Le Jardin de Mère Nature dans une Petite Planète

(Mother Nature's Garden on a Small Planet)

a SPECIES DISTRIBUTION LISTING for

TOWNSHIP 13 SOUTH, RANGE 12 EAST PIMA COUNTY, ARIZONA
Gila and Salt River Baseline and Meridian

August 31, 2010 Update

"An increasing need for careful husbandry of the earth's natural resources has renewed interest in the classification and mapping of ecosystems. The inventory of our remaining biotic entities is particularly urgent because the increased aspirations of a constantly growing world population are placing ever greater stress on these generous, but finite, living resources."

United States Department of Agriculture, Forest Service, General Technical Report RM-73

This photograph was taken looking southwest into the Tucson Mountains.
William T. Kendall, July 4, 2005

"To know the desert involves an acquaintance with all its aspects, and all its physical features, as well as all of the animals and plants that have learned how to find in it a congenial place to live. The most significant lesson that the desert dweller can learn from a familiarity with its plant and animal life is to regard himself not as an exile from some better place, but as a man at home in an environment to which his life can be adjusted without physical or intellectual loss."

Forest Shreve, The Cactus and Its Home, found in *Discovering the Desert*, by William G. McGinnies

MAJOR CONTRIBUTORS AND SOURCES OF INFORMATION

William T. Kendall *WTK (date of observation)*

Arizona Daily Star *ADS (date of article)*

Southwest Environmental Information Network (SEINet) *85 (a date of a search for information on the species)*

E. Lendell Cockrum. 1960. The Recent Mammals of Arizona: Their Taxonomy and Distribution, The University of Arizona Press, Tucson, Arizona. This inclusion is based on the general distribution maps and statements. *118 (distribution note, map - Figure Number and Page Number)*

Charles H. Lowe. 1964. The Vertebrates of Arizona with Major Section on Arizona Habitats, The University of Arizona Press, Tucson, Arizona. *55*

SPECIES DISTRIBUTION LISTINGS

Species Distribution Listings are being developed to encourage and promote the conservation of local native animals and plants. The listings are developed for legally defined geographic areas, and larger bodies of water. The listings include species reported as having been observed in or reported from the described area. Exotic and non-local landscaped plants are not included in the listings unless they have become naturalized into the surrounding native environment. Neither "Man" nor our domesticated animals, except for feral animals, have been included in the listings of species; however, they have had an impact on all natural areas, the future degree of this impact must be managed in order to restore and provide for the continuation of the natural interrelationships between all species.

Due to the continuing addition of species, the listings should be considered works in progress. In the listings, and most often in the listing of animals, species have been included based on general distribution mapping and/or statements and not on an observation made in a specific location. It is recommended that we consider a species as being "confirmed" to a township or general listing area only after we have at least three recorded sightings, cited in the footnotes, with no more than one of those records being based on general distribution mapping for the species. Note that the Southwest Environmental Information Network (SEINet) *85* may have several collections recorded for a species within any given township or listing area, and that the date shown in parentheses is a date of the search of their records and not a date of recorded sighting. Note also that many of the individual species collection records found in SEINet

include additional associated species. For assistance with the identification of a plant, contact the University of Arizona Herbarium (520-621-7243; FAX: 520-621-7186; P.O. Box 210036 Herring Hall, 1130 East South Campus Drive, Tucson, Arizona 85721).

Individual species records are presented alphabetically by division, class, family and genus within their kingdoms. Following the scientific name is the authority, common synonym(s), common name(s), a general description of the species, a general description of the habitat, the biotic communities in which it has reportedly been observed and footnotes. An attempt is being made to identify the range in mature (flowering/fruiting) heights reported for the plants. Wherever possible the flowering period is given as it has been reported and is inclusive to early month (1st-10th), mid-month (11th-20th) and late month (21st-end). The habitat description is provided in order to help you visualize the types of natural habitats a species is found in. Descriptions have been developed from and are based on herbarium records and general descriptions of habitat. The habitat description provided should not be considered as limiting as to the type of habitat that a plant might occupy. The terms "streambed", "creekbed", "riverbed" or "lakebed" refer to their dry aspects. Plants reported as occurring in recently burned areas were observed in the area within one year following a fire. The range in elevation has been rounded off to the nearest 100 feet up for the higher elevation, or down for the lower elevation. Species reported from within 0 to 100 feet as their lower elevation limit have been recorded as occurring "from sea level". The reporting of the ecological formations follows the mapping presented in the "Biotic Communities of the Southwest" by David E. Brown and Charles H. Lowe, August 1980, with the exception of the "wetlands" which are being reported as an ecological formation in the listings. Species not considered to be native to Arizona are shown as being EXOTIC, printed in red. Exotic plants are not recommended for use in landscaping or restoration projects. Plants that may be an attractive component of a restored native habitat are so noted. Plants reported as having been used by native peoples of North America and which might be investigated to determine their value as a home garden or commercial food, fodder, beverage, spice, fiber, and/or dye crop may be so noted; much of this information is based on the records of the Native American Ethnobotany website [University of Michigan - Dearborn], footnote *127*. Species once reported as having occurred within the described area, but that no longer occurs there, may be shown as EXTIRPATED. Disjunct species, outliers and plants on the edge of the main population, as observed by the surveyor, may be noted as being PERIPHERAL. When describing the "native range" of plants in North America northwestern refers to Alaska, northern refers to northern Canada (the Yukon Territory, Northwest Territories and Nunavut), northeastern refers to Greenland, central refers to southern Canada (north-central: British Columbia, Alberta, Saskatchewan, Manitoba, Ontario, Quebec, Newfoundland and Labrador, New Brunswick, Nova Scotia and Prince Edward Island) and the United States (south-central), and southern refers to Mexico, below which is Central America and South America. In the footnotes, the source(s) used for the inclusion of the species in a listing is printed in either green ***00*** (indicating that the entry is based on an actual sighting) or blue ***00*** (indicating that the entry is based on a general distribution description and/or mapping). Plants listed in the book "Livestock-Poisoning Plants of Arizona" by Ervin M. Schmutz, Barry M. Freeman and Raymond E. Reed and published in 1968 (80) as being either "Major Poisonous Range Plants" or "Secondary Poisonous Range Plants" are further identified by their listing heading being printed in red in the footnotes; plants considered to be "Rarely Poisonous and Suspected Poisonous Range Plants" and "Poisonous Cropland and Garden Plants" have also been noted. In order to facilitate referencing to T.H. Kearney and R. H. Pebbles' "Arizona Flora" the corresponding page number(s) for the species has been provided in the footnote (*46 (Page #)*).

Local native plants are recommended for use in landscape and restoration projects. Once established many native species require little, if any, irrigation. The inclusion of a plant in the township listing does not necessarily mean that the plant is suitable for the site in which you want to plant it. Ideally restoration should include those species of plants that were native to the property. The source material, of plants and seed, used in the project should be as local as possible. In order to determine what plants were native try to locate photographs of the area prior to clearing or look for natural areas and remnant populations and

plants adjacent to where the restoration is to take place. Plants should be planted in their approximate original habitat and density and taking into consideration the original local native site and elevation of occurrence.

The use of local native plants in landscape and restoration projects encourages native animals to remain in the area and helps us to retain the area's natural beauty and unique identity and heritage.

The Species Distribution Listings have been created and maintained by William T. Kendall. Any questions, concerns, corrections and/or comments, including the reporting of unrecorded species and information relating to historical distributions, may be sent to the following address: William T. Kendall, P.O. Box 86091, Tucson, Arizona 85754-6091

DISCLAIMER: The information presented under "Township Notes" has been obtained from large scale mapping and should be used only as a general guide. The listings are not meant to take the place of on-site surveys for species. Information used in the listings is accepted from biologists and individuals interested in helping to promote the conservation of our natural resources. Mistakes are made in the identification of species, the interpretation of data and in the recording of information, and changes in nomenclature occur. For these reasons I can not and do not warrant the accuracy of these listings. Attempts are made to keep the information contained in the Species Distribution Listings as accurate as possible; however, I disclaim any implied warranty or representation about its accuracy, completeness, or appropriateness for any particular purposes. Users of the information found in the listings assume full responsibility for their use of the information and understand that I not responsible or liable for any claim, loss, or damage resulting from its use.

CAUTION: Many native desert plants have sharp thorns and spines. Care should be given when handling these plants and consideration should be given to public safety at sites where they are to be planted. Range plants having a known toxic or poisonous property may be so noted. Footnotes for plants whose sources may have cautionary statements, comments and information on rarely poisonous or suspected poisonous properties may be shown in red *00*. Many poisonous plants are similar in appearance to edible ones. No field collected plant should be eaten unless you know for a fact that it is safe for you to do so.

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Acknowledgements

Footnotes and References for the Species Distribution Listings

TOWNSHIP NOTES

LOCATION: This township is located in northeastern Pima County in south-central Arizona. This township is bounded on the north by the alignment for Ina Road and on the east by the alignment for Camino de Oeste. Portions of this township are located within the limits for the Town of Marana and Saguaro National Park (West).

Historic Farming Activities: Historic farm: the Cortaro Farms.

Historic Ranching Activities: Historic ranches: the Idle Hour Ranch, the Sweetwater Ranch and the Wild Horse Ranch.

Historic Mining Activities: General mining activities included mining, quarrying and prospecting. Historic mines: the Gila Monster Mine, the Gould Mine, the Mile-Wide Mine, the Thunderbird Mine and the Yuma Mine.

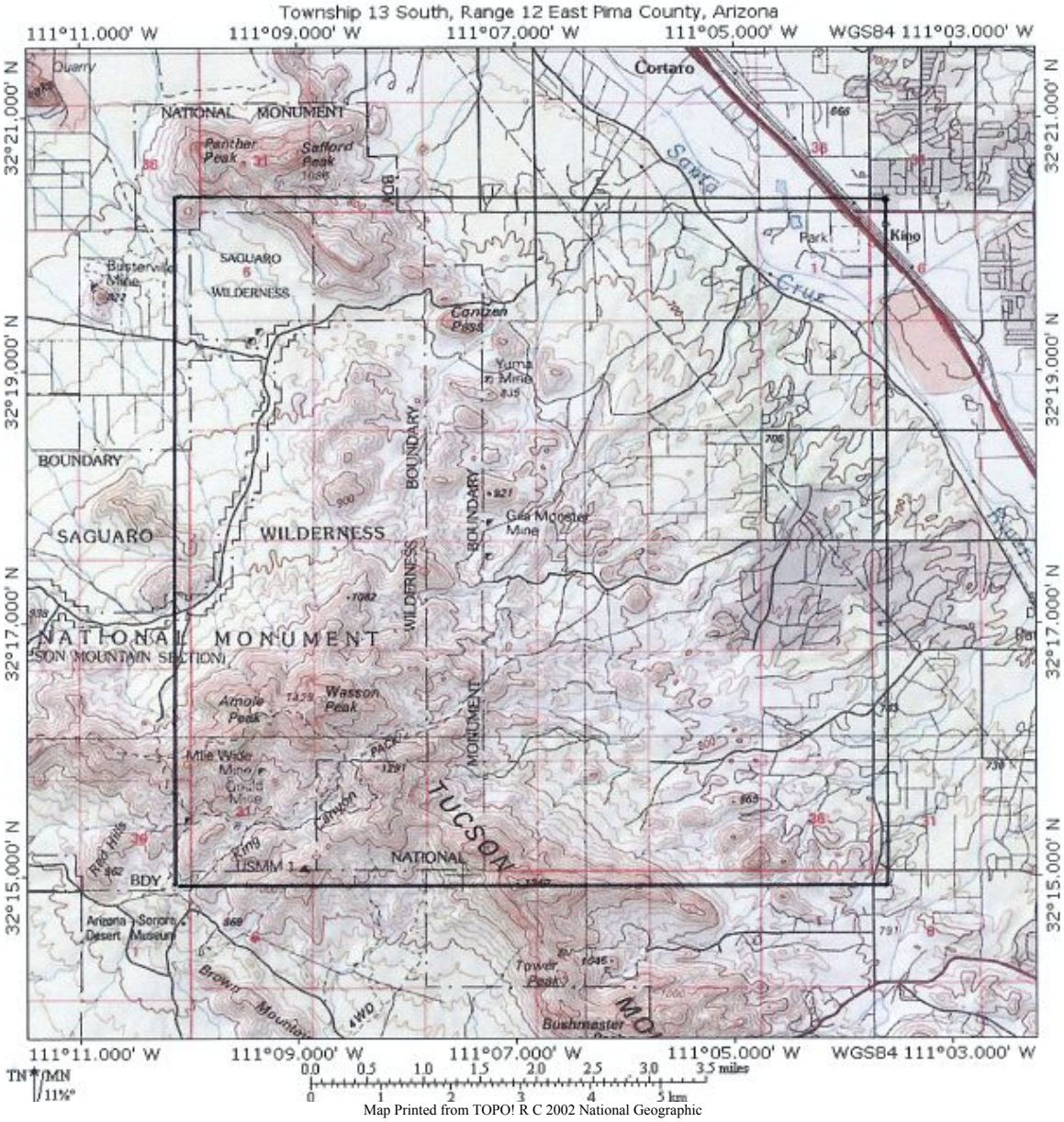
LANDMARKS: A portion of the Tucson Mountains is located in this township. Named canyons, passes and peaks include Amole Peak (4,422 feet), Cartog Peak, Contzen Pass, King Canyon, Wasson Peak (4,687 feet). Named washes and rivers include the Canada del Oro (confluence) and Santa Cruz River.

ELEVATION: Elevations range from approximately 2,155 feet in the Santa Cruz River on the north township line one mile west of the of the northeast corner to approximately 4,687 feet at Wasson Peak in the Tucson Mountains in the southwest quarter (1).

PHYSIOGRAPHIC PROVINCE: This township is located within the Sonoran Desert Section of the Basin and Range Physiographic Province (2).

SOILS: Soils have been described as being Thermic (hot) Arid Soils (soils with mean annual temperatures of 59 degrees to 72 degrees Fahrenheit (15 degrees to 22 degrees Centigrade) and 5 to 10 inches (13 to 25 cm) mean annual precipitation) and/or Thermic (hot) Semiarid Soils (soils with mean annual temperatures of 59 degrees to 72 degrees Fahrenheit (15 degrees to 22 degrees Centigrade) and 10 to 16 inches (25 to 41 cm) mean annual precipitation) of the Grabe-Gila-Pima Association (deep soils of the floodplains); Pinaleno-Nickel-Palos Verdes Association (deep, arid, gravelly soils on deeply dissected uplands), and the Rock Outcrop-Lampshire-Cellar Association (rock outcrop and very shallow and shallow semiarid soils of the mountains and foothills) (3).

BIOTIC COMMUNITY: This township is located within the Arizona Upland Subdivision of the Sonoran Desertscrub Regional Formation of the Desertscrub Formation with associated Wetlands, Scrub-Grassland (Semidesert Grassland) Regional Formation of the Grassland Formation may be found on the higher elevation peaks and ridges. (4)



Map Printed from TOPO! R C 2002 National Geographic

Map of Township and Adjacent Sections

LISTED BELOW ARE A FEW OF THE NATIVE PLANTS REPORTED AS OCCURRING IN THIS TOWNSHIP THAT MIGHT BE CONSIDERED FOR USE IN LANDSCAPE AND RESTORATION PROJECTS

Trees and Large Shrubs (over 7 feet maximum height)

Fremont Cottonwood (*Populus fremontii* subsp. *mesetae* - 10' to 112')
Velvet Ash (*Fraxinus velutina* - 40" to 65')
Saguaro (*Carnegiea gigantea* - 5' to 60')
Western Black Willow (*Salix gooddingii* - 4' to 60')
Sonoran Scrub Oak (*Quercus turbinella* - 10" to 60', see species record)
Velvet Mesquite (*Prosopis velutina* - 2' to 56')
Western Mulberry (*Morus microphylla* - 6½' to 50', see species record)
Blue Paloverde (*Parkinsonia florida* - 40" to 40')
Desert Ironwood (*Olneya tesota* - 10' to 33')
Desert Willow (*Chilopsis linearis* subsp. *arcuata* - 5' to 33')
Ocotillo (*Fouquieria splendens* - 5' to 33')
Yellow Trumpetbush (*Tecoma stans* - 3' to 33')
Arizona Rosewood (*Vauquelinia californica* - 5' to 30')
Foothill Paloverde (*Parkinsonia microphylla* - 40" to 26')
Catclaw Acacia (*Acacia greggii* var. *greggii* - 40" to 25')
Desert Olive (*Forestiera shrevei* - 40" to 25')
Desert Hackberry (*Celtis ehrenbergiana* - 3' to 20')
Whitethorn Acacia (*Acacia constricta* - 1' to 20')
Chain-fruit Cholla (*Cylindropuntia fulgida* var. *fulgida* - 3' to 15')
Staghorn Cholla (*Cylindropuntia versicolor* - 3' to 15')
Seep Willow (*Baccharis salicifolia* - 32" to 15')
Desert Lavender (*Hyptis emoryi* - 8" to 15')
Southern Cattail (*Typha domingensis* - 3' to 13')
Greythorn (*Ziziphus obtusifolia* var. *canescens* - 3' to 13')
Kearney Snakewood (*Condalia warnockii* var. *kearneyana* - 20" to 13')
Creosote Bush (*Larrea tridentata* var. *tridentata* - 20" to 13')
Fremont Lycium (*Lycium fremontii* - 20" to 13')
Jojoba (*Simmondsia chinensis* - 8" to 13')
Pencil Cholla (*Cylindropuntia arbuscula* - 20" to 12')
Fishhook Barrel Cactus (*Ferocactus wislizeni* - 1' to 11')
Buck-horn Cholla (*Cylindropuntia acanthocarpa* var. *acanthocarpa* - 40" to 10')
Desert Broom (*Baccharis sarothroides* - 3' to 10')
Pancake Pricklypear Cactus (*Opuntia chlorotica* - 2' to 10')
Skunkbush Sumac (*Rhus trilobata* var. *trilobata* - 2' to 10')
Teddybear Cholla (*Cylindropuntia bigelovii* - 20" to 10')
Berlandier Lycium (*Lycium berlandieri* var. *longistylum* - 20" to 10')
Arizona Desert-thorn (*Lycium exsertum* - 20" to 10')
Cane Cholla (*Cylindropuntia spinosior* - 16" to 10')
Fourwing Saltbush (*Atriplex canescens* - 1' to 10')

Wright Lycium (*Lycium andersonii* var. *wrightii* - 1' to 10')
Mountain Barrel Cactus (*Ferocactus cylindraceus* - 8" to 10')
Arizona Yucca (*Yucca* x *schottii* (pro sp.) [*baccata* x *elata*] - trunkless to 10') - do not confuse this species with the Schott or Mountain Yucca (*Yucca schottii* now considered to be *Yucca madrensis*)
Smooth Chain-fruit Cholla (*Cylindropuntia fulgida* var. *mamillata* -2' to 9')
Desert Honeysuckle (*Anisacanthus thurberi* - 3' to 8')
Desert Pricklypear Cactus (*Opuntia engelmannii* var. *engelmannii* - 20" to 8')
Desert Spoon (*Dasylirion wheeleri* - 16" to 8')
Four-spined Klein's Cholla (*Cylindropuntia* x *tetracantha* - 1' to 8')

Vines and Climbers

Hartweg Twinevine (*Funastrum cynanchoides* subsp. *heterophyllum* - 20" to 20')
Scarlet Creeper (*Ipomoea cristulata* - 8" to 11½')
Slender Janusia (*Janusia gracilis* - 16" to 10')
Wild Tepary Bean (*Phaseolus acutifolius* var. *tenuifolius*)
Redstar (*Ipomoea coccinea* - 5" to 10')
Slimjim Bean (*Phaseolus filiformis* - 2' to 7')
Tumamoc Globeberry (*Tumamoca macdougalii* - 28" to 5')
Watson Indian Root (*Aristolochia watsoni* - 8" to 40")
Rosary Bean (*Rhynchosia senna* var. *texana* - 8" to 40")
Crestrib Morning-glory (*Ipomoea costellata* - 12" to 30")

Shrubs (2 to 7 feet maximum height)

Cortaro Cholla (*Cylindropuntia* x *vivipara* - 40" to 7')
Major Cholla (*Cylindropuntia acanthocarpa* var. *major* - 2' to 7')
Canyon Ragweed (*Ambrosia ambrosioides* - 1' to 7')
California Brickellbush (*Brickellia californica* var. *californica* - 1' to 7')
Limberbush (*Jatropha cardiophylla* - 1' to 7')
Tulip Pricklypear Cactus (*Opuntia phaeacantha* - 10" to 7')
Rock Sage (*Salvia pinguifolia* - 20" to 78")
Desert Saltbush (*Atriplex polycarpa* - 12" to 78")
Pubescent Skunkbush Sumac (*Rhus trilobata* var. *pilosissima* - 12" to 78")
Parish Indian Mallow (*Abutilon parishii* - 40" to 6')
Desert Christmas Cactus (*Cylindropuntia leptocaulis* - 1' to 6')
White Brittlebush (*Encelia farinosa* - 1' to 6')
American Threefold (*Trixis californica* - 10" to 6')
Rough Jointfir (*Ephedra aspera* - 1' to 5')
Gumhead (*Gymnosperma glutinosum* - 1' to 5')
White Rantany (*Krameria grayi* - 8" to 5')
Desert Mistletoe (*Phoradendron californicum* - 8" to 5', see note)
Fairyduster (*Calliandra eriophylla* - 4" to 5')
Turpentine Bush (*Ericameria laricifolia* - 10" to 50")
Triangleleaf Bursage (*Ambrosia deltoidea* - 1' to 4')
Arizona Rosemallow (*Hibiscus biseptus* - 18" to 40")
Arizona Cockroach Plant (*Haplophyton crooksii* - 7" to 40")
Range Ratany (*Krameria erecta* - 2" to 40")

Wright Buckwheat (*Eriogonum wrightii* - 4” to 36”)

Grasses

Wright Sacaton (*Sporobolus wrightii* - 36” to 100”)
Spidergrass (*Aristida ternipes* - 10” to 79”)
Deergrass (*Muhlenbergia rigens* - 14” to 63”)
Bullgrass (*Muhlenbergia emersleyi* - 20” to 60”)
Spike Dropseed (*Sporobolus contractus* - 16” to 60”)
Tanglehead (*Heteropogon contortus* - 8” to 60”)
Whiplash Pappusgrass (*Pappophorum vaginatum* - 16” to 52”)
Sideoats Grama (*Bouteloua curtipendula* - 3” to 52”)
Arizona Cottontop (*Digitaria californica* - 12” to 48”)
Streambed Bristlegrass (*Setaria leucopila* - 8” to 48”)
Grisebach’s Bristlegrass (*Setaria grisebachii* - 4” to 48”)
Bush Muhly (*Muhlenbergia porteri* - 10” to 44”)
Plains Lovegrass (*Eragrostis intermedia* - 8” to 40”)
Blue Threeawn (*Aristida purpurea* var. *nealleyi* - 6” to 40”)
Parish Threeawn (*Aristida purpurea* var. *parishii* - 4” to 40”)
Littleseed Muhly (*Muhlenbergia microsperma* - 4” to 40”)
Sixweeks Threeawn (*Aristida adscensionis* - 1¼” to 40”)
Slender Grama (*Bouteloua repens* - 4” to 32”)
Black Grama (*Bouteloua eriopoda* - 8” to 30”)
Slender Muhly (*Muhlenbergia tenuifolia* - 8” to 28”)
Sprucetop Grama (*Bouteloua chondrosioides* - 4” to 24”)
Hairy Grama (*Bouteloua hirsuta* var. *hirsuta* - 4” to 24”)
Sixweeks Fescue (*Vulpia octoflora* var. *hirtella* - 2” to 24”)
Spike Pappusgrass (*Enneapogon desvauxii* - 4” to 20”)
Bigelow Bluegrass (*Poa bigelovii* - 2” to 20”)
Curly Mesquite (*Hilaria belangeri* - 2” to 14”)
Desert Fluffgrass (*Dasyochloa pulchella* - ½” to 6”)

Shrubs (under 2 feet maximum height), Subshrubs, Herbs and Small Succulents

Emory Globemallow (*Sphaeralcea emoryi* - 2¼” to 98”)
Desert Night-blooming Cereus (*Peniocereus greggii* var. *transmontanus* - 1’ to 8’)
Longleaf False Goldeneye (*Heliomeris longifolia* var. *annua* - 1’ to 6’)
Coulter Globemallow (*Sphaeralcea coulteri* - 6” to 6’)
Parry Penstemon (*Penstemon parryi* - 2’ to 5’)
Rose Globemallow (*Sphaeralcea ambigua* subsp. *rosacea* - 20” to 5’)
Brownfoot (*Acourtia wrightii* - 1’ to 5’)
White Cheesebush (*Hymenoclea salsola* var. *pentalepis* - 1’ to 5’)
Mexican Fireplant (*Euphorbia heterophylla* - 8” to 5’)
Colorado Four O’Clock (*Mirabilis multiflora* - 6” to 5’)
Yellow Monkeyflower (*Mimulus guttatus* - 2” to 5’)
Bladdermallow (*Herissantia crispa* - 8” to 4’)
Spreading Fanpetals (*Sida abutifolia* - 8” to 4’ in length)
Parish Larkspur (*Delphinium parishii* var. *parishii* - 6½” to 4’)
Tall Mountain Larkspur (*Delphinium scaposum* - 6” to 4’)

Desert Tobacco (*Nicotiana obtusifolia* var. *obtusifolia* - 12” to 42”, see notes)
Scarlet Four O’Clock (*Mirabilis coccinea* - 6” to 42”)
Violet Ruellia (*Ruellia nudiflora* var. *nudiflora* - 12” to 40”)
Violet Snapdragon (*Sairocarpus nuttallianus* - 12” to 40”)
Covena (*Dichelostemma capitatum* subsp. *capitatum* - 10” to 40”)
Longflowered Tubetongue (*Justicia longii* - 8” to 40”)
Prairie Flax (*Linum lewisii* var. *lewisii* - 4” to 40”)
Purplestem Phacelia (*Phacelia crenulata* var. *ambigua* - 4” to 40”)
Chia (*Salvia columbariae* var. *columbariae* - 4” to 40”)
Distant Phacelia (*Phacelia distans* - 3” to 40”)
Lacy Tansyaster (*Machaeranthera pinnatifida* - 4” to 36”)
Desert Senna (*Senna covesii* - 10” to 32”)
Mojave Lupine (*Lupinus sparsiflorus* - 6” to 32”)
Texas Desertrue (*Thamnosma texana* - 6” to 32”)
Arizona Centaury (*Centaurium arizonicum* - 5” to 32”)
Whitestem Paperflower (*Psilostrophe cooperi* - 4” to 32”)
Abert Buckwheat (*Eriogonum abertianum* - 2” to 32”)
Covena (*Dichelostemma capitatum* subsp. *pauciflorum* - 16” to 30”)
Hillside Vervain (*Verbena neomexicana* - 12” to 30”)
Desert Marigold (*Baileya multiradiata* - 6” to 30”)
Caliche Globemallow (*Sphaeralcea laxa* - 12” to 28”)
Spreading Fleabane (*Erigeron divergens* - 4” to 28”)
Bearded Prairie Clover (*Dalea pogonathera* var. *pogonathera* - 8” to 24”)
Goodding Mock Vervain (*Glandularia gooddingii* - 6” to 24”)
Rose Bladderpod (*Lesquerella purpurea* - 6” to 2’)
Mojave Milkweed (*Asclepias nyctaginifolia* - 4” to 24”)
Wavy Scaly Cloakfern (*Astrolepis sinuata* subsp. *sinuata* - 4” to 24”)
Desert Mariposa Lily (*Calochortus kennedyi* - 4” to 24”)
New Mexico Plumeseed (*Rafinesquia neomexicana* - 4” to 24”)
Twinleaf Senna (*Senna bauhinioides* - 4” to 24”)
Gordon Bladderpod (*Lesquerella gordonii* var. *gordonii*) - 3” to 24”)
Flatcrown Buckwheat (*Eriogonum deflexum* var. *deflexum* - 2” to 24”)
Mexican Gold Poppy (*Eschscholzia californica* subsp. *mexicana* - 1” to 24”)
Mangas Spring Phacelia (*Phacelia bombycina* - 12” to 20”)
Skyblue Phacelia (*Phacelia coerulea* - 6” to 20”)
Nevada Biscuitroot (*Lomatium nevadense* var. *nevadense* - 4” to 20”)
Nevada Biscuitroot (*Lomatium nevadense* var. *parishii* - 4” to 20”)
Desert Zinnia (*Zinnia acerosa* - 3” to 20”)
Bundle Hedgehog Cactus (*Echinocereus fasciculatus* - 2” to 18”)
Schott Agave (*Agave schottii* var. *schottii* - 8” to 16”)
Desert Evening Primroase (*Camissonia chamaenerioides* 4” to 16”)
Common Owl’s Clover (*Castilleja exserta* subsp. *exserta* - 4” to 16”)
Desert Broomrape (*Orobanche cooperi* - 4” to 16”)
Beaded Lip Fern (*Cheilanthes wootonii* - 3” to 15½”)
White Tackstem (*Calycoseris wrightii* - 10” to 12”)
Indian Rushpea (*Hoffmannseggia glauca* - 4” to 12”)
Arizona Poppy (*Kallstroemia grandiflora* - 4” to 12” in height, with stems extending to 4’ in length)
Largeflower Onion (*Allium macropetalum* - 3” to 12”)
Graham Pincushion Cactus (*Mammillaria grahamii* - 1” to 12”)
Mohave Desertstar (*Monoptilon bellioides* - 1” to 12”)
California Goldfields (*Lasthenia californica* subsp. *californica* - 3” to 10”)

Desert Holly (*Acourtia nana* - 2” to 10”)
Wright’s Lipfern (*Cheilanthes wrightii* - 1½” to 10”)
Copper Zephyrlily (*Zephyranthes longifolia* - 3” to 8”)
Manybristle Chinchweed (*Pectis papposa* - 1” to 8”)
Dwarf Morning-glory (*Evolvulus nuttallianus* - 4” to 6”)
Purplemat (*Nama demissum* - ½” to 3”)

CONSERVATION RELATED ORGANIZATIONS AND NURSERIES

Arizona Department of Agriculture

http://www.azda.gov/

Native Plant Crimes HOTLINE: 602-364-0907

The mission statement of the Arizona Department of Agriculture is to regulate and support Arizona agriculture in a manner that encourages farming, ranching, and agribusiness while protecting consumers and natural resources.

NOTICE OF INTENT TO CLEAR LAND

The Arizona Department of Agriculture enforces the sections of the Arizona Revised Statutes commonly referred to as the “Arizona Native Plant Law”. The statutes require, in part, that anyone who is clearing land notify the State of Arizona in advance of the clearing. Some land owners involved in the clearing of land allow for nurseries and people who are interested in salvaging plants to do so prior to the clearing. The Arizona Department of Agriculture posts these notifications in their county offices. You may also contact the Arizona Department of Agriculture and, for a fee, be put on a mailing list of people receiving copies of the Notices of Intent to Clear Land.

Contact Information: Arizona Department of Agriculture, 1688 West Adams Street, Phoenix, Arizona 85007. Telephone number: 602-542-4373.

Arizona Game and Fish Department

http://www.gf.state.az.us/

Operation GAME THIEF: 602-942-3000

The mission statement of the Arizona Game and Fish Department is to ~~conserve, enhance, and restore Arizona's diverse wildlife resources and habitats through aggressive protection and management programs, and to provide wildlife resources and safe watercraft and off-highway vehicle recreation for the enjoyment, appreciation, and use by present and future generations~~.

As part of their conservation program the Arizona Game and Fish Department provides ideas on how to learn to live with, and landscape for, wildlife:

LIVING WITH WILDLIFE
http://www.azgfd.gov/w_c/urban_wildlife.shtml

Contact Information: Arizona Game and Fish Department, 5000 West Carefree Highway, Phoenix, Arizona 85086-5000. Telephone number: 602-942-3000

Arizona Native Plant Society

http://aznps.org/

The Arizona Native Plant Society is a statewide nonprofit organization devoted to Arizona's native plants. Its mission is to promote knowledge, appreciation, conservation, and restoration of Arizona native plants and their habitats. They work with the Southwest Rare Plant Task Force to develop strategies for protecting rare species and their habitats; they keep abreast of conservation issues concerning native plants species and responds to those through their Conservation Committee; they promote the use of native species in residential and commercial landscapes; they publish the Plant Press, support the publication of scholarly works and maintains a website with information and links about native plant, and they host a series of statewide events that provide forums to learn from professionals. Member activities and benefits include chapter and statewide gatherings; field trips and educational presentations; conservation through education, outreach and restoration; habitat restoration projects; informative website, newsletters and journals, and interactions with plant experts and enthusiasts.

LISTING OF SOURCES FOR NATIVE PLANTS AND SEEDS

The Arizona Native Plant Society maintains a listing of Native Plant and Seed Sources at:
http://www.aznps.org/sources.html

Contact Information: Arizona Native Plant Society, PO Box 41206, Tucson, Arizona 85717.

Tucson Cactus and Succulent Society

http://www.tucsoncactus.org/

The Tucson Cactus and Succulent Society is a non-profit organization dedicated to educating, teaching and learning about cacti and succulent plants. Their monthly programs feature knowledgeable individuals who can educate you and help you understand more about these fascinating plants. They conduct and sponsor native cactus and succulent rescue operations, plant sales, field trips, nursery and garden visits, conventions and conferences as well as other activities throughout the year.

NATIVE PLANT RESCUE NOTICE

The Tucson Cactus and Succulent Society expends a tremendous amount of time and effort in the organizing and overseeing of their native plant rescue events. The native plant rescues carried out by the dedicated members of the Society provide an immeasurable service to our community.

Members of the Tucson Cactus and Succulent Society organize native plant rescues in areas being cleared for development. If interested in rescuing plants and/or obtaining local native plants for your landscaping or restoration project join the Society and become a rescue crew member.

Contact Information: Tucson Cactus and Succulent Society, PO Box 64759, Tucson, Arizona 85728-4759. Telephone number: 520-885-6367.

Desert Survivors Native Plant Nursery
http://www.desertsurvivors.org/nursery.asp

The Desert Survivors Native Plant Nursery sells many local native plants and is willing to consider growing any native plant for which there is a buyer.

Contact Information: Desert Survivors Native Plant Nursery, 1020 West Starr Pass Boulevard, Tucson, Arizona 85713. Telephone number: 520-791-9309.

Native Seeds/SEARCH
http://www.nativeseeds.org

The Native Seeds/SEARCH is a nonprofit conservation organization that seeks to preserve the crop seeds that connect the Native American cultures to their lands. The mission of the Native Seeds/SEARCH is to conserve, distribute and document the adapted and diverse varieties of agricultural seeds, their wild relatives and the role these seeds play in the cultures of the American Southwest and Northwest Mexico.

Contact Information: Native Seeds/SEARCH, 526 North Fourth Avenue, Tucson, Arizona 85705. Telephone number: 520-622-5561 or toll free at 866-622-5561; FAX 520-622-5561; e-mail: info@nativeseeds.org

LISTING OF PLANTS

STRICTLY ENFORCED LAWS PROTECT MANY OF ARIZONA'S NATIVE PLANTS FROM COLLECTION, MUTILATION AND DESTRUCTION

Native Plant Crimes HOTLINE: 602-364-0907

Kingdom Plantae: The Plant Kingdom
Subkingdom Tracheobionta: The Vascular Plants

Division Pteridophyta: The Ferns

CLASS FILICOPSIDA: The FERNS

Pteridaceae: The Maidenhair Fern Family

***Astrolepis sinuata* (M. Lagasca y Segura ex O. Swartz) D.M. Benham & M.D. Windham subsp. *sinuata*: Wavy Scaly Cloakfern**

SYNONYMY: *Cheilanthes sinuata* (M. Lagasca y Segura ex O. Swartz) K. Domin, *Notholaena sinuata* (M. Lagasca y Segura ex O. Swartz) G.F. Kaulfuss. COMMON NAMES: Bulb Cloakfern, Canaguala (Hispanic), Cloak-fern, Helecho (Hispanic), Jimmy-fern, Kalawala (Tarahumara), Wavy Cloak Fern, Wavy Cloakfern, Wavy Scaly Cloakfern, Wavy-leaved Star Fern. DESCRIPTION: Terrestrial perennial evergreen forb/herb (fronds are 4 to 24 inches in length); the leaf blades are dark green or olive green with reddish-brown or brown stipes; sporulation generally takes place summer through fall. HABITAT: Within the range of this species it has been reported from mountains; rocky mountainsides; along cliffs; cliff walls; gravelly-loamy canyons; canyon bottoms; rocky gorges; talus slopes; bases of cliffs; along crevices in boulders and rocks; rocky ledges; rocky ridges; ridgetops; hills; rocky hillsides; bouldery, rocky, rocky-stony, stony and gravelly-loamy slopes; rocky outcrops; amongst boulders and rocks; rock niches; banks; arroyos; draws; along bedrock ravines; along streams; creekbeds; sandy riverbeds; along rocky and sandy washes; rocky drainages; banks of creeks; rocky margins of seeps, and riparian areas in moist and dry bouldery, bouldery-rocky-sandy, rocky, rocky-stony, gravelly and sandy ground and gravelly loam and sandy-clayey loam ground, occurring from 700 to 8,000 feet in elevation in the forest, woodland, scrub, grassland and desertscrub ecological formations. NOTES: This plant may be an attractive component of a restored native habitat, consider planting with native Selaginella (Spikemosses). *Astrolepis sinuata* subsp. *sinuata* is native to south-central and southern North America; Central America and coastal Caribbean Islands, and northern, western and southern South America. *5, 6, 15, 28 (color photograph), 30, 43 (052610 - *Astrolepis sinuata* (Lag. ex Sw.) D.M. Benham & Windham, *Cheilanthes sinuata* Domin, *Notholaena sinuata* (Lag.) Kaulf.), 46 (recorded as *Notholaena sinuata* (Lag.) Kaulf., Page 41), 51 (color photograph, recorded as *Notholaena sinuata* var. *sinuata*), 58, 63 (052510), 77, **85** (052610 - color presentation), 122*

Cheilanthes sinuata (see *Astrolepis sinuata* subsp. *sinuata*)

***Cheilanthes wootonii* W.R. Maxon: Beaded Lipfern**

COMMON NAMES: Beaded Lip Fern, Beaded Lipfern, Lip Fern, Wooton Lace Fern, Wooton Lipfern, Wooton's Lip Fern. DESCRIPTION: Terrestrial perennial evergreen forb/herb (fronds are 3 to 15½ inches in length); the leaf blades are yellow-green (when young) or dark green (with age) with pale brown stipes; sporulation generally takes place between summer and fall. HABITAT: Within the range of this species it has been reported from mountains; cliffs; cliff faces; rocky walls; rocky canyons; along rocky canyon walls; bedrock and rocky canyon bottoms; gorges; bases of rock walls; crevices in boulders and rocks; rocky ledges; bouldery foothills; rocky hills; rocky hillsides; bouldery, rocky, gravelly, gravelly-loamy and silty-loamy slopes; bouldery bajadas; rocky outcrops; amongst boulders and rocks; bases of boulders and rocks; draws; gulches; along bedrock, bouldery-gravelly and rocky ravines; seeps; springs; along streams; bouldery streambeds; along and in creeks; along and in rocky washes; along and in bouldery drainages; (rocky) banks of streams and creeks; rock shelves; around and in stock tanks, and riparian areas growing in dry bouldery, bouldery-rocky-gravelly, bouldery-gravelly, rocky and gravelly ground; gravelly loam and silty loam ground, and on rotting logs often growing in shaded and sheltered areas, occurring from 1,300 to 9,600 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. This plant was reported to have been utilized by native peoples of North America;

it was noted as having been used as a drug or medication. *Cheilanthes wootonii* is native to southwest-central and southern North America. *5, 6, 15, 16, 43 (081109 - presents an alternate spelling: *Cheilanthes wootoni* Maxon), 46 (Page 39), 51 (color photograph), 58, 63 (081109 - color presentation), **77**, 85 (081109 - color presentation of dried material), 122, 127*

***Cheilanthes wrightii* W.J. Hooker: Wright's Lipfern**

COMMON NAMES: Wright Lipfern, Wright's Lip Fern, Wright's Lipfern. DESCRIPTION: Terrestrial perennial evergreen forb/herb (fronds are 1½ to 10 inches in length); the leaf blades are green with brown to dark brown stipes; sporulation generally takes place between summer and fall. HABITAT: Within the range of this species it has been reported from mountains; rocky mountainsides; mesas; rock cliffs; canyons; rocky canyon walls; bouldery and rocky canyon bottoms; chasms; talus slopes; bases of cliffs; soil filled crevices in rocks; rocky ledges; rocky ridges; ridgetops; foothills; rocky hills; bouldery and rocky hillsides; along bouldery and rocky slopes; bouldery and rocky outcrops; amongst rocks; on boulders; bases of boulders and rocks; rocky nooks; within bedrock and rocky arroyos; draws; rocky ravines; along streams; within rocky washes; drainages; depressions; rocky shelves; bottomlands, and riparian areas growing in dry bouldery, rocky and gravelly ground; gravelly-sandy loam and sandy-clayey loam ground, and gravelly clay ground, occurring from 900 to 7,100 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. *Cheilanthes wrightii* is native to southwest-central and southern North America. *5, 6, 15, 16, 43 (081109), 46 (Page 40), 51 (color photograph), 58, 63 (081109 - color presentation), 77, **85** (081109 - color presentation of dried material), 122*

Notholaena sinuata (see *Astrolepis sinuata* subsp. *sinuata*)

Superdivision Spermatophyta: The Seed Plants

Division Gnetophyta: The Gnetophytes

CLASS GNETOPSIDA: The GNETOPS

Family Ephedraceae: The Mormon-tea Family

***Ephedra aspera* G. Engelmann ex S. Watson: Rough Jointfir**

SYNONYMY: *Ephedra nevadensis* S. Watson var. *aspera* (G. Engelmann ex S. Watson) L.D. Benson. COMMON NAMES: Aspera Mormon Tea, Boundary Ephedra, Canatillo, Canutillo, Mormon Tea, Nevada Ephedra, Nevada Joint-fir, Pitamo Real (Hispanic), Popotillo (Hispanic), Rough Jointfir, Sanguinaria, Tepopote. DESCRIPTION: Terrestrial perennial evergreen subshrub or shrub (1 to 5 feet in height, one plant was described as being 1 foot in height with a crown 4 feet in width); the bark is gray; the young branches are pale green, green or dark green aging to yellow; the production of strobili (female and male cones) generally takes place between January and June. HABITAT: Within the range of this species it has been reported from mountains; mountainsides; along rocky canyons; rocky ledges; hills; rocky hillsides; rocky fans; rocky and gravelly slopes; bajadas; rocky outcrops; amongst boulders and rocks; gravelly flats; along arroyos; rocky ravines; sandy streambeds; along and in rocky and gravelly washes; sandy banks; terraces, and riparian areas growing in dry bouldery, rocky, gravelly and sandy

ground and gravelly loam ground, occurring from 1,000 to 6,000 feet in elevation in the woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. The Rough Jointfir may reach full size within 20 years living to be 100 years or more in age. This plant is browsed by wildlife, including the Bighorn Sheep (*Ovis canadensis*). *Ephedra aspera* is native to southwest-central and southern North America. *5, 6, 13 (recorded as *Ephedra nevadensis* S. Wats. var. *aspera* (Engelm.) L. Benson), 18 (genus), 43 (062910 - *Ephedra nevadensis* var. *aspera* (Engelm. ex S. Watson) L.D. Benson), 46 (recorded as *Ephedra nevadensis* Wats. var. *aspera* (Engelm.) L. Benson, Page 61), 48 (genus), 63 (062910), 77, **85** (062910 - color presentation including habitat, unable to access species information), 91*

***Ephedra nevadensis* S. Watson: Nevada Jointfir**

COMMON NAMES: Gray Ephedra, Mormon Tea, Mormon-tea, Nevada Ephedra, Nevada Jointfir. DESCRIPTION: Terrestrial perennial subshrub or shrub (1 to 5 feet in height and about the same in width); the bark is gray; the young twigs are pale green aging to yellow; the production of strobili (female and male cones) takes place from late winter to mid-spring with the cones generally opening from March through May . HABITAT: Within the range of this species it has been reported from mountains; canyons; ridgetops; foothills; rocky hills; gravelly hillsides; rocky slopes; sandy flats; valley floors; along gravelly washes; terraces; floodplains and disturbed areas growing in dry rocky, rocky-sandy, gravelly and sandy ground and rocky loam ground, occurring from 900 to 7,100 feet in elevation in the woodland, scrub, grassland and desertscrub ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. This plant was reported to have been utilized by native peoples of North America and could be investigated to determine its value as a home garden or commercial food and/or beverage crop; it was also noted as having been used as a fuel, as a tool (the wood reportedly provided the best charcoal for tattooing and as a drug or medication. The Nevada Jointfir is browsed by Mule Deer (*Odocoileus hemionus*), Pronghorn (*Antilocapra americana*) and Rocky Mountain Bighorn Sheep (*Ovis canadensis*), and the seeds are food for small mammals and birds. *Ephedra nevadensis* is native to southwest-central and southern North America. *5, 6, 13, 18, 43 (062910), 46 (Page 61), 48 (genus), 63 (062910 - color presentation), **85** (062910 - color presentation, unable to access species information), 127*

Ephedra nevadensis var. *aspera* (see *Ephedra aspera*)

Division Magnoliophyta: The Flowering Plants

CLASS LILIOPSIDA: The MONOCOTS

Agavaceae: The Century-plant Family

***Agave schottii* G. Engelmann: Schott's Century Plant**

COMMON NAMES: Agave, Amole, Amolillo, Schott Agave, Schott's Century Plant, Shin Dagger, Shin Digger. DESCRIPTION: Terrestrial perennial evergreen leaf-succulent forb/herb, subshrub or shrub (acaulescent and cespitose 8 inches to 2 feet in height and 14 inches in diameter with a flowering stem reaching to 12 feet in height); the leaves are green, dark green or yellowish-green; the flowers are yellow or deep yellow; the anthers are light yellow, yellow or deep yellow; flowering generally takes place between May and October. HABITAT: Within the range of this species it has been reported from mountains; mountainsides; canyons, rocky and gravelly slopes, rocky outcrops, and bajadas growing in

dry rocky and gravelly ground, occurring from 3,000 to 7,000 feet in elevation in the woodland, grassland and desertscrub ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. This plant was reported to have been utilized by native peoples of North America and could be investigated to determine its value as a home garden or commercial food crop. The flowers are visited by bees, hummingbirds and wasps. The Southern Long-nosed Bat (*Leptonycteris curasoae* subsp. *yerbabuenae*) is reported to be a pollinator of the Schott Agave. *Agave schottii* is native to southwest-central and southern North America. *5, 6, 13 (color photograph), 15 (color photograph #102), 17, 28 (color photograph), 43 (062310), 45 (color photograph), 46 (Page 192), 48 (genus), 63 (062310), **77**, 85 (062310 - color presentation), 115 (color presentation), 127*

***Agave schottii* G. Engelmann var. *schottii*: Schott's Century Plant**

COMMON NAMES: Agave, Amole, Amolillo, Schott Agave, Schott's Century Plant, Shin Dagger, Shin Digger. DESCRIPTION: Terrestrial perennial evergreen leaf-succulent forb/herb, subshrub or shrub (8 to 16 inches and 14 inches in diameter with a flowering stem reaching 6 to 13 feet in height); the leaves are green or yellowish-green; the flowers are yellow; the anthers are light yellow, yellow or deep yellow; the stigmas are yellow; flowering generally takes place between May and October. HABITAT: Within the range of this species it has been reported from mountains; canyons; rocky and gravelly slopes; rocky outcrops, and bajadas growing in dry rocky and gravelly ground, occurring from 3,000 to 7,000 feet in elevation in the woodland, grassland and desertscrub ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. The flowers are visited by bees, hummingbirds and wasps. The Southern Long-nosed Bat (*Leptonycteris curasoae* subsp. *yerbabuenae*) is reported to be a pollinator of the Schott Agave. *Agave schottii* var. *schottii* is native to southwest-central and southern North America. *5, 6, 13, 17, 43 (062310), 45 (species, color photograph of species), 46 (Page 192), 48 (genus), 63 (062310), 85 (062310 - color presentation including habitat), **HR***

Yucca arizonica (see *Yucca* x *schottii* (pro sp.) [*baccata* x *elata*])

Yucca baccata var. *brevifolia* (see *Yucca* x *schottii* (pro sp.) [*baccata* x *elata*])

Yucca thornberi (see *Yucca* x *schottii* (pro sp.) [*baccata* x *elata*])

***Yucca* x *schottii* G. Engelmann (pro sp.) [*baccata* x *elata*]: Schott's Yucca**

SYNONYMY: *Yucca arizonica* S.A. McKelvey, *Yucca baccata* J. Torrey var. *brevifolia* (H.W. Schott ex J. Torrey) L.D. Benson & R.A. Darrow, *Yucca thornberi* S.A. McKelvey. COMMON NAMES: Arizona Yucca, Banana Yucca, Blue Yucca, Datil, Palma Criolla, Schott's Yucca, Spanish Dagger, Thornber Yucca. DESCRIPTION: Terrestrial perennial evergreen leaf-succulent forb/herb, subshrub, shrub or tree (cespitose without trunks to 10 feet in height with a flowering stalk 13 inches to 5 feet in height); the leaves are blue-green, gray-green, green, dark green, dark olive-green, yellow-green (older leaves), dark yellow-green or yellowish-green; the flowers are cream, cream-white, green-creamish-yellow & cream-white with maroon-purple markings, greenish-cream lightly flushed with maroon in center, greenish-yellow-cream or white; the anthers are white or yellow; flowering generally takes place between early March and early June (additional records: one for early February, one for late August, one for late September and one for early October). HABITAT: Within the range of this species it has been reported from mountains; mountainsides; mesas; canyons; canyon bottoms; bases of cliffs; bluffs; knolls; ridges; ridgetops; foothills; hills; rocky hillsides; rocky slopes; bajadas; plains; gravelly flats; valley floors; arroyos; draws; along and in washes; along margins of washes, and benches growing in dry rocky, gravelly and sandy ground and gravelly loam ground, occurring from 1,900 to 6,400 feet in elevation in the woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. Do not confuse this plant with the Mountain Yucca, *Yucca schottii* auct non G. Engelmann [misapplied] which is now considered to be *Yucca*

madrensis H.S. Gentry. *Yucca* x *schottii* is native to southwest-central and southern North America. *5, 6, 13 (color photograph, recorded as *Yucca baccata* Torrey var. *brevifolia* (Schott) Benson & Darrow), 15 (color photograph on back cover of *Yucca thornberi* in habitat), 26 (genus), 43 (052610 - *Yucca baccata* Torr. in Emory var. *brevifolia* L.D. Benson & R.A. Darrow), 45 (color photograph, recorded as *Yucca arizonica*), 46 (recorded as *Yucca arizonica* McKelvey, Page 187 and *Yucca thornberi* McKelvey, Page 187), 48 (genus), 58, 63 (052610 - color presentation), **77** (*Yucca baccata* Torr. var. *brevifolia* (Schott ex Torr.) Benson & Darrow), 85 (052710), 91 (recorded as *Yucca arizonica* McKelvey), **HR** (recorded as *Yucca baccata* var. *brevifolia* and *Yucca thornberi*)*

Cyperaceae: The Sedge Family

***Cyperus esculentus* C. Linnaeus: Yellow Nutsedge**

COMMON NAMES: Amande de Terre (French), Bebollin, Cebollín (Spanish), Choufa (French), Chufa (Portuguese), Chufa Flatsedge, Coquillo (Hispanic), Coquillo Amarillo (Hispanic), Earth-almond, Erdmandel (German), Juncia Avellanada (Spanish), Northern Nut Grass, Sai´ (Hispanic), Souchet Comestible (French), Tigernut, Tiririca (Portuguese), Tiririca-amarela (Portuguese), Tiririca-mansa (Portuguese), Water-grass, Yellow Nut Grass, Yellow Nut-grass, Yellow Nutgrass, Yellow Nut Sedge, Yellow Nutsedge, Zacate (Hispanic). DESCRIPTION: Terrestrial perennial graminoid (4 to 40 inches in height); the leaves are yellow-green or bright green above and whitish below; the spikelets may be golden-brown, golden-tan, reddish, yellow-brown or yellowish; flowering generally takes place between mid-June and early November (additional records: two for early May, two for late May, one for early November and one for late December). HABITAT: Within the range of this species it has been reported from mountains; sandy pockets of soils on top of cliffs; canyons; rocky, rocky-sandy, gravelly and sandy canyon bottoms; bluffs; clayey meadows; foothills; bouldery hillsides; rocky, sandy and clayey slopes; bouldery and rocky outcrops; amongst boulders and rocks; plains; rocky, gravelly and clayey flats; basins; silty valley bottoms; along rocky and gravelly-loamy roadsides; arroyos; sandy arroyo bottoms; seeps; along streams; along and in sandy streambeds; along sandy creeks; creekbeds; along rivers; sandy riverbeds; along and in clayey washes; drainages; along drainage ways; palm oases; sandy-loamy ephemeral ponds; playas; bogs; marshes; sandy depressions; along sandy-silty banks of streams, creeks, rivers and washes; sandy and muddy edges of rivers, pools, ponds, lakes and playas; gravel bars; sandy benches; rock shelves; sandy-loamy sinks; sandy floodplains; around stock tanks (charcos); dikes of reservoirs; along canals; along and in ditches; cobbly and gravelly riparian areas, and disturbed areas growing in wet, moist or damp bouldery, rocky, rocky-sandy, cobbly, gravelly and sandy ground; gravelly loam, sandy loam and humus-clayey loam ground; clay ground, and sandy silty and silty ground, occurring from 100 to 9,200 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: Exotic? This plant was reported to have been utilized by native peoples of North America and could be investigated to determine its value as a home garden or commercial food crop; it was also noted as having been used as a drug or medication. *Cyperus esculentus* has been reported as both a native plant, a plant of worldwide distribution and as a plant that is native to the Old World, the status of *Cyperus esculentus* in Arizona is unknown. *5, 6, 15, 30, 43 (081309), 46 (Page 150), 58, 63 (081309 - color presentation), 68, 77, **85** (081309 - color presentation), 101 (color photograph), 127*

Liliaceae: The Lily Family

***Allium macropetalum* P.A. Rydberg: Largeflower Onion**

COMMON NAMES: Arizona Onion, Cebollin, Desert Onion, Largeflower Onion, Largeflower Wild Onion, Large-petal Onion, Wild Onion. DESCRIPTION: Terrestrial perennial forb/herb (3 inches to 1 foot in height); 1 to 5 bulbs growing without basal bulbets; the leaves are green; the flowers may be

cream with maroon midribs, lavender-pink, magenta, orchid-pink, pink, pink-lavender, pink-purple, pink-white, rose-white, white with green-violet, white-purple with dark purple veins or white with red-brown midribs in umbels of 10 to 20 flowers; flowering generally takes place between late February and mid-June (additional records: two for mid-August and one for late October). HABITAT: Within the range of this species it has been reported from mountains; rocky, stony-sandy-clayey, gravelly-sandy, sandy and loamy mesas; rocky plateaus; along rocky canyons; sandy canyonsides; sandy canyon bottoms; clayey bases of buttes; sandy pockets of soil in rock; buttes; along sandy ridges; rocky ridgetops; meadows; gravelly-sandy-clayey-loamy and sandy foothills; rocky, rocky-gravelly, shaley-gravelly, shaley-clayey, gravelly, gravelly-sandy, sandy and clayey-loamy hills; cobbly-sandy-loamy hilltops; rocky, rocky-gravelly-clayey-loamy and stony hillsides; rocky, rocky-gravelly, rocky-sandy, cobbly-gravelly, gravelly, gravelly-sandy, sandy and clayey slopes; shaley alluvial fans; gravelly bajadas; rock outcrops; amongst rocks; clayey outwash fans; sandy lava flows; prairies; gravelly, sandy and loamy flats; grassy valley floors; valley bottoms; rocky, along gravelly-sandy-loamy and gravelly-loamy roadsides; along and in arroyos; bottoms of draws; along bottoms of gullies; along creeks; along and in cobbly and sandy washes; along drainages; clayey swales; rocky and sandy benches; bouldery-gravelly-silty-clayey and gravelly terraces; clayey floodplains, and riparian areas growing in dry bouldery, rocky, rocky-gravelly, rocky-sandy, shaley, shaley-gravelly, stony, cobbly, cobbly-gravelly, gravelly, gravelly-sandy and sandy ground; rocky-gravelly-clayey loam, cobbly-sandy loam, gravelly loam, gravelly-sandy loam, gravelly-sandy-clayey loam, sandy loam, clayey loam and loam ground; bouldery-gravelly-silty clay, shaley clay, stony-sandy clay, sandy clay and clay ground, and sandy silty ground, occurring from 900 to 11,300 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. This plant was reported to have been utilized by native peoples of North America and could be investigated to determine its value as a home garden or commercial food crop. *Allium macropetalum* is native to southwest-central and southern North America. *5, 6, 15, 16, 18 (genus), 28 (color photograph), 43 (081509), 46 (Page 179), 58, 63 (081509 - color presentation), 77 (color photograph #54), **85** (081509 - color presentation of dried material), 127*

Brodiaea capitata (see *Dichelostemma capitatum* subsp. *capitatum*)

Brodiaea pulchella (see *Dichelostemma capitatum* subsp. *capitatum*)

Brodiaea pulchella var. *pauciflora* (see *Dichelostemma capitatum* subsp. *pauciflorum*)

***Calochortus kennedyi* Porter: Desert Mariposa Lily**

COMMON NAMES: Desert Mariposa, Desert Mariposa Lily, Desert Mariposa Tulip, Mariposa Lily, Red Mariposa Lily. DESCRIPTION: Terrestrial perennial forb/herb (4 inches to 2 feet in height); the leaves (4 to 8 inches in length) are grayish-green; the bell-shaped flowers (1 to 2 inches in diameter) may be golden, bright orange, orange, dark orange, orange-red, orange-yellow, reddish, reddish-orange, vermilion, light yellow or yellow; flowering generally takes place between early March and mid-June. HABITAT: Within the range of this species it has been reported from mountains; boulder mesas; rocky and gravelly canyons; rocky canyon bottoms; rocky ledges; rocky ridges; rocky ridgetops; foothills; rocky hills; hilltops; rocky and rocky-clayey hillsides; rocky, sandy and clayey slopes; bajadas; amongst rocks; rocky, rocky-sandy and gravelly-sandy flats; basins; valley floors; along rocky roadsides; along creeks; benches, and riparian areas growing in dry bouldery, rocky, rocky-sandy, gravelly, gravelly-sandy and sandy ground and rocky clay, gravelly clay and clay ground, occurring from 1,300 to 5,900 feet in elevation in the woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. *Calochortus kennedyi* is native to southwest-central and southern North America. *5, 6, 15, 16, 28 (color photograph), 43 (081509), 46 (Page 185), 48 (genus), 63 (081509 - color presentation), 77 (color photograph #55), **85** (081509 - color presentation), 86 (color photograph), 106 (081509), 115 (color presentation)*

***Dasylirion wheeleri* S. Watson: Common Sotol**

COMMON NAMES: Cactus Spoon, Common Sotol, Desert Spoon, Sotol (a potent beverage made from this plant), Spoon Flower, Spoon-flower, Spoon-leaf, Spoon Plant, Wheeler Dasylirion, Wheeler Sotol. DESCRIPTION: Terrestrial perennial evergreen leaf-succulent subshrub or shrub (16 inches to 8 feet in height and 4 to 6 feet in width with a flowering spike reaching 6 to 17 feet in height, one plant was described as being 6 feet in height and width); the spiny leaves (14 to 40 inches in length and ½ to 1 inch in width) may be bluish-gray, bluish-green, green or whitish; the flowers (dioecious, female and male flowers are born on separate plants) may be cream, greenish, greenish-white, greenish-yellow, white, pale yellow, yellow, yellow-green or yellowish-white; flowering generally takes place between early June and early October (additional records: one for mid-February, one for mid-May, one for late October and one for mid-November); the papery three-winged fruits may be golden-brown, reddish or straw. HABITAT: Within the range of this species it has been reported from mountains; rocky mesas; plateaus; canyon rims; rocky canyons; rocky canyon bottoms; talus slopes; bases of cliffs; rocky ledges; rocky and shaley ridges; rocky ridgetops; bases of ridges; rocky and gravelly hills; hilltops; rocky, rocky-gravelly, stony-gravelly and gravelly hillsides; bedrock, bouldery-gravelly-loamy, rocky, rocky-gravelly-clayey-loamy, shaley, gravelly and sandy-clayey slopes; bajadas; rocky outcrops; lava flows; prairies; rocky valley floors; rocky arroyos; gulches; along rivers; along drainages; benches, and riparian areas growing in dry rocky desert pavement; rocky, rocky-gravelly, stony-gravelly, gravelly and sandy ground; bouldery-gravelly loam, rocky-gravelly-clayey loam, gravelly loam, gravelly-sandy loam and sandy loam ground, and sandy clay ground, occurring from 2,900 to 7,000 feet in elevation in the woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. This plant was reported to have been utilized by native peoples of North America and could be investigated to determine its value as a home garden or commercial food, beverage and/or fiber crop; it was also noted as having been used in ceremonial items as a tool (fire drill hearths). This plant is browsed by Bighorn Sheep (*Ovis canadensis*). *Dasylirion wheeleri* is native to southwest-central and southern North America. *5, 6, 15 (placed in the Agavaceae), 18, 26 (color photograph), 28 (color photograph), 43 (081010), 45 (color photograph), 46 (Page 190), 48, 58 (placed in the Agavaceae), 63 (081010 - color presentation), 77 (placed in the Agavaceae), 85 (081110 - color presentation including habitat), 86 (color photograph), 115 (color presentation), 127, **HR***

***Dichelostemma capitatum* (G. Bentham) A. Wood: Bluedicks**

COMMON NAMES: Blue Dicks, Bluedicks, Brodiaea, Covena, Covenna, Coveria, Crow Poison, Desert Hyacinth, Few-flowered Covena, Fool's Onion, Fool's-onion, Grass Nuts, Grass-nuts, Hahd (Pima), Indian Hyacinth, Indian-hyacinth, Papago Lily, Purplehead, Wild Hyacinth. DESCRIPTION: Terrestrial perennial forb/herb (4 to 40 inches in height); the leaves are dark green; the flowers may be blue, blue-lavender, blue-purple, blue-violet, bluish-lavender, bluish-lavender-purple, lavender, dark lavender, pink, dark pink, pink-purple, light purple-blue, purple, dark purple, light violet, violet, violet-blue, white or yellow; flowering generally takes place between late January and late June (additional records: one for mid-July, one record for late August, one record for mid-September and one record for early November, flowering beginning as early as December and ending as late as mid-July has been reported). HABITAT: Within the range of this species it has been reported from rocky mountains; rocky mountainsides; rocky, gravelly and sandy mesas; plateaus; along canyon rims; rocky and stony canyons; rocky canyon bottoms; rock crevices; sandy pockets of soil on rocky banks; bluffs; rocky buttes; gravelly ridges; sandy ridgetops; sandy meadows; rocky foothills; bouldery, rocky and silty hills; rocky and sandy hilltops; bouldery, rocky and gravelly hillsides; bouldery, bouldery-sandy, rocky, rocky-gravelly, rocky-loamy, rocky-clayey, rocky-clayey-loamy, cobbly-sandy-loamy, gravelly-loamy, clayey and clayey-loamy slopes; rocky-sandy-loamy alluvial fans; bajadas; bouldery and rocky outcrops; amongst rocks; rocky banks; sandy plains; rocky, gravelly, gravelly-sandy and sandy flats; basins; valley floors; rocky-loamy valley bottoms; along rocky roadsides; rocky arroyos; draws; gulches; ravines; loamy springs; along streams; gravelly streambeds; silty creekbeds; rivers; in rocky, stony-gravelly and sandy washes; in

bouldery-rocky and sandy drainages; clayey-loamy depressions; sandy banks of rivers; gravelly terraces; sandy lowlands; riparian areas; waste places, and disturbed areas growing in dry desert pavement; rocky, rocky-gravelly, rocky-sandy, stony, stony-gravelly, cindery, gravelly, gravelly-sandy and sandy ground; rocky loam, rocky-clayey loam, cobbly-sandy loam, cobbly-silty loam, gravelly loam, sandy loam, clayey loam and loam ground; rocky clay, stony clay and clay ground, and silty ground, occurring from sea level to 8,600 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat, the flowers are reported to be fragrant. *Dichelostemma capitatum* is native to southwest-central and southern North America. *5, 6, 43 (081609), 46 (recorded as *Dichelostemma pulchellum* (Salisb.) Heller, Page 182 and *Dichelostemma pulchellum* (Salisb.) Heller var. *pauciflorum* (Torr.) Hoover, Page 182), 63 (081609 - color presentation), **85** (081609 - color presentation), 115 (color presentation)*

***Dichelostemma capitatum* (G. Bentham) A. Wood subsp. *capitatum*: Bluedicks**

SYNONYMY: *Brodiaea capitata* G. Bentham, *Brodiaea pulchella* (R.A. Salisbury) E.L. Greene, *Dichelostemma pulchellum* (R.A. Salisbury) A.A. Heller, *Dichelostemma pulchellum* (R.A. Salisbury) A.A. Heller var. *capitatum* (G. Bentham) J.L. Reveal. COMMON NAMES: Blue Dicks, Bluedicks, Brodiaea, Covena, Covenna, Coveria, Crow Poison, Desert Hyacinth, Few-flowered Covena, Fool's Onion, Fool's-onion, Grass Nuts, Grass-nuts, Hahd (Pima), Indian Hyacinth, Papago Lily, Purplehead, Wild Hyacinth. DESCRIPTION: Terrestrial perennial forb/herb (10 to 40 inches in height); the leaves are dark green; the flowers may be light blue, blue, dark blue, blue-purple, lavender, dark lavender, pink, pale purple, purple, dark purple, purple-blue, violet or white; flowering generally takes place between early February and late May (additional record: one for mid-July, one for late August, flowering beginning as early as December and ending as late as July has been reported). HABITAT: Within the range of this species it has been reported from mountains; mountainsides; rocky mesas; gravelly plateaus; along canyon rims; canyons; canyon walls; gravelly-sandy canyon bottoms; talus; sandy pockets of soil on rocky banks; bluffs; rocky ridges; ridgetops; meadows; rocky foothills; cobbly-sandy-loamy hills; rocky hilltops; bouldery, rocky, rocky-sandy, gravelly-clayey-loamy and sandy hillsides; rocky, gravelly, gravelly-sandy-clayey-loamy, sandy and sandy-loamy slopes; bajadas; bouldery and rocky outcrops; amongst rocks; rocky banks; rocky, rocky-clayey-loamy, gravelly and sandy-loamy flats; valley floors; along rocky and rocky-clayey roadsides; gravelly streambeds; creek beds; along and in stony-gravelly and sandy washes; depressions; sandy banks of rivers; sandy benches; sandy terraces; riparian areas; waste places, and disturbed areas growing in dry desert pavement; bouldery, rocky, stony-gravelly, gravelly, gravelly-sandy and sandy ground; rocky-clayey loam, cobbly-sandy loam, gravelly-sandy-clayey loam, gravelly-clayey loam, sandy loam and loam ground; rocky clay, stony clay and clay ground, and silty ground, occurring from sea level to 8,600 feet in elevation in the forest, woodland, scrub, grassland and desertscrub ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. *Dichelostemma capitatum* subsp. *capitatum* is native to southwest-central and southern North America. *5, 6, 16 (recorded as *Dichelostemma pulchellum* (Salisb.) Heller), 28 (recorded as *Dichelostemma pulchellum*, color photograph), 43 (081609), 46 (recorded as *Dichelostemma pulchellum* (Salisb.) Heller, Page 182), 63 (081609 - color presentation), **85** (081609 - color presentation), 115 (color presentation of the species)*

***Dichelostemma capitatum* (G. Bentham) A. Wood subsp. *pauciflorum* (J. Torrey) G. Keator: Bluedicks**

SYNONYMY: *Brodiaea pulchella* (R.A. Salisbury) E.L. Greene var. *pauciflora* (J. Torrey) C.V. Morton, *Dichelostemma pulchellum* (R.A. Salisbury) A.A. Heller var. *pauciflorum* (J. Torrey) R.F. Hoover. COMMON NAMES: Blue Dicks, Bluedicks, Brodiaea, Covena, Covenna, Coveria, Crow Poison, Desert Hyacinth, Few-flowered Covena, Fool's Onion, Fool's-onion, Grass Nuts, Grass-nuts, Hahd (Pima), Indian Hyacinth, Papago Lily, Purplehead, Wild Hyacinth. DESCRIPTION: Terrestrial perennial forb/herb (16 to 30 inches in height); the leaves are dark green; the flowers may be pale blue, blue, blue-lavender-purple, blue-purple, bluish-lavender, lavender, pink, pink-purple, purple or white;

flowering generally takes place between late January and mid-June (additional records: one record for early January, one record for mid-July, one record for mid-September and one record for early November) HABITAT: Within the range of this species it has been reported from rocky mountains; rocky mountainsides; gravelly and sandy mesas; plateaus; rocky canyons; rocky canyon bottoms; buttes; gravelly ridges; rocky ridgetops; foothills; rocky hills; sandy hilltops; rocky, gravelly hillsides; rocky and sandy slopes; rocky-sandy alluvial fans; bajadas; rocky outcrops; amongst rocks; prairies; plains; gravelly, gravelly-loamy and sandy flats; basins; sandy valley floors; along roadsides; rocky arroyos; along draws; gulches; ravines; along streams; silty creekbeds; rivers; along and in rocky and sandy washes; sandy beaches; gravelly terraces; sandy lowlands; ditches; around stock tanks; riparian areas, and disturbed areas growing in dry desert pavement; rocky, rocky-sandy, cindery, gravelly and sandy ground; cobbly-silty loam, gravelly loam and sandy loam ground; rocky clay, stony clay and clay ground, and silty ground, occurring from 900 to 8,600 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat, the flowers are reported to be fragrant. *Dichelostemma capitatum* subsp. *pauciflorum* is native to southwest-central and southern North America. *5, 6, 15, 28 (recorded as *Dichelostemma pulchellum*, color photograph), 43 (081609), 46 (recorded as *Dichelostemma pulchellum* (Salisb.) Heller var. *pauciflorum* (Torr.) Hoover, Page 182), 58, 63 (081609 - color presentation), 77 (recorded as *Dichelostemma pulchellum* (Salisb.) Heller, color photograph #56 and #103 labeled *Dichelostemma pulchellum*), **85** (081609 - color presentation), 86 (note, *Dichelostemma pulchellum*), 115 (color presentation of the species)*

Dichelostemma pulchellum (see *Dichelostemma capitatum* subsp. *capitatum*)

Dichelostemma pulchellum var. *capitatum* (see *Dichelostemma capitatum* subsp. *capitatum*)

Dichelostemma pulchellum var. *pauciflorum* (see *Dichelostemma capitatum* subsp. *pauciflorum*)

***Zephyranthes longifolia* W.B. Hemsley: Copper Zephyrlily**

COMMON NAMES: Cebolleta, Copper Zephyr-lily, Copper Zephyrlily, Rain Lily. DESCRIPTION: Terrestrial perennial forb/herb (3 to 8 inches in height); the leaves are dull green; the flowers are light yellow or yellow; the anthers are yellow; flowering generally takes place between early June and late August (additional records: two for early May and one for early October). HABITAT: Within the range of this species it has been reported from mountains; gravelly mesas; canyons; canyon bottoms; (gravelly) pockets of soil in boulders and rocks; gravelly-sandy-loamy bases of knolls; ridges; gravelly foothills; hills; hilltops; gravelly hillsides; bouldery-gravelly, rocky, rocky-sandy, gravelly-loamy and sandy slopes; sandy bajadas; rocky outcrops; sand dunes; sandy breaks; bouldery-sandy-clayey prairies; rocky, sandy and clayey flats; valley bottoms; creekbeds; sandy washes; (sandy) banks of riverbeds; (sandy) edges of streambeds; around fringes of playas, and sandy terraces growing in moist and dry bouldery-gravelly, rocky, rocky-sandy, gravelly and sandy ground; gravelly loam and gravelly-sandy loam ground, and bouldery-sandy clay ground and clay ground, occurring from 100 to 7,900 feet in elevation in the woodland, scrub, grassland and desertscrub ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. *Zephyranthes longifolia* is native to southwest-central and southern North America. *5, 6, 15, 43 (081910), 46 (Page 192), 58, 63 (081910), **77** (color photograph #104), 80 (Listed as a Rarely Poisonous and Suspected Poisonous Range Plant, an eastern species of this genus (*Zephyranthes atamasco*) is lethal but no losses have been reported from the Arizona species.), **85** (081910 - color presentation including habitat), 86*

Poaceae (Gramineae): The Grass Family

Andropogon contortus (see *Heteropogon contortus*)

***Aristida adscensionis* C. Linnaeus: Sixweeks Threeawn**

COMMON NAMES: Annual Bristle Grass, Flechilla (Spanish), Plumilla (Spanish), Six Weeks Three Awn Grass, Six-weeks Threeawn, Six-weeks Three-awn, Six-weeks Three-awn Grass, Sixweeks Threeawn, Three-awn, Zacate Cola de Zorra, Zacate Tres Barbas. DESCRIPTION: Terrestrial annual tufted graminoid (erect culms 1¼ to 40 inches in height); the color of the foliage has been described as being bright green, purple or yellow curing to straw; the florets may be purple or red-purple; flowering generally takes place between early August and late June; the seed heads may be purple. HABITAT: Within the range of this species it has been reported from rocky mountains; mountainsides; bedrock, rocky-sandy-loamy, gravelly-sandy-clayey and sandy mesas; plateaus; rocky canyons; rocky and sandy canyon bottoms; rocky gorges; talus slopes; crevices in rocks; shallow pockets of soil; buttes; rocky ledges; rocky ridges; rocky ridgetops; meadows; foothills; rocky and sandy hills; rocky-gravelly hilltops; rocky hillsides; escarpments; sandy bases of escarpments; bouldery, bouldery-sandy, rocky, rocky-gravelly, rocky-clayey, stony, stony-clayey, gravelly, gravelly-sandy, gravelly-loamy, gravelly-clayey-loamy, sandy, sandy-clayey-loamy and sandy-silty slopes; rocky alluvial fans; gravelly-sandy bajadas; rocky outcrops; amongst boulders and rocks; sandy lava flows; sand hills; sandy dunes; sandy-loamy prairies; gravelly-sandy, sandy and clayey-loamy plains; rocky-sandy, sandy, sandy-loamy and sandy-clayey-loamy flats; valley bottoms; along rocky railroad right-of-ways; along roadbeds; along rocky, rocky-gravelly, rocky-sandy, rocky-clayey-loamy, gravelly, gravelly-sandy, gravelly-loamy and sandy-loamy roadsides; along sandy arroyos; rocky draws; ravines; silty springs; along streams; along creeks; creekbeds; along rivers; sandy riverbeds; along and in rocky, rocky-sandy, cobbly-pebbly-sandy, gravelly, gravelly-sandy and sandy washes; drainages; within rocky drainage ways; silty depressions; swales; banks of draws; along rocky edges of washes; along margins of washes; mudflats; sandy benches; shelves; terraces; bottomlands; floodplains; ditches; gravelly-sandy riparian areas; sandy waste places, and disturbed areas growing in dry desert pavement; bouldery, bouldery-sandy, rocky, rocky-gravelly, rocky-pebbly, rocky-sandy, stony, cobbly-pebbly-sandy, gravelly, gravelly-sandy and sandy ground; rocky loam, rocky-gravelly loam, rocky-sandy loam, rocky-clayey loam, gravelly loam, gravelly-clayey loam, sandy loam, sandy-clayey loam, clayey loam and silty loam ground; rocky clay, stony clay, gravelly clay, gravelly-sandy clay and clay ground, and gravelly-sandy silty, sandy silty and silty ground, occurring from sea level to 12,700 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. This plant may be confused with *Aristida purpurea* var. *parishii*. *Aristida adscensionis* is native to south-central and southern North America; Central America; South America, and other tropic, sub-tropic and warm-temperate regions of the world. *5, 6, 15, 16, 33 (Page 242), 43 (080109), 46 (Page 120), 58, 63 (081709 - color presentation), 77, **85** (081709 - color presentation of dried material), 105*

Aristida glauca (see *Aristida purpurea* var. *nealleyi*)

Aristida parishii (see *Aristida purpurea* var. *parishii*)

***Aristida purpurea* T. Nuttall: Purple Threeawn**

COMMON NAMES: Blue Threeawn, Democrat Grass, Nealley Three-awn, Perennial Three-awn, Purple Needle-grass, Purple Three-awn, Purple Threeawn, Red Threeawn, Reverchon Three-awn, Reverchon Threeawn, Three Awn, Three-awn, Threeawn, Tres Barbas, Tres Barbas Purpurea, Wiregrass. DESCRIPTION: Terrestrial annual or perennial graminoid (a bunchgrass (clumpgrass) with erect culms 4 to 40 inches in height and up 4 to 12 inches in width at the base, plants 8 to 12 inches in height and 4 to 6 inches in width at the base were reported, plants 14 inches in height and 2 to 6 inches in width at the base were reported); the foliage is light to dark green curing to gray or straw; the inflorescence is green, purplish or dark red-purple; the awns are purple; flowering generally takes place between early January and mid-August; however, flowering may occur throughout the year under favorable conditions (additional records, including varieties: one for early January, one for early September, six for mid-

September, one for late September, four for early October, three for late October, two for mid-November and two for late November). HABITAT: Within the range of this species it has been reported from mountains; rocky summits; gravelly-sandy, sandy and clayey-loamy mesas; plateaus; along canyon rims; rocky cliffs; chutes; rocky canyons; rocky canyonsides; along bouldery-rocky-cobbly, rocky, rocky-gravelly, gravelly-sandy and sandy canyon bottoms; scree; talus slopes; sandy bases of escarpments; crevices in boulders and rocks; gravelly bluffs; buttes; rocky knolls; ledges; bouldery and rocky, gravelly-sandy-clayey and sandy ridges; ridgetops; silty ridgelines; rocky openings in forests; along meadows; foothills; rocky, gravelly, sandy, loamy and clayey hills; rocky, rocky-gravelly and gravelly hillsides; bedrock, bouldery, rocky, rocky-cobbly, rocky-sandy, rocky-sandy-loamy, shaley, cindery, gravelly, gravelly-sandy, gravelly-sandy-loamy, gravelly-sandy-clayey, sandy, loamy, clayey-loamy and silty-clayey slopes; sandy alluvial fans; rocky, rocky-gravelly, gravelly and sandy bajadas; bedrock, bouldery, rocky and shaley outcrops; amongst boulders and rocks; sandy lava flows; sand hills; sand dunes; in blow sand; breaks; rocky-sandy and sandy steppes; rocky, sandy, sandy-clayey, clayey and clayey-loamy prairies; bouldery-rocky, rocky, gravelly, gravelly-sandy and sandy plains; rocky, rocky-sandy, cindery, gravelly, gravelly-loamy, sandy, loamy, clayey-loamy and silty-clayey flats; rocky, gravelly-sandy and sandy valley floors; valley bottoms; along railroad right-of-ways; along gravelly, gravelly-loamy, sandy, sandy-loamy and clayey roadsides; along and in rocky, gravelly, sandy and clayey-loamy arroyos; along sandy bottoms of arroyos; along and in sandy draws; gulches; gravelly-sandy bottoms of gulches; rocky gullies; rocky-gravelly ravines; springs; in rocks along streams; bouldery streambeds; along creeks; along and in creekbeds; riverbeds; along and in bouldery, bouldery-cobbly-sandy, rocky, rocky-sandy, gravelly, gravelly-sandy and sandy washes; along and in bedrock, rocky, gravelly-sandy and sandy drainages; bouldery-rocky, rocky and pebbly drainage ways; sandy lakebeds; swamps; depressions; rocky, gravelly and sandy banks of washes; sandy edges of rivers and washes; gravelly margins of washes; mudflats; gravel bars; sandy beaches; rocky-clayey, gravelly and sandy benches; gravelly terraces; bottomlands; gravelly and sandy floodplains; mesquite bosques; along ditches; recently burned areas; riparian areas, and disturbed areas growing in dry rocky desert pavement; bouldery, bouldery-rocky, bouldery-rocky-cobbly, bouldery-cobbly-sandy, bouldery-cindery, bouldery-gravelly, rocky, rocky-cobbly, rocky-gravelly, rocky-sandy, shaley, shaley-sandy, cindery, gravelly, gravelly-sandy, pebbly and sandy ground; rocky loam, rocky-sandy loam, rocky-clayey loam, cobbly-gravelly loam, gravelly loam, gravelly-sandy loam, gravelly-clayey loam, sandy loam, sandy-clayey loam, sandy-silty loam, clayey loam, silty loam, humusy loam and loam ground; rocky clay, rocky-sandy clay, gravelly-sandy clay, sandy clay, silty clay and clay ground, and gravelly silty, sandy silty and silty ground, occurring from sea level to 9,000 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. This plant may be grazed by Black-tailed Prairie Dogs (*Cynomys ludovicianus*) and White-tailed Jackrabbits (*Lepus townsendii*). *Aristida purpurea* is native to central and southern North America. *5, 6, 15, 33 (Page 244), 43 (081709), 46 (Page 120), 48, 58, 63 (081709 - color presentation), 85 (092709 - color presentation of dried material), 105, **HR***

Aristida purpurea var. *glauca* (see *Aristida purpurea* var. *nealleyi*)

***Aristida purpurea* T. Nuttall var. *nealleyi* (G. Vasey) K.W. Allred: Blue Threeawn**

SYNONYMY: *Aristida glauca* (C.G. Nees von Esenbeck) W.G. Walpers, *Aristida purpurea* T. Nuttall var. *glauca* (C.G. Nees von Esenbeck) A.H. Holmgren & N.H. Holmgren. COMMON NAMES: Blue Threeawn, Nealley Three-awn, Nealley's Threeawn, Reverchon Three-awn, Reverchon Threeawn, Tres Barbas, Tres Barbas Purpurea. DESCRIPTION: Terrestrial perennial tufted graminoid (a bunchgrass (clumpgrass) 6 to 40 inches in height with clumps being reported that were up to 4 to 12 inches in width at the base); the inflorescence is purple; the awns are purple; flowering generally takes place between early January and mid-August; however, flowering may occur throughout the year under favorable conditions (additional records: two for mid-September and two for late November). HABITAT: Within the range of this species it has been reported from mountains; mesas; plateaus; chutes; rocky canyons;

rocky canyonsides; along bouldery-rocky-cobbly, rocky and gravelly-sandy canyon bottoms; scree; talus slopes; rocky bases of cliffs; crevices in boulders and rocks; knolls; ledges; gravelly-sandy-clayey ridges; ridgetops; foothills; clayey hills; rocky and rocky-gravelly hillsides; bedrock, bouldery, rocky, rocky-cobbly, rocky-sandy, rocky-sandy-loamy, shaley, gravelly, gravelly-sandy, gravelly-sandy-clayey, sandy and loamy slopes; alluvial fans; rocky, rocky-gravelly and gravelly bajadas; rocky outcrops; amongst boulders and rocks; sandy lava flows; sand dunes; plains; sandy flats; rocky valley floors; along gravelly-loamy and sandy roadsides; along and in rocky, gravelly and sandy arroyos; along draws; rocky gullies; rocky-gravelly ravines; springs; along and in creekbeds; riverbeds; along and in rocky, rocky-sandy, gravelly and sandy washes; within drainages; bouldery-rocky drainage ways; sandy lakebeds; rocky banks; edges of washes; mudflats; gravel bars; sandy beaches; sandy benches; gravelly terraces; floodplains; along ditches; riparian areas, and disturbed areas growing in dry rocky desert pavement; bouldery, bouldery-rocky, bouldery-rocky-cobbly, rocky, rocky-cobbly, rocky-gravelly, rocky-sandy, gravelly, gravelly-sandy and sandy ground; rocky-sandy loam, rocky-clayey loam, cobbly-gravelly loam, gravelly loam, gravelly-sandy loam, sandy loam, sandy-clayey loam and loam ground; rocky-sandy clay, gravelly-sandy clay and clay ground, and sandy silty ground, occurring from 800 to 8,900 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat, it reportedly has a "feathery" appearance. *Aristida purpurea* var. *nealleyi* is native to southwest-central and southern North America. *5, 6, 15 (recorded as *Aristida glauca* (Nees) Walp.), 16 (recorded as *Aristida purpurea* Nutt. var. *glauca* (Nees) A. Holmgren & N. Holmgren), 33 (recorded as *Aristida glauca* (Nees) Walp., Page 243), 43 (081809), 46 (recorded as *Aristida glauca* (Nees) Walp., Page 120), 48 (species), 63 (081809), 77, **85** (092709 - color presentation of dried material), 105 (species)*

***Aristida purpurea* T. Nuttall var. *parishii* (A.S. Hitchcock) K.W. Allred: Parish's Threeawn**

SYNONYMY: *Aristida parishii* A.S. Hitchcock. COMMON NAMES: Arizona Three-awn, Parish Threeawn, Parish's Three-awn, Parish's Threeawn, Threeawn. DESCRIPTION: Terrestrial perennial tufted graminoid (a bunchgrass 4 to 40 inches in height); the spikelets are reddish-purple; flowering generally takes place between mid-February and mid-May (flowering records: one for early March, four for mid-March, two for early April, one for mid-April, four for early May, one for mid-May, one for mid-June, one for early July, one for mid-September, three for late October and one for mid-November). HABITAT: Within the range of this species it has been range reported from mountains; rocky cliffs; canyons; rocky canyon bottoms; crevices in rocks; ridges; ridgelines; foothills; rocky hills, hillsides; rocky and sandy slopes; bajadas; bouldery and rocky outcrops; amongst boulders; sandy plains; gravelly and sandy flats; valley floors; along roadsides; arroyos; draws; springs; along streambeds; along and in bouldery, bouldery-cobbly-sandy, rocky and sandy washes; along and in rocky drainages; beaches; riparian areas, and disturbed areas growing in dry bouldery, bouldery-cobbly-sandy, rocky, rocky-gravelly, gravelly, gravelly-sandy and sandy ground; rocky-clay loam and gravelly-sandy loam ground, and clay ground, occurring from 500 to 4,800 feet in elevation in the woodland, scrub, grassland and desertscrub ecological formation. NOTES: This plant may be an attractive component of a restored native habitat. *Aristida purpurea* var. *parishii* is native to southwest-central North America. *5, 6, 16 (recorded as *Aristida parishii* Hitchc.), 33 (recorded as *Aristida parishii* Hitchc., Page 240), 43 (081809), 46 (recorded as *Aristida parishii* Hitchc., Page 121), 48 (species), 63 (081809), 77 (recorded as *Aristida parishii* A.S. Hitch.), **85** (092709 - color presentation of dried material), 105 (species)*

***Aristida ternipes* A.J. Cavanilles: Spidergrass**

COMMON NAMES: Aristida Grass, Spider Grass, Spidergrass, Spider Threeawn, Three Awn, Three-awn, Threeawn, Zacate Arana. DESCRIPTION: Terrestrial perennial tufted graminoid (a bunchgrass (clumpgrass) 10 to 79 inches in height, one plant was described as being 4 inches in diameter at the base and 52 inches in height); flowering generally takes place between mid-March and mid-December. HABITAT: Within the range of this species it has been reported from mountains; bouldery-cobbly mesas; plateaus; rock cliffs; rocky canyons; rocky canyon walls; along rocky canyon bottoms;

rocky talus; crevices in rocks; rock ledges; rocky ridges; rocky ridgetops; meadows; foothills; rocky, rocky-gravelly, gravelly-sandy, gravelly-clayey-loamy and sandy hills; rocky hillsides; bouldery, rocky, rocky-gravelly, rocky-gravelly-clayey, gravelly, sandy, sandy-loamy and sandy-clayey slopes; alluvial fans; gravelly and sandy bajadas; rocky outcrops; amongst boulders and rocks; gravelly plains; bouldery-sandy, rocky-loamy, gravelly, sandy and silty flats; valley floors; coastal plains; railroad right-of-ways; along bouldery-rocky and gravelly roadsides; along arroyos; along draws; ravines; along streams; streambeds; along bouldery creeks; rocky creekbeds; along rivers; along and in rocky and sandy washes; within drainages; banks of creeks; along edges of washes; sandy beaches; benches; rocky terraces; sandy floodplains; mesquite bosques; along fencelines; stock tanks (charcos or repressos); ditches; sandy riparian areas, and disturbed areas growing in dry bouldery, bouldery-rocky, bouldery-cobbly, bouldery-sandy, rocky, rocky-gravelly, rocky-sandy, gravelly, gravelly-sandy and sandy ground; rocky loam, rocky-gravelly loam, gravelly-clayey loam, sandy loam, sandy-clayey loam and humus loam ground; sandy clay ground, and sandy silty and silty ground, occurring from sea level to 6,800 feet in elevation in the forest (woodland transition), woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. *Aristida ternipes* is native to southwest-central and southern North America; Central America, and northern South America. *5, 6, 15, 16, 33 (Page 238), 43 (092709), 46 (Page 119), 58, 63 (092709 - color presentation), 77, 85 (092709 - color presentation of dried material), **HR***

***Arundo donax* C. Linnaeus: Giant Reed**

COMMON NAMES: Arundo Grass, Caña (Hispanic), Caña Común (Spanish), Caña de Castilla (Spanish), Cana Brava, Caña Hueca (Hispanic), Cana-do-brejo (Portuguese), Cana-do-reino (Portuguese), Cañaveral (Hispanic), Canne de Provence (French), Canno-do-reino (Portuguese), Canuto (Hispanic), Capim-plumoso (Portuguese), Carricillo (Hispanic), Carrizo (Hispanic), Carrizo de la Selva (Hispanic), Donax, Elephant Grass, Giant Cane, Giant Reed, Giant-reed, Grand Roseau (French), Gubaguih (Hispanic), Halal (Hispanic), Pakaab (Hispanic), Pfahlrohr (German), Spaanse-riet, Spanish-reed, Tarro (Hispanic), Tekhalal (Hispanic). DESCRIPTION: Terrestrial perennial graminoid, subshrub or shrub (erect culms 6 to 33 feet in height); the flowers are in cream or whitish plumes; flowering may take place throughout the year, but mostly between early spring and fall. HABITAT: Within the range of this species it has been reported from mountains; rocky canyons; rocky canyon bottoms; rocky slopes; plains; valleys; coastal basins; along sandy roadsides; arroyos; seeps; along seepage streams; springs; along streams; in sandy soils along creeks; along and in rivers; along and in sandy riverbeds; along sandy washes; along drainages; waterholes; along lakes; along sandy banks of streams, creeks and rivers; edges of rivers; margins of lakes; sandy terraces; floodplains; along canal banks; along culverts; along and in ditches; ditch banks; sandy riparian areas, and disturbed areas growing in water, and wet, moist and occasionally dry rocky, gravelly and sandy ground and sandy clay and clay ground, occurring from sea level to 7,200 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: EXOTIC Invasive Plant which poses a significant threat to our native biotic communities. This plant was reported to have been utilized by native peoples of North America; it was noted as having been used for making tools, musical instruments, ceremonial items and a yellow dye. Giant Reed was intentionally introduced into the Los Angeles, California area in the early 1800's; its clonal root masses (to over 3 feet thick) may extend to several acres. Giant Reed Grass may be confused with the native Common Reed Grass, so proper identification must be assured prior to implementing control measures. *Arundo donax* is native to eastern Asia. *5, 6, 18, 22 (color photographs), 26 (color photograph), 30, 33 (Page 93), 43 (071209), 46 (Page 89), 63 (092709 - color presentation), 77, 85 (092709 - color presentation), 109, 115 (color presentation), 127, **HR***

***Avena fatua* C. Linnaeus: Wild Oat**

COMMON NAMES: Aveia-brava (Portuguese), Aveia-fátua (Portuguese), Aveia-selvagem (Portuguese), Avena Loca (Spanish), Avena Silvestre (Spanish), Avoine Folle (French), Flaxgrass, Flughafer (German), Folle Avoine (French), Oat Grass, Oatgrass, Spring Wild Oat, Wheat Oats, Wild Oat,

Windhafer (German). DESCRIPTION: Terrestrial annual graminoid (erect culms 3 to 79 inches in height); the foliage is green; the flowers are green; flowering generally takes place between early February and early July (additional records: two for mid-January, one for mid-December and one for late December). HABITAT: Within the range of this species it has been reported from mountains; cliffs; rocky and rocky-sandy canyons; canyon bottoms; pockets of soil in rocks; bluffs; ridgetops; openings in woodlands; meadows; hills; rocky, cobbly-sandy-loamy and clayey hillsides; rocky, rocky-loamy, rocky-clayey, sandy, loamy, loamy-clayey and clayey slopes; sandy bajadas; rocky outcrops; plains; sandy, clayey and clayey-loamy flats; basins; valley floors; coastal flats; coastal hills; along railroad right-of-ways; along rocky, rocky-gravelly-loamy, gravelly, gravelly-loamy and clayey-loamy roadsides; seeps; springs; along streams; sandy streambeds; along and in rocky-cobbly creeks; creekbeds; along rivers; along and in gravelly and sandy washes; drainages; freshwater marshes; depressions; swales; rocky banks of streams, rivers, riverbeds and washes; rocky edges of ponds and lakes; margins of washes; benches; terraces; bottomlands; floodplains; lowlands; stock tanks; canals; canal banks; ditches; silty ditch banks; bouldery and sandy riparian areas; waste places and disturbed areas growing in moist and dry bouldery, rocky, rocky-cobbly, rocky-sandy, gravelly and sandy ground; rocky loam, rocky-gravelly loam, cobbly-sandy loam, gravelly loam, clayey loam, silty loam and loam ground; bouldery clay, rocky clay, loamy clay and clay ground, and silty ground, occurring from sea level to 8,300 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTE: EXOTIC Invasive Plant which poses a significant threat to our native biotic communities. This plant was reported to have been utilized by native peoples of North America; it was noted as having been used for food. Seed can remain dormant in soil for as long as 10 years. *Avena fatua* is native to Europe; Asia, and northern Africa. *5, 6, 15, 16, 33 (Page 166), 43 (092709), 46 (Page 100), 63 (092709 - color presentation of seed), 68, 77, **85** (092709 - color presentation), 101 (color photograph), 127*

***Bouteloua aristidoides* (K.S. Kunth) A.H. Grisebach: Needle Grama**

COMMON NAMES: Aceitilla, Navajita, Needle Grama, Pasto Cabra (Hispanic), Six Weeks Grama Grass, Six-weeks Needle Grama, Tochite (Hispanic), Zacate Saitillo. DESCRIPTION: Terrestrial annual tufted graminoid (2 to 24 inches in height); the foliage is light green or purple curing to straw; the flowers are purplish; flowering generally takes place between mid-August and late October (additional records: two for early January, one for late January, one for early February, one for early March, one for mid-March, five for early April, one for late April, one for mid-July, one for mid-November, two for late November and one for late December). HABITAT: Within the range of this species it has been reported from mountains; mountainsides; sandy mesas; sandy mesas; cliffs; rocky canyons; canyon bottoms; chasms; ridges; meadows; rocky hills; rocky-gravelly hilltops; rocky hillsides; sandy bases of escarpments; rocky, rocky-gravelly, gravelly, gravelly-sandy, sandy, sandy-silty and clayey-loamy slopes; gravelly bajadas; rocky coves; sand hills; sand dunes; sand hummocks; sand dunes; in blow sand; edges of dune fields; plains; gravelly and sandy flats, basins; clayey valley floors; loamy valley bottoms; coastal dunes; gravelly, gravelly-sandy, sandy and sandy-loamy roadsides; in arroyos; bottoms of arroyos; stony-sandy draws, seeps; springs; along streams; streambeds; creekbeds; along rivers; sandy riverbeds; along and in rocky, gravelly, gravelly-sandy, sandy, clayey and silty-clayey washes; within drainages; depressions; sandy-loamy banks of washes; margins of washes; rocky-sandy shores of lakes; benches; sandy terraces; loamy bottomlands; sandy floodplains; clayey lowlands; sandy mesquite bosques; waste places, and disturbed areas growing in dry rocky desert pavement; bouldery, rocky, rocky-gravelly, rocky-sandy, stony-sandy, gravelly, gravelly-sandy and sandy ground; gravelly-sandy loam, sandy loam, clayey loam and loam ground; silty clay and clay ground, and sandy silty ground, occurring from sea level to 6,800 feet in elevation in the woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTE: *Bouteloua aristidoides* is native to southwest-central and southern North America. *5, 6, 15, 16, 30, 33 (Page 141), 43 (092809), 46 (Page 128), 58, 63 (052809 - color presentation), 68, 77, **85** (052809 - color presentation of dried material), 105*

***Bouteloua chondrosioides* (K.S. Kunth) G. Bentham ex S. Watson: Sprucetop Grama**

COMMON NAMES: Harvard Grama, Pasto (Hispanic), Spruce-top Grama, Sprucetop, Sprucetop Grama, Uitsaku (Purépecha), Woolly-spiked Grama. DESCRIPTION: Terrestrial perennial tufted graminoid (a bunchgrass (clumpgrass) with erect, unbranched culms 4 to 24 inches in height); the foliage is bright green, purple or yellow curing to gray-white; the anthers are orange or yellow; the spikelets are purple-hued; flowering generally takes place between early August and early November (additional records: one for early April, one for late June and one for mid-July). HABITAT: Within the range of this species it has been reported from mountains; bases of mountains; rocky and gravelly mesas; grassy plateaus; canyons; canyonsides; canyon bottoms; pockets of soil in rocks; rocky bluffs; ridges; ridgetops; rocky and gravelly-loamy foothills; rocky, rocky-gravelly and stony hills; rocky hillsides; along rocky, rocky-gravelly, gravelly-sandy-loamy, gravelly-loamy, gravelly-clayey, gravelly-clayey-loamy and sandy slopes; bases of slopes; rocky outcrops; amongst boulders; sandy plains; rocky flats; along rocky-loamy roadsides; within draws; bottoms of draws; gulches; along streams; within creekbeds; floodplains, and disturbed areas growing in dry bouldery, rocky, rocky-gravelly, stony, gravelly and sandy ground; rocky loam, gravelly loam, gravelly-sandy loam, gravelly-clayey loam, sandy loam and clayey loam ground, and gravelly clay ground, occurring from 600 to 8,200 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. Purple and yellow forms were reported. *Bouteloua chondrosioides* is native to southwest-central and southern North America and Central America. *5, 6, 15, 30, 33 (Page 145), 43 (081910), 46 (Page 128), 48, 58, 63 (081910), 77, 85 (081910 - color presentation), 105*

***Bouteloua curtipendula* (A. Michaux) J. Torrey: Sideoats Grama**

COMMON NAMES: Avenilla (Hispanic), Banderilla (Hispanic), Banderita (Hispanic), Grama-azul (Portuguese), Grama del Cerro (Hispanic), Navajita Banderilla (Spanish), Qm-u-se'-a (Havasupai), Side Oats Grama, Side-oats Grama, Sideoats Grama, Side-oats Grama Grass, Side-oats Grama-grass, Sideoats Grama Grass, Tall Grama, Tall Grama Grass, Uitsaku Juatarhu (Purépecha). DESCRIPTION: Terrestrial perennial usually tufted graminoid (a bunchgrass (clumpgrass) with erect culms 3 to 52 inches in height and up to 2 feet in width at the base, one plant was reported to be 12 to 16 inches in height and 16 inches in width at the base, one plant was reported to be 28 inches in height and 4 inches in width at the base); the foliage is bluish-green or purple-green curing to reddish-brown or straw; the flowers are bright purple; the anthers are orange, purple, red, yellow or dark yellow; flowering generally takes place between late April and mid-November (additional records: one for early April, one for early December); the mature fruits are red-brown. HABITAT: Within the range of this species it has been reported from mountains; mountaintops; bouldery, pebbly-sandy and clayey-loamy mesas; plateaus; cliffs; rocky and sandy canyon rims; along rocky canyons; along canyon walls; along sandy canyon bottoms; rocky gorges; sandy bases of cliffs; sandy crevices in rocks; buttes; rocky and sandy ledges; rocky ridges; openings in forests and woodlands; meadows; rocky and clayey-loamy foothills; rocky and rocky-gravelly hills; sandy hilltops; rocky hillsides; sandy bases of escarpments; along bouldery-rocky-sandy, rocky, rocky-gravelly, rocky-sandy, shaley, gravelly, gravelly-sandy, gravelly-loamy, sandy, sandy-loamy, sandy-clayey-loamy, loamy, clayey-loamy and clayey slopes; bajadas; rocky outcrops; amongst boulders, rocks and cobbles; sandy lava flows; sand hills; sand dunes; prairies; sandy plains; shale barrens; sandy and clayey flats; sandy valley floors; along gravelly and sandy roadsides; along and in bedrock arroyos; along draws; along ravines; seeps; along springs; around streams; along streambeds; along creeks; rocky creekbeds; along rivers; along and in rocky, rocky-gravelly and sandy washes; within drainage ways; marshes; in low swales with Desert Willow; along banks of draws, streams, rivers and washes; along rocky edges of ravines, springs and washes; shores of lakes; gravel bars; benches; rock shelves; gravelly terraces; sandy floodplains; mesquite bosques; along fencelines; rocky riparian areas, and disturbed areas growing in dry rocky desert pavement; bouldery-rocky-sandy, bouldery-cobbly-sandy, rocky, rocky-gravelly, rocky-sandy, shaley, cobbly, cindery-gravelly, gravelly, gravelly-sandy, pebbly-sandy and sandy ground; rocky-clayey loam, gravelly loam, gravelly-clayey loam, sandy loam, sandy-clayey loam, clayey loam, silty loam, silty-clayey loam and loam ground; gravelly clay, sandy clay, silty clay and clay ground, and rocky silty and sandy silty ground, occurring from 300 to 9,800 feet in elevation in the forest, woodland, scrub,

grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. This plant was reported to have been utilized by native peoples of North America and could be investigated to determine its value as a home garden or commercial fiber or fodder crop; it was also noted as having been used as a decoration. Sideoats Grama may be useful in controlling erosion. Stems may occur singly or in small clusters from creeping rhizomes (var. *curtipendula*), or form into large clumps from a common root crown (var. *caespitosa*). In areas where it occurs naturally, consider including Sideoats Grama seed in reseeding mixtures. This plant is a larval food plant for the Orange Skipperling (*Copaeodes aurantiacus*). *Bouteloua curtipendula* is native to central and southern North America; Central America, and South America. *5, 6, 15, 16, 18, 30, 33 (Page 143, "One of the most important range grasses in the Southwest, highly palatable and a vigorous grower."), 43 (092909), 46 (Page 129), 48, 58, 63 (092909 - color presentation), 77, 82, **85** (093009 - color presentation of dried material), 105 ("This is one of our most important range grasses. ... It cures well and maintains a fairly high feeding value throughout the year. ... Sideoats is a normal component of most Arizona grassland ranges, and these ranges are not in excellent condition without an abundance of the grass. It lengthens the grazing season and increases forage production, in addition to providing variety in the feed."), 106 (061407), 127*

***Bouteloua eriopoda* (J. Torrey) J. Torrey: Black Grama**

COMMON NAMES: Black Grama, Black Grass, Hairyfoot Grama, Navajita Negra (Spanish), Woolly Foot Grama, Woollyfoot Grama. DESCRIPTION: Terrestrial perennial graminoid (a bunchgrass with decumbent culms 8 to 30 inches in height, plants were described that were 6 to 8 inches in height and 2 to 4 inches in width, plants 8 inches in height and 2 to 4 inches in width were observed and recoded); the foliage is grayish-green curing to gray; the flowers (spikelets) may be maroon, purplish, reddish-brown or red-maroon; the anthers are orange to yellow; flowering generally takes place between late June and early November (high amounts of spring rainfall may induce an earlier flowering; additional records: four for late May). HABITAT: Within the range of this species it has been reported from mountains; gravelly mountaintops; mountainsides; bouldery, rocky, gravelly, gravelly-sandy, sandy and sandy-silty mesas; sandy plateaus; rims of gorges; rocky canyons; rocky canyonsides; bedrock, bouldery and sandy canyon bottoms; gorges; rocky talus slopes; crevices in rocks; pockets of sandy soil; rocky knolls; ledges; gravelly ridges; gravelly-loamy ridgetops; sandy meadows; cinder cones; crater walls; rocky foothills; bouldery, rocky, rocky-gravelly, rocky-sandy and sandy hills; gravelly-clayey hilltops; bouldery and rocky hillsides; sandy bases of escarpments; bouldery, bouldery-gravelly, bouldery-sandy, rocky, rocky-gravelly, rocky-loamy, rocky-clayey, shaley, stony, cobbly, cindery, gravelly, gravelly-sandy, gravelly-sandy-clayey, gravelly-loamy, gravelly-clayey, sandy, sandy-loamy and clayey-loamy slopes; gravelly-sandy-loamy alluvial fans; rocky outcrops; amongst boulders, rocks and stones; rims of craters; lava flows; sandy sandhills; sandy dunes; sandy hummocks; sandy prairies; sandy, sandy-clayey and clayey-loamy plains; stony-sandy, cindery and sandy-loamy flats; esplanades; basins; valley floors; sandy valley bottoms; along rocky, rocky-gravelly, rocky-sandy, gravelly, gravelly-sandy, gravelly-loamy, sandy and loamy roadsides; sandy arroyos; bottoms of arroyos; draws; rills; along creeks; along and in bouldery, rocky, gravelly, sandy and clayey washes; within bouldery-gravelly, rocky and gravelly drainages; bedrock depressions; swales; sandy beaches; gravelly-sandy benches; gravelly shelves; gravelly terraces; floodplains, and waste places growing in dry, well drained desert pavement; bouldery, bouldery-gravelly, bouldery-sandy, rocky, rocky-gravelly, rocky-gravelly-sandy, rocky-sandy, shaley, stony, stony-sandy, cobbly, cindery, gravelly. gravelly-sandy and sandy ground; rocky loam, cobbly-sandy loam, gravelly loam, gravelly-sandy loam, sandy loam, sandy-clayey loam, sandy-silty loam, clayey loam, silty loam and loam ground; rocky-clayey, gravelly clay, gravelly-sandy clay, sandy clay and clay ground, and sandy silty ground, occurring from 1,800 to over 8,200 feet in elevation in the woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat, established plants are tolerant of short droughts and the plants may form "fairy rings". The plants may form large patches through the spreading and rooting of stoloniferous runners, it also regenerates through tillering and layering. Even though it may be difficult to establish, consideration

should be given to including this plant in re-seeding mixtures, seedling establishment is reduced by drought. Black Grama is considered excellent forage for wildlife, and Cactus Wrens (*Campylorhynchus brunneicapillus*) will use this grass in the construction of their nests. *Bouteloua eriopoda* is native to southwest-central and southern North America. *5, 6, 15, 30, 33 (Pages 149-151), 43 (081910), 46 (Page 128), 48, 58, 63 (081910 - color presentation), **77**, 85 (081910 - color presentation), 105*

Bouteloua filiformis (see *Bouteloua repens*)

***Bouteloua hirsuta* M. Lagasca y Segura (var. *hirsuta* is the variety reported as occurring in Arizona): Hairy Grama**

COMMON NAMES: Hairy Grama, Navajita Velluda (Hispanic), Spiked Grama, Zacate Banderita (Hispanic). DESCRIPTION: Terrestrial perennial tufted graminoid (a bunchgrass (clumpgrass) with decumbent to erect culms 4 to 30 inches in height); the foliage is bluish-green curing to gray or straw; the flowers may be green, dark purple or purple-green; the anthers are cream or yellow; flowering generally takes place between late June and early November (flowering beginning as early as April and May has been reported). HABITAT: Within the range of this species it has been reported from mountains; rocky mountainsides; rocky, rocky-clayey, gravelly, gravelly-sandy and sandy mesas; plateaus; rocky canyons; along sandy canyon bottoms; in sandy crevices; rocky-gravelly and sandy bluffs; rocky and gravelly knolls; stony tops of knolls; rocky ridges; rocky, gravelly and gravelly-loamy ridgetops; sandy bases of ridges; meadows; foothills; rocky and rocky-gravelly hills; bouldery and stony hilltops; bouldery, rocky, gravelly-sandy, sandy and clayey hillsides; along bouldery, bouldery-rocky, bouldery-gravelly-loamy, rocky, rocky-gravelly-sandy, rocky-sandy-loamy, rocky-loamy, stony-gravelly, gravelly, gravelly-sandy, gravelly-loamy, sandy, sandy-loamy, loamy and clayey-loamy slopes; rocky outcrops; amongst boulders and rocks; lava flows; sandhills; sand dunes; breaks; rocky and rocky-sandy steppes; rocky and sandy prairies; gravelly-sandy and sandy plains; rocky and sandy flats; rocky and sandy valley floors; road beds along gravelly-loamy and sandy roadsides; rocky arroyos; within draws; streambeds; creekbeds; sandy washes; within rocky and rocky-clayey-silty drainages; along banks of creeks; shores of lakes; stony-gravelly benches; sandy alluvial mounds; gravelly terraces; clayey bottomlands; floodplains; lowlands; around and in stock tanks; gravelly and sandy riparian areas, and disturbed areas growing in moist and dry desert pavement; bouldery, bouldery-rocky, rocky, rocky-gravelly, rocky-gravelly-sandy, rocky-sandy, shaley, stony, stony-gravelly, gravelly, gravelly-sandy and sandy ground; bouldery-gravelly loam, rocky loam, rocky-gravelly loam, rocky-sandy loam, rocky-clayey loam, gravelly loam, gravelly-sandy loam, sandy loam, sandy-clayey loam, clayey loam, silty loam and loam ground; rocky clay, sandy clay and clay ground, and rocky silty, rocky-clayey silty and silty ground, occurring from 100 to 8,300 feet in elevation in the forest, woodland, scrub, grassland and desertscrub ecological formations. NOTES: This plant may be an attractive component of a restored native habitat, and may form rings. This plant was reported to have been utilized by native peoples of North America; it was noted as having been used as a fodder and as a ceremonial item. Like Blue Grama (*Bouteloua gracilis*) and Buffalo Grass (*Buchloë dactyloides*) it is a hardy, drought resistant species of the Great Plains. Hairy Grama may be browsed by Pronghorn (*Antilocapra americana*). *Bouteloua hirsuta* is native to south-central and southern North America and Central America. *5, 6, 15, 30, 33 (Pages 147-148), 43 (081210 - *Bouteloua hirsuta* Lag.), 46 (Page 128), 48, 58, 63 (081310 - color presentation of seed), 77, **85** (081310 - color presentation), 105, 127*

***Bouteloua repens* (K.S. Kunth) F.L. Scribner & E.D. Merrill: Slender Grama**

SYNONYMY: *Bouteloua filiformis* (E.P. Fournier) D. Griffiths). COMMON NAMES: Navajta Rastrera, Large Mesquite Grama, Slender Grama, Zacate Sabanilla. DESCRIPTION: Terrestrial perennial tufted graminoid (a bunchgrass (clumpgrass) 4 to 32 inches in height and up to 4 inches in width at the base); the leaves are bright green (purple and yellow forms were also reported) curing to gray or yellow; the spikelets (flowers) are reddish-purple; the anthers are orange, red, purple or yellow; flowering generally takes place between late August and early November (additional records: two for

early January, three for late February, one for mid-June and two for early August, flowering beginning as early as June and July and ending as late as December has also been reported). HABITAT: Within the range of this species it has been reported from rocky mountains; gravelly mesas; cliff faces; rocky canyons; along gravelly-sandy canyon bottoms; talus slopes; bases of cliffs; crevices in rocks; pockets of soil in rocks; rocky buttes; rocky ledges; ridges; ridgetops; openings in forests; rocky and gravelly-loamy foothills; rocky hills; hilltops; rocky and rocky-clayey hillsides; along rocky, rocky-gravelly, rocky-clayey, rocky-sandy-loamy, gravelly, sandy, sandy-loamy and clayey slopes; alluvial fans; bajadas; bedrock and rocky outcrops; amongst rocks; prairies; llanos; rocky, cobbly and sandy plains; sandy and clayey flats; bedrock valley floors; railroad right-of-ways; along rocky roadbeds; along gravelly and sandy roadsides; along rocky arroyos; rocky draws; bottoms of draws; gulches; ravines; along streams; along and in rocky streambeds; along and in rocky, gravelly, gravelly-loamy and sandy washes; along and in bedrock drainages; within drainage ways; rocky-clayey swales; gravelly-loamy banks of washes; edges of arroyos; sandy shores of oceans; benches; floodplains; riparian areas, and disturbed areas growing in dry rocky, rocky-gravelly, gravelly, gravelly-sandy and sandy ground; rocky-sandy loam, cobbly-sandy loam, gravelly loam, gravelly-sandy loam, sandy loam and clayey loam ground, and rocky clay and clay ground, occurring from sea level to 8,300 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. Slender Grama holds up well under heavy grazing pressure. *Bouteloua repens* is native to southwest-central and southern North America; Central America, and northern South America. *5, 6, 15, 16, 33 (recorded as *Bouteloua filiformis* (Fourn.) Griffiths, Page 145), 43 (093009), 46 (recorded as *Bouteloua filiformis* (Fourn.) Griffiths, Page 129), 48, 58, 63 (093009 - color presentation), 77, **85** (093009 - color presentation of dried material, also recorded as *Bouteloua repens* var. *repens*), 105 (recorded as *Bouteloua filiformis* (Fourn.) Griffiths)*

Bouteloua repens var. *repens* (see footnote 85 under *Bouteloua repens*)

Brachiaria arizonica (see *Urochloa arizonica*)

Bromus madritensis subsp. *rubens* (see *Bromus rubens*)

***Bromus rubens* C. Linnaeus: Red Brome**

SYNONYMY: *Bromus madritensis* C. Linnaeus subsp. *rubens* (C. Linnaeus) Duvin [orthographic error]. COMMON NAMES: Bromo, Bromo Rojo, Foxtail Brome, Foxtail Chess, Red Brome. DESCRIPTION: Terrestrial annual graminoid (3 inches to 2 feet in height); the foliage is light green curing to a light straw yellow; the spikelets (flowers) may be purple, red-brown, reddish or reddish-purple; the awns are reddish; flowering generally takes place between late January and early June (additional records: one for late June, one for early July and one for late August); the seedheads are red, reddish-brown or purplish. HABITAT: Within the range of this species it has been reported from mountains; rocky mountainsides; sandy-silty mesas; cliffs; rocky-pebbly cliffsides; rocky and stony canyons; rocky and clayey canyon bottoms; talus; bases of cliffs; pockets of sandy soil in bedrock, boulders and rocks; bluffs; buttes; rocky and rocky-stony ledges; rocky promontories; along rocky and silty-loamy ridges; ridgetops; sandy meadows; sandy edges of meadows; cinder cones; rocky foothills; bouldery, rocky, sandy, loamy and silty-loamy hills; sandy-clayey and clayey hilltops; rocky and clayey hillsides; bedrock, bouldery, bouldery-rocky, rocky, rocky-sandy, rocky-clayey, rocky-clayey-loamy, rocky-loamy, cobbly-sandy-loamy, cindery, gravelly, gravelly-sandy, gravelly-clayey, sandy and loamy slopes; rocky alluvial fans; rocky, gravelly and sandy bajadas; rocky outcrops; amongst boulders and rocks; sand dunes; plains; rocky, rocky-sandy-clayey, cindery, gravelly and loamy flats; cindery valley floors; valley bottoms; coastal bluffs; coastal flats; along railroad right-of-ways; along gravelly roadbeds; along sandy-loamy roadsides; within rocky arroyos; draws; along rocky gullies; rocky and gravelly ravines; seeps; springs; around seeping streams; rocky-sandy streambeds; along and in creeks; rocky creekbeds; along rivers; riverbeds; along and in rocky, stony-gravelly, gravelly, gravelly-sandy and sandy

washes; within rocky and sandy drainages; rocky and sandy drainage ways; pondbeds; gravelly-clayey soils around lakes; sandy, sandy-silty and silty lakebeds; saltwater marshlands; depressions; swales; gravelly-sandy, sandy and loamy banks of streams, rivers and washes; along sandy edges of washes, lakes and freshwater and saltwater marshes; margins of washes; beaches; sandy benches; rocky-silty, gravelly and sandy terraces; sandy, sandy-loamy and loamy bottomlands; rocky, sandy and loamy floodplains; mesquite bosques; stock tanks; around reservoirs; canal banks; recently burned areas of scrub; bouldery and sandy riparian areas; sandy waste places, and disturbed areas growing in wet, moist, damp or dry desert pavement; bouldery, bouldery-rocky, rocky, rocky-pebbly, rocky-sandy, shaley, stony, stony-gravelly, cindery, gravelly, gravelly-sandy and sandy ground; rocky loam, rocky-clayey loam, cobbly-sandy loam, sandy loam, clayey loam and loam ground; rocky-sandy clay, rocky clay, gravelly clay, sandy clay and clay ground, and rocky silty, gravelly silty, sandy silty and silty ground, occurring from sea level to 8,000 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: EXOTIC Invasive Plant which poses a significant threat to our native biotic communities. *Bromus rubens* is native to southern Europe; middle and western Asia, and northern Africa. *5, 6, 15, 16, 22 (color photograph), 33 (Page 50), 43 (100309 - no record for *Bromus madritensis* subsp. *rubens*), 46 (Page 78), 58, 63 (100409 - color presentation), 68, 77, 80 (The Ergot Fungus (*Claviceps* sp.) is listed as a Secondary Poisonous Range Plant. Species of the genus *Bromus* can be hosts of the Ergot Fungus. "Ergot contains poisonous alkaloids and other compounds that may cause chronic poisoning (gangrenous ergotism) in the extremities when consumed in small amounts, or convulsive poisoning when large amounts are eaten. Animals may be poisoned by feeding on mature, infected grain or hay. Livestock, especially cattle, and humans are susceptible. ... Pastures causing ergot poisoning should be mowed or the animals removed. Mildly poisoned animals will usually recover if removed from the infested pastures, kept quiet, and supplied with good feed and water. In Arizona, some losses may be expected on rangelands during wet years, but most losses have occurred from grazing pastures of Dallas Grass (*Paspalum dilatatum*)." See text for additional information.), 85 (100409 - color presentation of dried material), 105, **HR***

Cenchrus ciliaris (see *Pennisetum ciliare*)

Chaetochloa leucopila (see *Setaria leucopila*)

***Cynodon dactylon* (C. Linnaeus) C.H. Persoon: Bermudagrass**

COMMON NAMES: Acabacahuiztle (Hispanic), Acacahuitzli (Nahuatl), Bermuda Grass, Bermudagrass, Bramilla (Hispanic), Canzuuc (Maya), Chiendent Pied-de-poule, Common Bermudagrass, Devil Grass, Devilgrass, European Bermuda Grass, Gallitos (Hispanic), Gewonekweek (Afrikaans), Grama (Hispanic), Grama de la Costa (Hispanic), Grama-seda, Gramilla (Hispanic), Grana (Hispanic), Guix-biguiñi (Zapoteco), Lan-suuk (Maya), Manienie, Motie Molulu, Pasto Bermuda (Hispanic), Pasto Estrella (Hispanic), Pata de Gallo (Hispanic), Pata de Perdiz (Hispanic), Pata de Pollo (Hispanic), Tsakam Toom (Hispanic), Zacate (Hispanic), Zacate Bermuda (Hispanic), Zacate Borrego (Hispanic), Zacate Chino (Hispanic), Zacate del Conejo (Hispanic), Zacate Inglés (Hispanic), Zacate Pilillo (Hispanic), Zaruue (Hispanic). DESCRIPTION: Terrestrial perennial graminoid (a sodgrass with usually stoloniferous and creeping culms 2 to 24 inches in height); the foliage is green or yellow-green curing to straw after a frost; the color of the florets has been described as being purple; flowering generally takes place between mid-February and late November (additional records: one for early January and one for mid-December). HABITAT: Within the range of this species it has been reported from mountains; canyons; bouldery-gravelly-sandy, rocky and sandy canyon bottoms; pockets of sandy soil in boulders; buttes; meadows; foothills; rocky hills; rocky hillsides; rocky, gravelly, sandy and clayey slopes; rocky outcrops; sand hummocks; prairies; plains; gravelly, sandy and clayey flats; valley floors; clayey valley bottoms; along railroad right-of-ways; along gravelly, gravelly-clayey-loamy and sandy roadsides; sandy bottoms of arroyos; seeps; springs; about streams; along streambeds; along creeks; along sandy creekbeds; along rivers; riverbeds; along and in rocky and sandy washes; within drainages; within rocky

drainage ways; in clayey soils around ponds; cienegas; freshwater marshes; clayey marshlands; sandy depressions; along sandy banks of draws, streams, creeks, rivers and washes; sandy edges of rivers, ponds, lagoons, bogs and marshes; shores of lakes; gravel bars; sandy beaches; sandy benches; loamy bottomlands; floodplains; mesquite bosques; in and around clayey-loamy stock tanks; edges of canals; along canal banks; along ditch banks; bouldery and sandy riparian areas; waste places, and disturbed areas growing in moist, damp and dry bouldery, bouldery-cobbly-sandy, bouldery-gravelly-sandy, bouldery-sandy, rocky, rocky-cobbly-sandy, gravelly, gravelly-sandy and sandy ground; rocky loam, gravelly loam, gravelly-clayey loam, sandy loam, clayey loam and loam ground; clay ground, and bouldery-gravelly-sandy silty, sandy silty and silty ground, occurring from sea level to 6,500 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: EXOTIC Invasive Plant which poses a significant threat to our native biotic communities. This plant was reported to have been utilized by native peoples of North America; it was noted as having been used as a veterinary aid. Bermuda Grass is sometimes confused with another exotic species, Large Crabgrass (*Digitaria sanguinalis*) a species of similar general appearance. Bermuda Grass goes dormant when nighttime temperatures drop below freezing or average daytime temperatures are below 50 degrees Fahrenheit. Vigorous growth is achieved when nighttime temperatures are above 60 degrees Fahrenheit and daytime temperatures are above 85 degrees Fahrenheit. *Cynodon dactylon* is native to Africa. *5, 6, 15, 16, 18, 22 (color photograph), 30, 33 (Page 129), 43 (100509), 46 (Page 124), 58, 63 (053109 - color presentation), 68, 77, 80 (Bermudagrass is listed as a Poisonous Cropland and Garden Plant. "Cattle grazing on Bermudagrass pasture may develop photosensitization, paralysis or a nervous syndrome."), **85** (053109 - color presentation of dried materials), 101 (color photograph), 105, 109, 127*

***Dactyloctenium aegyptium* (C. Linnaeus) C.L. von Wildenow: Egyptian Grass**

COMMON NAMES: Coast Button Grass, Comb Fringe Grass, Crowfoot Grass, Crowfootgrass, Duck Grass, Durban Crowfoot, Durban Crowfootgrass, Durban Crowfoot Grass, Durban's Crow-foot Grass, Egyptian Grass, Egyptian Crowfootgrass, Estrela (Portuguese), Finger Comb Grass, Grama-de-dedo-egipica (Portuguese), Grama Egipica (Portuguese), Makri (India), Mão-de-sapo (Portuguese), Três-dedos (Portuguese). DESCRIPTION: Terrestrial annual graminoid (decumbent culms 2 to 40 inches in height); the foliage is green; the florets are maroon with pale yellow anthers; flowering generally takes place between late July and late November (flowering records: one for mid-March, one for late July, one for early August, four for mid-August, one for late August, two for early September, three for mid-September, one for early October, four for mid-October, one for late October, one for early November, two for mid-November, one for late November and three for late December). HABITAT: Within the range of this species it has been reported from canyon bottoms; rocky bluffs; hills; hillsides; rocky slopes; along dunes; sandy-loamy plains; flats; basins; valley floors; along coastal dunes; coastal plains; coastal beaches; along coastlines; along gravelly roadsides; along gravelly bottoms of arroyos; along streams; in gravelly soils along rivers; sandy riverbeds; along and in sandy washes; along banks of rivers; sandy beaches; floodplains, and disturbed areas growing in moist and dry rocky, gravelly and sandy ground and sandy loam ground, occurring from sea level to 4,500 feet in elevation in the woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: EXOTIC Invasive Plant. *Dactyloctenium aegyptium* is native to southern Asia and Africa. *5, 6, 33 (Pages 127-128), 43 (100509), 46 (*Dactyloctenium aegyptium* (C. Linnaeus) H.E. Richter, Page 124), 63 (100509 - color presentation), 85 (100509 - color presentation of dried material), **HR***

***Dasyochloa pulchella* (K.S. Kunth) C.L. von Wildenow ex P.A. Rydberg: Low Woollygrass**

SYNONYMY: *Erioneuron pulchellum* (K.S. Kunth) T. Tateoka, *Tridens pulchellus* (K.S. Kunth) A.S. Hitchcock, *Triodia pulchella* K.S. Kunth. COMMON NAMES: Desert Fluffgrass, Fluff Grass, Fluff-grass, Fluffgrass, Low Woollygrass, Oerennuak Grass, Zacate Borreguero. DESCRIPTION: Terrestrial perennial (often appearing to be an annual and has also been described as being a short-lived perennial) tufted graminoid (a bunchgrass (clumpgrass) ½ to 6 inches in height, plants were observed that were 2 to 4 inches in height and 2 to 4 inches in width, plants were observed that were 4 inches in height

and 12 inches in width); the foliage is bluish-green curing to a gray-white; the flowers are green, silvery or white; flowering generally takes place between late March and late October (additional record: one for early December). HABITAT: Within the range of this species it has been reported from mountains; rocky-sandy, gravelly, sandy-loamy and clayey mesas; rocky, gravelly and sandy canyons; gravelly-sandy canyon bottoms; rocky talus slopes; sandy soils in crevices in rocks and rock slabs; knolls; rocky and gravelly ridges; clayey ridgetops; ridgelines; meadows; foothills; rocky, gravelly and sandy hills; rocky, rocky-sandy and gravelly hillsides; sandy bases of escarpments; sandy edges of escarpments; bouldery, rocky, rocky-gravelly, stony, cindery-clayey, gravelly, gravelly-sandy, gravelly-sandy-loamy, gravelly-sandy-clayey-loamy and sandy slopes; rocky alluvial fans; rocky-sandy, gravelly and sandy bajadas; rocky outcrops; amongst boulders and rocks; rocky-sandy coves; lava rincons; sand hills; sand dunes; breaks; gravelly steppes; sandy and clayey plains; rocky, cindery, gravelly, gravelly-sandy, sandy, sandy-loamy and clayey flats; valley floors; along railroad right-of-ways; along bouldery-rocky, rocky, gravelly, gravelly-sandy-loamy, gravelly-loamy, sandy and sandy-loamy roadsides; arroyos; sandy bottoms of arroyos; gravelly draws; rocky gullies; streambeds; creekbeds; along and in rocky-sandy, gravelly, gravelly-sandy and sandy washes; along and in sandy drainages; playas; marshes; clayey depressions; along banks of washes; edges of washes; rocky-sandy shores of lakes; benches; gravelly and sandy terraces; rocky-sandy and loamy bottomlands; floodplains; rocky lowlands; sandy riparian areas, and disturbed areas growing in moist or dry desert pavement; bouldery, bouldery-rocky, rocky, rocky-gravelly, rocky-sandy, stony, cobbly, cindery, gravelly, gravelly-sandy and sandy ground; gravelly loam, gravelly-sandy loam, gravelly-sandy-clayey loam, sandy loam, clayey loam and loam ground; rocky clay, cindery clay, gravelly-sandy clay and clay ground, and sandy silty ground, occurring from 100 to 7,000 feet in elevation in the woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This low, densely tufted perennial may be an attractive component of a restored native habitat. This plant was reported to have been utilized by native peoples of North America; it was noted as having been used as a drug or medication. This plant is browsed by the Desert Bighorn Sheep (*Ovis canadensis mexicana*); however, it has been reported that this plant is generally avoided by grazing animals. *Dasyochloa pulchella* is native to southwest-central and southern North America. *5, 6, 15 (recorded as *Erioneuron pulchellum* (H.B.K.) Tateoka), 16 (recorded as *Erioneuron pulchellum* (H.B.K.) Tateoka), 33 (recorded as *Tridens pulchellus* (H.B.K.) Hitchc., Page 97), 43 (071309), 46 (recorded as *Tridens pulchellus* (H.B.K.) Hitchc., Page 90), 58 (recorded as *Erioneuron pulchellum* (H.B.K.) Tateoka), 63 (100609 - color presentation), 77 (recorded as *Erioneuron pulchellum* (H.B.K.) Tateoka), **85** (100609 - color presentation of dried material), 105 (recorded as *Tridens pulchellus* (H.B.K.) Hitchc.), 127*

***Digitaria californica* (G. Bentham) J.T. Henrard: Arizona Cottontop**

SYNONYMY: *Trichachne californica* (G. Bentham) M.A. Chase. COMMON NAMES: Arizona Cotton Grass, Arizona Cottongrass, Arizona Cottontop, California Cottontop, Cotton Grass, Cottongrass, Cotton-top, Cottontop, Punta Blanca (Spanish), Zacate Punta Blanca. DESCRIPTION: Terrestrial perennial graminoid (a bunchgrass (clumpgrass) with erect culms 1 to 4 feet in height); the foliage may be dark bluish-green, gray-green, green or yellow-green curing to gray or straw; spikelets (flowers) are purplish-pink, flowering generally takes place between early August and early December (additional records: one for early May and one for early July); the cottony seedheads are covered by silky hairs. HABITAT: Within the range of this species it has been reported from rocky mountains; mountaintops; sandy-loamy mesas; shaded rocky cliffs; rocky and gravelly-loamy canyons; rocky canyon walls; canyon bottoms; bouldery and rocky talus slopes; bases of cliffs; crevices in rocks; rock buttes; knobs; ledges; rocky ridges; foothills; bouldery and rocky hills; rocky hillsides; bouldery escarpments; bouldery, bouldery-rocky, rocky, rocky-gravelly, gravelly and clayey-loamy slopes; alluvial fans; bajadas; bouldery outcrops; amongst boulders and rocks; silty plains; rocky and gravelly flats; hollows; valley floors; along gravelly and sandy roadsides; arroyos; rocky draws; gulches; ravines; springs; along creeks; riverbeds; along and in sandy and silty-clayey washes; within drainage ways; marshes; along the rocky and sandy banks of arroyos, streams and washes; gravel bars; along benches; terraces; clayey bottomlands; sandy floodplains; ditches; sandy riparian areas, and disturbed areas growing in dry rocky desert pavement;

bouldery, bouldery-rocky, bouldery-rocky-sandy, rocky, rocky-gravelly, rocky-sandy, shaley, stony, cobbly, gravelly, pebbly-sandy and sandy ground; rocky-clayey loam, gravelly loam, gravelly-sandy loam, sandy-clayey, clayey loam and loam ground; gravelly clay, silty clay and clay ground, and sandy silty and silty ground, occurring from 200 to 7,000 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. *Digitaria californica* is native to southwest-central and southern North America; Central America, and western and southern South America. *5, 6, 15, 16, 33 (recorded as *Trichachne californica* (Benth.) Chase, Page 296), 43 (100609), 46 (recorded as *Trichachne californica* (Benth.) Chase, Page 132), 48, 58, 63 (100609 - color presentation), 77, **85** (100609 - color presentation), 105 (recorded as *Trichachne californica* (Benth.) Chase)*

***Enneapogon desvauxii* N.A. Desvaux ex A.M. Palisot de Beauvois: Nineawn Pappusgrass**

COMMON NAMES: Feather Pappus Grass, Feather Pappusgrass, Kalkgras (Afrikaans), Nine-awn Pappus Grass, Nineawn Pappusgrass, Nine-awned Pappus Grass, Purple Grass, Purple-grass, Spike Pappus Grass, Spike Pappusgrass, Wondergras (Afrikaans), Wright Pappusgrass, Zacate Ladera, Zacate Lobero. DESCRIPTION: Terrestrial perennial graminoid (a bunchgrass (clumpgrass) 4 to 20 inches in height); the foliage may be grayish-green or light green; the flowers are grayish, grayish-green or purplish; flowering generally takes place in summer and fall between early August and early November (additional records: two for late January, one for early July and one for mid-December). HABITAT: Within the range of this species it has been reported from mountains; mountaintops; mountainsides; bedrock and sandy mesas; plateaus; cliffs; sandy rims of canyons; bouldery, rocky and clayey canyons; sandy canyon bottoms; talus slopes; crevices; along bases of cliffs; knolls; bouldery and rocky ledges; ridges, ridgetops; rocky foothills; rocky, gravelly and clayey hills; gravelly hilltops; rocky hillsides; escarpments; rocky, rocky-gravelly, rocky-loamy, gravelly, sandy and sandy-loamy slopes; bedrock and gravelly bajadas; rocky outcrops; amongst rocks; sandy lava flows; lava fields; debris fans; plains; gravelly flats, basins; rocky valley floors; rocky valley bottoms; along rocky, rocky-gravelly, gravelly and sandy roadsides; rocky bottoms of arroyos; gulches; gullies; ravines; along streambeds; gravelly-loamy creekbeds; within rocky and gravelly washes; along drainages; drainage ways; depressions; edges of ravines; sand bars; benches; terraces; bottomlands; floodplains; stock tanks; ditches; riparian areas; waste areas, and disturbed areas growing in dry rocky desert pavement; bouldery, bouldery-rocky-sandy, rocky, rocky-cindery-sandy, rocky-sandy, gravelly, gravelly, gravelly-sandy and sandy ground; rocky loam, gravelly loam, gravelly-sandy loam and sandy loam ground; gravelly clay, sandy clay and clay ground, and rocky-gravelly silty ground, occurring from 900 to 7,300 feet in elevation in the forest, woodland, grassland and desertscrub ecological formations. NOTES: This plant may be an attractive component of a restored native habitat, consider using in a mix with other grasses when over-seeding. *Enneapogon desvauxii* is native to central and southern Asia; Africa; southwest-central and southern North America, and west-central and southern South America. *5, 6, 15, 16, 33 (Pages 102-103), 43 (100909 - *Enneapogon desvauxii* P. Beauv.), 46 (Page 91), 58, 63 (100909 - color presentation), 77, **85** (101009 - color presentation of dried material), 105 ("This grass seems to be rather short-lived for a perennial. However, it is a prolific seeder and re-establishes rapidly and abundantly during seasons of good rainfall"), 106 (053109)*

***Eragrostis cilianensis* (C. Allioni) F. Vignolo-Lutati ex E.E. Janchen: Stinkgrass**

SYNONYMY: *Eragrostis megastachya* (G.L. Koeler) J.H. Link. COMMON NAMES: Amoresco (Hispanic), Candy Grass, Candy-grass, Candygrass, Éragrostide Fétide, Graminha (Portuguese), Großes Liebesgras (German), Gray Love Grass, Lovegrass, Stink Grass, Stinkgrass, Stinking Lovegrass, Strong-scented Lovegrass, Strongscented Lovegrass, Watergrass, Zacate Apestoso (Hispanic), Zacate Apestoso (Hispanic), Zacate Borreguero (Hispanic), Zacate de Amor Hediondo (Hispanic), Zacate Estepario (Hispanic). DESCRIPTION: Terrestrial annual tufted graminoid (a bunchgrass with prostrate to erect culms 3 to 36 inches in height); the foliage is gray-green or light green; the spikelets (flowers) are greenish, white or whitish with green veins turning tawny with age, the anthers

are yellow; flowering generally takes place between late July and late October (additional records: one for mid-March, one for late March, one for mid-May, one for late May, one for early June, three for early July, one for mid-November, one for late November and one for mid-December). HABITAT: Within the range of this species it has been reported from mountains; sandy mesas; gravelly and sandy canyons; sandy canyon bottoms; sandy bases of cliffs; bluffs; knolls; ledges; sandy meadows; bouldery foothills; rocky hills; rocky and gravelly hillsides; rocky, rocky-gravelly, gravelly, gravelly-sandy-loamy, gravelly-loamy, sandy-loamy, sandy-clayey, loamy, clayey-loamy and clayey slopes; rocky outcrops; amongst rocks; coves; plains; sandy and sandy-silty flats; valley floors; valley bottoms; along gravelly, gravelly-loamy and sandy roadsides; arroyos; bottoms of arroyos; draws; gulches; gullies; gravelly-sandy seeps; springs; along streams; along and in cobbly-sandy streambeds; along creeks; creekbeds; sandy riverbeds; along and in gravelly, sandy and silty-clayey washes; within drainage ways; clayey lakebeds; cienegas; marshes; bedrock depressions; silty swales; along rocky-sandy, sandy and sandy-loamy banks of creeks, rivers, washes and drainages; sandy edges of streams, ponds, lakes and marshes; sand bars; sandy benches; gravelly-loamy terraces; loamy bottomlands; sandy and clayey floodplains; sandy mesquite bosques; around and in stock tanks (charcos, repressos); sandy ditches; sandy riparian areas; waste places, and disturbed areas growing in wet, moist, damp and dry bouldery, rocky, rocky-gravelly, stony, cobbly-sandy, gravelly, gravelly-sandy and sandy ground; rocky-clayey loam, gravelly loam, gravelly-sandy loam, sandy loam, clayey loam, clayey-humusy loam and loam ground; sandy clay, silty clay and clay ground, and sandy silty and silty ground, occurring from sea level to 8,000 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: EXOTIC Invasive Plant. *Eragrostis cilianensis* is native to middle, eastern and southern Europe; western, eastern and southern Asia, and Africa. *5, 6, 15, 16, 30, 33 (recorded as *Eragrostis megastachya* (Koel.) Link, Pages 82-83), 43 (101009), 46 (Page 86), 58, 63 (101009 - color presentation of seed), 68, 77, 80 (This plant is listed as a Rarely Poisonous and Suspected Poisonous Range Plant. "This annual grass was reported to cause poisoning in horses when fed in large quantities over a long period of time."), **85** (101009 - color presentation of sried material), 101 (color photograph), 105 (recorded as *Eragrostis megastachya* (Koel.) Link)*

***Eragrostis echinochloidea* O. Stapf: African Lovegrass**

COMMON NAME: African Lovegrass, Bosluisgras (Afrikaans), Lovegrass, Tick Grass, Tickgrass. DESCRIPTION: Terrestrial perennial graminoid (a bunchgrass (clumpgrass) 12 to 40 inches in height); the spikelets flowers) are greenish to lead with yellowish anthers; flowering generally takes place between early and late October (flowering records: one for mid-April; two for early October, and one for late October, flowering beginning as early as July, August and September has been reported). HABITAT: Within the range of this species it has been reported from mountains; bedrock canyon bottoms; crevices in rocks; foothills; hillsides; rocky slopes; sandy plains; flats; along sandy roadsides; sandy streambeds; along washes; swales; sandy banks of washes and drainage ways; floodplains; mesquite bosques; sandy riparian areas, and disturbed areas growing in moist, damp and dry rocky, gravelly and sandy ground, occurring from 1,500 to 4,600 feet in elevation in the grassland, desertscrub and wetland ecological formations. NOTES: EXOTIC Invasive Plant. *Eragrostis echinochloidea* is native to southern Africa. *5, 6, 15, 16, 33 (no record of this species), 43 (101009 - no record), 46 (Page 87, note beneath *Eragrostis lehmanniana*), 58, 63 (101009 - color presentation), 77, **85** (101009 - color presentation of dried material)*

***Eragrostis intermedia* A.S. Hitchcock: Plains Lovegrass**

COMMON NAMES: Plains Love Grass, Plains Lovegrass, Zacate Amor de Planicie (Hispanic), Zacate de Amor (Hispanic), Zacate Llanero (Hispanic), Zacate Pradera (Hispanic). DESCRIPTION: Terrestrial perennial tufted graminoid (a bunchgrass (clumpgrass) with erect or ascending culms 8 to 40 inches in height, plants in clumps 2 inches to 1 foot in width at the base were observed and reported); the foliage is gray-green, green or yellow-green curing to a light straw-yellow; the branches of the inflorescence is red-purple; the spikelets (flowers) are green or greenish-tan; flowering generally takes

place between early July and late October (additional records: one for mid-March, one for late March, one for mid-April, three for mid-May and one for late November). HABITAT: Within the range of this species it has been reported from mountains; mountaintops; bases of mountains; rocky, gravelly-sandy and sandy mesas; plateaus; canyons; canyon walls; along rocky and sandy canyon bottoms; talus slopes; bases of cliffs; crevices in rocks; clefts in granite domes; rocky bluffs; along rocky ridges; ridgetops; ridgelines; meadows; rocky and rocky-gravelly-loamy foothills; rocky hills; rocky hilltops; bouldery, rocky, gravelly-loamy and silty hillsides; rocky, rocky-gravelly, stony-clayey-loamy, gravelly, sandy, sandy-clayey, sandy-clayey-loamy, clayey and clayey-loamy slopes; bases of slopes; rocky outcrops; bases of rock outcrops; amongst boulders and rocks; sandy prairies; rocky, gravelly-sandy and sandy plains; clayey flats; sandy basins; dells; valley floors; roadbeds; along gravelly roadsides; sandy bottoms of arroyos; gulches; within sandy ravines (barrancas); springs; in cobbles and sand along streams; rocky and cobbly streambeds; along sandy creeks; riverbeds; along and in rocky, rocky-sandy and sandy washes; along and in sandy drainages; low spots; along (rocky-sandy, gravelly and sandy) banks of creeks, rivers and washes; edges of washes and lakes; along margins of streams; (rocky) shores of lakes and bays; benches; rock shelves; floodplains; along fencelines; sandy riparian areas, and disturbed areas growing in moist and dry bouldery, rocky, rocky-gravelly, rocky-sandy, stony, cobbly, gravelly, gravelly-sandy and sandy ground; rocky loam, rocky-gravelly loam, rocky-clayey loam, stony loam, stony-clayey loam, gravelly loam, gravelly-clayey loam, sandy loam, sandy-clayey loam, clayey loam and loam ground; rocky-clay, gravelly clay, sandy clay and clay ground, and silty ground, occurring from 1,200 to 8,500 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. *Eragrostis intermedia* is native to south-central and southern North America and Central America. *5, 6, 15, 30, 33 (Pages 80-81), 43 (053110), 46 (Page 87), 48, 58, 63 (053110 - color presentation), **77**, 85 (060810 - color presentation), 105*

***Eragrostis lehmanniana* C.G. Nees von Esenbeck: Lehmann Lovegrass**

COMMON NAMES: Lehman Lovegrass, Lehmann Lovegrass, Lehmann's Love Grass, Lehmann's Lovegrass, Lovegrass, Zacate Africano, Zacate de Amor. DESCRIPTION: Terrestrial perennial tufted graminoid (a bunchgrass (clumpgrass) with ascending or erect culms 8 to 48 inches in height); the foliage is bright green or yellow-green curing to a dull yellow; the spikelets (flowers) are grayish-green, lead or straw colored with yellowish anthers; flowering generally takes place between late July and early November (flowering records: one for early March, one for mid-March, one for early May, one for mid-May, one for early June, two for early July, two for late July, one for early August, three for mid-August, three for late August, one for early September, two for mid-September, one for late September, three for early October, two for mid-October, two for late October and one for early November). HABITAT: Within the range of this species it has been reported from mountains; canyons; along canyon bottoms; gravelly ridges; meadows; rocky foothills; rocky hills; rocky hillsides; rocky, gravelly, gravelly-loamy and sandy-loamy slopes; gravelly bajadas; rock outcrops; amongst boulders; dunes; gravelly plains; gravelly, sandy and clayey flats; clayey valley floors; roadbeds; along sandy and clayey roadsides; along arroyos; springs; along and in streambeds; along creeks; along and in creekbeds; along rivers; sandy riverbeds; along gravelly and sandy washes; drainages; depressions; along banks of rivers; shores of lakes; sandy beaches; cobbly-sandy benches; travertine clefts; terraces; loamy bottomlands; sandy floodplains; mesquite bosques; ditches; riparian areas, and disturbed areas growing in dry bouldery, bouldery-cobbly-sandy, rocky, rocky-cobbly-sandy, rocky-sandy, stony, cobbly-sandy, gravelly, gravelly-sandy and sandy ground; gravelly loam, sandy loam and clayey loam ground, and clay ground, occurring from 500 to 7,600 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: EXOTIC Invasive Plant that poses a significant threat to our native biotic communities. *Eragrostis lehmanniana* is native to southern Africa. *5, 6, 15, 16, 22 (color photograph), 33 (Page 79), 43 (101009), 46 (Page 87), 58, 63 (101009 - color presentation of seeds), 77, **85** (101009 - color presentation of dried material), 105*

Eragrostis megastachya (see *Eragrostis cilianensis*)

Erioneuron pulchellum (see *Dasyochloa pulchella*)

Festuca octoflora subsp. *hirtella* (see *Vulpia octoflora* var. *hirtella*)

Festuca octoflora var. *hirtella* (see *Vulpia octoflora* var. *hirtella*)

***Heteropogon contortus* (C. Linnaeus) A.M. Palisot de Beauvois ex J.J. Roemer & J.A. Schultes: Tanglehead**

SYNONYMY: *Andropogon contortus* C. Linnaeus. COMMON NAMES: Barba Negra, Black Spear Grass, Bunch Spear Grass, Common Tangleweed, Hierba Torcida (Spanish), Piligrass (Hawaii), Tangle Grass, Tangle-head, Tanglehead, Tanglehead Grass, Retorcido Moreno, Spear Grass, Speergras (German), Zacate Colorado. DESCRIPTION: Terrestrial perennial tufted graminoid (a bunchgrass (clumpgrass) 8 to 60 inches in height); the foliage is bright green curing to orange-brown; the spikelets (flowers) may be brown or purple; flowering generally takes place between early January and late May and again between early August and early December (flowering records: one for early January, one for late January, one for late February, one for mid-March, one for early May, one for late May, three for early August, five for late August, three for early September, four for mid-September, three for late September, one for mid-October, four for early November, one for mid-November and one for early December). HABITAT: Within the range of this species it has been reported from mountains; rocky mountainsides; mesas; cliffs; cliff faces; along rocky canyons; along canyon walls; along bouldery and gravelly canyon bottoms; bases of cliffs; crevices in rocks; ledges; rocky ridges; bouldery ridgetops; foothills; rocky hills; rocky and gravelly-clayey hillsides; rocky, gravelly, gravelly-sandy and sandy slopes; rocky outcrops; amongst boulders and rocks; lava flows; rocky and sandy plains; gravelly flats; valley floors; along sandy roadsides; along and in rocky arroyos; rocky-sandy bottoms of arroyos; along draws; within gullies; ravines; around seeping streams; streambeds; creekbeds; along and in rocky, rocky-sandy, cobbly, gravelly-sandy and sandy washes; within gravelly-sandy-loamy drainages; within rocky and sandy drainage ways; bedrock tinajas; around pools; silty banks of streams and rainwater basins; edges of washes; sandy beaches; terraces; floodplains; riparian areas, and disturbed areas growing in dry bouldery, bouldery-sandy, rocky, rocky-sandy, cobbly, gravelly, gravelly-sandy and sandy ground; gravelly-sandy loam and loam ground; gravelly clay ground, and silty ground, occurring from sea level to 7,500 feet in elevation in the woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. *Heteropogon contortus* is native to south-central and southern North America and possibly to other tropic sub-tropic and warm-temperate regions of the world. *5, 6, 15, 16, 33 (Page 302), 43 (101209), 46 (Page 144), 48, 58, 63 (101209 - color presentation), 77, 85 (101209 - color presentation), 105 (Reports that Tanglehead Grass "is one of the easiest grasses to establish under conditions of low rainfall."), **HR***

***Hilaria belangeri* (E.G. von Steudel) G.V. Nash: Curly-mesquite**

COMMON NAMES: Common Curlymesquite, Creeping Curly-mesquite, Curly Mesquite, Curly-mesquite, Curlymesquite, Curly Mesquite Grass, Curlymesquite Grass, Mesquite-grass, Southwestern Buffalo Grass. DESCRIPTION: Terrestrial perennial tufted graminoid (a sodgrass 2 to 14 inches in height, plants to 4 inches in width at the base have been reported); the foliage is bluish-green curing to white; inflorescences are green, dark red-purple or purplish; the awns are purple; flowering generally takes place between early August and early November (additional records: one for mid-February, one for early March, one for mid-March and one for mid-September). HABITAT: Within the range of this species it has been reported from mountains; mesas; rocky canyons; rocky canyon bottoms; knolls; gravelly-sandy-clayey ridges; ridgelines; ridgetops; meadows; foothills; rocky and gravelly-clayey-loamy hills; hilltops; rocky hillsides; rocky, rocky-gravelly-sandy, stony, gravelly, gravelly-sandy-clayey and clayey slopes; gravelly bajadas; boulder and rock outcrops; amongst boulders, rocks and gravels; prairies; sandy

plains; gravelly and sandy flats; grassy valley floors; along roadsides; along arroyos; along streams; streambeds; along creeks; along and in gravelly washes; within drainage ways; depressions; swales; banks of washes; benches and riparian areas growing in dry bouldery, rocky, rocky-cobbly-gravelly, rocky-gravelly-sandy, rocky-sandy, stony, gravelly and sandy ground; bouldery-gravelly loam, gravelly loam, gravelly-clayey loam, sandy loam, clayey loam and loam ground, and gravelly-sandy clay and clay ground, occurring from 1,100 to 6,100 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat, it may not be overly drought resistant or shade tolerant. In native stands most of the rapid growth is shown after the beginning of the summer rains. Depending upon the variety, this plant may be soloniferous (var. *belangeri*) or may not be soloniferous (var. *longifolia*). Curlymesquite is grazed by pronghorn and deer. *Hilaria belangeri* is native to southwest-central and southern North America. *5, 6, 15, 16, 33 (Pages 158-160), 43 (101209), 46 (Page 122), 48, 58, 63 (101209), **85** (101209 - color presentation of dried material), 105 (Curly Mesquite, a palatable and nutritious grass, may be used as an indicator plant of range conditions. Where Curly Mesquite is abundant in comparison to other high-volume production grasses the stocking load should be reduced, sound range management is indicated where high-volume production grasses are abundant or increasing.)*

***Hordeum murinum* C. Linnaeus: Mouse Barley**

COMMON NAMES: Barley, Bulbous Barley, Cevada-de-ponche-verde (Portuguese), Cevada-dos-ratos (Portuguese), False Barley, Mouse Barley, Mugi-kusa (transcribed Japanese), Wall Barley, Wild Barley. DESCRIPTION: Terrestrial annual graminoid (6 to 44 inches in height); the spikes are greenish or reddish; the anthers are gray to yellow sometimes spotted with purple; flowering generally takes place between late February and late May (additional records: one for early July, flowering as late as October has been reported). HABITAT: Within the range of this species it has been reported from mountains; clayey mountaintops; mountainsides; mesas; plateaus; sandy soils on cliffs; gravelly canyons; rocky, rocky-gravelly and sandy canyon bottoms; bases of cliffs; bluffs; buttes; pebbly ridgetops; meadows; rocky hills; rocky hillsides; rocky, rocky-loamy, cobbly-gravelly-loamy, gravelly, loamy, clayey and silty slopes; sandy bajadas; boulder outcrops; sand dunes; pebbly plains; gravelly, pebbly and clayey flats; valley floors; valley bottoms; along railroad right-of-ways; along gravelly, sandy and clayey roadsides; gulches; within gullies; springs; along streams; along creeks; loamy creekbeds; along rivers; along and in rocky, rocky-sandy, gravelly, gravelly-sandy and sandy washes; drainages; rocky drainage ways; rocky-sandy bases of waterfalls; waterholes; sandy-silty lakebeds; silty playas; cienegas; clayey freshwater marshes; clayey depressions; swales; sandy banks of arroyos, rivers and washes; sandy edges of seeps, creekbeds, rivers, poolbeds and ponds; shores of rivers and lakes; mudflats; channel bars; along sandy and silty floodplains; around stock tanks; along silty ditches; banks of ditches; rocky-sandy, gravelly and sandy riparian areas; waste places, and disturbed areas growing in moist and dry bouldery, rocky, rocky-gravelly, rocky-sandy, gravelly, gravelly-sandy, pebbly and sandy ground; rocky loam, cobbly-gravelly loam, gravelly loam, sandy-clayey loam and loam ground; bouldery-cobbly clay and clay ground, and sandy silty and silty ground, occurring from sea level to 9,100 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: EXOTIC Invasive Plant. This plant was reported to have been utilized by native peoples of North America; it was noted as having been used for food and as a drug or medication (*H.m.* subsp. *glaucum*). *Hordeum murinum* is native to Europe; western, central and southern Asia, and northern Africa. *5, 6, 16, 33 (note under *Hordeum leporinum*, Page 107), 43 (101309), 63 (101309 - color presentation), **85** (101309 - color presentation of dried material), 127*

Hordeum stebbinsii (see *Hordeum murinum* subsp. *glaucum*)

***Muhlenbergia emersleyi* G. Vasey: Bullgrass**

COMMON NAMES: Bull Grass, Bullgrass, Cola de Zorra. DESCRIPTION: Terrestrial perennial tufted graminoid (a bunchgrass (clumpgrass) with decumbent or erect culms 20 inches to 5 feet

in height and up to 8 inches to 5 feet in width at the base); the foliage is gray-green or light green curing to a light gray; the panicles (inflorescences) are light brownish, maroon or light purplish; the flowers (spikelets) are light-maroonish-brown or purple; the anthers are purple, purplish or yellowish; flowering generally takes place between mid-August and late September (additional records: one for late July, one for late October, one for early November and one for late November); the grain is reddish-brown. HABITAT: Within the range of this species it has been reported from rocky mountains; mountaintops; bouldery-gravelly mountainsides; plateaus; rocky cliffs; rocky canyons; rocky canyonsides; along rocky canyon bottoms; talus; crevices in boulders and rocks; bluffs; rocky ledges; rocky ridges; ridgetops; openings in forests and woodlands; foothills; bouldery, bouldery-rocky and rocky hills; hilltops; bouldery, rocky and rocky-clayey hillsides; bouldery, rocky, rocky-gravelly, rocky-gravelly-clayey, rocky-loamy, gravelly, gravelly-loamy, loamy and clayey-loamy slopes; rocky bases of slopes; rocky outcrops; amongst boulders and rocks; sandy bases of boulders; along breaks; prairies; flats; gravelly dells; valley floors; along roadsides; along arroyos; within rocky draws; within ravines; bottoms of ravines; springs; rocky, rocky-sandy and sandy streambeds; in sand along creeks; along gravelly-sandy creekbeds; along and in rocky-sandy, gravelly and sandy washes; within drainages; (rocky) banks of gullies, streams and drainages; along (bouldery and rocky) edges of gullies, ravines (barrancas), seeps, washes and drainages; benches; rocky-gravelly terraces; floodplains, and sandy riparian areas growing in wet, moist and dry bouldery, bouldery-rocky, bouldery-gravelly, rocky, rocky-gravelly, rocky-sandy, stony, gravelly, gravelly-sandy and sandy ground; rocky loam, stony loam, gravelly loam, sandy-clayey loam, clayey loam, humusy loam and loam ground; rocky clay and rocky-gravelly clay ground, and rocky-silty ground, occurring from 2,600 to 8,200 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat and is grown as an ornamental. *Muhlenbergia emersleyi* is native to southwest-central and southern North America. *5, 6, 15, 18, 33 (Pages 219-220), 43 (060810), 46 (Page 112), 48, 58, 63 (060810 - color presentation), 77, 85 (060810 - color presentation), 105*

***Muhlenbergia microsperma* (A.P. de Candolle) C.B. von Trinius: Littleseed Muhly**

COMMON NAMES: Liendrilla Chica (Hispanic), Liendrilla Fina y Liendrilla Chica (Hispanic), Little-seed Muhly, Littleseed Muhly. DESCRIPTION: Terrestrial annual graminoid (spreading or erect culms 4 to 40 inches in height/length); the foliage may be purplish turning red with age; the inflorescence is tinged with purple; the spikelets (flowers) are dark pink or purplish with purplish anthers; flowering generally takes place between late January and mid-June (additional records: one for early January, one for early September, one for mid-September, one for late September, one for mid-October, one for late October, one for early November, three for mid-November, three for mid-December and two for late December); the caryopsis (fruit) is reddish-brown. HABITAT: Within the range of this species it has been reported from mountains; mountaintops; rocky mountainsides; mesas; rocky cliffs; bouldery, bouldery-rocky-sandy, rocky and sandy canyons; rocky canyon walls; rocky, rocky-silty, sandy and sandy-loamy canyon bottoms; scree; talus slopes; along bases of cliffs; crevices in rocks; bluffs; buttes; rocky ledges, rocky and cobbly-sandy-loamy ridges; clayey ridgetops; margins of meadows; foothills; rocky and rocky-sandy hills; rocky, rocky-cobbly, rocky-gravelly and gravelly hillsides; bouldery, bouldery-sandy, bouldery-loamy, rocky, rocky-gravelly, rocky-sandy, rocky-loamy-clayey, rocky-clayey, gravelly, sandy, loamy, loamy-clayey and clayey slopes; bajadas; bouldery and rocky outcrops; amongst boulders and rocks; lava bluffs; lava slopes; along lava slides; dunes; sandy plains; bouldery, rocky-sandy, gravelly and sandy flats; rocky-gravelly coastal slopes; coastal plains; sandy coastal flats; gravelly valley floors; along railroad right-of-ways; bouldery-gravelly-loamy and sandy roadsides; arroyos; in the shade of mesquite trees in the bottoms of arroyos; gulches; rocky-sandy ravines; springs; along streams in the partial shade of Mexican Blue Oaks; rocky and rocky-sandy streambeds; along creeks; along rivers; along and in rocky, rocky-silty, gravelly, gravelly-sandy and sandy washes; silty-clayey drainages; drainage ways; gravelly-sandy tinajas; depressions; along rocky, gravelly-sandy and sandy banks of arroyos, streams, washes and drainages; edges of gullies; margins of riverbeds; benches; bottomlands; sandy floodplains; mesquite bosques; around stock tanks (charcos); rocky margins of reservoirs; along and in ditches; sandy riparian

areas and disturbed areas growing in wet, moist and dry gravelly desert pavement; bouldery, bouldery-rocky-sandy, bouldery-sandy, rocky, rocky-cobbly, rocky-gravelly, rocky-sandy, gravelly, gravelly-sandy and sandy ground; bouldery loam, bouldery-gravelly loam, rocky-clayey loam, cobbly-sandy loam, gravelly loam, sandy loam and loam ground; rocky clay, rocky-loamy clay, loamy clay, silty clay and clay ground, and rocky silty ground, occurring from sea level to 8,000 feet in elevation in the woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. This grass sometimes forms dense mound-like colonies. *Muhlenbergia microsperma* is native to southwest-central and southern North America; North-central Pacific Islands; Central America, and northern and western South America. *5, 6, 15, 16, 30, 33 (Pages 195-196), 43 (101609), 46 (Page 109), 63 (101609 - color presentation), 77, **85** (101709 - color presentation of dried material)*

Muhlenbergia monticola (see *Muhlenbergia tenuifolia*)

***Muhlenbergia porteri* F.L. Scribner ex W.J. Beal: Bush Muhly**

COMMON NAMES: Bakú (Tarahumara), Bush-grass, Bush Muhly, Hoe Grass, Hoegrass, Liendrilla Amacollada (Hispanic), Mesquite Grass, Mesquitegrass, Porter's Muhlenbergia, Telaraña (Hispanic), Zacate Aparejo (Hispanic). DESCRIPTION: Terrestrial perennial tufted graminoid (a bunchgrass with geniculate culms 10 to 44 inches in height/length and 18 inches to 10 feet in width, several plants were described as being 3 feet in height and 10 feet in width); the stems are dull green; the leaves are green, purplish-green or yellow-green curing to buff; the panicles (compound inflorescences) are usually purple; the spikelets (flowers) are green becoming purple when mature; anthers are purple to yellow; flowering generally takes place between late February and late October (additional records: one for late November and one for early December); the caryopsis (fruit) is yellowish-brown the aggregate of which covers the plants in a misty shroud. HABITAT: Within the range of this species it has been reported from mountains; rocky and stony-sandy mountainsides; mesas; rocky cliffs; bouldery and rocky canyons; rocky canyonsides; rocky-sandy and gravelly canyon bottoms; gorges; talus slopes; crevices in rocks; buttes; along sandy-silty and silty ledges; rocky ridge tops; foothills; rocky and sandy hills; bouldery-sandy and rocky hillsides; rocky escarpments; along bouldery, bouldery-rocky, rocky, rocky-loamy, gravelly, gravelly-loamy, sandy and sandy-loamy slopes; bajadas; rocky outcrops; amongst boulders and rocks; alcoves; sandy lava flows; lava fields; sand dunes; dune-like areas of fine blow-sand deposits; gravelly plains; rocky, gravelly-sandy, sandy and sandy loamy flats; open sandy ground amongst Ephedra and Larrea; basins; sandy valley floors; valley bottoms; along rocky, rocky-gravelly, gravelly, gravelly-loamy and sandy roadsides; rocky arroyos; clefts in rocky hillsides; within draws; gulches; ravines; springs; bouldery streambeds; along rivers; along and in rocky, rocky-gravelly, rocky-sandy, gravelly, gravelly-sandy and sandy washes; along drainages; bouldery-cobbly and rocky drainage ways; around ponds; gravelly-sandy banks; margins of washes; sandy-silty and silty benches; gravelly terraces; sandy floodplains; sandy mesquite bosques; riparian areas, and disturbed areas often growing in the protection of shrubs and trees in damp and dry rocky desert pavement; bouldery, bouldery-rocky, bouldery-cobbly, bouldery-sandy, rocky, rocky-gravelly, rocky-sandy, stony-sandy, cindery, gravelly, gravelly-sandy and sandy ground; rocky loam, rocky-clayey loam, cobbly-sandy loam, gravelly loam, sandy loam, clayey loam and loam ground; gravelly clay, sandy clay and clay ground, and cobbly-sandy silty, sandy silty and silty ground, occurring from 700 to 7,500 feet in elevation in the woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. In areas where it occurs naturally, consider including Bush Muhly seed in reseeding mixtures. According to the USDA Forest Service Fire Effects Information System, Bush Muhly germinates best when temperatures are at 86 degrees Fahrenheit (30 degrees Centigrade). When re-vegetating desert washes consider planting Bush Muhly along with Whitethorn Acacia (*Acacia constricta*), Catclaw Acacia (*Acacia greggii* var. *greggii*), Limberbush (*Jatropha cardiophylla*), Triangleleaf Bursage (*Ambrosia deltoidea*) and White Bursage (*Ambrosia dumosa*). Bush Muhly is browsed by the Desert Bighorn Sheep (*Ovis canadensis* subsp. *mexicana*). *Muhlenbergia porteri* is native

to southwest-central and southern North America. *5, 6, 15, 16, 30, 33 ("Bush Muhly originally existed in extensive stands on the open range lands of southern Arizona but now occurs for the most part in the protection of shrubs and subshrubs and is seldom locally abundant. It is highly palatable and well liked by livestock despite the wiry culms.", Pages 201-202), 43 (101709), 46 (Page 111), 48, 58, 63 (101709 - color presentation), 77, **85** (101709 - color presentation), 105 ("This was formerly one of the most abundant and important grasses of southern Arizona, but is found now largely as individual plants under the protection of shrubs. ... Where possible this grass should be allowed to set a full crop of seed during the summer growing season at least every second or third year. Deferment of grazing during July and August every year is recommended on run-down ranges.")*

***Muhlenbergia rigens* (G. Bentham) A.S. Hitchcock: Deergrass**

COMMON NAMES: Deer Grass, Deergrass, Liendrilla de Venado (Hispanic). DESCRIPTION: Terrestrial perennial tufted graminoid (a bunchgrass (clumpgrass) with erect culms 14 to 63 inches in height and in clumps to 4 to 40 inches in width at the base, one plant was observed and reported to be 30 inches in height and 30 inches in width, one plant was observed and reported to be 40 inches in height and 28 inches in width); the foliage is blue-green, gray-green or grayish curing to a gray straw color; the flowers are in long narrow spikes (3 to 16 inches in length and 1/4 to 3/8 inch in diameter); the panicles (inflorescences) are grayish-green; the spikelets (flowers) are grayish or light green; the anthers are purplish or yellow; flowering generally takes place between mid-July and late November (additional records: one for mid-April, three for early May, four for early June and two for late June); the grain is brownish. HABITAT: Within the range of this species it has been reported from mountains; rocky mesas; plateaus; along rocky canyons; along bouldery, rocky, rocky-sandy, gravelly and sandy canyon bottoms; gorges; crevices in bedrock; meadows; foothills; rocky hills; rocky hillsides; rocky, rocky-sandy-loamy and sandy slopes; alluvial fans; amongst boulders and rocks; flats; basins; valley bottoms; roadsides; along rocky and sandy arroyos; bottoms of arroyos; rocky and rocky-gravelly-sandy draws; bottoms of draws; gulches; along and in rocky gullies; bouldery and rocky bottoms of ravines; along seeps; around and in gravely and sandy springs; along streamlets; along streams; along and in bedrock, rocky, gravelly and sandy streambeds; in boulders and rocky-sandy soil along creeks; along and in rocky, rocky-sandy, stony and sandy creekbeds; rocky riverbeds; along and in bouldery, rocky, rocky-gravelly, cobbly, gravelly and sandy washes; along and in bouldery and rocky drainages; bases of waterfalls; along rocky, cobbly and sandy banks of draws, streams, creeks, rivers and washes; gravelly-sandy edges of arroyos, seeps, streams, streambeds, rivers and washes; along margins of streambeds and washes; sand bars; sandy terraces; bottomlands; floodplains; along fencelines; along ditch banks, and bouldery-cobbly-sandy, rocky-gravelly-sandy, cobbly, gravelly and sandy riparian areas growing in shallow water; muddy, and wet, moist, damp and dry bouldery, bouldery-cobbly-sandy, rocky, rocky-gravelly, rocky-gravelly-sandy, rocky-sandy, cobbly, cobbly-sandy, gravelly, gravelly-sandy and sandy ground; rocky-sandy loam, gravelly-clayey-loamy and gravelly-silty loam ground; clay ground, and silty ground, occurring from 200 to 8,400 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. This plant was reported to have been utilized by native peoples of North America and could be investigated to determine its value as a home garden or commercial food, fodder and/or fiber crop; it was also noted as having been used as a tool and as a ceremonial item. *Muhlenbergia rigens* is native to southwest-central and southern North America. *5, 6, 15, 18, 30, 33 (Page 218), 43 (060910), 46 (Page 110), 48, 58, 63 (060910 - color presentation), 77, **85** (060910 - color presentation), 105, 127*

***Muhlenbergia tenuifolia* (K.S. Kunth) C.B. von Trinius: Slender Muhly**

SYNONYMY: *Muhlenbergia monticola* S.B. Buckley. COMMON NAMES: Mesa Muhly, Slender Muhly, Slimflower Muhly. DESCRIPTION: Terrestrial annual or perennial densely tufted graminoid (a bunchgrass (clumpgrass) with decumbent, ascending or erect culms 8 to 28 inches in height and in clumps to 4 to 12 inches in width at the base); the spikelets (flowers) may be purplish; the anthers are yellowish; based on few records located, flowering generally takes place between mid-August and late

October (additional records: flowering beginning as early as July and ending as late as November has been reported); the grains are brownish. HABITAT: Within the range of this species it has been reported from mountains; mountaintops; mountainsides; rocky cliffs; cliff faces; rocky and rocky-gravelly canyons; rocky canyon bottoms; rocky gorges; talus slopes; along bases of cliffs; crevices in rocks; rocky ledges; rocky ridges; rocky ridgetops; meadows; foothills; rocky hills; rocky and gravelly hillsides; escarpments; rocky, rocky-clayey, rocky-clayey-loamy, gravelly and clayey-loamy slopes; bouldery and rocky outcrops; amongst boulders and rocks; bases of rocks; within niches; plains; gravelly flats; valley floors; railroad right-of-ways; along rocky and gravelly roadsides; arroyos; gravelly bottoms of arroyos; draws; gulches; along ravines (barrancas); in rocks along streams; streambeds; along creeks; rocky creekbeds; along and in bouldery-gravelly, rocky and sandy washes; sandy drainages; rocky-gravelly banks of arroyos and streams; rocky and rocky-gravelly edges of arroyos and draws; terraces; sandy-clayey-loamy ditches; riparian areas; waste places, and disturbed areas growing in dry bouldery, bouldery-gravelly, rocky, rocky-gravelly, gravelly and sandy ground; rocky-clayey loam, sandy-clayey loam and clayey loam ground, and rocky clay ground, occurring from 2,600 to 8,000 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTE: This plant may be an attractive component of a restored native habitat. *Muhlenbergia tenuifolia* is native to southwest-central and southern North America; Central America, and northern South America. *5, 6, 15 (recorded as *Muhlenbergia monticola* Buckl.), 33 (recorded as *Muhlenbergia monticola* Buckl., Page 215), 43 (060910 - *Muhlenbergia tenuifolia* Trin.), 46 (recorded as *Muhlenbergia monticola* Buckl., Page 111), 63 (060910), 77 (recorded as *Muhlenbergia monticola* Buckl.), **85** (061010 - color presentation of dried material)*

Panicum arizonicum (see *Urochloa arizonica*)

Pappophorum apertum (see *Pappophorum vaginatum*)

Pappophorum mucronulatum (see *Pappophorum vaginatum*)

***Pappophorum vaginatum* S.B. Buckley: Whiplash Pappusgrass**

SYNONYMY: *Pappophorum apertum* W. Munro ex F. Lamson-Scribner, *Pappophorum mucronulatum* auct. non C.G. Nees von Esenbeck. COMMON NAMES: Mucronulate Pappusgrass, Pappusgrass, Pima Pappusgrass, Whiplash Pappusgrass. DESCRIPTION: Terrestrial perennial graminoid (a bunchgrass (clumpgrass) 16 to 52 inches in height); the foliage is gray-green or light green; the inflorescences may be tinged with purple; based on few flowering records available, flowering generally takes place between late March and late October (flowering records: two for late March, one for late April, one for early July, one for late August, three for early September, one for mid-September and one for late October). HABITAT: Within the range of this species it has been reported from mountains; mountaintops; mesas; rocky canyons; bases of cliffs; ridgetops; foothills; rocky hillsides; rocky, sandy and clayey slopes; bajadas; rocky plains; gravelly and sandy-silty flats; basins; valley floors; valley bottoms; coastal dunes; sandy coastal flats; along railroad right-of-ways; along stony and sandy roadsides, along sandy gullies; along creeks; along and in gravelly washes; along drainage ways; depressions; banks of washes; along edges of washes; margins of washes; floodplains; dams; in sandy ditches, and disturbed areas growing in moist and dry rocky, stony, gravelly and sandy ground; clayey loam ground, clay ground, and sandy silty ground, occurring from sea level to 4,800 feet in elevation in the grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. *Pappophorum vaginatum* is native to southwest-central and southern North America and southern South America. *5, 6, 15, 16, 33 (recorded as *Pappophorum mucronulatum* Nees., Page 103), 43 (101809), 46 (recorded as *Pappophorum mucronulatum* Nees., Page 91), 48, 63 (101809 - color presentation), 77, **85** (101809 - color presentation of dried material), 105 (recorded as *Pappophorum mucronulatum* Nees.)*

***Pennisetum ciliare* (C. Linnaeus) J.H. Link: Buffelgrass**

SYNONYMY: *Cenchrus ciliaris* C. Linnaeus. COMMON NAMES: African Foxtail, African Foxtail Grass, Anjangrass, Buffel Grass, Büffelgras (German), Buffelgrass, Bufle, Cadillo Buffel (Hispanic), Cenchrus Cilié (French), Dhaman (India), Huizapol (Hispanic), Pasto Buffel (Spanish), Sandbur, Zacate Buffle (Hispanic). DESCRIPTION: Terrestrial perennial tufted graminoid (a bunchgrass (clumpgrass) 4 inches to 5 feet in height); the leaves are green; the spikelets are reddish turning a golden-brown when dry; flowering may take place several times a year when sufficient moisture is available (flowering records: one for mid-February, one for early April, one for mid-April, one for mid-August, one for late September, one for early October, one for mid-October, one for late October and one for late November). HABITAT: Within the range of this species it has been reported from mountains; mountainsides; along rocky and sandy canyons; canyon bottoms; bases of cliffs; rocky-gravelly-clayey bluffs; buttes; ridges; ridgetops; foothills; rocky hillsides; rocky slopes; bajadas; rocky and rocky-gravelly outcrops; sandy plains; sandy flats; valley floors; along rocky roadsides; along and in arroyos; within draws; ravines; springs; cobbly creekbeds; rocky, rocky-cobbly-sandy and cobbly riverbeds; along and in gravelly-sandy washes; oases; marshes; depressions; rocky-sandy banks of washes; edges of arroyos and washes; sandy beaches; floodplains; lowlands; riparian areas, and disturbed areas growing in moist and dry rocky, rocky-cobbly-sandy, rocky-gravelly, rocky-sandy, cobbly, gravelly-sandy and sandy ground; loam ground; rocky-gravelly clay ground, and sandy-silty (loess) ground, occurring from sea level to 7,100 feet in elevation in the woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: EXOTIC Invasive Plant that poses a significant threat to our native biotic communities. *Pennisetum ciliare* is native to southeastern Europe; western and southern Asia, and Africa. *5, 6, 16, 22 (color photograph), 30, 33 (Page 266), 43 (101909), 46 (Supplement Page 1041), 63 (101909 - color presentation), 77, 85 (101909 - color presentation of dried material), **HR***

Pennisetum ruppelii (see *Pennisetum setaceum*)

***Pennisetum setaceum* (P. Forsskål) E. Chiovenda: Crimson Fountaingrass**

SYNONYMY: *Pennisetum ruppelii* E.G. von Steudel. COMMON NAMES: African Fountain Grass, Annual Fountain Grass, Crimson Fountaingrass, Fountain Grass, Fountain-grass, Fountaingrass, Plumitas, Pronkgras (Afrikaans), Purple Fountain Grass, Tender Fountain Grass, Tender Fountaingrass, Zacate de la Fuente. DESCRIPTION: Terrestrial perennial graminoid (a bunchgrass (clumpgrass) 1 to 5 feet in height, one clump was noted as being 5 feet in height by 5 feet in width); the leaves are green; the inflorescences are purplish; flowering generally takes place from early March to mid-December (additional record: one for early February); the fruits are purplish. HABITAT: Within the range of this species it has been reported from mountains; canyons; canyon walls; rocky and rocky-sandy and sandy canyon bottoms; bases of cliffs; crevices in rocks; ridges; swards; rocky foothills; rocky hills; hilltops; rocky hillsides; bouldery, bouldery-sandy, rocky and loam slopes; rocky-sandy-loamy alluvial fans; bajadas; amongst boulders and rocks, rocks cobbles and gravels; flats; coastal dunes; rocky coastal beaches; railroad right-of-ways; along rocky-clayey roadsides; draws; along streams; along and in creeks; riverbeds; along and in rocky and sandy washes; drainages; drainage ways; banks of drainages; along pebbly-sandy and sandy edges of creeks and lakes; margins of washes, pools and ponds; lake shores; sand bars; rocky strands; mesquite bosques; rocky edges of reservoirs; canals; culverts; ditches; riparian areas, and disturbed areas growing in wet, moist and dry bouldery, bouldery-sandy, rocky, rocky-cobbly-sandy, rocky-sandy, cobbly, cobbly-gravelly, gravelly, pebbly-sandy and sandy ground; rocky-sandy loam and loam ground, and rocky clay and clay ground, occurring from sea level to 7,200 feet in elevation in the woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: EXOTIC Invasive Plant that poses a significant threat to our native biotic communities. *Pennisetum setaceum* is native to western and southern Asia and northern, eastern and southern Africa. *5, 6, 16, 22 (color photograph), 26 (color photograph), 33 (recorded as *Pennisetum ruppelii* Steud., Page 266), 43 (101909), 46 (Page 140), 63 (101909), 77, **85** (102009 - color presentation), 109*

***Poa bigelovii* G. Vasey & F.L. Scribner: Bigelow's Bluegrass**

COMMON NAMES: Bigelow Bluegrass, Bigelow's Blue Grass, Bigelow's Bluegrass, Zacate Azule Nativo. DESCRIPTION: Terrestrial annual tufted graminoid (usually erect culms 2 to 20 inches in height); the inflorescences are greenish or silvery; flowering generally takes place between late February and early May (additional records: two for early February). HABITAT: Within the range of this species it has been reported from mountains; mesas; sandy cliffs; rocky and gravelly-sandy canyons; bouldery, rocky and sandy canyon bottoms; along talus slopes; bases of cliffs; crevices in rocks; rocky ledges; ridges; meadows; gravelly-sandy foothills; hills; rocky hillsides; bouldery, bouldery-gravelly, rocky, rocky-clayey-loamy, gravelly, gravelly-loamy and sandy slopes; gravelly and sandy bajadas; bouldery and rocky outcrops; amongst boulders and rocks; steppes; sandy plains; gravelly and sandy flats; basins; rocky valley floors; valley bottoms; along gravelly roadsides; rocky, gravelly and sandy arroyos; rocky draws; bottoms of draws; ravines; seeps; around seeping streams; bouldery and sandy springs; along streams; streambeds; along creeks; sandy creekbeds; along rivers; riverbeds; along and in bouldery, rocky, rocky-sandy, gravelly, gravelly-sandy, sandy and sandy-loamy washes; drainages; within drainage ways; edges of washes; along sandy banks of arroyos, streams and washes; shore of lakes; river channel bars; beach talus; benches; coves; terraces; loamy bottomlands; sandy floodplains; rocky-sandy catchments; rocky margins of reservoirs; riparian areas, and disturbed areas growing in dry desert pavement; bouldery, bouldery-gravelly, rocky, rocky-sandy, gravelly, gravelly-sandy and sandy ground; rocky-sandy loam, rocky-clayey loam, gravelly loam, gravelly-clayey loam, sandy loam, sandy-clayey loam and loam ground, and clay ground, occurring from 500 to 9,500 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. *Poa bigelovii* is native to southwest-central and southern North America. *5, 6, 15, 16, 33 (Pages 64-65), 43 (102009), 46 (Page 83), 48 (genus), 58, 63 (102009), 77, 80 (The Ergot Fungus (*Claviceps* sp.) is listed as a Secondary Poisonous Range Plant. Bluegrasses of the genus *Poa* can be hosts of the Ergot Fungus. "Ergot contains poisonous alkaloids and other compounds that may cause chronic poisoning (gangrenous ergotism) in the extremities when consumed in small amounts, or convulsive poisoning when large amounts are eaten. Animals may be poisoned by feeding on mature, infected grain or hay. Livestock, especially cattle, and humans are susceptible. ... Pastures causing ergot poisoning should be mowed or the animals removed. Mildly poisoned animals will usually recover if removed from the infested pastures, kept quiet, and supplied with good feed and water. In Arizona, some losses may be expected on rangelands during wet years, but most losses have occurred from grazing pastures of Dallas Grass (*Paspalum dilatatum*)." See text for additional information.), **85** (102109 - color presentation)*

***Schismus barbatus* (P. Loefling ex C. Linnaeus) A. Thellung: Common Mediterranean Grass**

COMMON NAMES: Common Mediterranean Grass, Kelch-grass, Mediterranean Grass, Mediterraneangrass, Zacate Mediterrane Comun. DESCRIPTION: Terrestrial annual tufted graminoid (1 to 14 inches in height); the foliage is green; the inflorescence is greenish-purple; the spikelets (flowers) may be purple tinged; flowering generally takes place between early January and early June (additional records: one for mid-October and one for late October, flowering beginning as early as November has been reported). HABITAT: Within the range of this species it has been reported from mountains; mountaintops; sandy and sandy-silty mesas; rocky cliffs; rocky and clayey canyons; sandy canyon bottoms; rocky talus; bluffs; rocky ridges; ridgetops; ridgelines; rocky, sandy-loamy and clayey hills; hilltops; rocky hillsides; along rocky, rocky-gravelly-loamy, rocky-loamy-clayey, gravelly, gravelly-sandy, sandy, sandy-loamy, loamy and clayey slopes; rocky alluvial fans; gravelly-sandy bajadas; rocky outcrops; sand dunes; blow-sand deposits; gravelly-sandy plains; gravelly, gravelly-sandy, sandy and silty flats; sandy valley floors; around wharves; roadbeds; along gravelly and sandy roadsides; springs; in sandy soils along streams; along gravelly-sandy and sandy creekbeds; along rivers; along rocky, gravelly and clayey-loamy riverbeds; along and in rocky-sandy, rocky-silty, gravelly-sandy and sandy washes; drainages; sandy and silty lakebeds; depressions; sandy banks of streams; sandy edges of streambeds and lakes; margins of washes; sandy benches; shelves; gravelly and sandy terraces; floodplains; canal banks;

gravelly-sandy riparian areas, and disturbed areas growing in wet, moist and dry desert pavement; rocky, rocky-gravelly, rocky-sandy, gravelly, gravelly-sandy and sandy ground; rocky-gravelly loam, gravelly-sandy loam, sandy loam, clayey loam and loam ground; rocky-loamy clay and clay ground, and rocky silty, gravelly silty, sandy silty and silty ground, occurring from sea level to 8,000 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: EXOTIC Invasive Plant that poses a significant threat to our native biotic communities. *Schismus barbatus* is native to southwestern Europe; western, central and southern Asia, and northern and southern Africa. *5, 6, 15, 16, 22 (color photograph), 33 (Pages 172-173), 43 (102209), 46 (Page 98), 58, 63 (102209 - color presentation of seeds), 68, 77, 85 (102209 - color presentation of dried material), **HR***

***Setaria grisebachii* E.P. Fournier: Grisebach's Bristlegrass**

COMMON NAMES: Grisebach Bristlegrass, Grisebach's Bristle Grass, Grisebach's Bristlegrass, Ola de Zorra. DESCRIPTION: Terrestrial annual graminoid (often with geniculate-spreading culms 4 inches to 4 feet in height); the panicles (compound inflorescences) are purple; the flowers are yellow with purple spots; flowering generally takes place between early August and mid-October (flowering ending as late as November has been reported). HABITAT: Within the range of this species it has been reported from mountains; rocky mountainsides; mesas; cliffs; rocky, gravelly-loamy and sandy canyons; sandy canyon bottoms; gorges; rocky bases of cliffs; talus slopes; crevices; rocky ledges; along meadows; foothills; rocky hills; rocky, rocky-silty and gravelly-clayey hillsides; rocky, rocky-stony, gravelly, gravelly-clayey and clayey-loamy slopes; rocky outcrops; amongst boulders and rocks; sandy lava flows; clayey-loamy flats; valley floors; along railroad right-of-ways; along sandy roadsides; along and in arroyos; draws; bottoms of draws; rocky gulches; gravelly-sandy seeps; springs; along streams; along and in rocky-gravelly and gravelly streambeds; creeks; creekbeds; along sandy rivers; along and in sandy and clayey washes; along and in bouldery drainage ways; banks of washes; sandy benches; sandy floodplains; mesquite bosques; along ditches; sandy riparian areas; waste areas, and disturbed areas growing in moist, damp and dry rocky, rocky-stony, rocky-gravelly, stony, gravelly, gravelly-sandy and sandy ground; gravelly loam and clayey loam ground, and rocky silty and sandy silty ground, occurring from 1,200 to 8,300 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. *Setaria grisebachii* is native to southwest-central and southern North America; Central America, and northwestern South America. *5, 6, 15, 33 (Page 269), 43 (102209), 46 (Page 139), 58, 63 (102209 - color presentation), **77**, **85** (102309 - color presentation of dried material)*

***Setaria leucopila* (F.L. Scribner & E.D. Merrill) K.M. Schumann: Streambed Bristlegrass**

SYNONYMY: *Chaetochloa leucopila* F.L. Scribner & E.D. Merrill. COMMON NAMES: Bristlegrass, Plains Bristle Grass, Plains Bristlegrass, Streambed Bristle Grass, Streambed Bristlegrass, White-haired Bristlegrass, Yellow Bristlegrass, Yellow Foxtail, Zacate Tempranero. DESCRIPTION: Terrestrial perennial tufted graminoid (a bunchgrass (clumpgrass) with ascending, geniculate or erect culms 8 inches to 4 feet in height with plants up to 12 to 20 inches in width at the base observed and reported); the foliage is green; the spike-like panicles (compound inflorescence) are pale green; based on few records located, flowering generally takes place between early July and early November (additional records: one for early March, three for mid-March, one for late April, two for mid-June and two for late December). HABITAT: Within the range of this species it has been reported from mountains; mesas; plateaus; cliffs; rock walls; canyons; sandy canyon bottoms; gorges; talus slopes; bases of cliffs and rock walls; crevices in rocks; buttes; crests of rocky buttes; ridges; ridgetops; foothills; rocky, gravelly and gravelly-sandy hills; rocky and rocky-sandy hillsides; escarpments; sandy bases of escarpments; rocky, rocky-clayey-loamy, gravelly, gravelly-sandy and sandy-loamy slopes; bases of slopes; alluvial fans; bajadas; rocky outcrops; amongst boulders and rocks; rocky and sandy lava flows; sand dunes; sandy steppes; sandy plains; gravelly, gravelly-sandy, sandy, sandy-loamy and sandy-silty flats; basins; valley floors; valley bottoms; coastal sand dunes; coastal flats; coastal beaches; railroad right-of-ways; roadbeds; along rocky, gravelly and sandy-loamy roadsides; along and in rocky-gravelly arroyos; bottoms of

arroyos; rocky and gravelly-sandy-loamy draws; gulches; within rocky ravines; seeps; in sand around streams; bouldery streambeds; along creeks; in rocky and gravelly creekbeds; in sand along rivers; riverbeds; along and in rocky, rocky-sandy, gravelly, gravelly-sandy and sandy washes; within drainages; within drainage ways; along sandy-loamy banks of draws, streams, rivers and washes; edges of arroyos, springs, washes, pools and marshes; sand bars; rocky benches; terraces; sandy-loamy bottomlands; floodplains; lowlands; mesquite bosques; sandy mottes; along and in ditches; clayey-loamy water tanks; gravelly and sandy riparian areas, and disturbed areas growing in wet, moist and dry rocky desert pavement; bouldery, rocky, rocky-gravelly, rocky-sandy, gravelly, gravelly-sandy and sandy ground; rocky-clayey loam, gravelly-sandy loam, sandy loam, sandy-clayey loam and clayey loam ground; rocky clay and clay ground, and rocky silty and sandy silty ground often reported as growing at the base or under shrubby mesquites and other protected areas, occurring from sea level to 6,900 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. *Setaria leucopila* is native to southwest-central and southern North America. *5, 6, 33 (no record of species), 43 (061110), 46 (included under *S. macrostachya* in the "First edition", Page 139, and Supplement Page 1041), 48, 63 (061110 - color presentation), 77, **85** (061110 - color presentation of dried material)*

***Sorghum halepense* (C. Linnaeus) C.H. Persoon: Johnsongrass**

COMMON NAMES: Aleppo Grass, Aleppohirse (German), Aleppo Milletgrass, Cañota (Spanish), Herbe d'Alep (French), Herbe de Cuba, Hierba Johnson (Spanish), Johnson Grass, Johnsongras (Afrikaans), Johnsongrass, Means Grass, Sorgho d'Alep (French), Sorgo de Alepo, Sorgo de Aleppo (Spanish), Wilde Mohrenhirse (German), Zacate Johnson. DESCRIPTION: Terrestrial perennial graminoid (20 inches to 8 feet in height); the foliage is green; the flowers are cream-purple, greenish-purple, dark red-purple or purplish; flowering may take place year-round. HABITAT: Within the range of this species it has been reported from mountains; canyons; sandy canyon bottoms; bluffs; meadows; foothills; hills; hillsides; sandy, sandy-loamy and sandy-silty slopes; amongst boulders and rocks; sand hummocks; rocky mudflows; sandy steppes; prairies; plains; sandy and loamy flats; valley floors; coastal prairies; along cindery railroad right-of-ways; along gravelly-sandy, gravelly-loamy and sandy roadsides; gulches; springs; rocky-sandy soil along streams; along and in streambeds; along and in rocky and rocky-gravelly-sandy creeks; along creekbeds; in sandy soil along and in rivers; along and in sandy riverbeds; in rocky and sandy washes; drainages; cienegas; freshwater marshes; sandy banks of creeks, rivers and washes; edges of streams; gravel and sand bars; cobbly-sandy and sandy benches; sandy terraces; sandy, loamy and silty bottomlands; sandy and sandy-loamy floodplains; silty-clayey stock tanks; along canals; along canal banks; along and in sandy-loamy ditches; along clayey and clayey-loamy ditch banks; gravelly-sandy and sandy riparian areas; waste places, and disturbed areas growing in wet, moist and damp bouldery, rocky, rocky-gravelly-sandy, rocky-sandy, cobbly, cindery, gravelly, gravelly-sandy and sandy ground; sandy loam, clayey loam, silty-clayey loam and loam ground; silty clay and clay soils, and sandy-silty and silty ground, occurring from sea level to 7,500 feet elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: EXOTIC Invasive Plant that poses a significant threat to our native biotic communities. This plant was reported to have been utilized by native peoples of North America; it was noted as having been used as a fodder and as a toy or in games (children used stems and leaves to make whistles). Johnsongrass was introduced into the United States around 1830. *Sorghum halepense* readily hybridizes with *Sorghum bicolor* (Sorghum) which is also an exotic. *Sorghum halepense* is native to western, middle and southern Asia and northern Africa. *5, 6, 15, 16, 22 (color photograph), 33 (Pages 310-313), 43 (102409), 46 (Page 143), 58, 63 (102409 - color presentation), 68 ("Johnsongrass ordinarily is good feed, but sometimes the plant, particularly the leaves, contain hydrocyanic (prussic) acid, a cyanide type of poisoning. Any factor which interrupts normal growth may cause the release of HCN within plants. Rapid growth of new leaves, wilting due to drought, frost, freezing, cutting, or trampling are the most dangerous events." See text for additional information), 77, 80 (Johnsongrass is Listed as a Major Poisonous Range Plant. "Most losses from Johnsongrass are due to hydrocyanic-acid poisoning, but plants also accumulate dangerous levels of nitrate. Danger from

HCN poisoning is greatest when soils are high in available nitrogen and low in phosphorus, when plants have been exposed to drouth or disease which results in slow or stunted growth, and when plants are making rapid regrowth or have been frosted. Leaves are more toxic than stems, and young plants are more toxic than mature ones.... Management to defer pastures during dangerous periods of growth, and feeding of animals before turning them on pastures containing Johnsongrass are the best preventive measures. " See text for additional information.), 85 (102409 - color presentation), 101 (color photograph), 105, 127, **HR***

Sporobolus airoides var. *wrightii* (see *Sporobolus wrightii*)

***Sporobolus contractus* A.S. Hitchcock: Spike Dropseed**

COMMON NAMES: Dropseed, Spike Dropseed. DESCRIPTION: Terrestrial perennial graminoid (a bunchgrass (clumpgrass) 16 inches to 5 feet in height and 4 to 12 inches in width at the base, plants 16 inches in height and 8 inches in width were reported); the spikelets (flowers) may be brownish, lead colored or whitish; flowering generally takes place be between late August and late October (additional record: one for early July). HABITAT: Within the range of this species it has been reported from mountains; sandy mesas; plateaus; rocky and gravelly canyons; along sandy and sandy-clayey canyon bottoms; bases of cliffs; talus; bluffs; knolls; in sand amongst pinyons and junipers; sandy foothills; sandy hills; rocky and sandy hillsides; rocky, rocky-clayey, rocky-clayey-loamy, cindery, gravelly, sandy, sandy-loamy, sandy-clayey and sandy-clayey-loamy slopes; bajadas; rocky outcrops; sand hills; sand dunes; mesquite hummocks; sandy plains; gravelly, sandy and clayey flats; sandy basins; valley floors; railroad right-of-ways; along cindery-gravelly, gravelly-loamy, sandy-loamy and sandy roadsides; sandy arroyos; clayey bottoms of arroyos; bottoms of gulches; bouldery ravines; bouldery streambeds; sandy soils along creeks; in sandy soils along rivers; sandy riverbeds; along and in gravelly, gravelly-clayey, sandy and silty-clayey washes; drainages; drainage ways; depressions; pot holes; cindery swales; sandy banks of creeks and rivers; gravelly-sandy and sandy edges of washes and drainage ways; silty and silty-clayey margins of seeps; sand bars; sandy beaches; sandy benches; bouldery-gravelly-sandy, gravelly and sandy terraces; floodplains; mesquite bosques; along fencelines; in ditches; sandy ditch banks; sandy riparian areas, and disturbed areas growing in damp and dry bouldery, bouldery-gravelly-sandy, rocky, cindery, cindery-gravelly, gravelly, gravelly-sandy and sandy ground; rocky-clayey loam, gravelly loam, gravelly-sandy loam, gravelly-clayey loam, sandy loam and sandy-clayey loam ground; rocky-sandy clay, rocky clay, gravelly clay, sandy clay, silty clay and clay ground, and gravelly-clayey silty, clayey silty and silty round, occurring from 900 to 9,400 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. This plant was reported to have been utilized by native peoples of North America and could be investigated to determine its value as a home garden or commercial food and/or fiber crop. *Sporobolus contractus* is native to southwest-central and southern North America. *5, 6, 15, 16, 33 (Pages 225-226), 43 (102409), 46 (Page 114), 48, 58, 63 (102409 - color presentation of seeds), 77, **85** (102409 - color presentation of dried material), 127*

***Sporobolus wrightii* W. Munro ex F.L. Scribner: Big Sacaton**

SYNONYMY: *Sporobolus airoides* (J. Torrey) J. Torrey var. *wrightii* (W. Munro ex F.L. Scribner) F.W. Gould. COMMON NAMES: Alkali Sacaton, Big Alkali Sacaton, Big Sacaton, Giant Sacaton, Sacaton, Sacaton Grass, Wright Sacaton, Zacaton. DESCRIPTION: Terrestrial perennial graminoid (a bunchgrass (clumpgrass) with mostly erect branches 36 to 100 inches in height and 20 to 36 inches in width at the base); the foliage is pale green with a gray cast; the spikelets (flowers) are greenish, purplish or whitish; the anthers are purplish to yellowish; flowering generally takes place between early August and mid-September (flowering records: one for mid-April, one for late April, two for mid-June, two for early August, two for mid-August, two for late August, one for early September and three for mid-September; flowering beginning as early as March and ending as late as November has been reported); the fruits are blackish or reddish-brown. HABITAT: Within the range of this species it has been reported

from mountains; gravelly-sandy mesas; plateaus; canyons; canyon bottoms; bases of cliffs; rock ledges; meadows; hills; rocky hillsides; escarpments; rocky slopes; amongst rocks; plains; clayey flats; basins; basin bottoms; sandy-clayey valley floors; tidal flats; railroad right-of-ways; along gravelly-loamy and sandy-loamy roadsides; along arroyos; rocky-sandy bottoms of arroyos; along creeks; along rivers; along riverbeds; along and in gravelly and sandy washes; within drainages; bolson depressions; playas; cienegas; marshes; depressions; banks of rivers; rocky edges of washes; margins of ponds; benches; terraces; bottomlands; sandy floodplains; mesquite bosques; in clayey-loamy soils around stock tanks; along sandy ditches; riparian areas, and disturbed areas growing in dry rocky, rocky-sandy, gravelly, gravelly-sandy and sandy ground; rocky loam, gravelly loam, sandy loam, sandy-clayey loam, clayey loam and silty-clayey loam ground; sandy clay ground, and gravelly silty ground, occurring from sea level to 7,000 feet in elevation in the woodland, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat, and useful in slowing runoff, enhancing infiltration and controlling erosion. This plant was reported to have been utilized by native peoples of North America and could be investigated to determine its value as a home garden or commercial food and/or fiber crop. An estimated 95% of the original stands of Big Sacaton have been lost or degraded due to channelization, erosion and overgrazing. Attempts should be made to restore these grasslands on the mesas, plateaus, low alluvial flats, arroyos, bottomlands and broad floodplains subject to periodic flooding. This plant provides cover for wildlife including the Collard Peccary (*Peccari tajacu*), Botteri's Sparrow (*Aimophila botterii*) and other birds, Diamondback Rattlesnakes (*Crotalus atrox*) and rodents. *Sporobolus wrightii* is native to southwest-central and southern North America. *5, 6, 15, 16, 33 (recorded as *Sporobolus airoides* (Torr.) Torr. var. *wrightii* (Munro) Gould, Pages 230-231), 43 (102409), 46 (Page 114), 48, 58, 63 (102409 - color presentation), 77, **85** (102409 - color presentation), 105, 127*

Trichachne californica (see *Digitaria californica*)

Tridens pulchellus (see *Dasyochloa pulchella*)

Triodia pulchella (see *Dasyochloa pulchella*)

***Urochloa arizonica* (F.L. Scribner & E.D. Merrill) O. Morrone & F.O. Zuloaga: Arizona Signalgrass**

SYNONYMY: *Brachiaria arizonica* (F.L. Scribner & E.D. Merrill) S.T. Blake, *Panicum arizonicum* F.L. Scribner & E.D. Merrill. COMMON NAMES: Arizona Panicgrass, Arizona Panicum, Arizona Signal Grass, Arizona Signalgrass, Piojillo de Arizona. DESCRIPTION: Terrestrial annual graminoid (6 to 26 inches in height); the flowers are purple; flowering generally takes place between early August and early November (flowering beginning as early as June has been reported). HABITAT: Within the range of this species it has been reported from mountains; mesas; canyons; canyon bottoms; chasms; rocky talus; meadows; foothills; rocky hills; rocky and rocky-clayey hillsides; bouldery, rocky, rocky-gravelly, rocky-sandy, stony and gravelly slopes; alluvial fans; gravelly bajadas; rocky banks; rock outcrops; amongst boulders; bases of rocks; sand dunes; sandy flats; coastal dunes; along roadsides; arroyos; bottoms of arroyos; sandy draws; along rocky ravines; seeps; rivulets; along and in gravelly-sandy streambeds; along and in rocky, gravelly and sandy washes; drainages; within clayey drainage ways; rocky-sandy and sandy banks of washes; shores of lakes; benches; terraces; sandy floodplains; mesquite bosques; margins of stock tanks; ditches; riparian areas, and disturbed areas growing in dry bouldery, bouldery-gravelly, rocky, rocky-gravelly, rocky-sandy, stony, gravelly and sandy ground; gravelly loam and gravelly-clayey loam ground, and rocky clay, sandy clay and clay ground, occurring from 300 to 6,600 feet in elevation in the woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTE: *Urochloa arizonica* is native to southwest-central and southern North America. *5, 6, 15 (recorded as *Brachiaria arizonica* (Scribn. & Merr.) S.T. Blake), 16 (recorded as *Panicum arizonicum* Scribn. & Merr.), 33 (*Panicum arizonicum* Scribn. & Merr., Page 281), 43 (102609), 46 (recorded as *Panicum arizonicum* Scribn. & Merr., Page 135), 58 (recorded as *Brachiaria arizonica*

(Scribn. & Merr.) S.T. Blake), 63 (102609), 68, 77 (recorded as *Brachiaria arizonica* (Scribn. & Merr.) S.T. Blake), **85** (102609 - color presentation of dried material)*

***Vulpia octoflora* (T. Walter) P.A. Rydberg var. *hirtella* (C.V. Piper) J.T. Henrard: Sixweeks Fescue**

SYNONYMY: *Festuca octoflora* T. Walter subsp. *hirtella* C.V. Piper, *Festuca octoflora* T. Walter var. *hirtella* (C.V. Piper) C.V. Piper ex A.S. Hitchcock. COMMON NAMES: Eight-flowered Fescue, Fescua, Hairy Pullout Grass, Sixweeks Fescue, Six-weeks Fescue, Sixweeks Fescue, Sixweeks Grass. DESCRIPTION: Terrestrial annual graminoid (erect culms 2 inches to 2 feet in height); the foliage is bright green or yellow-green; the florets are green; flowering generally takes place between early February and late June. HABITAT: Within the range of this species it has been reported from mountains; rocky mountainsides; sandy mesas; rocky cliffs; rocky canyons; gravelly and sandy canyon bottoms; crevices in rocks; cobbly-loamy buttes; rocky ledges; along ridges; ridgetops; ridgelines; meadows; rocky foothills; hills; bases of hills; rocky-gravelly hillsides; rocky, rocky-sandy, gravelly, sandy and humusy-loamy slopes; bajadas; bouldery and rocky outcrops; amongst boulders and rocks; bases of boulders; lava flows; dunes; along sandy outwash fans; breaks; plains; stony, gravelly and sandy flats; sandy-loamy valley floors; valley bottoms; along roadsides; sandy arroyos; gulches; gullies; springs; humusy-loamy soils along streams; sandy streambeds; along creeks; rocky-sandy creekbeds; along rivers; riverbeds; along and in bouldery, stony-gravelly, gravelly-sandy, sandy and sandy-loamy washes; within sandy drainage ways; swales; around lakes; margins of cienegas; shores of lakes; sandy beaches; gravelly and sandy terraces; sandy and loamy bottomlands; floodplains; stock tanks (charcos); ditches; sandy riparian areas; waste places; recently burned areas, and disturbed areas growing in moist and dry bouldery, rocky, rocky-gravelly, rocky-sandy, stony-gravelly, gravelly, gravelly-sandy, sandy and chalky ground; rocky-clayey loam, cobbly loam, gravelly loam, sandy loam, clayey loam, humusy loam and loam ground, and sandy clay and clay ground, occurring from 200 to 6,900 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: Sixweeks Fescue may be useful in the restoration of disturbed areas and acts as a soils stabilizer. This plant is browsed by Bison (*Bos bison*), Black-tailed Jack Rabbits (*Lepus californicus*), Desert Mule Deer (*Odocoileus hemionus* subsp. *crooki*), Lesser Prairie Chicken (*Tympanuchus pallidicinctus*), Pronghorn (*Antilocapra americana*), White-tailed Prairie Dogs (*Cynomys leucurus*) and other small mammals, and Ground Squirrels (Townsend Ground Squirrel noted), Kangaroo Rats (Merriam's Kangaroo Rat noted), Pocket Gophers (Plains Pocket Gopher noted), Pocket Mice (Bailey's and Rock Pocket Mice noted) and other small mammals and birds (Chukar and Sharp-tailed Grouse noted) feed on the seed. *Vulpia octoflora* var. *hirtella* is native to west-central and southern North America. *5, 6, 33 (recorded as *Festuca octoflora* var. *hirtella* Piper, Page 55), 43 (060710), 46 (recorded as *Festuca octoflora* Walt. var. *hirtella* Piper, Page 80), 63 (102709), 77, **85** (102709)*

Typhaceae: The Cat-tail Family

Typha angustifolia (see note under *Typha domingensis*)

***Typha domingensis* C.H. Persoon: Southern Cattail**

COMMON NAMES: Cat-tail, Cattail, Narrow-leaf Cattail, Southern Cat-tail, Piripepe (Spanish), Pirivevyi (Spanish), Southern Cat-tail, Southern Cattail, Totora (Spanish), Tule. DESCRIPTION: Semi-aquatic perennial forb/herb (3 to 13 feet in height); the foliage may be dark green or light yellowish-green; the pistillate flowers are light brown, tawny-brown or brown becoming buff or grayish; the staminate flowers are golden-yellow or yellow-green; flowering generally takes place between early March and late November (flowering records: one for early March, one for early April, one for late April, one for early May, three for mid-May, two for late May, four for early June, three for mid-June, one for late June, two for early July, one for mid-July, two for late July, two for early August, one for early September, one for late September, one for early October, one for late October and one for late

November). HABITAT: Within the range of this species it has been reported from canyons; canyon bottoms; rocky hills; bouldery and rocky hillsides; clayey slopes; clayey flats; draws; seeps; around and in gravelly and gravelly-sandy springs; along and in streams; along and in rocky-sandy and sandy streambeds, along and in creeks; along rivers; sandy and sandy-silty riverbeds; rocky washes; waterholes (pozos); lagoons (esteros); pools; ponds; lakes; freshwater marshes; swamps; sinkholes; sloughs; (gravelly-sandy) banks of streams, rivers and washes; (shallow water and silty) edges of rivers, pools; ponds, lakes and bogs; along shores of lakes; sand bars; sandy benches; bottomlands; sandy floodplains; lowlands; along canals; along ditches; muddy-sandy and gravelly-sandy riparian areas, and waste places growing in shallow water and wet, moist and damp bouldery, rocky, rocky-sandy, gravelly, gravelly-sandy and sandy ground; clayey loam ground; clay ground, and sandy-clayey silty and sandy silty ground, occurring from sea level to 6,600 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. Arizona specimens were historically referred to as *Typha angustifolia*. This plant was reported to have been utilized by native peoples of North America and could be investigated to determine its value as a home garden or commercial food and/or fiber crop. *Typha domingensis* is native to the subtropics; tropics, and warm-temperate regions of south-central and southern North America; Central America; South America; southern Pacific Islands; Australia; Eurasia, and Africa. *5, 6, 15, 16, 28 (color photograph), 43 (102809), 46 (Page 64), 58, 63 (102809 - color presentation), 68, 77, 85 (102809 - color presentation of dried material), 127, **HR***

CLASS MAGNOLIOPSIDA: The DICOTS

Acanthaceae: The Acanthus Family

***Anisacanthus thurberi* (J. Torrey) A. Gray: Thurber's Desert Honeysuckle**

COMMON NAMES: Anisacanthus, Chuparosa, Colegayo, Desert Honeysuckle, Thurber Anisacanthus, Thurber Desert-honeysuckle, Thurber's Desert Honeysuckle, Thurber's Desert-honeysuckle. DESCRIPTION: Terrestrial perennial cold deciduous shrub (3 to 8 feet in height); the stems are pale gray, gray or white; the leaves are green or yellow-green; the tubular flowers may be brick-red, brown-orange, brownish-red, burnt-orange, copper-red, orange, orange-brown, orange-red, orange with a purple fringe, orange-salmon, purplish, red, reddish-brown, reddish-orange, red-orange-brown or yellow; flowering generally takes place between late March and early August (additional records: one for late February, two for early October, two for mid-October, two for late October, three for early November, two for mid-November, one for late November, one for early December and one for mid-December; flowering has been described as occurring mainly in the spring, but may take place almost throughout the year). HABITAT: Within the range of this species it has been reported from mountains; along bouldery and rocky canyons; rocky canyon bottoms; bases of cliffs; meadows; foothills; hills; gravelly hilltops; rocky and rocky-gravelly-loamy hillsides; escarpments; rocky, rocky-gravelly, rocky-clayey, gravelly, gravelly-sandy and sandy slopes; rocky outcrops; amongst boulders; traces; valley bottoms; along roadsides; along arroyos; draws; sandy bottoms of draws; grottos; gulches; ravines; springs; along streams; along and in streambeds; along creeks; creekbeds; along rivers; along and in rocky, gravelly and sandy washes; bouldery drainage ways; along rocky and gravelly-sandy banks of rivers; along edges of creeks and washes; rocky shelves; rocky-sandy floodplains; mesquite bosques; ditches, and bouldery riparian areas growing in dry bouldery, rocky, rocky-gravelly, rocky-gravelly-sandy, rocky-sandy, pebbly, gravelly, gravelly-sandy and sandy ground; rocky-gravelly loam ground; rocky clay and gravelly clay ground, and silty ground, occurring from 1,000 to 6,000 feet in elevation in the woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. The flowers may be fragrant. The flowers attract hummingbirds

and both the Costa's Hummingbird (*Calypte costae*) and Rufous Hummingbird (*Selasphorus rufus*) have been observed visiting the flowers. This plant is browsed by wildlife. *Anisacanthus thurberi* is native to southwest-central and southern North America. *5, 6, 10, 13, 15, 16, 18, 28 (color photograph), 43 (102909 - *Anisacanthus thurberi* A. Gray), 46 (Page 801), 48, 58, 63 (102909 - color presentation of seed), 77 (color photograph #1), **85** (102909), 91, 115 (color presentation)*

***Justicia longii* R.A. Hilsenbeck: Longflower Tube Tongue**

SYNONYMY: *Siphonoglossa longiflora* (J. Torrey) A. Gray. COMMON NAMES: Longflower Tube Tongue, Long-flowered Justicia, Longflowered Tube Tongue, Longflowered Tubetongue, Siphonoglossa, Tubetongue, White Needle Flower. DESCRIPTION: Terrestrial perennial forb/herb or subshrub (8 to 40 inches in height, one plant was described as being 12 inches in height with a crown 12 inches in width, one plant was described as being 16 inches in height with a crown 16 inches in width); the foliage is gray-green or dark green; the flowers are white or light yellow; based on few records examined, flowering generally takes place between mid-April and early November (additional records: one for early February and one for mid-March); the green fruits turn dark brown when mature. HABITAT: Within the range of this species it has been reported from mountains; crevices in cliffs; canyons; canyon bottoms; bases of cliffs; rocky foothills; gravelly hills; bouldery-rocky, rocky and rocky-sandy hillsides; rocky slopes; rocky outcrops; amongst boulders and rocks; basins; arroyos; bottoms of arroyos; ravines; springs; along washes; within rocky and rocky-gravelly drainages; within drainage ways; along rocky banks of washes; margins of washes, and bouldery-sandy riparian areas growing in dry bouldery, bouldery-rocky, bouldery-sandy, rocky, rocky-gravelly, rocky-sandy, gravelly, gravelly-sandy and sandy ground, occurring from 1,200 to 4,900 feet in elevation in the scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat, the tubular flowers open in the evening and are reported to be slightly fragrant. This plant is browsed by wildlife. *Justicia longii* is native to southwest-central and southern North America. *5, 6, 15 (recorded as *Siphonoglossa longiflora* (Torr.) Gray), 16 (recorded as *Siphonoglossa longiflora* (Torr.) Gray), 28 (recorded as *Siphonoglossa longiflora*, color photograph), 43 (103009), 46 (recorded as *Siphonoglossa longiflora* (Torr.) Gray, Page 802), 58 (recorded as *Siphonoglossa longiflora* (Torr.) Gray), 63 (103009), 77 (recorded as *Siphonoglossa longiflora*, color photograph #58), **85** (103009 - color presentation of dried material), 115 (color presentation)*

***Ruellia nudiflora* (G. Engelmann & A. Gray) I. Urban (var. *nudiflora* is the variety reported as occurring in Arizona): Violet Wild Petunia**

SYNONYMY: (*Ruellia nudiflora* (G. Engelmann & A. Gray) I. Urban var. *glabrata* E.C. Leonard for *Ruellia nudiflora* (G. Engelmann & A. Gray) I. Urban var. *nudiflora*). COMMON NAMES: Common Wild Petunia, Longneck Ruellia, Oregano de China, Ruellia, Violet Ruellia, Violet Wild Petunia, Wild Petunia. DESCRIPTION: Terrestrial perennial evergreen forb/herb or subshrub (12 to 40 inches in height); the flowers are blue, lavender or purple; flowering generally takes place between mid-March mid-October. HABITAT: Within the range of this species it has been reported from mountains; mesas; rocky canyons; rocky canyon bottoms; foothills; rocky slopes; alluvial fans; bajadas; amongst rocks; flats; roadsides; arroyos; sandy draws; along gullies; along streams; along rocky and sandy washes; cienegas; swales; banks of arroyos and washes; bottomlands; floodplains; openings in mesquite bosques; margins of stock tanks (charcos); in ditches; along ditch banks; riparian areas, and disturbed areas growing in dry rocky and sandy ground; loam ground, and clay ground often in shaded areas and amongst rocks, occurring from 1,900 to 4,300 feet in elevation in the woodland, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. *Ruellia nudiflora* is native to south-central and southern North America. *5, 6, 16, 43 (103109), 46 (Page 799), 63 (103109 - color presentation), 77 (color photograph #3), **85** (103109 - color presentation), 115 (color presentation)*

Ruellia nudiflora var. *glabrata* (see *Ruellia nudiflora* var. *nudiflora*)

Siphonoglossa longiflora (see *Justicia longii*)

Amaranthaceae: The Amaranth Family

***Amaranthus fimbriatus* (J. Torrey) G. Bentham ex S. Watson: Fringed Amaranth**

SYNONYMY: *Amaranthus fimbriatus* (J. Torrey) G. Bentham ex S. Watson var. *fimbriatus*. COMMON NAMES: Bledo, Fringed Amaranth, Fringed Pigweed, Guey Cimarron (Mayo), Quelite, Quelite Cimarron (Mayo), Quelitillo, Siim (Seri), Toothed Amaranth, Wee'e (Yaqui), Ziim C Ic (Seri), Ziim Cáitic (Seri). DESCRIPTION: Terrestrial annual forb/herb (6 to 64 inches in height); the stems may be green, pink or pink-red; the foliage may be green or purple, pinkish-purple, pink-red or reddish; the flowers (in spikes) are green, pink, pinkish-white or white; flowering generally takes place between early March and late November (additional records: two record for mid-December and two for late December), the fruits are pinkish-purple. HABITAT: Within the range of this species it has been reported from mountains; mesas; cliffs; rocky canyons; rocky and gravelly-sandy canyon bottoms; ridgetops; foothills; bouldery, bouldery-gravelly and rocky hills; hilltops; rocky hillsides; bouldery-rocky, rocky, gravelly, gravelly-sandy and sandy slopes; rocky alluvial fans; gravelly bajadas; rocky outcrops; amongst boulders; sandy-silty lava flows; sand hills; sand dunes; sand hummocks; blow-sand deposits; sandy plains; gravelly and sandy flats; valley floors; coastal dunes; coastal flats; along railroad right-of-ways; along gravelly roadsides; within rocky arroyos; bottoms of arroyos; draws; springs; riverbeds; along and in rocky, rocky-sandy, sandy and sandy-clayey washes; waterholes; silty lakebeds; playas; marshes; along banks of rivers and washes; sandy-clayey edges of washes, lagoons and swales; margins of esteros; mudflats; cobbly and sandy beaches; sandy floodplains; sandy mesquite bosques; stock tanks (charcos), riparian areas, and disturbed areas growing in dry bouldery, bouldery-rocky, bouldery-gravelly, bouldery-sandy, rocky, rocky-sandy, cobbly, gravelly, gravelly-sandy and sandy ground; gravelly loam ground; sandy clay ground, and sandy silty and silty ground, occurring from sea level to 5,600 feet in elevation in the woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant was reported to have been utilized by native peoples of North America and could be investigated to determine its value as a home garden or commercial food crop. *Amaranthus fimbriatus* is native to southwest-central and southern North America. *5, 6, 15, 16, 43 (110109), 46 (Page 266), 63 (110109), 68, 77, **85** (110109 - color presentation), 115 (color presentation), 127*

Amaranthus fimbriatus var. *fimbriatus*: (see *Amaranthus fimbriatus*)

Cladothrix lanuginosa (see *Tidestromia lanuginosa*)

***Tidestromia lanuginosa* (T. Nuttall) P.C. Standley: Woolly Tidestromia**

SYNONYMY: *Cladothrix lanuginosa* T. Nuttall. COMMON NAMES: Espanta Vaqueras, Espanta Vaqueros (Spanish), Herba Lanuda, Hierba Ceniza, Honeymat, Honeysweet, Kau Ee Oona (Yaqui), White Mat, Woolly Honeysweet, Woolly Mat, Woolly Tidestromia, Wooly Tidestromia. DESCRIPTION: Terrestrial prostrate annual forb/herb (3 to 20 inches in height and 8 inches to 5 feet in diameter); the plants are gray, gray-green, reddish, white-green, whitish or yellowish-green; the stems are pink, purple, red or red-purple; the flowers are white, yellow or yellowish-green; flowering generally takes place between late June and late November (additional record: one for mid-May). HABITAT: Within the range of this species it has been reported from mountains; mesas; canyons; canyon bottoms; talus; sandy ridges; sandy foothills; rocky and sandy hills; rocky hillsides; bouldery, rocky, gravelly, gravelly-sandy, gravelly-loamy and sandy slopes; alluvial fans; rocky bajadas; lava flows; sand hills; sand dunes; sand hummocks; sandy plains; sandy and clayey flats; basins; sandy valley floors; valley bottoms; coastal dunes; coastal flats; coastal beaches; along roadbeds; along gravelly-loamy, sandy, sandy-loamy and clayey roadsides; along sandy arroyos; draws; gullies; ravines; sandy riverbeds; along and in rocky,

gravelly and sandy washes; along drainages; along drainage ways; depressions; swales; banks of rivers and washes; sandy edges of washes; rocky-sandy shores of lakes; mudflats; sandy beaches; sandy-loamy terraces; sandy-silty lowlands; along sandy floodplains; mesquite bosques; sandy riparian areas, and disturbed areas growing in muddy and wet, moist, damp or dry bouldery, rocky, gravelly and sandy ground; gravelly loam and sandy loam ground; gravelly clay, sandy clay and clay ground, and gravelly-sandy silty, sandy silty and silty ground, occurring from sea level to 7,000 feet in elevation in the woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: Woolly Tidestromia is an alternate host plant of the Beet Leafhopper (*Circulifer tenellus*). Subspecies and varieties for this species may or may not be recognized by various sources. *Tidestromia lanuginosa* is native to south-central and southern North America. *5, 6, 16, 28 (color photograph), 43 (110109, no records located for varieties or subspecies), 46 (Page 268), 58, 63 (110109 - color presentation), 77, **85** (110209 - also recorded as *Tidestromia lanuginosa* ssp. *eliassoniana* Sanchez-del Pino & Olivera, *Tidestromia lanuginosa* (T. Nuttall) P.C. Standley ssp. *eliassonii* Sánchez-del Pino & Flores-Olvera, *Tidestromia lanuginosa* ssp. *lanuginosa* (Nutt.) Stand. and *Tidestromia lanuginosa* var. *lanuginosa* (Nutt.) Stand., color presentation), 106 (110109 - *Circulifer tenellus* C.F. Blake), 115 (color presentation)*

Tidestromia lanuginosa ssp. *eliassoniana* (see footnote 85 under *Tidestromia lanuginosa*)

Tidestromia lanuginosa ssp. *eliassonii* (see footnote 85 under *Tidestromia lanuginosa*)

Tidestromia lanuginosa ssp. *lanuginosa* (see footnote 85 under *Tidestromia lanuginosa*)

Tidestromia lanuginosa var. *lanuginosa* (see footnote 85 under *Tidestromia lanuginosa*)

Anacardiaceae: The Sumac Family

Rhus aromatica (see NOTES under *Rhus trilobata* var. *trilobata*)

Rhus aromatica var. *pilosissima* (see *Rhus trilobata* var. *pilosissima*)

Rhus aromatica var. *trilobata* (see *Rhus trilobata* var. *trilobata*)

***Rhus trilobata* T. Nuttall var. *pilosissima* G. Engelmann: Pubescent Skunkbush Sumac**

SYNONYMY: *Rhus aromatica* W. Aiton var. *pilosissima* (G. Engelmann) L.H. Shinners. COMMON NAMES: Lemonade Berry, Pubescent Skunkbush Sumac, Skunk Bush, Squawbush. DESCRIPTION: Terrestrial perennial deciduous shrub (1 to 6½ feet in height); the bark is gray or gray-brown; the stems are arching and spreading; the leaves are green, dark green or yellow-green turning a brilliant yellow to red before dropping in the fall; the flowers may be cream, cream-green, cream-yellow, green, green-yellow, greenish-red, greenish-white, reddish, white-cream, yellow or yellow-green; based on few records located, flowering generally takes place between mid-March and early July (additional records: one for mid-September and one for early November); the fruits are red-orange. HABITAT: Within the range of this species it has been reported from mountains; canyons; rocky-gravelly canyon bottoms; bouldery bases of rock cliffs; bouldery-sandy buttes; foothills; shaley-clayey hills; gravelly hillsides; rocky escarpments; sandy bases of escarpments; gravelly, gravelly-loamy and loamy slopes; rocky outcrops; amongst boulders; lava flows; sandhills; breaks; sandy prairies; plains; flats; valley floors; along gravelly roadsides; within arroyos; bottoms of arroyos; draws; ravines; springs; along streams; along streambeds; benches; along ditches, and sandy riparian areas growing in dry bouldery, bouldery-sandy, rocky, rocky-gravelly, cindery, gravelly, gravelly-sandy and sandy ground; gravelly loam and loam ground, and shaley clay ground, occurring from 1,500 to 8,000 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be

an attractive component of a restored native habitat, it may form thickets some of which have reached 30 feet in diameter. This plant was reported to have been utilized by native peoples of North America and could be investigated to determine its value as a home garden or commercial food, beverage and/or fiber (stems used in basketry) crop; it was also noted as having been used as a drug or medication. It is a useful plant in the re-vegetation of disturbed areas and excellent for use in erosion control. It provides cover for many mammals and birds. Bighorn Sheep (*Ovis canadensis*), cottontails, Elk (*Cervus elaphus*), jackrabbits, Mule Deer (*Odocoileus hemionus*), Porcupines (*Erethizon dorsatum*), Pronghorn (*Antilocapra americana*), White-tailed Deer (*Odocoileus virginianus*) and small mammals feed on the foliage and twigs, and Black Bears (*Ursus americanus*), Bobwhite Quail (*Colinus virginianus*), Gambel's Quail (*Callipepla gambelii*), prairie chickens, Merriam's Turkey (*Meleagris gallopavo* subsp. *merriami*), Ruffed Grouse (*Bonasa umbellus*), Sage Grouse (*Centrocercus minimus*), Scaled Quail (*Callipepla squamata*), Sharp-tailed Grouse (*Tympanuchus phasianellus*), California (Valley) Quail (*Callipepla californica*), White-tailed Deer (*Odocoileus virginianus*), songbirds and other birds and small mammals feed on the berries. *Rhus trilobata* var. *pilosissima* is native to southwest-central North America. *5, 6, 15, 18 (species), 28 (color photograph of species- *Rhus trilobata*), 43 (082010 - *Rhus trilobata* T. Nuttall var. *pilosissima* G. Engelmann in A.DC.), 46 (Pages 523-524), 63 (082010), 77, 85 (082010), 115 (color presentation of species), 127*

***Rhus trilobata* T. Nuttall var. *trilobata*: Skunkbush Sumac**

SYNONYMY: *Rhus aromatica* W. Aiton var. *trilobata* (T. Nuttall) A. Gray ex S. Watson. COMMON NAMES: Agrillas (Hispanic), Agrito (Hispanic), Chascarillo, Ill-scented Sumac, Lantrisco, Lemita, Lemonade Berry, Lemonade-berry, Lemonade Bush, Lemonade Sumac, Lentisco, Limonita, Skunk Bush, Skunk-bush, Skunkbush Sumac, Squaw Berry, Squaw Bush, Squaw-bush, Threeleaf Sumac. DESCRIPTION: Terrestrial perennial deciduous shrub (2 to 10 feet in height, one plant was described as being 10 feet in height and 6½ feet in width); the bark may be gray or gray-brown; the stems are arching and spreading; the leaves are green, dark green or yellow-green turning a brilliant yellow to red before dropping in the fall; the flowers may be whitish, whitish-green, yellow, yellowish-green or yellowish-white; flowering generally takes place between late February and late October (additional records: one for early January, one for early February and one for mid-November); the mature berries are bright orange, orange-red, red, red-orange or yellowish-orange. HABITAT: Within the range of this species it has been reported from mountains; mountaintops; rocky-sandy and sandy mesas; plateaus; canyon rims; shaley and chalky cliffs; bases of cliffs; talus slopes; clayey walls; along rocky canyons; rocky and stony canyon walls; canyon bottoms; crevices in boulders; rocky, shaley, clayey and silty bluffs; bases of bluffs; rocky-gravelly-clayey, rocky, shaley, stony and chalky buttes; tops of buttes; hogbacks; rocky, stony, gravelly, sandy and chalky knolls; rocky, rocky-gravelly-silty, sandy and clayey ledges; along rocky, rocky-shaley, rocky-gravelly, rocky-sandy, shaley-sandy, stony-sandy, stony-clayey, gravelly-sandy and sandy ridges; rocky, rocky-sandy, rocky-loamy-clayey, shaley, gravelly-clayey and sandy ridgetops; bases of ridges; rocky, stony and sandy meadows; foothills; bouldery, rocky, shaley, stony, cindery, gravelly, sandy, sandy-clayey and chalky hills; rocky and cindery hilltops; rocky, rocky-sandy, sandy and chalky hillsides; bouldery, rocky, rocky-gravelly, rocky-sandy, rocky-sandy-clayey-loamy, rocky-loamy, rocky-clayey, shaley, shaley-sandy, stony, stony-gravelly, stony-sandy, cobbly, cobbly-sandy, gravelly, gravelly-sandy, gravelly-loamy, gravelly-clayey, gravelly-clayey-loamy, pebbly, sandy, sandy-loamy, sandy-clayey, sandy-silty, loamy, clayey, clayey-loamy and silty slopes; rocky, shaley, sandy and sandy-clayey outcrops; along bases of rock outcrops; amongst boulders and rocks; bases of boulders; shady alcoves; cindery lava flows; sand dunes; shady niches; rocky banks; shaley, shaley-clayey-loamy, sandy and clayey breaks; moraines; loamy and loamy-clayey prairies; stony, sandy and chalky plains; rocky, stony, cobbly, gravelly, gravelly-loamy and sandy flats; basins; sandy valley floors; valley bottoms; along sandy river valleys; railroad right-of-ways; gravelly, gravelly-loamy, gravelly-clayey and sandy roadsides; along rocky-gravelly-sandy, rocky-sandy, cobbly, gravelly-sandy, sandy and chalky draws; bottoms of draws; within gulches; along sandy and silty-loamy gullies; bottoms of gullies; along rocky, cindery and sandy ravines; sandy bottoms of ravines; seeps; springs; sandy soils along streams; along rocky, gravelly-clayey and

sandy streambeds; along and in creeks; along sandy-loamy and loamy creekbeds; in sand along rivers; along and in rocky riverbeds; along and in bedrock & bouldery-sandy, rocky-gravelly-sandy, stony-gravelly, gravelly, gravelly-sandy, sandy and loamy-clayey washes; within rocky, shaley, gravelly, gravelly-sandy, sandy, clayey and silty-loamy drainages; along watercourses; marshes; sandy bowls; silty-loamy depressions; swales; along (bedrock, bouldery-gravelly-sandy, rocky, loamy and loamy-clayey) banks of draws, streams, creeks, rivers, washes and drainages; (sandy) edges of streams, rivers and washes; (sandy) margins of creeks, rivers and lakes; (gravelly, gravelly-sandy, gravelly-clayey, sandy and clayey) shores of creeks and rivers; mudflats; bouldery sandbars; stony-gravelly, cobbly and cobbly-clayey-loamy benches; terraces; sandy bottomlands; floodplains; stock ponds; along banks of reservoirs; canals; canal banks; along ditches; rocky and sandy riparian areas, and disturbed areas growing in wet, moist and dry bouldery, bouldery-gravelly-sandy, bouldery-sandy, rocky, rocky-shaley, rocky-gravelly, rocky-gravelly-sandy, rocky-sandy, shaley, shaley-sandy, stony, stony-gravelly, stony-sandy, cobbly, cobbly-sandy, cindery, gravelly, gravelly-sandy, pebbly and sandy ground; rocky loam, rocky-sandy-clayey loam, shaley-clayey loam, cobbly-clayey loam, gravelly loam, gravelly-clayey loam, sandy loam, silty loam and loam ground; rocky-gravelly clay, rocky clay, rocky-silty clay, shaley clay, gravelly clay, sandy clay, loamy clay, silty clay and clay ground; rocky-gravelly silty, sandy silty and silty ground, and chalky ground, occurring from 1,200 to 9,800 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat, it may form thickets some of which have reached 30 feet in diameter. Variety *trilobata* is reportedly ill-scented. This plant was reported to have been utilized by native peoples of North America and could be investigated to determine its value as a home garden or commercial food and/or beverage crop; the species, *Rhus trilobata*, was also noted as having been used as a spice, fiber (used in basketry and making furniture), fuel, for making tools and dyes (black, blue, red, red-brown, and the fruits were used for the mordant effect), for incense and fragrance, as a drug or medication and in the making of ceremonial items. According to one current treatment of *Rhus aromatica*, all Arizona specimens of this species belong to *Rhus trilobata* T. Nuttall var. *trilobata*. It is may be useful in the re-vegetation of disturbed areas and excellent for use in erosion control. It provides cover for many mammals and birds. Bighorn Sheep (*Ovis canadensis*), cottontails, Elk (*Cervus elaphus*), jackrabbits, Mule Deer (*Odocoileus hemionus*), Porcupines (*Erethizon dorsatum*), Pronghorn (*Antilocapra americana*), White-tailed Deer (*Odocoileus virginianus*) and small mammals feed on the foliage and twigs, and Black Bears (*Ursus americanus*), Bobwhite Quail (*Colinus virginianus*), Gambel's Quail (*Callipepla gambelii*), prairie chickens, Merriam's Turkey (*Meleagris gallopavo* subsp. *merriami*), Ruffed Grouse (*Bonasa umbellus*), Sage Grouse (*Centrocercus minimus*), Scaled Quail (*Callipepla squamata*), Sharp-tailed Grouse (*Tympanuchus phasianellus*), California (Valley) Quail (*Callipepla californica*), White-tailed Deer (*Odocoileus virginianus*), songbirds and other birds and small mammals feed on the berries. Calliphorid Flies have been observed visiting the flowers. *Rhus trilobata* var. *trilobata* is native to northwest-central, south-central and southern North America. *5, 6, 13 (recorded as *Rhus aromatica* Aiton var. *trilobata* (Nutt.) A. Gray), 18, 28 (color photograph of species, *Rhus trilobata*), 30 (species), 43 (081310 - *Rhus trilobata* Nutt.), 46 (species, Pages 523-524), 48 (species), 63 (081310), **85** (081610 - color presentation), 115 (color presentation of species), 127*

Apiaceae (Umbelliferae): The Carrot Family

***Bowlesia incana* H. Ruiz Lopez & J.A. Pavon: Hoary Bowlesia**

COMMON NAMES: American Bowlesia, Bowlesia, Hairy Bowlesia, Hoary Bowlesia, Miner's Lettuce. DESCRIPTION: Terrestrial annual forb/herb (creeping prostrate stems to 2 inches in height and 2 to 24 inches in length); the foliage is pale green or green; the inconspicuous flowers are greenish-white, pink, purple, white, white-green or yellowish-green; flowering generally takes place between late January and late May (additional records: one for mid-June and one for early July). HABITAT: Within the range

of this species it has been reported from mountains; mountainsides; mesas; plateaus; rocky canyons; rocky canyon bottoms; bases of cliffs; crevices in rocks; buttes; rocky ledges; rocky ridgetops; meadows; foothills; bouldery hills; clayey hilltops; bouldery hillsides; bouldery, rocky, gravelly, gravelly-sandy and clayey slopes; gravelly bajadas; rocky outcrops; amongst boulders and rocks; lava fields; plains; rocky and gravelly flats; basins; valley floors; along roadsides; draws; along gullies; ravines; seeps; along streams; along creeks; around creekbeds; along rivers; riverbeds; along and in rocky-sandy, gravelly, gravelly-sandy, sandy and sandy-clayey washes; within rocky-clayey drainages; along and in drainage ways; swampy areas; swales; along rocky and gravelly-sandy banks of arroyos, creeks, rivers and washes; sandy benches; loamy bottomlands; floodplains; lowlands; bottoms of tanks; ditches; ditch banks; rocky and sandy riparian areas; waste places, and disturbed areas growing in wet, moist, damp and dry bouldery, rocky, rocky-sandy, gravelly, gravelly-sandy and sandy ground; gravelly-clayey loam, sandy loam, humusy loam and loam ground; rocky clay, sandy clay and clay ground, and gravelly-sandy silty ground often in the shade of boulders, rocks, trees, shrubs and other vegetation, occurring from sea level to 5,200 feet in elevation in the woodland, scrub, grassland, desertscrub and wetland ecological formation. NOTE: *Bowlesia incana* is native to southwest-central and southern North America, and South America. *5, 6, 15, 16, 43 (110209), 46 (Page 609), 58, 63 (110209 - color presentation), 68, 77, **85** (110309 - color presentation), 106 (110209), 115 (color presentation)*

Caucalis microcarpa (see *Yabea microcarpa*)

***Daucus pusillus* A. Michaux: American Wild Carrot**

COMMON NAMES: American Carrot, American Wild Carrot, Rattlesnake Carrot, Rattlesnake Weed (California), Rattlesnake-weed, Rattlesnakeweed, Seedticks, Southwest Wild Carrot, Southwestern Carrot, Wild Carrot, Zanahoria Silvestre. DESCRIPTION: Terrestrial annual forb/herb (1 to 40 inches in height); the flowers may be cream, greenish-white, purplish, white or light yellow; flowering generally takes place between early March and late June (additional record: one for early September); the seed heads are reddish. HABITAT: Within the range of this species it has been reported from bouldery and rocky mountains; rocky, rocky-sandy and sandy-clayey mesas; plateaus; rocky and stony canyons; rocky and sandy-loamy canyon bottoms; rocky talus slopes; bases of cliffs; bluffs; rocky knobs; clayey-loamy and silty-loamy ridges; bouldery ridgetops; rocky foothills; bouldery, rocky, rocky-clayey and clayey hills; bouldery hilltops; rocky, rocky-clayey and loamy hillsides; bouldery, bouldery-gravelly, rocky, rocky-gravelly-loamy, rocky-clayey, gravelly, sandy, loamy, clayey and clayey-loamy slopes; rocky-sandy-loamy alluvial fan; bajadas; bouldery and rocky outcrops; amongst rocks; along shaded bases of rocks; sandy plains; cobbly-sandy-loamy, cobbly-sandy-loamy-clayey, gravelly and sandy flats; basins; clayey valley bottoms; coastal marshes; gravelly edges of railroadbeds; along rocky, gravelly and sandy roadsides; along bouldery arroyos; silty draws; gullies; around springs; moist sandy soil along streams; sandy streambeds; along rivers; riverbeds; along and in rocky, rocky-clayey, gravelly, gravelly-sandy and sandy washes; drainages; along and in drainage ways; clayey freshwater marshes; clayey depressions; gravelly-sandy and sandy banks of arroyos, streams and rivers; clayey edges of creeks and salt marshes; margins of washes; mudflats; along sandy benches; sandy terraces; sandy bottomlands; floodplains; canals; gravelly-sandy and sandy riparian areas, and disturbed areas growing in moist, damp and dry bouldery, bouldery-gravelly, rocky, rocky-sandy, stony, gravelly, gravelly-sandy and sandy ground; rocky-gravelly loam, rocky-sandy loam, cobbly-sandy loam, gravelly loam, gravelly-clayey loam, sandy loam, clay loam, silty loam and loam ground; rocky clay, cobbly-sandy-loamy clay and clay ground, and silty ground, occurring from sea level to 5,500 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant was reported to have been utilized by native peoples of North America and could be investigated to determine its value as a home garden or commercial food crop; it was also noted as having been used as a drug or medication and as a talisman in gambling (a good luck charm). *Daucus pusillus* is native to northwest-central, south-central and southern North America and central and southern South America. *5, 6, 16, 28 (color photograph), 43 (110309),

46 (Page 612), 58, 63 (110309 - color presentation), 77, **85** (110409 - color presentation), 115 (color presentation), 127*

Lilaeopsis recurva (see *Lilaeopsis schaffneriana* var. *recurva*)

Lilaeopsis schaffneriana subsp. *recurva* (see *Lilaeopsis schaffneriana* var. *recurva*)

***Lilaeopsis schaffneriana* (D.F. von Schlechtendal) J.M. Coulter & J.N. Rose var. *recurva* (A.W. Hill) J.M. Affolter: Schaffner's Grasswort**

SYNONYMY: *Lilaeopsis recurva* A.W. Hill, *Lilaeopsis schaffneriana* (D.F. von Schlechtendal) J.M. Coulter & J.N. Rose subsp. *recurva* (A.W. Hill) J.M. Affolter. COMMON NAMES: Cienega False Rush, Cienega False-rush, Cienega Water Umbel, Huachuca Water Umbel, Huachuca Water-umbel, Huachuca Waterumbel, Schaffner Grasswort, Schaffner's Grasswort. DESCRIPTION: Terrestrial aquatic to semi-aquatic perennial forb/herb (leaves 1½ to 9 inches in height); the leaves are yellow-green; the tiny flowers are cream, greenish or white; based on few flowering records examined, flowering generally takes place between late May and late June (flowering records: one for late January, two for late May, two for early June, two for mid-June, one for late June, one for mid-July and one for late August; flowering beginning as early as March and ending as late as October has been reported). HABITAT: Within the range of this species it has been reported from mountains; rocky mountain slopes; hillsides; along draws; perennial seeps; in springs; along streams; streambeds; along creeks; along rivers; around and in ponds; around and in lakes; cienegas; marshlands; muddy banks, and riparian areas growing in shallow water; muddy, and wet rocky and sandy ground and silty ground, occurring from 2,000 to 7,100 feet in elevation in the forest, woodland, grassland, desertscrub and wetland ecological formations. NOTES: This species has been recorded as having once occurred in the valley of the Santa Cruz River near Tucson. *Lilaeopsis schaffneriana* var. *recurva* is native to southwest-central and southern North America. *5, 6, 8, 9 (color photograph), 43 (110509), **46** (*Lilaeopsis recurva* A.W. Hill (Santa Cruz River valley near Tucson, Pima County - Pringle in 1881, the type collection), Page 617), 63 (110509), 85 (110509 - detailed information is masked - color presentation)*

***Lomatium nevadense* (S. Watson) J.M. Coulter & J.N. Rose: Nevada Biscuitroot**

COMMON NAMES: Nevada Biscuitroot, Nevada Desert-parsley, Parish Biscuitroot, Parish's Biscuitroot, Wild Parsley. DESCRIPTION: Terrestrial perennial forb/herb (erect stems 4 to 20 inches in height); the lower portion of the stem, below the leaves, is purple-red; the leaves are gray-green, grayish-green and dark green; the flowers are cream, cream-white, creamy-yellow, pale purple, purple, purplish, white, white-pinkish, white with a purple tinge, whitish, yellow, yellow-orange or pale yellowish; the anthers are purple, dark purple or reddish; flowering generally takes place between late February and early July (additional records: two for early August, one for mid-August and one for early November). HABITAT: Within the range of this species it has been reported from mountains; rocky mountaintops; bouldery-silty-clayey and sandy mesas; canyon rims; canyons; canyonsides; talus slopes; rocky spurs; knolls; ledges; rocky and sandy ridges; ridgetops; rocky clearings in forests; meadows; foothills; rocky and clayey hills; rocky hilltops; rocky and sandy hillsides; bases of hills; bouldery-silty, bouldery-silty-clayey, rocky, rocky-sandy, gravelly, gravelly-sandy, gravelly-loamy, sandy, clayey and clayey-loamy slopes; rocky outcrops; amongst boulders and rocks; prairies; rocky fields; rocky, stony and gravelly-loamy flats; rocky basins; along gravelly, gravelly-sandy and sandy roadsides; along draws; rocky ravines; along creeks; along and in sandy washes; along and in drainages; (gravelly) banks of rivers; along edges of creeks; shores of lakes; lowlands; riparian areas; waste places, and disturbed areas growing in moist, damp and dry bouldery, bouldery-sandy, rocky, rocky-gravelly, rocky-sandy, gravelly, gravelly-sandy and sandy ground; rocky-sandy loam, rocky-clayey loam, stony-gravelly-silty loam, stony-silty loam, gravelly-loamy, gravelly-silty loam, sandy loam, clayey loam and silty loam ground; bouldery-silty clay, rocky clay, gravelly clay, silty clay and clay ground; bouldery silty, shaley silty and silty ground, and chalky ground, occurring from 1,500 to 9,900 feet in elevation in the forest, woodland, scrub, grassland,

desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. This plant was reported to have been utilized by native peoples of North America and could be investigated to determine its value as a home garden or commercial food crop. *Lomatium nevadense* is native to southwest-central and southern North America. *5, 6, 43 (082410 - *Lomatium nevadense* J.M. Coult. & Rose), 46 (Page 622), 58, 63 (082410 - color presentation), **85** (082610 - color presentation), 127*

***Lomatium nevadense* (S. Watson) J.M. Coulter & J.N. Rose var. *nevadense* (J.M. Coulter & J.N. Rose) W.L. Jepson: Biscuitroot**

COMMON NAMES: Nevada Biscuitroot, Nevada Desert-parsley, Wild Parsley. DESCRIPTION: Terrestrial perennial forb/herb (erect stems 4 to 20 inches in height); the leaves are gray-green or grayish-green; the flowers are cream, creamy-yellow or white; the anthers are purple; flowering generally takes place between late February and mid-June (additional records: one for early July, two for early August and one for early November). HABITAT: Within the range of this species it has been reported from mountains; knolls; gravelly ridges; foothills; clayey hills; rocky hillsides; rocky and gravelly, gravelly-sandy, clayey and clayey-loamy slopes; rocky outcrops; amongst boulders; rocky and stony flats; along roadsides; along and in washes; along drainages, and lowlands growing in moist and dry bouldery, bouldery-sandy, rocky, rocky-gravelly, stony, gravelly, gravelly-sandy and sandy ground; stony-gravelly-silty loam, gravelly-silty loam, clayey loam and silty loam ground; clay ground, and shaley silty ground, occurring from 2,500 to 9,600 feet in elevation in the forest, woodland, grassland and desertscrub ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. The species, *Lomatium nevadense*, was reported to have been utilized by native peoples of North America and could be investigated to determine its value as a home garden or commercial food crop. *Lomatium nevadense* var. *nevadense* is native to southwest-central and southern North America. *15, 43 (082410 - *Lomatium nevadense* J.M. Coult. & Rose), 46 (Page 622), 63 (082410 - color presentation), **77**, 85 (082610), 127 (species)*

Lomatium nevadense var. *pseudorientale* (see *Lomatium nevadense* var. *parishii*)

***Lomatium nevadense* (S. Watson) J.M. Coulter & J.N. Rose var. *parishii* (J.M. Coulter & J.N. Rose) W.L. Jepson: Parish's Biscuitroot**

SYNONYMY: *Lomatium nevadense* (S. Watson) J.M. Coulter & J.N. Rose var. *pseudorientale* (M.E. Jone) P.A. Munz. COMMON NAMES: Parish Biscuitroot, Parish's Biscuitroot. DESCRIPTION: Terrestrial perennial forb/herb (erect stems 4 to 20 inches in height); the leaves are gray-green; the flowers are pinkish-purple, pale purple, white, white with whitish-pink margins or yellow-orange; the anthers are purple or dark purple; flowering generally takes place between late February and early June (additional record: one for late June). HABITAT: Within the range of this species it has been reported from mountains; rocky mountaintops; bouldery-silty-clayey mesas; canyons; talus slopes; ledges; sandy ridges; rocky clearings in forests; meadows; foothills; rocky hills; rocky hilltops; rocky hillsides; bouldery-silty, bouldery-silty-clayey, rocky, gravelly, sandy and clayey slopes; rocky outcrops; prairies; rocky flats; along gravelly-sandy and sandy roadsides; along draws; rocky ravines; shores of lakes; riparian areas, and waste places growing in dry rocky, gravelly, gravelly-sandy and sandy ground; rocky-clayey loam ground; bouldery-silty clay, rocky clay, gravelly clay, silty clay and clay ground; bouldery silty ground, and chalky ground, occurring from 2,200 to 8,300 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. This plant was reported to have been utilized by native peoples of North America and could be investigated to determine its value as a home garden or commercial food crop. *Lomatium nevadense* var. *parishii* is native to southwest-central and southern North America. *5, 6, 43 (082410 - *Lomatium nevadense* J.M. Coult. & Rose var. *pseudorientale* Munz, *Lomatium nevadense* J.M. Coult. & Rose var. *parishii* Jeps.), 46 (Page 622), 58 (recorded as *Lomatium nevadense* (Wats.) Coulter & Rose var. *pseudorientale* (Jone) Munz), 63 (082410), **85** (082610 - color presentation), 127*

***Spermolepis echinata* (T. Nuttall ex A.P. de Candolle) A.A. Heller: Bristly Scaleseed**

COMMON NAMES: Beggar's Lice, Bristly-fruit Scaleseed, Bristly Scaleseed, Scale Seed, Scaleseed, Wild Carrot. DESCRIPTION: Terrestrial annual forb/herb (2 to 8 inches in height); the minute flowers are cream, greenish-white, white or yellow-white; flowering generally takes place between mid-February and late April (additional records: one for late May and one for mid-July). HABITAT: Within the range of this species it has been reported from mountains; mesas; sandy canyons; along canyon bottoms; foothills; rocky hills; hillsides; rocky, rocky-gravelly-loamy, gravelly, gravelly-sandy and gravelly-loamy slopes; rocky-sandy alluvial fans; gravelly bajadas; amongst rocks; gravelly and sandy flats; valley floors; valley bottoms; gravelly railroad right-of-ways; stony, gravelly and sandy roadsides; sandy and silty-loamy draws; bottoms of draws; springs; moist clayey soils along streams; along creeks; along rivers; riverbeds; along and in gravelly and sandy washes; gravelly-sandy drainage ways; banks of arroyos; channel bars; benches; sandy floodplains; reservoirs; gravelly-sandy riparian areas, and disturbed areas growing in wet, moist, damp and dry rocky, rocky-sandy, stony, gravelly, gravelly-sandy and sandy ground and rocky-gravelly loam, gravelly loam and silty loam ground, occurring from 100 to 6,000 feet in elevation in the woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTE: *Spermolepis echinata* is native to south-central and southern North America. *5, 6, 15, 16, 43 (110509 - no record), 46 (Page 610), 58, 63 (110509), 77, **85** (110509 - color presentation)*

***Yabea microcarpa* (W.J. Hooker & G.A Arnott) B.M. Koso-Poljansky: False Carrot**

SYNONYMY: *Caucalis microcarpa* W.J. Hooker & G.A. Arnott. COMMON NAMES: California Hedge Parsley, False Carrot, Falsecarrot; False Hedge Parsley, False Hedge-parsley, Hedge Parsley, Wild Parsley. DESCRIPTION: Terrestrial annual forb/herb (1 to 16 inches in height); the flowers are white; flowering generally takes place between late February and late May. HABITAT: Within the range of this species it has been reported from mountains; mesas; cliffs; rocky, gravelly, gravelly-sandy and sandy canyons; rocky canyon bottoms; talus slopes; bases of cliffs; buttes; rocky ridges; rocky hills; rocky and clayey hillsides; bouldery, rocky, rocky-gravelly, gravelly, loamy and clayey-loamy slopes; rocky outcrops; amongst rocks; gravelly and sandy flats; basins; along grassy roadsides; gulches; along seeps; along streams; along creeks; rocky creekbeds; along rivers; along rocky and rocky-gravelly washes; along and in drainage ways; along banks of washes; sandy benches; riparian areas, and disturbed areas growing in dry bouldery, rocky, rocky-gravelly, gravelly, gravelly-sandy and sandy ground; cobbly-gravelly loam, sandy loam, clayey loam and loam ground, and stony clay and clay ground, occurring from sea level to 6,600 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTE: *Yabea microcarpa* is native to west-central and southern North America. *5, 6, 15, 16, 43 (110509 - *Yabea microcarpa* Koso-Pol.), 46 (*Caucalis microcarpa* Hook. & Arn., Page 612), 58, 63 (110509), 77, **85** (110509 - color presentation)*

Apocynacaeae: The Dogbane Family

Haplophyton cimicidum (see *Haplophyton crooksii*)

Haplophyton cimicidum var. *crooksii* (see *Haplophyton crooksii*)

***Haplophyton crooksii* (L.D. Benson) L.D. Benson: Cockroachplant**

SYNONYMY: *Haplophyton cimicidum* auct. non A.L. de Candolle, *Haplophyton cimicidum* A.L. de Candolle var. *crooksii* L.D. Benson. COMMON NAMES: Actimpatli, Atempatli, Arizona Cockroach Plant, Cockroachplant, Crooks Cockroachplant, Hierba-de-la-cucuracha (Hispanic). DESCRIPTION: Terrestrial perennial subshrub or shrub (7 to 40 inches in height); the foliage is dark green; the flowers are cream-white, green-yellow or yellow; flowering generally take place between mid-July and mid-November (additional records: one for early March, one for mid-April, two for late April, one for late

May and one for early December); the slender, smooth and elongate fruits are gray-green or green pods. HABITAT: Within the range of this species it has been reported from mountains; rocky canyons; canyon walls; canyon bottoms; rocky talus slopes; bases of cliffs; below rocky ledges; rocky ridges; foothills; rocky hills; rocky hillsides; bouldery, bouldery-rocky and rocky slopes; bouldery and rocky outcrops; amongst boulders and rocks; shade of boulders; valley bottoms; gulches; within rocky and gravelly drainages; within rocky drainage ways; rocky banks of creeks, drainages and drainage ways; floodplains, and riparian areas growing in dry bouldery, bouldery-rocky, rocky, gravelly and sandy ground and gravelly loam ground, occurring from 1,900 to 5,200 feet in elevation in the grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat, the flowers open in the evening and close in the early morning, this plant is slow growing and may be drought deciduous, it may best be used planted with succulents in rock gardens. *Haplophyton crooksii* is native to southwest-central and southern North America. *5, 6, 13, 15, 16, 43 (110509), 46 (Page 651), 58, 63 (0110509), 77 (color photograph #4), **85** (110509 - color presentation), 115 (color presentation), MBJ*

Aristolochiaceae: The Birthwort Family

***Aristolochia watsonii* E.O. Wooton & P.C. Standley: Watson's Dutchman's Pipe**

COMMON NAMES: Dutchman's Pipe, Dutchman's Pipevine, Hierba del Indio, Indian Root, Indian-root, Indianroot, Pipevine, Pipevine Flower, Raiz del Indio, Watson's Dutchman's Pipe, Watson Indian Root. DESCRIPTION: Terrestrial perennial deciduous (evergreen?) forb/herb or vine (a short creeping, trailing or twining vine 8 to 40 inches in length); the leaves are blackish, dark brown-purple, dark green, maroon-brown of the upper surface and pale dull green below, and purple or purple-green, the flowers blackish, brownish, brown with yellow spotted throat, green with maroon rim and dots in throat, green with purple spots, brownish-purple, purple, purple-brown, purple-green, purple-green-brown or reddish-brown; flowering generally takes place between mid-March and early October (additional records: one for mid-February, one for late November, one for mid-December and one for late December). HABITAT: Within the range of this species it has been reported from mountains; cliffs; canyons; canyon bottoms; shady hollows; bases of cliffs; crevices in boulders and rocks; ridges; pockets of sandy soil on ridges; rocky hills; rocky, rocky-gravelly and gravelly hillsides; rocky and loamy slopes; bajadas; rocky outcrops; amongst boulders and rocks; plains; gravelly, sandy and sandy-silty flats; loamy basins; hollows; valley floors; valley bottoms; along sandy roadsides; within gravelly, gravelly-sandy and sandy arroyos; bottoms of arroyos; gulches; sandy bottoms of ravines; along streams; along creeks; creekbeds; along rivers; gravelly-sandy riverbeds; along and in rocky, gravelly and sandy washes; along small drainages twining on Canyon Ragweed and White Ratany; along bouldery drainage ways; in cienegas with Sacaton; swamps; along bedrock, gravelly and sandy banks of creeks and washes; along edges of washes; benches; terraces; floodplains; mesquite bosques; bases of levees; around stock tanks; canals; gravelly riparian areas, and disturbed areas growing in moist and dry bouldery, rocky, rocky-gravelly, gravelly, gravelly-sandy and sandy ground, gravelly loam, gravelly-sandy loam, sandy clayey loam, silty loam and loam ground; clay ground, and sandy silty ground often reported as growing in shaded to heavily shaded areas and less often in full sun,, occurring from 100 to 5,500 feet in elevation in the woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat, consider using the Pipevine Flower as a ground cover in heavily shaded areas. The flowers may have a fetid odor. The Pipevine Flower is a larval food plant of the Pipevine Swallowtail Butterfly (*Battus philenor*). *Aristolochia watsonii* is native to southwest-central and southern North America. *5, 6, 15, 16, 43 (110609), 46 (alternate spelling *Aristolochia watsoni*, Page 227), 58, 63 (110609), 77 (color photograph #59), **85** (110608 - color presentation), 106 (071708 - information relating to the Pipevine Swallowtail Butterfly), 115 (color presentation)*

Asclepiadaceae: The Milkweed Family

***Asclepias nyctaginifolia* A. Gray: Mojave Milkweed**

COMMON NAMES: Four O'clock Milkweed, Four O'clock-leafed Milkweed, Hierba Lechosa, Mojave Milkweed. DESCRIPTION: Terrestrial perennial forb/herb (erect stems 4 to 24 inches in height); the leaves are dark purplish-green, green or green and tinged with dark purple; the flowers may be pale green, green, purplish-green, white or yellow-cream with yellowish to orangish hoods; flowering generally takes place between mid-April and mid-September (flowering ending as late as October has been reported); the fruit is pale green. HABITAT: Within the range of this species it has been reported from mountains; mesas; canyons; canyon bottoms; ridges; foothills; rocky-sandy and sandy hills; rocky hillsides; rocky, rocky-sandy and gravelly slopes; bajadas; plains; valleys; clayey roadsides; along and in arroyos; along and in rocky-sandy, gravelly, gravelly-sandy and sandy washes; sandy creekbeds; in sandy drainages; drainage ways; swales; margins of washes; sand bars; floodplains, and disturbed areas growing in dry rocky, rocky-sandy, gravelly and sandy ground; rocky-sandy loam and sandy loam ground, and clay ground, occurring from 1,500 to 6,700 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. This plant was reported to have been utilized by native peoples of North America; it was noted as having been used as a drug or medication. *Asclepias nyctaginifolia* is native to south-central and southern North America. *5, 6, 15, 16, 43 (110609), 46 (species within this genus may contain a glucoside that is poisonous to livestock, especially to sheep; however, the plants are seldom eaten, Page 662), 58, 63 (110609), 77 (color photograph #60), **85** (110609 - color presentation), 115 (color presentation), 127*

***Funastrum cynanchoides* (J. Decaisne) F.R. Schlechter subsp. *heterophyllum* (G. Engelmann ex J. Torrey) J.T. Kartesz: Hartweg's Twinevine**

SYNONYMY: *Funastrum heterophyllum* (G. Engelmann) P.C. Standley, *Sarcostemma cynanchoides* J. Decaisne subsp. *hartwegii* (A.M. Vail) R.W. Holm, *Sarcostemma cynanchoides* J. Decaisne var. *hartwegii* (A.M. Vail) L.H. Shinners. COMMON NAMES: Climbing Milkweed, Guirote Lechosa, Hartweg Climbing Milkweed, Hartweg's Twinevine, Hexe (Seri). DESCRIPTION: Terrestrial perennial forb/herb or vine (a climbing, sprawling and/or twining stem 20 inches to 20 feet in length); the leaves are dark green; the flowers may be dull cream-white & maroon, cream-purple, cream-white & purple, greenish-white, lilac-mauve, magenta-cream, maroon-cream, pinkish-white, purple, purple & cream, dull purplish & white, dull purplish-red & whitish, purplish-tan & white, violet-pink, white, white & brown, white & maroon, white & dull purple, white &purple or white & purple-maroon; flowering generally takes place between mid-March and early November (additional records: one for early February, one for mid-February, one for late November and one for mid-December). HABITAT: Within the range of this species it has been reported from mountains; bouldery-cobbly mesas; canyons; along rocky and gravelly-sandy canyon bottoms; ridges; clayey ridgetops; foothills; rocky and sandy hills; rocky hillsides; bouldery, rocky and gravelly slopes; bajadas; rocky outcrops; lava flows; sand dunes; bouldery-cobbly, cindery and sandy flats; bouldery basins; sandy valley floors; valley bottoms; coastal sand dunes; along sandy roadsides; along and in rocky and sandy arroyos; springs; along streams; along creeks; around creekbeds; along rivers; riverbeds; along and in rocky, gravelly, gravelly-sandy, gravelly-sandy-silty, sandy and sandy-silty washes; drainages; drainage ways; waterholes (tinajas); playas; swampy areas; (rocky, gravelly-sandy and sandy) banks of arroyos, streams, rivers, washes and drainages; along (gravelly) margins of arroyos and washes; gravel and sand bars; sandy benches; terraces; bottomlands; sandy floodplains; mesquite bosques; fencelines; canal banks; along ditches; sandy riparian areas, and disturbed areas growing in dry bouldery, bouldery-cobbly, rocky, rocky-sandy, cindery, gravelly, gravelly-sandy and sandy ground; rocky-gravelly-clayey loam and gravelly loam ground; clay ground, and gravelly-sandy silty and sandy silty ground, occurring from sea level to 5,000 feet in elevation in the woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. *Funastrum cynanchoides* subsp.

heterophyllum is native to southwest-central and southern North America. *5, 6, 15 (recorded as *Sarcostemma cynanchoides* Decne. var. *hartwegii* (Vail) Shinners), 16 (recorded as *Sarcostemma cynanchoides* Decne. var. *hartwegii* (Vail) Shinners), 43 (110709 - *Funastrum cynanchoides* Schltr. subsp. *heterophyllum* (Engelm. ex J. Torr.) Kartesz), 46 (recorded as *Funastrum heterophyllum* (Engelm.) Standl., Page 664), 58 (recorded as *Sarcostemma cynanchoides* Decne. ssp. *hartwegii* (Vail) R. Holm), 63 (110709), 68, 77 (recorded as *Sarcostemma cynanchoides* Decne. ssp. *hartwegii* (Vail) Holm), **85** (110809 - color presentation), 115 (color presentation of species)*

Funastrum heterophyllum (see *Funastrum cynanchoides* subsp. *heterophyllum*)

*Gonolobus parvifoliu*s (see *Matelea parvifolia*)

Gonolobus productus (see *Matelea producta*)

***Matelea parvifolia* (J. Torrey) R.E. Woodson: Spearleaf**

SYNONYMY: *Gonolobus parvifoliu*s J. Torrey. COMMON NAMES: Angle-pod, Anglepod, Littleleaf Matelea, Little Leaf Milk Vine, Milkweed Vine, Small-leaf Anglepod, Small-leaved Milkvine, Spearleaf. DESCRIPTION: Terrestrial perennial shrub or vine (a clambering, climbing and twining vine 16 inches to 5 feet in length); the stems are gray-green or green; the leaves are green; the flowers may be black, dark brownish-purple, green, greenish-purple, dark purple or purple-brown; based on few flowering records examined, flowering generally takes place between early March and mid-May and between mid-October and early December (flowering records: three for late January, three for early March, three for mid-March, four for late March, three for early April, two for mid-April, one for early May, one for mid-May, one for mid-October, one for late October, five for early November, one for mid-November, one for late November and one for early December); the fruits are long, warty, green seed pods. HABITAT: Within the range of this species it has been reported from rocky mountains; rocky mountainsides; mesas; rocky canyons; canyon bottoms; rocky ridge tops; ridgelines; rocky and stony-gravelly hills; rocky and rocky-gravelly hillsides; bouldery and rocky slopes; bajadas; amongst boulders and rocks; bouldery, cobbly, gravelly and gravelly-sandy flats; along roadsides; along arroyos; springs; rivers; along and in rocky washes; along drainages; edges of washes; floodplains, and rocky riparian areas growing in dry bouldery, rocky, rocky-gravelly, stony-gravelly, cobbly and gravelly soils, occurring from 1,200 to 5,000 feet in elevation in the woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTE: *Matelea parvifolia* is native to southwest-central and southern North America. *5, 6, 15, 16, 43 (110809), 46 (recorded as *Gonolobus parvifoliu*s Torr., Page 665), 63 (110809), 77, **85** (110809 - color presentation)*

***Matelea producta* (J. Torrey) R.E. Woodson: Texas Milkvine**

SYNONYMY: *Gonolobus productus* J. Torrey. COMMON NAME: Texas Milkvine. DESCRIPTION: Terrestrial perennial vine (prostrate, clambering, climbing, trailing or twining stems to 2 feet in height/length); the leaves may be pale green, green or dark green with lighter veins; the flowers are cream-white, pale green, green, green-yellow, greenish-yellow, light yellow tinged with green, pale yellow-green or yellowish-green; flowering generally takes place between late May and early October (additional records: one for early May and one for late October). HABITAT: Within the range of this species it has been reported from mountains; grassy mesas; cliffs; bases of cliffs; rocky canyons; canyon bottoms; ridges; rocky hills; bases of hills; rocky and gravelly-sandy slopes; bouldery bajadas; bases of rock outcrops; sandy flats; valley floors; along rocky-sandy roadsides; within arroyos; creeks; along and in cobbly and sandy washes; rocky-sandy drainages; terraces; floodplains; mesquite bosques; levees, and disturbed areas growing in dry bouldery, rocky, rocky-sandy, cobbly, gravelly-sandy and sandy ground and rocky-gravelly loam ground, occurring from 3,000 to 6,600 feet in elevation in the woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: The vines have a milky sap and an unpleasant smell. This plant was reported to have been utilized by native peoples of North America; it

was noted as having been used as a food (the seeds were eaten fresh or boiled). *Matelea producta* is native to southwest-central North America. *5, 6, 43 (081610), 46 (recorded as *Gonolobus productus* Torr., Page 665), 63 (081610), **77** (color photograph #5), 85 (081610 - color presentation)*

Sarcostemma cynanchoides subsp. *hartwegii* (see *Funastrum cynanchoides* subsp. *heterophyllum*)

Sarcostemma cynanchoides var. *hartwegii* (see *Funastrum cynanchoides* subsp. *heterophyllum*)

Asteraceae (Compositae): The Aster Family

***Acourtia nana* (A. Gray) J.L. Reveal & R.M. King: Dwarf Desertpeony**

SYNONYMY: *Perezia nana* A. Gray. COMMON NAMES: Ban Auppa-ga (Gila River Pima), Desert Holly, Desert-holly, Dwarf Desertpeony. DESCRIPTION: Terrestrial perennial forb/herb (2 to 10 inches in height, plants 4 to 5 inches in height and 3 to 6 inches in width were reported); the holly-like leaves are pale grayish-green or olive-green; the flowers may be cream, pale lavender-pink, lavender, lavender-pink, maroon and white, pale pink-lavender, pink, pink-purple, purple, white or white-pink; flowering generally takes place between late March and early June (additional records: one for late January, one for late February, one for early July, one for late July, one for early August, one for mid-August, one for early September, two for late September, one for mid-October, one for mid-November and two for mid-December). HABITAT: Within the range of this species it has been reported from rocky mountains; sandy mesas; gravelly-loamy canyons; talus slopes; rocky foothills; rocky and gravelly hills; rocky and gravelly hillsides; bouldery, rocky, stony, gravelly, gravelly-sandy and sandy slopes; bajadas; amongst boulders and rocks; gravelly breaks; gravelly plains; rocky, gravelly, gravelly-sandy, sandy, sandy-loamy and clayey flats; basins; basin bottoms; rocky valley floors; valley bottoms; gravelly-loamy roadsides; arroyos; bottoms of arroyos; rocky gullies; gravelly-loamy creekbeds; riverbeds; within gravelly, gravelly-sandy and sandy-clayey washes; drainage ways; playas; sandy-loamy, sandy-clayey-loamy and clayey-loamy swales; clayey-loam banks of washes; benches; gravelly and sandy terraces; floodplains; mesquite mosques; riparian areas, and disturbed areas growing in dry desert pavement; bouldery, rocky, rocky-sandy, stony, gravelly, gravelly-sandy and sandy ground; gravelly loam, sandy loam, sandy-clayey loam, clayey loam, silty loam and loam ground, and sandy clay and clay ground often in the shade of trees and shrubs, occurring from 1,200 to 7,100 feet (one record for 8,500 feet) in elevation in the woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. Consider using Desert Holly as a ground cover under larger shrubs and trees. The flowers give off a fragrance similar to that of violets or lilacs. *Acourtia nana* is native to southwest-central and southern North America. *5, 6, 15, 16, 28 (color photograph), 43 (110809), 46 (recorded as *Perezia nana* Gray, Page 957), 58, 63 (110809 - color presentation), 77, **85** (110909 - color presentation), 115 (color presentation)*

***Acourtia wrightii* (A. Gray) J.L. Reveal & R.M. King: Brownfoot**

SYNONYMY: *Perezia wrightii* A. Gray. COMMON NAMES: Brownfoot, Desert Holly, Perezia, Pink Perezia, Pink Perezzia, Wright's Desertpeony. DESCRIPTION: Terrestrial perennial forb/herb (1 to 5 feet in height, one plant was recorded as being 1 foot in height with a crown 1 foot in width); the holly-like leaves are dark green; the flowers may be lavender, pink, pink-brown, pink-lavender, pink-purple, pale purple, purple, white, white & pink, whitish-maroon or white & purple; flowering generally takes place between early February and early July and sometimes in autumn between early September and early November (additional records: one for mid-August, one for late November and one for early December). HABITAT: Within the range of this species it has been reported from mountains; plateaus; rock cliffs; crater walls; rocky canyons; rocky canyon bottoms; talus slopes; bases of cliffs; along crevices in boulders; buttes; along ledges; ridges; ridgetops; foothills; rocky, stony-gravelly and sandy hills; rocky and rocky-gravelly-loamy hillsides; bouldery-rocky, rocky, rocky-gravelly, shaley, gravelly and sandy

slopes; sandy alluvial fans; gravelly and sandy bajadas; along bedrock and rocky outcrops; amongst boulders and rocks; bases of boulders; in shaded alcoves; rocky plains; rocky and silty flats; railroad right-of-ways; rocky and gravelly-sandy-clayey-loamy roadsides; along rocky arroyos; draws; gullies; ravines; seeps; rocky springs; along creeks; along rocky, gravelly and sandy washes; along drainage ways; rocky banks of streams and washes; edges of washes; mudflats; beaches; floodplains; mesquite bosques; riparian areas, and disturbed areas growing in dry desert pavement; bouldery, bouldery-rocky, rocky, rocky-gravelly, rocky-sandy, stony-gravelly, gravelly and sandy ground; rocky-gravelly loam, rocky silty loam, gravelly-sandy-clayey loam, sandy loam, silty-clayey loam and silty loam ground, and silty ground, occurring from 700 to 7,300 feet in elevation in the woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat, the flowers are reported to be fragrant. This plant was reported to have been utilized by native peoples of North America; it was noted as having been used as a drug or medication. *Acourtia wrightii* is native to southwest-central and southern North America. *5, 6, 15, 16, 28 (color photograph), 43 (110809), 46 (recorded as *Perezia wrightii* Gray, Page 957), 58, 63 (110909 - color presentation), 77, 85 (110909 - color presentation), 115 (color presentation), 127, **HR***

***Adenophyllum porophylloides* (A. Gray) J.L. Strother: San Felipe Dogweed**

SYNONYMY: *Dyssodia porophylloides* A. Gray. COMMON NAMES: San Felipe Adenophyllum, San Felipe Dogweed, San Felipe Dyssodia, San Felipe Fetid Marigold, Yerba del Venado. DESCRIPTION: Terrestrial perennial subshrub (8 to 32 inches in height, one plant was described as being approximately 18 inches in height and 24 inches in width); the leaves are dark green; the disk flowers may be golden-yellow, maroon, orange or yellow-orange; the ray flowers may be pink, pink-maroon, red-orange, yellow, yellowish-brown or yellow-orange; flowering generally takes place between early February and early December. HABITAT: Within the range of this species it has been reported from mountains; rocky mountaintops; mesas; rocky cliffs; bouldery and rocky canyons; canyon walls; rocky canyon bottoms; buttes; ridgetops; foothills; rocky-gravelly and stony-gravelly hills; rocky hillsides; bouldery, rocky, rocky-gravelly, shaley, gravelly and sandy slopes; alluvial fans; rocky-gravelly bajadas; bouldery and rocky outcrops; amongst boulders and rocks; boulder fields; plains; gravelly and sandy flats; valley floors; along roadsides; along the bottoms of rocky arroyos; gulches; ravines; streambeds; along creeks; along and in rocky, gravelly, gravelly-sandy and sandy washes; at waterfalls; rocky edges of washes; benches; riparian areas, and disturbed areas growing in dry desert pavement; bouldery, rocky, rocky-gravelly, rocky-sandy, shaley, stony-gravelly, stony-sandy, cindery, gravelly, gravelly-sandy and sandy ground; rocky loam and cobbly-gravelly loam ground, and sandy clay ground, occurring from 700 to 4,200 feet in elevation in the woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: The leaves give off a strong odor when bruised, reportedly similar to that of *Porophyllum gracile* (Deerweed). *Adenophyllum porophylloides* is native to southwest-central and southern North America. *5, 6, 13, 15 (recorded as *Dyssodia porophylloides* Gray), 16 (recorded as *Dyssodia porophylloides* Gray), 28 (recorded as *Dyssodia porophylloides*, color photograph), 43 (111009), 46 (recorded as *Dyssodia porophylloides* Gray, Page 932), 63 (111009 - color presentation), 77 (recorded as *Dyssodia porophylloides* Gray), **85** (111009 - color presentation), 115 (color presentation)*

***Ambrosia ambrosioides* (A.J. Cavanilles) W.W. Payne: Ambrosia Leaf Bur Ragweed**

SYNONYMY: *Franseria ambrosioides* A.J. Cavanilles. COMMON NAMES: Ambrosia Bursage, Ambrosia Leaf Bur Ragweed, Ambrosia Leaf Burr Ragweed, Big Bursage, Burr Sage, Bur-sage, Bursage, Canyon Ragweed, Chicura (Hispanic), Giant Bursage, Leaf Burr Ragweed, Nu Nu Ju Its (Tohono O'odham), Tinkl (Seri). DESCRIPTION: Terrestrial perennial cold- and drought-deciduous subshrub or shrub (1 to 7 feet in height, one plant was described as being 3 feet in height and 6 feet in width); the branches are reddish-brown with white hairs; the leaves are dull gray-green or green; the flowers are yellowish or yellowish-green; flowering generally takes place between mid-February and early May (additional records: two for mid-January, one for late May, one for early June, one for mid-June, one for early July and one for mid-September), the fruits are burrs. HABITAT: Within the range of

this species it has been reported from rocky mountains; mesas; rocky canyons; canyon walls; rocky, gravelly and gravelly-sandy canyon bottoms; bases of cliffs; crevices in rocks; foothills; rocky hills; rocky hillsides; rocky and sandy slopes; rocky outcrops; sandy soil pockets in rocks; plains; basins; silty valleys; along coasts; coastal plains; along rocky-sandy roadsides; arroyos; arroyo bottoms; along seeping streams; along streams; rocky and sandy streambeds; along creeks; creekbeds; along rivers; riverbeds; along and in rocky, gravelly, gravelly-silty and sandy washes; along and in sandy drainages; along and in cobbly and sandy drainage ways; around waterholes; rocky and sandy banks of lakes; sandy edges of washes; riparian areas, and disturbed areas growing in dry rocky, rocky-sandy, cobbly, gravelly, gravelly-sandy and sandy ground; rocky loam and sandy-clayey loam ground, and gravelly silty and silty ground, occurring from sea level to 4,500 feet in elevation in the woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. This plant was reported to have been utilized by native peoples of North America; it was noted as having been used as a drug or medication. *Ambrosia ambrosioides* is native to southwest-central and southern North America. *5, 6, 13, 15, 28 (color photograph), 43 (111009 - *Ambrosia ambrosioides* (Delpino) W.W. Payne), 46 (recorded as *Franseria ambrosioides* Cav., Page 895), 63 (111009), 77 (color photograph #67), **85** (111009 - color presentation), 91, 115 (color presentation), 127, **WTK** (July 4, 2005)*

***Ambrosia confertiflora* A.P. de Candolle: Weakleaf Bur Ragweed**

SYNONYMY: *Franseria confertiflora* (A.P. de Candolle) P.A. Rydberg. COMMON NAMES: Altamisa de Playa, Bur Ragweed, Bur-sage, Bursage Ragweed, Bur-weed, Chi'ichivo (Yaqui), Estafiate (Mexican), Field Ragweed, Istafiate (northern Sinaloa, Mexico), Mo?otatk Juich (Gila River Pima), Slender Ragweed, Slimleaf Bursage, Slimleaf Ragweed, Weak-leaf Burr-ragweed, Weakleaf Bur Ragweed, Weakleaf Burr Ragweed, Weak-leaved Burweed. DESCRIPTION: Terrestrial perennial forb/herb (4 inches to 5 feet in height and may be procumbent and up to 6 feet in width in higher elevations); the leaves are gray, gray-green or whitish; the flowers are greenish, tan-yellow, white, yellow, yellow-brown or yellow-green; flowering generally takes place between late April and mid-December (additional records: one for early January, one for mid-March, one for late March and one for early April). HABITAT: Within the range of this species it has been reported from mountains; mesas; rocky canyons; along sandy canyon bottoms; bases of cliffs; crevices in rock faces; knolls; rocky ridgetops; sandy meadows; foothills; rocky-gravelly-loamy hills; hilltops; rocky hillsides; rocky, rocky-loamy, rocky-clayey, gravelly, gravelly-loamy, gravelly-clayey and sandy-loamy slopes; bajadas; piedmonts; shaley-sandy outcrops; prairies; sandy-silty plains; clayey flats; rocky-silty, gravelly-sandy and sandy valley floors; coastal plains; along clayey roadsides; arroyos; ravines; seeps; springs; along streams; streambeds; along rivers; sandy riverbeds; along and in gravelly, gravelly-sandy, gravelly-sandy-silty and sandy washes; rocky drainages; within rocky drainage ways; around ponds; around lakes; playas; depressions; silty swales; along banks of creeks, rivers and washes; gravelly-sandy edges of washes; beaches; rocky benches; terraces; grassy bottomlands; floodplains; mesquite bosques; fencerows; canal banks; ditches; riparian areas; waste places, and disturbed areas growing in dry rocky, shaley-sandy, gravelly, gravelly-sandy and sandy ground; rocky loam, rocky-gravelly loam, gravelly loam, sandy loam and sandy-clayey loam ground; rocky clay, gravelly clay and clay ground, and rocky silty, gravelly silty, gravelly-sandy silty, sandy silty and silty ground, occurring from sea level to 8,800 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: The flowers are reported to be fragrant. *Ambrosia confertiflora* is native to south-central and southern North America. *5, 6, 15, 16, 43 (061309), 46 (recorded as *Franseria confertiflora* (DC.) Rydb., Page 895), 58, 63 (111009), 68, 77, **85** (111009 - color presentation), 115 (color presentation), **WTK** (September 8, 2005)*

***Ambrosia deltoidea* (J. Torrey) W.W. Payne: Triangle Bur Ragweed**

SYNONYMY: *Franseria deltoidea* J. Torrey. COMMON NAMES: Burrobush, Bur-sage, Bursage, Chamizo Forrajero, Chicurilla, Rabbit Bush, Kokomak Segoi (Pima), Shegoi (Pima), Todshag (Papago), Triangle Bur Ragweed, Triangle Burr Ragweed, Triangle Bursage, Triangle-leaf Bursage,

Triangle-leaved Bursage, Triangle-leaf Burr Ragweed. DESCRIPTION: Terrestrial perennial evergreen (or drought-deciduous) subshrub or shrub (1 to 4 feet in height, one plant was described as being 2 feet in height and width); the leaves are gray, gray-green or green; the flowers are greenish, greenish-yellow, purple, white or yellow; flowering generally takes place between early January and early May (additional records: three for late May; flowering as late as July has been reported). HABITAT: Within the range of this species it has been reported from mountains; rocky mesas; rocky canyons; canyon bottoms; bases of cliffs; buttes; ridges; rocky foothills; rocky hills; rocky hillsides; rocky, gravelly and gravelly-clayey slopes; bajadas; lava flows; dunes; sandy plains; rocky, stony-chalky, gravelly and sandy flats; basins; rocky valley floors; along rocky-sandy roadsides; shallow arroyos; runnels; riverbeds; along and in stony-gravelly, gravelly and sandy washes; within drainages; rocky and sandy banks of creeks and washes; edges of dry lakes (playas); margins of washes; gravelly terraces; bottomlands; floodplains; riparian areas, and disturbed areas growing in moist and dry desert pavement; rocky, rocky-gravelly, rocky-sandy, stony-gravelly, gravelly, gravelly-sandy and sandy ground; gravelly-sandy loam and loam ground; rocky clay, gravelly clay and sandy clay ground, and stony chalky ground, occurring from 100 to 4,000 feet in elevation in the grassland and desertscrub ecological formations. NOTES: This plant may be an attractive component of a restored native habitat and may be useful in the restoration of disturbed habitat. It may live to be about 50 years of age. The Triangleleaf Bursage serves as a nurse plant for Saguaro (*Carnegiea gigantea*), Ocotillo (*Fouquieria splendens*), Foothill Paloverde (*Parkinsonia microphylla*) and other woody plants. The Triangleleaf Bursage is one of the first plants to colonize in open spaces. *Ambrosia deltoidea* is native to southwest-central and southern North America. *5, 6, 13, 15, 16, 28 (color photograph), 43 (070910), 46 (recorded as *Franseria deltoidea* Torr., Page 896), 63 (111009 - color presentation), 77 (color photograph #68), 85 (111009 - color presentation), 91, 115 (color presentation), **WTK** (July 4, 2005)*

Ambrosia salsola (see *Hymenoclea salsola*)

Ambrosia salsola var. *pentalepis* (see *Hymenoclea salsola* var. *pentalepis*)

***Antheropeas lanosum* (A. Gray) P.A. Rydberg: White Easterbonnets**

SYNONYMY: *Eriophyllum lanosum* (A. Gray) A. Gray. COMMON NAMES: White Easterbonnets, White Easterbonnets, Whoolly Daisy, Whooly Daisy, Woolly Daisy, Woolly-daisy, Woolly Eriophyllum, Woolly Fleabane. DESCRIPTION: Terrestrial annual forb/herb (¾ to 8 inches in height); the stems are reddish; the leaves are gray-green; the disk flowers are orange-yellow or yellow; the ray flowers are white; flowering generally takes place between early February and mid-May (additional records: two for mid-June and one for mid-November). HABITAT: Within the range of this species it has been reported from mountains; gravelly and pebbly-sandy-silty mesas; canyons; talus slopes; bases of cliffs; bluffs; rocky ridges; foothills; rocky and gravelly hills; hilltops; rocky hillsides; rocky, rocky-loamy, cobbly, gravelly and gravelly-loamy slopes; alluvial fans; bajadas; bouldery and rocky outcrops; amongst rocks; sand hills; gravelly and sandy plains; rocky, gravelly and sandy flats; basins; valley floors; silty valley bottoms; along gravelly, sandy and clayey roadsides; along and in gravelly arroyos; creekbeds; riverbeds; along and in rocky, gravelly, gravelly-sandy and sandy washes; along muddy and sandy banks of arroyos and washes; benches; terraces; sandy bottomlands, and disturbed areas growing in dry desert pavement; bouldery-rocky-gravelly, rocky, rocky-gravelly, rocky-sandy, stony, stony-sandy, gravelly, gravelly-sandy and sandy ground; rocky loam, gravelly-sandy loam, gravelly loam, sandy loam and silty loam ground; clay ground, and pebbly-sandy silty, powdery silty and silty ground, occurring from 500 to 4,600 feet in elevation in the grassland, desertscrub and wetland ecological formations. NOTES: This plant may grow in patches with larger plants tending to be prostrate. *Antheropeas lanosum* is native to southwest-central and southern North America. *5, 6, 15, 16, 28 (recorded as *Eriophyllum lanosum*, color photograph), 43 (111109 - *Antheropeas lanosum* Rydb.), 46 (recorded as *Eriophyllum lanosum* Gray, Page 921), 58, 63 (111109 - color presentation), 77 (recorded as *Eriophyllum lanosum*, color photograph #19), **85** (111209 - color presentation), 115 (color presentation)*

Aplopappus laricifolius (see footnote 46 under *Ericameria laricifolia*)

Baccharis glutinosa (see *Baccharis salicifolia*)

***Baccharis salicifolia* (H. Ruiz Lopez & J.A. Pavon) C.H. Persoon: Mule-fat**

SYNONYMY: *Baccharis glutinosa* C.H. Persoon. COMMON NAMES: Azumiate (Hispanic), Bachomo (Hispanic), Baldag Shi (Hispanic), Batamote (Hispanic), Broom Baccharis, Chamiso (Hispanic), Chamiso del Rio (Hispanic), Chilca, Cucamoarisha (Cora), Cuerepillo (Hispanic), Dsea Miis Ro (Hispanic), Dsea Miis Tee (Hispanic), False Willow, Gila Willow, Groundsel Tree, Guamate, Guatamote (Hispanic), Guatarote (Hispanic), Hierba del Pasmo (Hispanic), Huamate, Jara, Jara Amarilla (Hispanic), Jara Mexicana (Hispanic), Jaral (Hispanic), Jarilla (Hispanic), KáaW (Seri), Mule-fat, Mule's Fat, Nehol (Tohono O'odham), Romerello, Rosin Brush, Seep Willow, Seep-willow, Seepwillow, Seepwillow Baccharis, Sticky Baccharis, Sticky Seep-willow, Togzten (Hispanic), Tu Ta' Vi (Hispanic), Water Motie, Water-motie, Watermotie, Water Wally, Water-wally, Waterwally, Water Willow, Waterwillow. DESCRIPTION: Terrestrial perennial deciduous shrub (32 inches to 15 feet in height, plants were described that were 10 feet in height forming clones 6 to 13 feet in width); the bark is gray; the leaves are gray or green; the disc (no ray flowers) flowers (dioecious) are cream, cream-maroon, cream-maroon-purple, cream-white, grayish-white, off white, white, white-magenta, whitish-yellow or yellow; flowering generally takes place between mid-January and mid-November (additional record: one for late December). HABITAT: Within the range of this species it has been reported from mountains; sandy mesas; bouldery-rocky and rocky and rocky-sandy canyons; sandy canyon bottoms; along rocky, sandy and sandy-silty canyon bottoms; talus; bases of cliffs; foothills; hills; rocky hillsides; slopes; bajadas; amongst rocks; dunes; plains; rocky-sandy and sandy flats; valleys; coastal dunes; coastal saltwater marshes; along railroad right-of-ways; along gravelly-sandy, sandy and sandy-loamy roadsides; along and in sandy arroyos; clayey bottoms of arroyos; draws; gullies; seeps; gravelly and sandy springs; seeping springs; silty soils along streams; in bouldery-rocky, rocky and sandy streambeds; along and in bouldery creeks; along and in sandy creekbeds; along rivers; along and in rocky, gravelly and sandy riverbeds; along and in bouldery-sandy, rocky, gravelly, gravelly-sandy, sandy and silty washes; along and in bouldery-rocky and rocky-clayey drainages; along and in sandy drainage ways; rock tanks; around and in ponds; lakebeds; cienegas; freshwater and saltwater marshes; depressions; along sandy banks of arroyos, springs, streams, creeks, rivers and washes; along sandy and sandy-silty edges of springs, streams, creeks, rivers, washes, ponds, lakes, playas and saltmarshes; margins of streams and washes; rocky-sandy and sandy shores of rivers and lakes; mudflats; sandbanks; shell mantled beach ridges; rocky and sandy beaches; sandy benches; bouldery-gravelly-sandy terraces; gravelly and sandy bottomlands; lowlands; sandy floodplains; along dikes; margins of stock tanks (charcos); reservoirs; along canals; along ditches; muddy, rocky-gravelly-sandy, rocky-sandy and sandy riparian areas, and disturbed areas growing in shallow water and wet, moist, damp and dry ground in bouldery, bouldery-rocky, bouldery-gravelly-sandy, bouldery-sandy, rocky, rocky-gravelly-sandy, rocky-sandy, shaley, cobbly-loamy, gravelly, gravelly-sandy and sandy ground; sandy loam ground; rocky clay, silty clay and clay ground, and sandy silty and silty ground, occurring from sea level to 6,600 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. This plant was reported to have been utilized by native peoples of North America and could be investigated to determine its value as a home garden or commercial food and/or fiber crop; it was also noted as having been used as tools, as a drug or medication and as a commodity used in personal hygiene (the leaves were used in a hair wash solution to prevent baldness). Seep Willow is useful in controlling watercourse erosion and slowing stream flow. *Baccharis salicifolia* is native to southwest-central and southern North America; Central America, and western, central and southern South America. *5, 6, 13 (recorded as *Baccharis glutinosa* Pers.), 15, 16, 28 (recorded as *Baccharis glutinosa*, color photograph), 30, 43 (111209), 46 (recorded as *Baccharis*

glutinosa Pers., Page 884), 48 (recorded as *Baccharis glutinosa*), 58, 63 (111209 - color presentation), 68, 77, **85** (111209 - color presentation), 115 (color presentation), 127, 134*

***Baccharis sarothroides* A. Gray: Desertbroom**

COMMON NAMES: Amargo, Broom Baccharis, Caasot Caocl (Seri), Desert Broom, Desert-broom, Desertbroom, Escoba, Greasewood, Groundsel, Hierba del Pasmo, Mexican Broom, Romerillo, Rosin Brush, Rosin-brush, Rosin Bush, Shooshk Vakch ("Wet Shoes" - Pima), Soosk Vaks ("Wet Shoes" - questionably Maricopa), Wet Shoes. DESCRIPTION: Terrestrial perennial deciduous shrub (3 to 10 feet in height, one plant was described as being 40 inches in height and 40 inches in width, one plant was described as being 7 feet in height and 8 feet in width); the foliage is bright green or yellow-green; the disc (no ray flowers) flowers (dioecious) are cream, golden, rust, white or yellow; flowering generally takes place between mid-September and late February (additional records: one for mid-March, two for late March, two for mid-April, one for late April, one for mid-July, one for early August and one for late August). HABITAT: Within the range of this species it has been reported from mountains; mesas; canyons; canyon bottoms; chasms; ridges; foothills; silty-clayey hills; rocky hillsides; rocky slopes; bajadas; debris fans; sandy plains; rocky flats; valley floors; coastal plains; along rocky, rocky-gravelly-sandy-clayey-loamy, rocky-gravelly-sandy-silty-clayey-loamy and sandy roadsides; along arroyos; along sandy and clayey bottoms of arroyos; draws; gulches; gullies; springs; along streams; streambeds; along gravelly-sandy creeks; gravelly and sandy creekbeds; along rivers; along bouldery-cobbly-sandy, rocky-sandy, gravelly and sandy riverbeds; along and in cobbly, gravelly and sandy washes; along drainages; along drainage ways; waterholes; playas; oases; along gravelly and sandy banks of arroyos, rivers and washes; edges of washes; beaches; sandy benches; terraces; bottomlands; floodplains; lowlands; mesquite bosques; along canals; along ditches; muddy and sandy riparian areas, and disturbed areas growing in muddy and damp and dry bouldery-cobbly-sandy, rocky, rocky-sandy, cobbly, gravelly, gravelly-sandy and sandy ground; rocky-gravelly-sandy-clayey loam and rocky-gravelly-sandy-silty-clayey loam ground; silty clay and clay ground, and sandy silty ground, occurring from sea level to 6,200 feet in elevation in the woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat, consider planting only male plants to eliminate seed production. This plant was reported to have been utilized by native peoples of North America and could be investigated to determine its value as a home garden or commercial beverage and/or fiber crop; it was also noted as having been used for making tools and as a drug or medication. *Baccharis sarothroides* is native to Southwestern and southern North America. *5, 6, 13, 15, 16, 18, 26 (color photograph), 28 (color photograph), 43 (111209), 46 (Page 883), 48, 58, 63 (111209), 77, 85 (111309 - color presentation), 115 (color presentation), 127, **WTK** (July 4, 2005)*

Baeria chrysostoma (see *Lasthenia californica* subsp. *californica*)

Baeria chrysostoma var. *gracilis* (see *Lasthenia californica* subsp. *californica*)

***Baileya multiradiata* W.H. Harvey & A. Gray ex A. Gray: Desert Marigold**

SYNONYMY: *Baileya multiradiata* W.H. Harvey & A. Gray ex A. Gray var. *thurberi* (P.A. Rydberg) M.T. Kittell. COMMON NAMES: Baileya del Desierto, Cloth-of-gold, Desert Baileya, Desert Marigold, Desert-marigold, Hierba Amarilla, Many-flowered Desert-marigold, Paper Daisy, Paperdaisy, Wild Marigold. DESCRIPTION: Terrestrial annual, biennial or perennial forb/herb (6 to 30 inches in height); the foliage may be gray-green, gray-white-green, grayish and woolly or silvery-green; the flowers (1½ to 2 inches in width) are lemon-yellow, orange, light yellow or yellow; flowering generally takes place between mid-January and late December but may continue year round under favorable conditions. HABITAT: Within the range of this species it has been reported from mountains; rocky and sandy mesas; rocky and sandy canyons; sandy pockets of soil in rock; rocky bluffs; buttes; sandy ridges; foothills; rocky, gravelly and gravelly-sandy hills; rocky, rocky-gravelly, sandy-clayey and clayey hillsides; rocky, stony-gravelly-sandy, cindery, gravelly, gravelly-sandy, sandy and sandy-loamy slopes; rocky-sandy

alluvial fans; bajadas; amongst rocks; sand hills; sand dunes; sandy embankments; sandy plains; gravelly, sandy and sandy-loamy flats; valleys; along gravelly, sandy and sandy-loamy roadsides; within stony-gravelly-sandy arroyos; bottoms of arroyos; gravelly draws; along streams; sandy streambeds; sandy creekbeds; along rivers; rocky riverbeds; within rocky, rocky-sandy, gravelly, gravelly-sandy and sandy washes; rocky bowls; swales; sandy banks of rivers and washes; gravelly edges of washes; benches; gravelly terraces; sandy and loamy bottomlands; floodplains; ditch banks; riparian areas, and disturbed areas growing in dry rocky, rocky-gravelly, rocky-sandy, stony-gravelly-sandy, cindery, gravelly, gravelly-sandy and sandy ground; gravelly loam, gravelly-clayey loam, sandy loam and loam ground, and gravelly clay, sandy clay and clay ground, occurring from sea level to 7,000 feet in elevation in the woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. This plant was reported to have been utilized by native peoples of North America and could be investigated to determine its value as a home garden or commercial fiber crop; it was also noted as being a commodity used in personal hygiene. Consider seeding Desert Marigold with native Lupines (*Lupinus* spp.) and Globemallows (*Sphaeralcea* spp.) for a late winter and early spring desert wildflower display. *Baileya multiradiata* is native to southwest-central and southern North America. *5, 6, 15, 16, 18, 28 (color photograph), 43 (111309), 46 ("It is said that horses crop the heads, but fatal poisoning of sheep and goats eating this plant on overgrazed ranges has been reported.", Page 915), 48, 58, 63 (111309 - color presentation), 68 ("Desert Baileya, either fresh or dried, is poisonous to sheep and goats, but not to horses or cattle. The plant is not palatable to sheep, but the showy flower heads are relished, however, the flowering and fruiting heads are nearly twice as poisonous as the green leaves. Goats evidently do not graze the plant under range conditions, but have been poisoned in experimental feeding. Sheep losses from Desert Baileya have occurred in Arizona when green forage is scarce."), **77** (color photograph #17), 80 (This plant is listed as a Secondary Poisonous Range Plant. "The toxic principle is an unknown water-soluble compound. Plants are toxic to sheep on the range in both the green and dry state. ... Goats have been poisoned by experimental feeding but apparently do not eat the plant on the range. Both cattle and horses graze the plant on the range but no losses have been observed. Losses generally occur only when other feed is short or animals are trailed through dense stands." See text for additional information.), 85 (111309 - also recorded as *Baileya multiradiata* var *multiradiata* Harv. & Gray, color presentation), 86 (color photograph), 115 (color presentation), 127, **HR***

Baileya multiradiata var *multiradiata* (see footnote 85 under *Baileya multiradiata*)

Baileya multiradiata var. *thurberi* (see *Baileya multiradiata*)

***Brickellia californica* (J. Torrey & A. Gray) A. Gray (var. *californica* is the variety reported as occurring in Arizona): California Brickellbush**

COMMON NAMES: Brickellbush, California Brickellbush, False Boneset, Pachaba (Hopi). DESCRIPTION: Terrestrial perennial subshrub or shrub (1 to 7 feet in height, plants were reported that were 28 inches in height and width, plants were reported that were 40 inches in height and width); the branches are white; the leaves are gray-green, dark green or green tinged with dark purple; the flowers may be cream, cream-pink, cream-white, greenish, greenish-yellow, red-purple, white, pale yellowish, yellow, pale yellow-green or yellow-green; flowering generally takes place between early July and early December. HABITAT: Within the range of this species it has been reported from mountains; mountaintops; mountainsides; mesas; plateaus; along rocky cliffs; along bouldery-sandy, rocky and gravelly canyons; rocky-sandy canyonsides; rocky bases of canyon walls; along bouldery, rocky, rocky-gravelly and rocky-sandy-silty canyon bottoms; rocky gorges; bouldery and rocky talus slopes; bases of cliffs; rocky-sandy crater rims; sandy crevices in boulders and rocks; rock clefts; along bluffs; buttes; rocky ledges; openings in forests; rocky ridges; sandy ridgetops; bouldery ridgelines; openings in forests; foothills; rocky hills; rocky hillsides; escarpments; rocky, rocky-clayey, shaley, stony-loamy, cindery, gravelly, sandy and sandy-clayey slopes; sandy alluvial fans; bajadas; bouldery and rocky outcrops; amongst boulders, rocks and cobbles; bases of rocks; lava flows; lava beds; sand dunes; rocky banks;

debris flows; rocky, cindery and sandy flats; valley floors; along rocky and rocky-shaley roadsides; along and in gravelly arroyos; rocky bottoms of arroyos; rocky ravines; seeps; bouldery, gravelly, gravelly-sandy and sandy springs; along streams; along and in bouldery-rocky, rocky-cobbly and gravelly streambeds; along creeks; rocky-sandy and sandy creekbeds; along rivers; gravelly riverbeds; along and in rocky, rocky-sandy, cobbly, gravelly and sandy washes; bouldery drainages; along rocky drainage ways; bogs; sandy margins of creeks; rocky banks of arroyos, ravines, rivers and washes; along gravelly-sandy edges of rivers and washes; gravelly-sandy and sandy beaches; benches; terraces; floodplains; muddy, sandy and sandy-clayey riparian areas, and disturbed areas growing in muddy and damp and dry bouldery, bouldery-rocky, bouldery-sandy, rocky, rocky-shaley, rocky-cobbly, rocky-gravelly, rocky-sandy, shaley, cobbly, cindery, gravelly, gravelly-sandy and sandy ground; rocky loam, stony loam, gravelly loam and loam ground; rocky clay, gravelly clay, sandy clay and clay ground, and rocky-sandy silty ground, occurring from sea level to 9,500 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. This plant was reported to have been utilized by native peoples of North America and could be investigated to determine its value as a home garden or commercial food/beverage crop (the leaves were used as a substitute for tea); it was also noted as having been used as a drug or medication. *Brickellia californica* is native to southwest-central and southern North America. *5, 6, 13, 15, 16, 43 (111409), 46, 48 (genus), 58, 63 (111409 - color presentation), 77, **85** (111409 - color presentation), 127*

***Calycoseris wrightii* A. Gray: White Tackstem**

COMMON NAMES: Tackstem, White Cupfruit, White Tackstem. DESCRIPTION: Terrestrial annual forb/herb (10 to 12 inches in height); the leaves are gray-green; the disc flowers are creamy-yellow or whitish-yellow; the ray flowers are white turning pinkish or purplish with age; flowering generally takes place between late January and mid-June. HABITAT: Within the range of this species it has been reported from mountains; mesas; rocky canyons; buttes; ridges; bouldery and rocky ridgetops; cinder cones; foothills; rocky and sandy hills; rocky hillsides; rocky, rocky-gravelly-loamy, rocky-sandy, stony, gravelly, gravelly-sandy and sandy slopes; rocky and gravelly alluvial fans; gravelly-loamy and sandy bajadas; rocky outcrops; gravelly plains; gravelly, gravelly-clayey, sandy-clayey and loamy flats; sandy basins; valley floors; along rocky, gravelly, gravelly-sandy, gravelly-sandy-clayey-loamy, gravelly-loamy and sandy roadsides; arroyos; along and in rocky, gravelly and sandy washes; along drainages; gravelly drainage ways; sandy benches; terraces; canal banks; riparian areas, and disturbed areas growing in dry desert pavement; bouldery, rocky, rocky-gravelly, rocky-sandy, stony, cindery, gravelly, gravelly-sandy and sandy ground; rocky-gravelly loam, gravelly loam, gravelly-sandy-clayey loam, sandy loam and loam ground; gravelly clay and sandy clay ground, and gravelly-sandy silty ground, occurring from 400 to 7,600 feet in elevation in the scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. *Calycoseris wrightii* is native to southwest-central and southern North America. *5, 6, 15, 16, 28 (color photograph), 43 (111409), 46 (Page 964), 58, 63 (111409 - color presentation), 77, **85** (111409 - color presentation of dried materials), 86 (note under *Rafinesquia neomexicana*), 115 (color presentation)*

***Chaenactis stevioides* W.J. Hooker & G.A. Arnott: Esteve's Pincushion**

SYNONYMY: *Chaenactis stevioides* W.J. Hooker & G.A. Arnott var. *thornberi* W.P. Stockwell. COMMON NAMES: "Broad-leaved Chaenactis", Desert Pincushion, Dusty Maiden, Dustymaiden, Esteve False Yarrow, Esteve Pincushion, Esteve's Pincushion, "False Yarrow", Pincushion Flower, Steve's Dusty Maiden, Steve's Dusty-maiden, Steve's Dustymaiden, Steve's Pincushion. DESCRIPTION: Terrestrial annual forb/herb (8 to 18 inches in height); the leaves are grayish-green; the disk flowers (no ray flowers) are cream, cream-white, yellow, dull white, white, white-cream or whitish-yellow; flowering generally takes place between early February and late June (additional records: one for early January, one for mid-January, one for mid-July and one for late November). HABITAT: Within the range of this species it has been reported from mountains; mountainsides; mesas; plateaus; canyon rims; sandy canyon bottoms; chalky cliffs; bouldery canyons; bluffs; buttes; rocky and clayey knolls; ledges;

ridges; bedrock ridgetops; foothills; bouldery, rocky, gravelly and sandy hills; hillsides; bedrock, bouldery, bouldery-gravelly, rocky, rocky-gravelly-loamy, rocky-sandy, rocky-sandy-loamy, shaley, cobbly-gravelly-sandy, cindery, gravelly, gravelly-sandy and sandy slopes; bouldery and sandy alluvial fans; silty bajadas; amongst boulders; lava fields; sand dunes; sand hummocks; wind-blown sand-ramps; sand fields; blow-sand deposits; gravelly banks; sandy plains; gravelly, gravelly-sandy, sandy and silty flats; sandy and silty valley floors; along gravelly-sandy, gravelly-clayey, gravelly-sandy-clayey-loamy and sandy roadsides; rocky, rocky-gravelly, gravelly and sandy arroyos; springs; along streams; gravelly streambeds; riverbeds; along and in rocky, rocky-sandy, gravelly and sandy washes; drainage ways; sandy lakebeds; marshes; silty swales; sandy banks of washes; sandy and sandy-silty edges of ponds and lakes; mudflats; beaches; benches; along terraces; sandy bottomlands; sandy floodplains; along canals; ditches; riparian areas, and disturbed areas growing in dry desert pavement; bouldery, bouldery-gravelly, rocky, rocky-gravelly, rocky-sandy, shaley, stony-sandy, cobbly-gravelly-sandy, cindery, gravelly, gravelly-sandy and sandy ground; rocky-gravelly loam, rocky-sandy loam, gravelly-sandy loam, gravelly-sandy-clayey loam and sandy loam ground; rocky clay, shaley clay, gravelly clay, sandy clay and clay ground; gravelly-sandy silty, sandy silty and silty ground, and chalky ground, occurring from sea level to 7,400 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant was reported to have been utilized by native peoples of North America; it was noted as having been used as a drug or medication and the juice was used as a glue to mend ceremonial items. *Chaenactis stevioides* is native to southwest-central and southern North America. *5, 6, 15, 16, 28 (color photograph), 43 (111709), 46 (Page 923), 58, 63 (111709 - color presentation), 77, **85** (111809 - also recorded as *Chaenactis stevioides* var. *stevioides* Hook. & Arn., color presentation), 86 (color photograph), 115 (color presentation), 127*

Chaenactis stevioides var. *stevioides* (see footnote 85 under *Chaenactis stevioides*)

Chaenactis stevioides var. *thornberi* (see *Chaenactis stevioides*)

***Dimorphotheca sinuata* A.P. de Candolle: Glandular Cape Marigold**

COMMON NAMES: African Daisy, Cape Marigold, Cape-marigold, Glandular Cape Marigold, Margarida (Portuguese), Namaqualand Daisy, Sun-marigold. DESCRIPTION: Terrestrial annual forb/herb (4 to 12 inches in height); the disk flowers are dark (nearly black) or black; the ray flowers may be cream, orange, orange-yellow, pumpkin-gold or yellow; flowering generally takes place between early February and late May (additional flowering record: one for early September). HABITAT: Within the range of this species it has been reported from mountains; sandy mesas; canyons; rocky canyon bottoms; ridges; ridgetops; sandy openings in woodlands; rocky hillsides; escarpments; rocky-clayey, gravelly and sandy slopes; sandy alluvial fans; gravelly bajadas; plains; gravelly and sandy flats; valley floors; along sandy roadsides; creekbeds; riverbeds; along rocky and sandy washes; sinks, and disturbed areas growing in moist and dry rocky, gravelly and sandy ground and rocky clay ground, occurring from 400 to 4,100 feet in elevation in the woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: EXOTIC Invasive Plant. *Dimorphotheca sinuata* is native to southern Africa. *5, 6, 18, 43 (112009), 63 (112009 - color presentation), 77 (recorded as *Dimorphotheca sinuata* DC. [*D. aurantiaca* Hort., non DC.]), **85** (112009 - color presentation), 115 (color presentation)*

Dyssodia porophylloides (see *Adenophyllum porophylloides*)

***Encelia farinosa* A. Gray ex J. Torrey: Brittlebush**

SYNONYMY: *Encelia farinosa* A. Gray ex J. Torrey var. *farinosa* A. Gray ex J. Torrey, *Encelia farinosa* A. Gray ex J. Torrey var. *phenicodonta* (S.F. Blake) I.M. Johnston, *Encelia farinosa* A. Gray ex J. Torrey var. *radians* T.S. Brandegee ex S.F. Blake. COMMON NAMES: Brittle Bush, Brittle-bush, Brittlebush, Button Brittlebush, Goldenhills, Hierba Cenisa, Hierba de Gusano, Hierba de las Animas, Hierba del Vaso, Inceinso, Incienso (Spanish), Rama Blanca, Tohavs (Pima), White Brittle Bush, White

Brittlebush. DESCRIPTION: Terrestrial perennial evergreen (leaves will be shed under extreme drought conditions) subshrub or shrub (1 to 6 feet in height, one plant was described as being 2 feet in height and width, many plants were reported as being 40 inches in height); the foliage may be dark green, pale gray-green, silvery-gray, silvery-gray-green, silvery-green, silvery or whitish; the disk flowers are brown, brown-maroon, brown-purple, orange-yellow, purple, dark purple or yellow; the ray flowers are yellow or yellow-orange (the flowers appear 6 to 12 inches above or beyond the end of the foliage); flowering generally takes place between early November and mid-June (additional records: three for early July, four for late August, one for early September, two for mid-October). HABITAT: Within the range of this species it has been reported from mountains; mountainsides; mesas; cliffs; rocky and shaley canyons; rocky canyon walls; rocky, rocky-sandy and sandy canyon bottoms; talus slopes; bases of cliffs; bluffs; buttes; rocky ledges; along ridges; rocky ridgetops; sandy meadows; foothills; rocky and sandy hills; hilltops; bouldery, rocky, stony and cobbly hillsides; bouldery-gravelly, rocky, rocky-loamy, gravelly, sandy, loamy and clayey slopes; bouldery-stony-gravelly-sandy, rocky and rocky-sandy-loamy alluvial fans; gravelly-sandy bajadas; bouldery and rocky outcrops; amongst boulders and rocks; lava flows; sand dunes; sandy and clayey plains; rocky-sandy, gravelly-sandy and sandy flats; rocky and gravelly-sandy valley floors; coastal dunes; sandy railroad right-of-ways; along rocky, sandy and clayey roadsides; arroyos; sandy-silty bottoms of arroyos; around springs; along creeks; creekbeds; along rivers; sandy riverbeds; along and in rocky, gravelly, gravelly-sandy and sandy washes; within sandy drainages; drainage ways; along swales; edges of arroyos and washes; shores of rivers; beaches; gravelly benches; gravelly, rocky shelves; gravelly-sandy and sandy terraces; rocky-sandy floodplains; canal banks; riparian areas, and disturbed areas growing in dry desert pavement; bouldery, bouldery-stony-gravelly-sandy, bouldery-gravelly, rocky, rocky-sandy, shaley, gravelly, gravelly-sandy and sandy ground; rocky loam, rocky-sandy loam and loam ground; sandy clay and clay ground (where it reportedly does poorly), and sandy silty ground, occurring from sea level to 4,800 feet in elevation in the woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat, and has an estimated life span of 32 years. This plant was reported to have been utilized by native peoples of North America and could be investigated to determine its value as a home garden or commercial food (candy), and/or paint (varnish) crop; it was also noted as having been used as fuel, as a tool and waterproofing agent and as a drug or medication. According to the Fire Effects Information System, Brittlebush competes strongly with Buffelgrass (*Pennisetum ciliare*); it may be top-killed or completely killed by fire, and is considered to be a good off-site colonizer of post-fire communities. Plants with yellow ray flowers and dark purple disk flowers have historically been referred to as variety *phenicodonta* which has been observed growing with the typical plant which has yellow disk flowers. The Brittle Bush is browsed by Desert Bighorn Sheep (*Ovis canadensis* subsp. *mexicana*) and Desert Mule Deer (*Odocoileus hemionus* subsp. *crooki*). *Encelia farinosa* is native to southwest-central and southern North America. *5, 6, 13 (color photograph), 16, 18, 26 (color photograph), 28 (color photograph), 43 (112009), 46 (Page 904), 48, 58, 63 (112009 - color presentation), 85 (112109 - color presentation), 86 (color photograph), 91, 115 (color presentation), 127, **HR***

Encelia farinosa var. *farinosa* (see *Encelia farinosa*)

Encelia farinosa var. *phenicodonta* (see *Encelia farinosa*)

Encelia farinosa var. *radians* (see *Encelia farinosa*)

***Ericameria laricifolia* (A. Gray) L.H. Shinners: Turpentine Bush**

SYNONYMY: *Haplopappus laricifolius* A. Gray. COMMON NAMES: Ericameria, Larch-leaf Goldenweed, Roundleaf Rabbitbrush, Turpentine Bush, Turpentine-bush, Turpentine Brush, Turpentine-brush. DESCRIPTION: Terrestrial perennial subshrub or shrub (10 to 50 inches in height, one plant was described as being 1 foot in height and 2 to 3 feet in width, one plant was described as being 16 inches in height and 40 inches in width, one plant was described as being 40 inches in height and 40 inches in

width); the leaves are gray, gray-green, gray-silver, green or yellow-green; the disk flowers may be orange-yellow or yellow, the ray flowers may be orange-yellow or yellow; flowering generally takes place between mid-August to late December (additional records: two for mid-January, two for late January, one for mid-February, one for late March, one for late April, two for early May, two for late May, one for early July and one for late July); the fruits are white. HABITAT: Within the range of this species it has been reported from mountains; bouldery-gravelly mountainsides; mesas; plateaus; bouldery and rocky canyons; along bouldery and rocky-clayey canyon bottoms; rocky talus; bouldery bases of cliffs; crevices in rocks; rocky knolls; rocky ledges; rocky and gravelly ridges; stony ridgetops; ridgelines; clearings in woodlands; bouldery foothills; rocky hills; rocky and silty hillsides; rocky, rocky-gravelly, gravelly, gravelly-loamy-silty sandy-loamy and loamy-clayey slopes; bouldery and rocky outcrops; amongst boulders and rocks; bases of boulders; bouldery coves; plains; gravelly and sandy flats; rocky basins; valley floors; along gravelly, gravelly-sandy, sandy and loamy roadsides; along arroyos; draws; gulches; rocky gullies; seeps; along streams; along streambeds; along creekbeds; bouldery-cobbly-sandy riverbeds; along bouldery and sandy washes; drainage ways; gravelly-sandy edges of washes; margins of arroyos; gravelly terraces; floodplains; riparian areas, and disturbed areas growing in dry rocky desert pavement; bouldery, bouldery-cobbly-sandy, bouldery-gravelly, rocky, rocky-gravelly, rocky-sandy, cobbly, gravelly, gravelly-sandy and sandy ground; rocky-gravelly-sandy loam, gravelly-silty loam, clayey loam and loam ground; rocky clay and gravelly clay ground, and gravelly-loamy silty and silty ground, occurring from 1,000 to 7,200 feet in elevation in the woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. The flowers are visited by many types of insects. *Ericameria laricifolia* is native to southwest-central and southern North America. *5, 6, 13 (*Haplopappus laricifolius* A. Gray), 15, 16, 28 (color photograph), 43 (112109), 46 (recorded as *Aplopappus laricifolius* Gray, Page 861), 58, 63 (112109 - color presentation), 77, **85** (112109 - color presentation), 115 (color presentation), **HR***

***Erigeron colomexicanus* A. Nelson: Running Fleabane**

SYNONYMY: *Erigeron divergens* J. Torrey & A. Gray var. *cinereus* A. Gray. COMMON NAMES: Running Daisy, Running Fleabane. DESCRIPTION: Terrestrial biennial forb/herb (6 to 8 inches in height, plants were reported that were 6 to 8 inches in height and 4 inches in width); the foliage is gray-green or yellow-green; the disk flowers are orange-yellow or yellow; the ray flowers may be lavender, pinkish, pale purple, purple, white (turning pink with age), white-pale lavender, white with a pink tint, white tinged with purple or red-purple or white with purple tips; flowering generally takes place between mid-March and mid-July (additional records: two for late August and one for late September). HABITAT: Within the range of this species it has been reported from mountains; sandy mesas; plateaus; along canyons; canyon bottoms; talus slopes; rocky ledges; rocky ridges; rocky meadows; foothills; rocky hills; rocky hillsides; escarpments; rocky, gravelly-sandy, gravelly-loamy and clayey-loamy slopes; rocky outcrops; amongst boulders and rocks; sandy lava flows; sandy steppes; sandy and clayey prairies; plains; rocky, sand and clayey flats; basins; valley floors; along gravelly roadbeds; along rocky, gravelly, gravelly-loamy and sandy roadsides; within rocky and sandy arroyos; rocky and sandy draws; gulches; ravines; springs; along streams; sandy streambeds; along and in creeks; along creekbeds; gravelly-loamy and sandy washes; sandy drainages; within bouldery drainage ways; around ponds; silty-clayey lakebeds; loamy playas; sandy-silty swales; along banks of streams, creeks and washes; rocky shelves; sandy bottomlands; floodplains; along fencerows; edges of charcos (stock tanks); ditches; riparian areas, and disturbed areas growing in damp and dry bouldery, rocky, rocky-sandy, gravelly, gravelly-sandy and sandy ground; gravelly loam, sandy loam and clayey loam ground; silty clay and clay ground, and sandy silty ground, occurring from 2,600 to 8,900 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTE: *Erigeron colomexicanus* is native to southwest-central and southern North America. *5, 6, 15, 43 (112109), 46 (no record of species, record for *Erigeron divergens* Torr. & Gray is located on Page 880), 48 (genus), 63 (112109), **77**, **85** (112209 - color presentation, recorded as *Erigeron tracyi* Greene)*

***Erigeron divergens* J. Torrey & A. Gray: Spreading Fleabane**

SYNONYMY: *Erigeron divergens* J. Torrey & A. Gray var. *typicus* A.J. Cronquist. COMMON NAMES: Desert Fleabane, Diffuse Daisy, Fleabane, Fleabane Daisy, Green Rabbit Bush, Spreading Daisy, Spreading Fleabane. DESCRIPTION: Terrestrial biennial forb/herb (4 to 28 inches in height, plants were observed that were 8 inches in height and 6 inches in width, plants were observed that were 12 inches in height and 16 inches in width); the leaves are a dull gray-green; the disk flowers are orange-yellow or yellow; the ray flowers may be blue, blue-lavender, blue-purple, pale lavender, lavender, lavender-blue, lavender-pink, lavender-purple, pale pink, pinkish, pinkish-white, light purple, white or white-lavender; flowering generally takes place between mid-January and late December. HABITAT: Within the range of this species it has been reported from mountains; rocky, gravelly-loamy and sandy mountaintops; rocky crags; mountainsides; rocky-gravelly and sandy mesas; rocky and sandy plateaus; rocky cliffs; rocky, gravelly, gravelly-loamy and sandy canyons; along rocky and sandy canyon bottoms; talus slopes; bases of cliffs; sandy knolls; rocky ledges; bouldery and rocky ridges; ridgetops; sandy openings in forests and woodlands; rocky-sandy, sandy and clayey meadows; margins of meadows; rocky foothills; bouldery, bouldery-rocky and rocky hills; rocky and rocky-sandy hillsides; escarpments; bouldery, rocky, rocky-loamy, gravelly, gravelly-sandy, gravelly-loamy, sandy, clayey-loamy, loamy, clayey and silty slopes; bajadas; bedrock, bouldery and rocky outcrops; amongst boulders and rocks; lava flows; sandy dunes; rocky-sandy ashflows; banks; stony prairies; sandy plains; bouldery-gravelly-sandy, rocky, gravelly, sandy, loamy and silty-loamy flats; clayey basins; rocky and sandy valley floors; along railroad right-of-ways; along rocky, gravelly, gravelly-clayey-loamy, sandy, sandy-clayey-loamy and clayey roadsides; along sandy arroyos; bottoms of arroyos; draws; gulches; in seeps; springs; along streams; along rocky-sandy and gravelly-loamy streambeds; along creeks; along cobbly-loamy, gravelly-sandy and sandy creekbeds; gravelly areas and sandy soils along rivers; along sandy riverbeds; along and in bedrock, gravelly, gravelly-sandy, sandy and silty washes; drainages; along and in rocky, rocky-silty-clayey, sandy, silty-clayey and clayey drainage ways; boggy areas; cienegas; marshes; banks of streams, creeks, rivers and ponds; (sandy-silty) edges of vernal pools and playas; margins of lakes; along shores of lakes; mudflats; beaches; sandy and silty-loamy benches; sandy terraces; sandy bottomlands; clayey lowlands; floodplains; mesquite bosques; along levees; edges of tanks; along and in ditches; sandy riparian areas; waste places; recently burned areas of forests, and disturbed areas growing in wet, moist, damp and dry bouldery, bouldery-rocky, bouldery-gravelly-sandy, rocky, rocky-gravelly, rocky-sandy, shaley, shaley-sandy, stony, cindery, gravelly, gravelly-sandy and sandy ground; rocky loam, rocky-gravelly loam, rocky-sandy loam, cobbly loam, gravelly loam, gravelly-clayey loam, sandy loam, sandy-clayey loam, clayey loam, silty loam and loam ground; rocky-silty clay, gravelly clay, sandy clayey, silty clay, powdery clay and clay ground, and rocky silty and silty ground, occurring from 300 to 10,300 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. This plant was reported to have been utilized by native peoples of North America; it was noted as having been used as a drug or medication and the plants were used in the home as a good luck charm. *Erigeron divergens* is native to west-central and southern North America. *5, 6, 15, 16, 43 (112209), 46 (Page 880), 48 (genus), 58, 63 (112209 - color presentation), 77, **85** (112409 - color presentation), 86 (color photograph), 115 (color presentation), 127*

Erigeron divergens var. *cinereus* (see *Erigeron colomexicanus*)

Erigeron divergens var. *typicus* (see *Erigeron divergens*)

Erigeron tracyi (see footnote 85 under *Erigeron colomexicanus*)

Eriophyllum lanosum (see *Antheropeas lanosum*)

Eupatorium solidaginifolium (see *Koanophyllon solidaginifolium*)

Evax multicaulis (see *Evax verna* var. *verna*)

***Evax verna* C.S. Rafinesque var. *verna*: Spring Pygmycudweed**

SYNONYMY: *Evax multicaulis* A.P. de Candolle. COMMON NAMES: Cotton-rose, Evax, Manystem Evax, Rabbit Tobacco, Roundhead Rabbit-tobacco, Spring Pygmy-cudweed, Spring Pygmycudweed. DESCRIPTION: Terrestrial annual forb/herb (2 to 3 inches in length); the foliage is light gray; the flowers are white; flowering generally takes place between mid-March and late May. HABITAT: Within the range of this species it has been reported from mountains; mountainsides; mesas; canyons; hills; hilltops; rocky slopes; bajadas; rocky, gravelly and loamy flats; valley floors; along clayey roadsides; along rivers; along and in gravelly, gravelly-sandy and sandy washes; depressions; swales; edges of washes; margins of cienegas; benches; channel bars; gravelly-sandy bottomlands; floodplains; mesquite bosques; around stock tanks; riparian areas and disturbed areas growing in dry rocky, gravelly, gravelly-sandy and sandy ground; clayey loam and loam ground, and clay ground, occurring from 400 to 4,900 feet in elevation in the grassland, desertscrub and wetland ecological formations. NOTE: *Evax verna* var. *verna* is native to south-central and southern North America. *5, 6, 15 (recorded as *Evax multicaulis* DC.), 16 (recorded as *Evax multicaulis* DC.), 43 (112609), 46 (recorded as *Evax multicaulis* DC., Page 885), 58 (recorded as *Evax multicaulis* DC.), 63 (112709), 77 (recorded as *Evax multicaulis* DC.), **85** (112709 - color presentation of dried material)*

Filago arizonica (see *Logfia arizonica*)

Franseria ambrosioides (see Ambrosia ambrosioides)

Franseria confertiflora (see *Ambrosia confertiflora*)

Franseria deltoidea (see *Ambrosia deltoidea*)

Gnaphalium canescens (see *Pseudognaphalium canescens* subsp. *canescens*)

Gnaphalium wrightii (see *Pseudognaphalium canescens* subsp. *canescens*)

***Gymnosperma glutinosum* (C.P. Sprengel) C.F. Lessing: Gumhead**

SYNONYMY: *Selloa glutinosa* C.P. Sprengel. COMMON NAMES: Cola de Zorro, Escobilla, Glutinous Gymnosperma, Gumhead, Hierba Pegajosa, Jarilla, Jucu Ndede, Mariquita, Motita, Moto, Nakedseed Weed, Pegajosa, Tatalencho, Tata Lencho, Xonequilitl, Zazal. DESCRIPTION: Terrestrial perennial subshrub or shrub (erect stems 1 to 5 feet in height); the leaves are green; the flowers are golden or yellow; flowering generally takes place between late July and late November (additional records: one for late January, one for mid-February, five for mid-March, three for early April, one for mid-April, two for late April, one for late May, three for mid-June, one for late June and one for late December). HABITAT: Within the range of this species it has been reported from mountains; mountainsides; mesas; rocky canyons; rocky, gravelly and sandy canyon bottoms; bases of cliffs; crevices; rocky ridges; bouldery ridgetops; foothills; rocky, rocky-gravelly and gravelly hills; rocky hillsides; rocky and gravelly-loamy slopes; amongst boulders; bases of rocks; volcanic dikes and plugs; gravelly-loamy flats; rocky valley floors; rocky roadcuts; along roadsides; within sandy arroyos; bottoms of arroyos; bottoms of gullies; within ravines; springs; along streams; streambeds; creekbeds; along and in rocky, gravelly and sandy washes; within drainages; palm oases; along gravelly-sandy banks of ravines, streams and washes; edges of arroyos; rocky margins of arroyos; floodplains, and riparian areas growing in moist and dry bouldery, rocky, rocky-gravelly, rocky-sandy, gravelly, gravelly-sandy and sandy ground and gravelly loam and sandy loam ground, occurring from 100 feet to 7,600 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive

component of a restored native habitat. *Gymnosperma glutinosum* is native to southwest-central and southern North America and Central America. *5, 6, 13, 15, 28, 43 (071710 - *Gymnosperma glutinosum* Less.), 46 (recorded as *Selloa glutinosa* Spreng., Page 851), 77, **85** (072910 - color presentation)*

Haplopappus laricifolius (see *Ericameria laricifolia*)

***Helianthus annuus* C. Linnaeus: Common Sunflower**

COMMON NAMES: Alizeti (Swahili), Annual Sunflower, Common Sunflower, Girasol (Spanish), Girassol (Portuguese), Grand Soleil (French), Hopi Sunflower, Isoauringonkukka, Kansas Sunflower, Mirasol (Spanish for "looks at the sun"), Omatts'aba (Zuni), Sonnenblume (German), Sunflower, Tournesol (French), Wild Artichoke, Wild Sunflower. DESCRIPTION: Terrestrial annual forb/herb (1 to13 feet in height); the leaves are green; the disk flowers may be black, dark brown, brownish, maroon, reddish, reddish-brown, reddish-purple or rust-brown; the ray flowers are golden, orange-yellow or yellow; flowering generally takes place between early February and early November (additional records: one for mid-January, one for late November and two for late December). HABITAT: Within the range of this species it has been reported from mountains; mountaintops; mesas; plateaus; cliffs; canyons; rocky and sandy canyon bottoms; bluffs; ridges; rocky and loamy meadows; clayey foothills; rocky hills; rocky and clayey bouldery hillsides; gravelly-loamy, gravelly-sandy, gravelly-clayey, sandy, sandy-loamy and clayey slopes; bajadas; rocky outcrops; amongst rocks; sand dunes; rocky and sandy prairies; plains; alkali flats; sandy valley floors; along railroad right-of-ways; along gravelly, gravelly-loamy, sandy and clayey roadsides; within sandy arroyos; within gullies; ravines; seeps; springs; along streams; streambeds; along creeks; creekbeds; along rivers; riverbeds; bouldery and bouldery-cobbly-sandy riverbeds; along and in rocky, rocky-sandy, sandy, clayey and silty washes; in drainages; along and in rocky drainage ways; watersheds; around ponds; around lakes; freshwater and saltwater marshes; swales; along sandy banks of creeks and rivers; along silty edges of streams, rivers and ponds; around and along margins of lakes; sandy and sandy-loamy shores of rivers, ponds, lakes and backwaters; loamy benches; bottomlands; floodplains; fencerows; sandy-clayey stock tanks; shores of reservoirs; canals; canal banks; along and in sandy-loamy and silty ditches; along ditch banks; sandy riparian areas; waste places, and disturbed areas growing in wet, damp and dry bouldery, bouldery-cobbly-sandy, rocky, rocky-sandy, cindery, gravelly, gravelly-sandy and sandy ground; rocky loam, rocky-clayey loam, gravelly loam, sandy loam, sandy-clayey loam, clayey loam, silty loam and loam ground; gravelly clay, sandy clay and clay ground, and gravelly-sandy silty, sandy silty and silty ground, occurring from sea level to 9,300 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant was reported to have been utilized by native peoples of North America and could be investigated to determine its value as a home garden or commercial food, fodder, cooking agent, fiber, and/or dye crop; it was also noted as having been used for lighting, as a tool, as a musical instrument, as a drug or medication, for ceremonial items, decorations and as a commodity used in personal hygiene. The flower heads follows the sun through the day. *Helianthus annuus* is native to central and southern North America. *5, 6, 15, 18, 28 (color photograph), 43 (061709), 46 (Page 903), 48, 58, 63 (113009 - color presentation), 68, 77, 80 (The Common Sunflower is listed as a Rarely Poisonous and Suspected Poisonous Range Plant. "This common, annual forb has been reported to accumulate toxic levels of nitrate."), 85 (113009 - color presentation), 86 (color photograph), 101 (color photograph), 115 (color presentation), 127, **HR***

***Heliomeris longifolia* (B.L. Robinson & J.M. Greenman) T.D. Cockerell var. *annua* (M.E. Jones) L.G. Yates: Longleaf False Goldeneye**

SYNONYMY: *Viguiera annua* (M.E. Jones) S.F. Blake. COMMON NAMES: Annual Goldeneye, Goldeneye, Longleaf False Goldeneye, Longleaf Falsegoldeneye, Resinweed, Southern Goldeneye, Tallowweed. DESCRIPTION: Terrestrial annual forb/herb (1 to 6 feet in height); the stems are reddish; the leaves are green or dark green; the disk flowers may be golden-yellow, orange-yellow, yellow, dark yellow or yellow-orange; the ray flowers may be golden-yellow, orange-yellow, yellow or

dark yellow; flowering generally takes place between early August and mid-November (additional records: one for late March, two for mid-April, three for late April, two for mid-May, one for late May and one for early July, it has been reported that flowering may continue thru mild winters). HABITAT: Within the range of this species it has been reported from mountains; mesas; plateaus; cliff-facings; rocky and gravelly-loamy canyons; canyon bottoms; ridges; rocky-sandy, stony and gravelly meadows; rocky foothills; clayey rocky hills; rocky and gravelly-clayey hillsides; rocky, rocky-loamy and gravelly-clayey slopes; rocky-clayey alluvial fans; rocky outcrops; lava flows; banks; plains; cindery and clayey flats; valley floors; along railroad right-of-ways; along gravelly and clayey roadsides; arroyos; bottoms of arroyos; rocky-gravelly-loamy soils along streams; gravelly-loamy streambeds; along and in rocky-gravelly creekbeds; riverbeds; along and in sandy and clayey washes; along and in sandy and sandy-clayey drainages; beside clayey-loamy waterholes; around ponds; cienegas; marshes; swampy areas; sandy-loamy banks of streams; mudflats; sandy benches; gravelly terraces; bottomlands; floodplains; lowlands; around and in stock tanks; ditches; ditch banks; gravelly-sandy and sandy riparian areas, and disturbed areas growing in wet, moist and dry rocky, rocky-sandy, stony, cindery, gravelly, gravelly-sandy and sandy ground; rocky loam, rocky-gravelly loam, gravelly loam, sandy loam and clayey loam ground, and rocky clay, gravelly clay, sandy clay, silty clay and clay ground, occurring from 2,500 to 8,000 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. *Heliomeris longifolia* var. *annua* is native to southwest-central and southern North America. *5, 6, 15 (recorded as *Viguiera annua* (Jones) Blake), 28 (recorded as *Viguiera annua*), 43 (061809 - no record of *Heliomeris longifolia* var. *annua*, *Viguiera annua* (Jones - note that Jones is the standard form abbreviation for W. Jomes and not M.E. Jones) S.F. Blake), 46 (recorded as *Viguiera annua* (Jones) Blake), 48 (genus - *Viguiera*), 63 (081610 - color presentation), 68, 77 (recorded as *Viguiera annua* (Jones) Blake), 80, 85 (081610 - color presentation including habitat), 115 (color presentation)*

Hymenoclea pentalepis (see *Hymenoclea salsola* var. *pentalepis*)

***Hymenoclea salsola* J. Torrey & A. Gray ex A. Gray: Burrobrush**

SYNONYMY: *Ambrosia salsola* (J. Torrey & A. Gray) J.L. Strother & B.G. Baldwin. COMMON NAMES: Burro Brush, Burrobrush, Burrobush, Cheesebush, Cheeseweed, Desert Pearl, Ivdat (Pima), Jecota, Pearlbush, Romerillo, White Burrobrush, White Burro-bush, White Burrobush, White Cheesebush. DESCRIPTION: Terrestrial perennial drought-deciduous subshrub (10 inches to 8 feet in height and possibly two to three times as wide, one plant was observed and reported to be 2 feet in height and 40 inches in width, one plant was observed and reported to be 3 feet in height and 2 feet in width, one plant was observed and reported to be 3 feet in height and 5 feet in width with a trunk diameter of 2 inches, one plant was observed and reported to be 40 inches in height and 32 inches in width); the stems are green or yellow-green; the leaves are creamish-green, dark green or yellow-green; the flowers may be brown (male), cream, creamish-green, greenish-white (female), metallic gold, light pink, silvery, silvery-white, white, light yellow or yellow; flowering generally takes place between mid-January and early June (additional records: one for early October, flowering through June has been reported); the fruit has silvery-white wings. HABITAT: Within the range of this species it has been reported from mountains; sandy plateaus; rocky canyons; rocky canyon bottoms; sandy bases of cliffs; buttes; cinder cones; foothills; rocky, rocky-gravelly, sandy and clayey hills; rocky hillsides; bouldery, rocky, rocky-gravelly, rocky-sandy, cindery, gravelly and sandy slopes; rocky-sandy alluvial fans; sandy-silty bajadas; sand dunes; rocky-sandy outwash fans; rocky and rocky-gravelly banks; gravelly-sandy and sandy plains; gravelly-sandy, sandy and clayey flats; valley floors; along rocky, rocky-sandy and sandy roadsides; arroyos; bottoms of arroyos; gullies; gravelly-sandy ravines; along streams; streambeds; along rivers; sandy riverbeds; along and in rocky-sandy, gravelly, gravelly-sandy and sandy washes; within sandy drainages; around ponds; rocky-sandy edges of washes; margins of washes; gravelly-sandy shores of lakes; gravel and sand bars; bouldery beaches; benches; loamy bottomlands; floodplains; canal banks; recently burned areas in woodlands and desertscrub, and disturbed areas growing in dry bouldery, rocky,

rocky-gravelly, rocky-sandy, stony, cindery, gravelly, gravelly-sandy and sandy ground; clayey loam and loam ground; clay ground, and sandy silty and silty ground, occurring from below sea level to 5,300 feet in elevation in the woodland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. White Cheesebush may be useful in the re-vegetation of disturbed sites. *Hymenoclea salsola* is native to southwest-central and southern North America. *5, 6, 13, 15, 28 (color photograph), 43 (052010 - *Hymenoclea salsola* Torr. & A. Gray), 46 (Page 893), 48 (genus), 63 (052010 - color presentation), **85** (052110 - color presentation, also recorded as *Ambrosia salsola* (J. Torrey & A. Gray) J.L. Strother & B.G. Baldwin), 91, 115 (color presentation)*

***Hymenoclea salsola* J. Torrey & A. Gray ex A. Gray var. *pentalepis* (P.A. Rydberg) L.D. Benson: Burrobrush**

SYNONYMY: *Ambrosia salsola* (J. Torrey & A. Gray) J.L. Strother & B.G. Baldwin var. *pentalepis* (P.A. Rydberg) J.L. Strother & B.G. Baldwin, *Hymenoclea pentalepis* P.A. Rydberg. COMMON NAMES: Burro Brush, Burrobrush, Burrobush, Cheesebush, Cheeseweed, Ivdat? (Pima), Jecota, Romerillo, White Burrobrush, White Burrobush, White Burro-bush, White Cheesebush. DESCRIPTION: Terrestrial perennial deciduous subshrub (1 to 5 feet in height, one plant was reported to be 40 inches in height and 40 inches in width, one plant was reported to be 4 feet in height and 5 feet in width); the herbage is dark green; the flowers may be cream, creamish-green, metallic gold, silvery, white or light yellow, flowering generally takes place between mid-February and early May; the fruit has silvery-white wings. HABITAT: Within the range of this species it has been reported from mountains; rocky canyons; buttes; foothills; sandy hills; rocky, cindery and sandy slopes; bajadas; banks; sandy plains; sandy flats; valley floors; rocky and sandy roadsides; arroyos; bottoms of arroyos; gravelly-sandy ravines; streambeds; riverbeds; along and in gravelly, gravelly-sandy and sandy washes; around ponds; margins of arroyos; terraces; loamy bottomlands; floodplains; riparian areas, and disturbed areas growing in dry rocky-gravelly, rocky-sandy, stony, gravelly-sandy and sandy ground and sandy silty and silty ground, occurring from sea level to 3,000 feet in elevation in the desertscrub ecological formation. NOTES: This plant may be an attractive component of a restored native habitat. White Cheesebush may be useful in the re-vegetation of disturbed sites. *Hymenoclea salsola* var. *pentalepis* is native to southwest-central and southern North America. *5, 6, 13, 28 (species, color photograph), 43 (052010 - *Hymenoclea salsola* Torr. & A. Gray var. *pentalepis* (Rydb.) L.D. Benson), 46 (recorded as *Hymenoclea pentalepis* Rydb., Page 894), 48 (genus), 63 (052010), 77, 85 (052010 - color presentation (same as *Ambrosia salsola*), also recorded as *Ambrosia salsola* (J. Torrey & A. Gray) J.L. Strother & B.G. Baldwin var. *pentalepis* (P.A. Rydberg) J.L. Strother & B.G. Baldwin), 91*

***Hymenothrix wislizeni* A. Gray: Trans-Pecos Thimblehead**

COMMON NAMES: Golden Ragweed, Trans-Pecos Thimblehead, TransPecos Thimblehead, Wislizenus Beeflower, Yellow Thimblehead. DESCRIPTION: Terrestrial annual or biennial forb/herb (8 inches to 5 feet in height); the foliage is green; the disc and ray flowers are green-yellow or yellow; flowering generally takes place between early June and early December (additional record: one for late March). HABITAT: Within the range of this species it has been reported from mountains; mesas; clefts in cliffs; rocky canyons; buttes; meadows; foothills; stony-gravelly hills; rocky and gravelly hillsides; bouldery-rocky-sandy and rocky slopes; alluvial fans; bajadas; amongst boulders; plains; gravelly, sandy and clayey flats; valley floors; along gravelly, gravelly-sandy-clayey-loamy, gravelly-silty, sandy and sandy-clayey-loamy roadsides; within sandy arroyos; along sandy bottoms of arroyos; springs; sandy streambeds; along creeks; along rivers; sandy riverbeds; along and in rocky, gravelly, gravelly-sandy, sandy and clayey washes; gravelly-sandy and sandy banks of washes; sandy edges of washes; terraces; floodplains; mesquite bosques; around stock tanks, and disturbed areas growing in dry bouldery, bouldery-rocky-sandy, rocky, rocky-sandy, stony-gravelly, gravelly, gravelly-sandy and sandy ground; rocky-clayey loam, gravelly-sandy-clayey loam, sandy-clayey loam and loam ground; gravelly clay and clay ground, and gravelly silty ground, occurring from 1,300 to 7,600 feet in elevation in the woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTE: *Hymenothrix wislizeni* is native

to southwest-central and southern North America. *5, 6, 15, 16, 43 (062009), 46 (Page 920), 58, 63 (120209), 77, **85** (120209 - color presentation), 115 (color presentation), **WTK** (September 9, 2005)*

***Koanophyllon solidaginifolium* (A. Gray) R.M. King & H.E. Robinson: Shrubby Thoroughwort**

SYNONYMY: *Eupatorium solidaginifolium* A. Gray. COMMON NAMES: Boneset, Shrubby Thoroughwort. DESCRIPTION: Terrestrial perennial subshrub (18 inches to 5 feet in height); the flowers are cream-yellow; based on few records located, flowering generally takes place between late April and early December (flowering records: one for late April, one for early May, one for late June, two for late August, two for early September, 4 for late September, 4 for early October, two for mid-October, one for mid-November and two for early December). HABITAT: Within the range of this species it has been reported from mountains; rock faces; rocky canyons; rocky canyon bottoms; rocky talus; bases of cliffs; rocky crevices; crests of buttes; rocky promontories; rocky ridges; foothills; rocky hilltops; rocky-sandy cuts in hillsides; rocky slopes; bases of rocky outcrops; amongst boulders and rocks; bases of rocks; in partial shade along valley bottoms; within draws; within ravines; along streams; along washes; shady bottomlands, and riparian areas growing in dry bouldery, rocky, rocky-sandy, gravelly and sandy ground, occurring from 100 to 6,800 feet in elevation in the grassland and desertscrub ecological formations. NOTE: *Eupatorium solidaginifolium* is native to southwest-central and southern North America. *5, 6, 15, 43 (071710), 46 (recorded as *Eupatorium solidaginifolium* Gray, Page 845), 58, 63 (073010), 77 (color photograph #69), 85 (073010 - color presentation of dried material)*

***Lasthenia californica* A.P. de Candolle ex J. Lindley subsp. *californica*: California Goldfields**

SYNONYMY: *Baeria chrysostoma* F.E. von Fischer & C.A. von Meyer, *Baeria chrysostoma* F.E. von Fischer & C.A. von Meyer var. *gracilis* (A.P. de Candolle) H.M. Hall, *Lasthenia chrysostoma* (F.E. von Fischer & C.A. von Meyer) E.L. Greene. COMMON NAMES: California Goldenfields, California Goldfields, Gold-fields, Goldfields. DESCRIPTION: Terrestrial annual forb/herb (3 to 10 inches in height); the foliage is green; the disc flowers are orange or yellow; the ray flowers are golden-yellow, yellow or yellow-orange; flowering generally takes place between late January and mid-June. HABITAT: Within the range of this species it has been reported from mountains; rocky mountainsides; gravelly mesas; plateaus; rocky canyons; canyon bottoms; ridges; ridgetops; meadows; foothills; rocky hills; rocky hillsides; rocky, gravelly and stony-loamy slopes; bajadas; amongst boulders and rocks; clayey-loamy plains; gravelly flats; sandy basins; valley floors; along roadsides; sandy draws; seeps; along streams; bouldery-gravelly streambeds; sandy riverbeds; along and in rocky and sandy washes; clayey lakebeds; edges of creeks and rivers; banks of washes; gravelly and sandy-loamy terraces; bottomlands; floodplains; gravelly-sandy riparian areas, and disturbed areas growing in dry bouldery, bouldery-gravelly, rocky, rocky-gravelly-sandy, gravelly, gravelly-sandy and sandy soils; rocky loam, stony loam, sandy loam and clayey loam soils, and clay soils, occurring from 700 to 5,600 feet in elevation in the woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. The flowers are reportedly fragrant. The species, *Lasthenia californica*, was reported to have been utilized by native peoples of North America and could be investigated to determine its value as a home garden or commercial food crop. *Lasthenia californica* subsp. *californica* is native to southwest-central and southern North America. *5, 6, 15, 28 (recorded as *Lasthenia chrysostoma*, color photograph), 43 (120409), 46 (recorded as *Baeria chrysostoma* Fisch. & Mey. var. *gracilis* (DC.) Hall, reports that variety *gracillis* is the only form occurring in Arizona, Page 917-918), 63 (120409 - color presentation), 77, 85 (120409 - recorded as *Lasthenia californica*, no varieties of *Lasthenia californica* were recorded, color presentation), 86 (recorded as *Lasthenia chrysostoma* - color photograph), 127 (species)*

Lasthenia chrysostoma (see *Lasthenia californica* subsp. *californica*)

***Logfia arizonica* (A. Gray) J. Holub: Arizona Cottonrose**

SYNONYMY: *Filago arizonica* A. Gray. COMMON NAMES: Arizona Cottonrose, Arizona Filago, Arizona Fluffweed, Arizona Herba Impia. DESCRIPTION: Terrestrial annual forb/herb (2 to 6 inches in height); the leaves are gray, grayish or green; the disc flowers are brownish or yellowish; flowering generally takes place between mid-February and mid-May (additional records: one for early January, one for mid-June and one for early September). HABITAT: Within the range of this species it has been reported from mountains; mesas; escarpments; canyons; gravelly and sandy-loamy canyon bottoms; sandy bases of buttes; crevices in rocks; ridges; rocky hills; rocky, clayey and silty-clayey hillsides; rocky and gravelly-clayey slopes; gravelly bajadas; amongst rocks; lava fields; gravelly and sandy plains; rocky, gravelly, gravelly-sandy, sandy and clayey flats; valley floors; valley bottoms; rocky coastal bluffs; along sandy roadsides; arroyos; along streams; riverbeds; along and in rocky-silty, gravelly, gravelly-sandy and sandy washes; drainage ways; rocky-clayey soils in and about vernal pools; shores of lakes; depressions; beaches; clayey terraces; floodplains; sandy-silty edges of stock tanks (charcos); gravelly-sandy riparian areas, and disturbed areas growing in dry bouldery, rocky, gravelly, gravelly-sandy, sandy ground; cobbly-sandy loam, sandy loam and clayey loam ground; rocky clay, gravelly clay and clay ground; rocky silty, gravelly-sandy silty and sandy silty ground, and chalky ground, occurring from sea level to 4,400 feet in elevation in the scrub, grassland, desertscrub and wetland ecological formation. NOTE: *Logfia arizonica* is native to southwest-central and southern (Baja California) North America. *5, 6, 16 (recorded as *Filago arizonica* Gray), 43 (120509), 46 (recorded as *Filago arizonica* Gray, Page 886), 63 (120509 - color presentation), 77 (recorded as *Filago arizonica* Gray), **85** (120509 - color presentation)*

***Machaeranthera pinnatifida* (W.J. Hooker) L.H. Shinners: Lacy Tansyaster**

COMMON NAMES: Cutleaf Goldenweed, Cutleaf Ironplant, Ironplant, Lacy Tansy-aster, Lacy Tansyaster, Pinnate Machaeranthera, Spiny Daisy, Spiny Goldenweed, Spiny Haplopappus, Tansyaster, Yellow Spiny Daisy. DESCRIPTION: Terrestrial perennial forb/herb or subshrub (4 to 36 inches in height); the color of the leaves has been described as being bluish, gray-green or green; the disk flowers may be brown, brownish, golden-yellow, orange, yellow or yellow-orange; the ray flowers are golden-yellow or yellow; flowering generally takes place between mid-January and late December. HABITAT: Within the range of this species it has been reported from mountains; rocky mountaintops; rocky mountainsides; rocky mesas; plateaus; rock cliffs; rocky and rocky-sandy rims of canyons and craters; rocky, shaley and sandy canyons; canyon walls; bouldery-gravelly-sandy and sandy canyon bottoms; talus slopes; bases of cliffs; rocky clefts; crevices in bedrock, boulders, rocks and cracks in soil; ledges; rocky and chalky ridges; bouldery ridgetops; crater walls; foothills; rocky and sandy hills; bouldery and rocky hillsides; bouldery, rocky and gravelly slopes; gravelly, gravelly-sandy and sandy bajadas; rocky outcrops; amongst boulders and rocks; alcoves; along lava flows; lava fields; prairies; sandy plains; gravelly, sandy and clayey flats; valley floors; along rocky, rocky-loamy, gravelly and gravelly-loamy roadsides; arroyos; sandy-silty draws; gullies; along streams; streambeds; along creeks; creekbeds; along rivers; along and in rocky, gravelly and sandy washes; along and in cobbly drainages; banks of creeks and rivers; mudflats; sand bars; along rocky beaches; gravelly and sandy benches; rocky and gravelly-sandy terraces; rocky terrace alcoves; bottomlands; floodplains; mesquite bosques; dry bottoms of stock tanks (charcos); sandy riparian areas, and disturbed areas growing in dry bouldery, bouldery-gravelly-sandy, rocky, rocky-gravelly, rocky-sandy, cobbly, cindery, gravelly, gravelly-sandy, sandy and chalky ground; rocky loam, gravelly loam, gravelly-clayey loam and sandy loam ground; sandy clay and clay ground, and sandy silty ground, occurring from sea level to 8,900 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. *Machaeranthera pinnatifida* is native to central and southern North America. *5, 6, 16, 43 (062109), 46 (recorded as *Aplopappus spinulosus* (Pursh) DC., Page 860; *Aplopappus spinulosus* (Pursh) DC. subsp. *typicus* H.M. Hall, Page 860; *Aplopappus spinulosus* (Pursh) DC. var. *gooddingii* (A. Nels.) Blake, Page 860, and *Aplopappus spinulosus* (Pursh) DC. var. *turbinellus* (Rydb.) Blake, Page 860), 63 (120609 - color presentation), 80 (Species of the genus *Machaeranthera* (*Aster* sp.) are listed as a Rarely Poisonous and Suspected Poisonous Range Plant. "Species of this genus

are secondary or facultative selenium absorbers and can be dangerous to livestock.”), **85** (120609 - color presentation), 86 (recorded as *Haplopappus spinulosus*, color photograph)*

***Matricaria discoidea* A.P. de Candolle: Disc Mayweed**

SYNONYMY: *Matricaria matricarioides* auct. non (C.F. Lessing) T.C. Porter, *Matricaria suaveolens* (F.T. Pursh) F.G. Buchenau. COMMON NAMES: Disc Mayweed, False Chamomile, Manzanilla, Pineapple Weed, Pineapple-weed, Pineappleweed, Rayless Chamomile, Rounded Chamomile, Strahllose Kamille (German), Uv Spuluv ‘Smelly Clover’ (Pima). DESCRIPTION: Terrestrial annual forb/herb (3 to 12 inches in height); the flowers may be green, greenish-yellow, white, dull yellow, yellow, dull yellow-green or yellow-green; flowering generally takes place between mid-February and mid-July (additional record: one for early August, two for mid-August, one for early September and one for late September). HABITAT: Within the range of this species it has been reported from mountains; mesas; rocky canyons; canyon bottoms; bluffs; ridgetops; meadows; foothills; rocky and loamy hills; hillsides; bouldery, bouldery-sandy and rocky slopes; plains; clayey flats; valley floors; loamy valley bottoms; in roadways; along roadsides; gulches; along streams; along rivers; along riverbeds; along and in gravelly and sandy washes; along sandy-clayey-loamy drainages; sandy banks of rivers and pools; alkali lakebeds; clay pans; rocky beaches; sandy terraces; bottomlands; stock tanks; canals; riparian areas; waste places, and disturbed areas growing in muddy and wet, moist and dry bouldery, bouldery-sandy, rocky, gravelly and sandy ground; gravelly loam, sandy loam, sandy-clayey loam, clayey loam and loam ground, and rocky clay, sandy clay and clay ground, occurring from sea level to 10,300 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant was reported to have been utilized by native peoples of North America and could be investigated to determine its value as a home garden or commercial food and/or fiber (dried and crushed plants used to line baby cradles crop; it was also noted as having been used as a drug or medication, the dried blossoms were used for jewelry, perfume and as an insect repellent, and the plant was used as an indicator of the salmonberry picking time. *Matricaria discoidea* is native to northwestern, northern (Yukon Territory), west-central and southern North America, and eastern Asia, its exact native range is obscure. *5, 6, 16, 43 (120809), 46 (recorded as *Matricaria matricarioides* (Less.) Porter, Page 937), 63 (120809), 77, **85** (120809 - color presentation), 101 (color photograph), 127*

Matricaria matricarioides (see *Matricaria discoidea*)

Matricaria suaveolens (see *Matricaria discoidea*)

***Monoptilon bellioides* (A. Gray) H.M. Hall: Mojave Desertstar**

COMMON NAMES: Desert Daisy, Desert Star, Desertstar, Mohave Desert Star, Mohave Desertstar, Mojave Desertstar, Rock Daisy. DESCRIPTION: Terrestrial annual forb/herb (1 to 12 inches in height, plants may be up to 10 inches in width, plants ¾ inch in height and 5 inches in width were reported); the leaves are grayish-green; the disk flowers are golden or yellow; the ray flowers may be blue, blue-lavender-white, lavender, pink, purplish-lavender, white, white-lavender or white tinged with pink, pink-purple, purple or rose; flowering generally takes place between mid-January and mid-June. HABITAT: Within the range of this species it has been reported from mountains; stony and sandy mesas; rocky canyons; foothills; rocky, gravelly and sandy hills; rocky, rocky-cobbly and gravelly hillsides; rocky, rocky-gravelly-sandy, rocky-sandy, stony-sandy, cobbly-gravelly, cobbly-gravelly-sandy, gravelly-sandy, sandy and clayey slopes; rocky alluvial fans; gravelly-sandy and sandy bajadas; bouldery outcrops; amongst rocks; lava flows; lava fields; sand dunes; gravelly plains; rocky, gravelly and sandy flats; valley floors; coastal sand dunes; sandy roadsides; gullies; creekbeds; along and in stony-sandy, gravelly, gravelly-sandy and sandy washes; stony drainage ways; playas; gravelly and sandy banks of drainage ways, silty depressions; shores of lakes; gravel bars; gravelly and sandy benches; terraces; canal banks, and gravelly-sandy riparian areas growing in dry desert pavement; bouldery, rocky, rocky-cobbly, rocky-gravelly-sandy, rocky-sandy, stony, stony-sandy, cobbly-gravelly, cobbly-gravelly-sandy, gravelly,

gravelly-sandy and sandy ground; gravelly-sandy loam and sandy loam ground, and clay ground, occurring from sea level to 4,000 feet in elevation in the desertscrub and wetland ecological formations. NOTES: This small winter annual may be an attractive component of a restored native habitat, the flowers are about ¾ inch in width. *Monoptilon bellioides* is native to southwest-central and southern North America. *5, 6, 16, 28 (color photograph), 43 (120809 - *Monoptilon bellioides* H.M. Hall), 46 (Page 868), 63 (120809 - color presentation), 77 (color photograph #21), **85** (120909 - color presentation), 86 (color photograph), 115 (color presentation)*

***Pectis cylindrica* (M.L. Fernald) P.A. Rydberg: Sonoran Cinchweed**

COMMON NAMES: Fetid-marigold, Sonoran Cinchweed, Summer Mat. DESCRIPTION: Terrestrial annual forb/herb (prostrate to erect stems 1 to 4 inches in height sometimes forming dense mats); the disk flowers are yellow; the ray flowers are yellow; flowering generally takes place between late August and early October (additional records: one for late October and one for early December, flowering beginning as early as May has been reported). HABITAT: Within the range of this species it has been reported from mountains; gravelly-sandy mesas; ridges; foothills; rocky hills; bajadas; lava flows; earthen banks; gravelly-sandy and silty plains; sandy-silty, clayey and silty flats; valley floors; valley bottoms; gravelly roadsides; within shaded arroyos; washes; drainages; playas; gravelly-sandy banks of streambeds; mudflats; channel bars; floodplains; mesquite bosques, and disturbed areas growing in moist and dry rocky, gravelly and gravelly-sandy ground; rocky-gravelly-sandy loam and gravelly loam ground; clay ground, and sandy-silty and silty ground, occurring from 600 to 7,200 feet in elevation in the woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTE: *Pectis cylindrica* is native to southwest-central and southern North America. *5, 6, 43 (071710), 46 (Page 935), 63 (073010), 77, **85** (073010 - color presentation of dried material)*

***Pectis filipes* W.H. Harvey & A. Gray (var. *subnuda* M.L. Fernald is the variety reported as occurring in Arizona): Fivebract Cinchweed**

COMMON NAME: Fivebract Cinchweed. DESCRIPTION: Terrestrial annual forb/herb (2½ to 8 inches in height); the stems are red or reddish; the ray flowers are golden, golden-yellow, yellow or yellow-maroon; flowering generally takes place between late July and mid-November (additional record: one for late December). HABITAT: Within the range of this species it has been reported from mountains; gravelly mountaintops; mountainsides; mesas; canyons; canyon bottoms; crevices in lava rock; pockets of soil; bluffs; ridges; ridgetops; stony and gravelly openings in forests and woodlands; foothills; rocky hills; bases of hills; rocky hilltops; rocky and sandy hillsides; along rocky, shaley, stony, gravelly, gravelly-loamy and sandy-loamy slopes; bajadas; amongst rocks; lava flows; rocky, cobbly and sandy plains; gravelly and sandy flats; sandy valley floors; along rocky roadsides; arroyos; bottoms of arroyos; draws; along streams; along creeks; within rocky creekbeds; along sandy washes; (rocky-sandy) shores of lakes; sandy gravelbars; gravelly and sandy benches; floodplains; riparian areas; gravelly waste places, and disturbed areas growing in wet, moist and dry bouldery-gravelly, rocky, rocky-sandy, shaley, cobbly, gravelly, gravelly-sandy and sandy ground; gravelly loam and sandy loam ground, and sandy clay ground, occurring from 600 to 7,000 feet in elevation in the forest, woodland, scrub, grassland and desertscrub ecological formations. NOTES: This plant reportedly has a pleasant fragrance. *Pectis filipes* is native to southwest-central and southern North America. *5, 6, 43 (082010 - *Pectis filipes* Harv. & A. Gray), 46 (Page 935), 63 (082010), **77**, 85 (082110 - color presentation)*

***Pectis papposa* W.H. Harvey & A. Gray: Manybristle Chinchweed**

COMMON NAMES: Chinchweed, Chinchweed Fetidmarigold, Cinchweed, Desert Cinchweed, Fetid Marigold, Fetid-marigold, Limoncillo, Manybristle Chinchweed, Manzanilla de Coyote. DESCRIPTION: Terrestrial annual forb/herb (1 to 8 inches in height and up 2 to 15 inches in width, plants were described as being 6 inches in height and 8 inches in width); the foliage is green or yellow; the ray and disk flowers are yellow; flowering generally takes place between early July and late December (additional records: one for early April, one for late April, two for early May, one for mid-May

and two for early June). HABITAT: Within the range of this species it has been reported from mountains; rocky-sandy mesas; plateaus; rocky canyons; crevices in rock; buttes; sandy ridges; rocky and sandy foothills; bouldery and gravelly hills; rocky-gravelly hilltops; rocky hillsides; bouldery-rocky-gravelly, rocky, rocky-gravelly, gravelly, sandy and sandy-silty slopes; gravelly alluvial fans; bajadas; amongst boulders and rocks; sand hills; sand dunes; sand hummocks; blow-sand deposits; gravelly and gravelly-sandy plains; bouldery, rocky-sandy, gravelly, gravelly-silty and sandy flats; basins; sandy valley floors; valley bottoms; coastal dunes; coastal flats; along gravelly, gravelly-sandy and sandy-loamy roadsides; rocky and sandy arroyos; along sandy bottoms of arroyos; silty springs; along streams; along streambeds; sandy riverbeds; along and in bouldery-sandy, cobbly, gravelly, gravelly-sandy, sandy and silty washes; gravelly drainages; sandy baysides; depressions; swales; sandy banks of rivers and washes; silty edges of lakebeds; terraces; floodplains; lowlands; mesquite bosques; impoundments; bottoms of dry stock tanks (charcos); riparian areas; waste places, and disturbed areas growing in moist and dry desert pavement; bouldery, bouldery-rocky-gravelly, bouldery-sandy, rocky, rocky-gravelly, rocky-sandy, pebbly, pebbly-sandy, gravelly, gravelly-sandy and sandy ground; rocky-gravelly loam, gravelly loam, gravelly-sandy-clayey loam and sandy loam ground; clay ground, and gravelly silty, gravelly-sandy silty, sandy silty and silty ground, occurring from sea level to 7,500 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat, and has been reported to be pleasantly aromatic (one record reported that it has a pungent aroma somewhat like that of a lemon). This plant was reported to have been utilized by native peoples of North America and could be investigated to determine its value as a home garden or commercial food and/or spice crop; it was also noted as having been used as a drug or medication and as a ceremonial item. This plant is a host of the Beet Leaf Hopper. *Pectis papposa* is native to southwest-central and southern North America. *5, 6, 16, 43 (121009), 46 (Page 935), 63 (121009), 77, **85** (121009 - color presentation), 86 (color photograph), 127*

Perezia nana (see *Acourtia nana*)

Perezia wrightii (see *Acourtia wrightii*)

***Porophyllum gracile* G. Bentham: Slender Poreleaf**

COMMON NAMES: Deerweed, Hierba del Venado (Herb of the Deer), Odora, Poreleaf, Slender Poreleaf. DESCRIPTION: Terrestrial perennial subshrub (4 to 48 inches in height, one plant was described as being 8 inches in height and 12 inches in width, one plant was described as being 16 inches in height and 20 inches in width), the foliage is bluish, blue-gray, gray, gray-green, green or purple-gray; the disk flowers (no ray flowers) may be cream, cream-maroon, cream-purple, cream-white, flesh, grayish-white, maroon, maroon-cream, pinkish, pinkish-white, purple, purplish-white, white, whitish, white tinged with purple, yellow or yellow-white; flowering generally takes place between mid-February and late December (additional records: one for early January and one for mid-January). HABITAT: Within the range of this species it has been reported from mountains; rocky mountainsides; rocky-gravelly and gravelly mesas; cliffs; bouldery and rocky and stony canyons; rocky and sandy canyon bottoms; scree; talus slopes; bouldery bases of cliffs; crevices in boulders and rocks; ledges; rocky ridges; ridgetops; meadows; foothills; rocky and rocky-sandy hills; along bouldery hilltops; rocky hillsides; bouldery, rocky, rocky-gravelly, rocky-loamy, rocky-clayey, gravelly and sandy slopes; alluvial fans; rocky and gravelly bajadas; rocky outcrops; amongst boulders and rocks; sandy lava beds; sand dunes; sandy hummocks; sandy plains; rocky-sandy, gravelly and sandy flats; basins; valley floors; sandy coastal dune ridges; along gravelly roadsides; sandy arroyos; rocky arroyo walls; rocky arroyo bottoms; draws; along gullies; around springs; along streams; along creeks; sandy creekbeds; along rivers; rocky riverbeds; along and in rocky, rocky-clayey, gravelly, gravelly-sandy and sandy washes; within drainage ways; rocky, cobbly and sandy banks of arroyos, rivers and washes; rocky edges of arroyos; along shores; beaches; gravelly terraces; floodplains; riparian areas, and recently burned areas of chaparral growing in wet and dry desert pavement; bouldery, bouldery-gravelly, rocky, rocky-gravelly, shaley, cobbly, cindery,

gravelly, gravelly-sandy and sandy ground; rocky loam and rocky-gravelly loam ground, and rocky clay and clay ground, occurring from sea level to 6,100 feet in elevation in the woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: Deerweed emits a pungent odor when bruised. This plant was reported to have been utilized by native peoples of North America crop; it was noted as having been used as a drug or medication. Deer browse this plant. *Porophyllum gracile* is native to southwest-central and southern North America. *5, 6, 13, 15, 16, 28 (color photograph), 43 (121109), 46 (Pages 933-934), 58, 63 (121109 - color presentation), 77, **85** (121209 - color presentation), 115 (color presentation), 127*

***Pseudognaphalium canescens* (A.P. de Candolle) W.A. Weber subsp. *canescens*: Wright's Cudweed**

SYNONYMY: *Gnaphalium canescens* A.P. de Candolle, *Gnaphalium wrightii* A. Gray. COMMON NAMES: Everlasting, Gordolobo, Wright Cudweed, Wright's Cudweed. DESCRIPTION: Terrestrial annual, biennial or perennial forb/herb (12 to 40 inches in height); the foliage is gray; the flowers are cream, straw, white, yellow or yellow-cream; flowering generally takes place between early July and early November, late October (additional records: one for mid-January, one for late January, one for early February, one for late February, one for early April, one for mid-April, one for late April, one for late May, one for early June and one for late December). HABITAT: Within the range of this species it has been reported from mountains; mesas; rocky canyons; along canyon bottoms; bases of cliffs; sandy crevices in boulders and rocks; knolls; meadows; hills; sandy hillsides; rocky and gravelly slopes; bases of slopes; rocky outcrops; banks; flats; along roadsides; gullies; along streambeds; riverbeds; rocky and sandy washes; in pools; edges of seeps; cobbly-sandy terraces; gravelly-sandy riparian areas, and disturbed areas growing in moist and dry rocky, gravelly, gravelly-sandy and sandy ground, occurring from sea level to 8,000 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: The foliage may be scented. *Pseudognaphalium canescens* subsp. *canescens* is native to southwest-central and southern North America. *5, 6, 15, 43 (071710), 46 (recorded as *Gnaphalium wrightii* Gray, Page 888), 58, 63 (071710), **77**, **85** (073110)*

***Psilostrophe cooperi* (A. Gray) E.L. Greene: Whitestem Paperflower**

COMMON NAMES: Cooper Paperflower, Paper Daisy, Paper-daisy, Paper Flower, Paper-flower, Paperflower, Whitestem Paperflower, Yellow Paper Daisy. DESCRIPTION: Terrestrial perennial forb/herb or subshrub (4 to 32 inches in height, one plant was described as being 32 inches in height and 40 inches in width); the stems are white; the leaves may be blue-green, gray, gray-green, green, greenish-gray or white; the disk flowers are yellow, the ray flowers are lemon-yellow, pale yellow or yellow fading to cream or white and persisting on plant when dry; flowering generally takes place between early January and early December. HABITAT: Within the range of this species it has been reported from mountains; rocky mesas; bouldery canyons; along canyon bottoms; buttes; rocky and chalky ridges; ridgelines; foothills; rocky, stony-gravelly, cobbly-gravelly-loamy and clayey hills; rocky and gravelly hillsides; bouldery, rocky, rocky-gravelly-clayey, stony, gravelly-sandy-silty, gravelly-clay and sandy-silty slopes; sandy bajadas; amongst boulders and rocks; lava fields; plains; gravelly and sandy flats; basins; sandy valley floors; rocky embankments; in roadbeds; along rocky-sandy-loamy, gravelly-sandy, sandy and clayey roadsides; arroyos; along streams; along and in rocky, rocky-sandy, gravelly, gravelly-sandy and sandy washes; drainages; sandy along rocky drainage ways; sandy depressions; gravelly-silty edges of draws; along sandy banks of arroyos, rivers and washes; mudflats; rocky benches; gravelly terraces; sandy bottomlands; floodplains; sandy riparian areas, and disturbed areas growing in moist and dry desert pavement; bouldery, rocky, rocky-sandy, stony, stony-gravelly, cindery, gravelly, gravelly-sandy, sandy and chalky ground; rocky-sandy loam, cobbly-gravelly loam, sandy-clayey loam and sandy-silty loam ground; rocky-gravelly clay, gravelly clay and clay ground, and gravelly silty, gravelly-sandy silty and sandy silty ground, occurring from 500 to 5,200 feet in elevation in the woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. *Psilostrophe cooperi* is native to southwest-central and southern North America. *5, 6, 13 (color photograph), 15, 16, 18, 28 (color photograph), 43 (121209 - *Psilostrophe cooperi*

Greene), 46 (Page 914), 48 (genus), 63 (121209 - color presentation), 77, 80 (This species is listed as a Rarely Poisonous and Suspected Poisonous Range Plant. "This showy, low-growing shrub is widespread in Arizona. No losses have been documented, but it may cause some poisoning similar to the other paperflowers."), 85 (121209 - color presentation), 86 (color photograph), 115 (color presentation), **HR***

***Rafinesquia neomexicana* A. Gray: New Mexico Plumeseed**

COMMON NAMES: Desert Chickory, Desert Chicory, Desert-chicory, Desert Dandelion, Goatsbeard, Mexican Plumeseed, New Mexico Plumeseed, New Mexico Plumseed, Plumeseed. DESCRIPTION: Terrestrial annual forb/herb (4 to 24 inches in height); the foliage is bluish-gray-green; the ray flowers (flowering head 2 inches in width) are cream, cream-white, white, white with lavender or pink stripes, yellow or yellow-cream; flowering generally takes place between early January and late May (additional record: one for mid-July). HABITAT: Within the range of this species it has been reported from mountains; mountainsides; sandy-silty mesas, along rocky cliffs; rocky canyons; sandy and sandy-loamy canyon bottoms; bases of cliffs; knobs; ridges; ridgetops; foothills; rolling hills; rocky and sandy hillsides; rocky escarpment; bouldery-sandy-clayey, rocky, rocky-gravelly-loamy, rocky-sandy, rocky-silty-clayey, rocky-powdery, stony, cobbly-gravelly-sandy, cobbly-sandy loam, gravelly, gravelly-sandy, gravelly-loamy, gravelly-clayey-loamy, sandy, sandy-loamy and silty slopes; alluvial fans; rocky-sandy and gravelly bajadas; amongst rocks; lava fields; sand dunes; blow-sand deposits; bouldery-pebbly and sandy plains; rocky, gravelly, sandy, sandy-loamy, sandy-silty silty flats; gravelly and sandy valley floors; coastlines; along rocky-sandy, gravelly, gravelly-sandy-clayey-loamy and sandy roadsides; rocky and sandy arroyos; along gullies; along and in rocky, gravelly, gravelly-sandy and sandy washes; drainages; cobbly drainage ways; silty lakebeds; sandy and silty depressions; alkaline sinks; gravelly-sandy and sandy banks of washes; sandy edges of washes and lakes; margins of washes; shores of lakes; gravelly-sandy benches; terraces; floodplains; ditches; sandy riparian areas and disturbed areas growing in dry desert pavement; bouldery-pebbly, rocky, rocky-sandy, stony, cobbly, cobbly-gravelly-sandy, cindery, gravelly, gravelly-sandy and sandy ground; rocky-gravelly loam, cobbly-sandy loam, gravelly loam, gravelly-sandy-clayey loam, gravelly-clayey loam and sandy loam ground; bouldery-sandy clay, rocky-silty clay, silty clay and clay ground; sandy silty and silty ground, and rocky powdery ground, occurring from sea level to 5,800 feet in elevation in the scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. It is often found growing up through the crowns of and supported by Triangleleaf Bursage (*Ambrosia deltoidea*) and other small low shrubs. *Rafinesquia neomexicana* is native to southwest-central and southern North America. *5, 6, 16, 28 (color photograph), 43 (121209), 46 (Page 961), 58, 63 (121209 - color presentation), 77 (color photograph #22), **85** (121209 - color presentation), 86 (color photograph), 115 (color presentation)*

Selloa glutinosa (see *Gymnosperma glutinosum*)

***Senecio lemmonii* A. Gray: Lemmon's Ragwort**

COMMON NAMES: Groundsel; Lemmon Butterweed, Lemmon's Butterweed, Lemmon Groundsel, Lemmon Ragwort, Lemmon's Ragwort. DESCRIPTION: Terrestrial perennial forb/herb or subshrub (generally 10 to 20 inches in height; however, plants up to 5 feet in height have been reported); the stems are reddish; the foliage is purple beneath and green above; the disk flowers are golden-yellow, orange-yellow or yellow, the ray flowers are buttery-yellow, green-yellow or yellow, flowering generally takes place between early February and mid-May (additional records: one for early January, one for mid-January, one for early February, one for early June, one for late June, two for mid-November and four for late November). HABITAT: Within the range of this species it has been reported from mountains; mountaintops; rocky peaks; rocky mountainsides; mesas; canyon rims; rocky cliffs; rocky cliff faces; along rocky canyons; bases of cliffs; crevices in boulders and rocks; buttes; rocky ridges; foothills; rolling hills; rocky, shaley, gravelly and gravelly-silty hillsides; bouldery, bouldery-rocky and rocky slopes; bajadas; rocky outcrops; amongst boulders and rocks; bases of boulders and rocks; along arroyos; draws;

around seeps; along streams; rocky streambeds; along creeks; along and in rocky, rocky-sandy, gravelly and sandy washes; banks of streams and washes, and riparian areas growing in dry bouldery, rocky, rocky-sandy, shaley, gravelly and sandy ground; gravelly loam ground; clay ground, and gravelly silty ground, occurring from 300 to 4,700 feet in elevation in the scrub, grassland, desertscrub and wetland ecological formations. NOTE: *Senecio lemmonii* is native to southwest-central and southern North America. *5, 6, 15, 16, 28 (color photograph), 43 (121509), 46 (recorded as *Senecio lemmoni* Gray, Page 949), 58, 63 (121509), 77, **85** (121509 - color presentation), 115 (color presentation)*

***Sonchus oleraceus* C. Linnaeus: Common Sowthistle**

COMMON NAMES: Achicoria (Hispanic), Achicoria Dulce (Hispanic), Annual Sow Thistle, Annual Sowthistle, Borraja (Hispanic), Borrajilla (Hispanic), Cardo (Hispanic), Cerraja (Spanish), Chicalotillo (Hispanic), Chicoria (Hispanic), Chicoria (Purépecha), Chicória-brava (Portuguese), Colewort, Common Sow Thistle, Common Sowthistle, Diente de León (Hispanic), Endivia (Hispanic), Grespino Commune (Hispanic), Hare's Lettuce, Hierba del Golpe (Hispanic), Hwai Hoehoevo (Pima, meaning "Deer Lashes"); Kaalivalvatti (Hispanic), Lechuguilla (Hispanic), Matalí Morado (Hispanic), Milk Thistle, Mitihuaraca (Hispanic), Muela de Caballo (Hispanic), Pualele, Serralha-lisa (Portuguese), Smooth Sowthistle, Sow Thistle, Sowthistle, Tlamatsalin (Michoacán), Tskutsuk Chekamiti (Purépecha). DESCRIPTION: Terrestrial annual forb/herb (1 to 8 feet in height); the stems may be reddish or reddish-pink with a white sap; the leaves are green above and pale green below; the disk flowers are yellow; the ray flowers are cream or yellow; flowering generally takes place between mid-January and mid-October (additional records: one for early November and one for mid-November). HABITAT: Within the range of this species it has been reported from mountains; rocky-clayey mountaintops; along rocky canyons; bouldery-gravelly-sandy, rocky and clayey canyon bottoms; chasms; bluffs; ridgetops; foothills; rocky hillsides; rocky, rocky-clayey, gravelly-loamy and sandy slopes; sandy loamy bajadas; bedrock and rocky outcrops; amongst rocks; sand dunes; blow-sand deposits; plains; gravelly, sandy and clayey flats; basins; valley floors; clayey coastal cliffs; coastal flats; along roadsides; within draws; seeps; along sandy streams; streambeds; along creeks; along and in creekbeds; along rivers; rocky riverbeds; along and in sandy washes; within clayey and silty drainages; within rocky-silty drainage ways; lakebeds; saltwater marshes; depressions; sandy edges of rivers and washes, washes and ponds; along cobbly banks of creeks and rivers; edges of lagoons; margins of rivers; shores of rivers; sandy beaches; terraces; loamy bottomlands; sandy floodplains; stock tanks; along and in silty ditches; ditch banks; along canals; along clayey banks, edges and walls of canals; sandy channels; cobbly and gravelly-sandy riparian areas; waste places, and disturbed areas growing in wet, moist, damp and dry bouldery-gravelly-sandy, rocky, cobbly, gravelly, gravelly-sandy and sandy ground; gravelly loam, sandy loam, clayey loam and loam ground; rocky clay, silty clay and clay ground, and rocky silty and silty ground, occurring from sea level to 8,100 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: EXOTIC Invasive Plant. This plant was reported to have been utilized by native peoples of North America; it was noted as having been used for food, fodder and as a drug or medication. *Sonchus oleraceus* is native to northern, eastern, middle and southern Europe; Asia, and northern Africa. *5, 6, 15, 16, 28 (color photograph), 30, 43 (121709), 46 (Page 965), 63 (121709 - color presentation), 68, 77 (color photograph #23), 80 (Species of the genus *Sonchus* are considered to be Rarely Poisonous and Suspected Poisonous Range Plants. "Species of this genus (*Sonchus*) have been reported to accumulate dangerous levels of nitrates."), **85** (121709 - color presentation), 101 (color photograph), 115 (color presentation)*

***Stylocline micropoides* A. Gray: Woollyhead Neststraw**

COMMON NAMES: Desert Nest Straw, Desert Neststraw, Woollyhead Fambract, Woolly Neststraw, Woollyhead Neststraw. DESCRIPTION: Terrestrial annual forb/herb (1½ to 8 inches in height); the herbage is light grayish; the flowers are white; flowering generally take place between mid-February and mid-May. HABITAT: Within the range of this species it has been reported from mountains; rocky mountainsides; pebbly-sandy-silty mesas; rocky canyon rims; canyons; talus slopes; pockets of soil in cobbles; along ridges; rocky and clayey hills; hilltops; rocky hillsides; rocky, rocky-cobbly-sandy,

rocky-gravelly, gravelly and gravelly-sandy slopes; gravelly and sandy bajadas; amongst rocks; lava flows; lava fields; dunes; plains; rocky, gravelly, gravelly-sandy and sandy flats; along gravelly roadsides; arroyos; along draws; rocky gullies; along streams; along and in rocky, gravelly, gravelly-sandy and sandy washes; sandy drainage ways; depressions; rocky banks of arroyos; rocky-gravelly edges of washes; margins of washes; silty-clayey shores of lakes; beaches; loamy bottomlands; floodplains; riparian areas, and disturbed areas growing in dry desert pavement; rocky, rocky-gravelly, gravelly, gravelly-sandy and sandy ground; clayey loam ground; silty clay and clay ground, and pebbly-sandy silty and sandy silty ground, occurring from 500 to 5,000 feet in elevation in the scrub, grassland, desertscrub and wetland ecological formations. NOTE: *Stylocline micropoides* is native to southwest-central and southern North America. *5, 6, 15, 16, 43 (121909), 46 (Page 885), 63 (121909), 77, **85** (121909 - color presentation)*

***Trixis californica* A. Kellogg: American Threefold**

SYNONYMY: *Trixis californica* A. Kellogg var. *californica*. COMMON NAMES: American Threefold, American Trixis, Arizona Green Plant, California Trixis, Trixis. DESCRIPTION: Terrestrial perennial (leaves are cold and drought deciduous) subshrub or shrub (10 inches to 6 feet in height); the stems are gray, the leaves are green, dark green or yellow-green; the disk flowers may be yellow; the ray flowers are white or yellow; flowering generally takes place between mid-January and late December; the seeds have straw-colored bristles. HABITAT: Within the range of this species it has been reported from mountains; rocky mountaintops; mountainsides; shaded cliffs; cliff faces; along rocky canyons; canyon walls; canyon bottoms; rocky gorges; talus slopes; bases of cliffs; crevices in rocks; sandy knolls; rocky ledges; bouldery and rocky ridges; bouldery ridgetops; bouldery and rocky foothills; rocky hills; rocky hilltops; rocky and gravelly hillsides; bouldery, bouldery-gravelly, rocky and rocky-gravelly slopes; alluvial fans; sandy bajadas; bouldery and rocky outcrops; amongst boulders and rocks; bases of boulders; sandy boulderfields; shady coves; plains; sandy and sandy-clayey-loamy flats; valley floors; along roadsides; sandy arroyos; draws; bottoms of rocky gullies; within ravines; around springs; around seeping streams; along creeks; creekbeds; along and in bouldery, bouldery-gravelly-sandy, rocky, rocky-sandy, stony, gravelly, pebbly and sandy washes; within rocky-bedrock drainage ways; rocky bowls; along banks of arroyos, streams, rivers, washes and drainages; rocky edges of arroyos and washes; sandy beaches; floodplains; riparian areas, and disturbed areas growing in dry bouldery, bouldery-rocky, bouldery-gravelly, bouldery-gravelly-sandy, bouldery-sandy, rocky, rocky-gravelly, rocky-sandy, stony, gravelly, gravelly-sandy, pebbly and sandy ground and sandy-clayey loam ground often in the shade of rocks and larger shrubs and trees, occurring from sea level to 7,800 feet in elevation in the woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. *Trixis californica* is native to southwest-central and southern North America. *5, 6, 13, 15, 16, 28 (color photograph), 43 (122309), 46 (Page 958), 58, 63 (122309 - color presentation), 77, **85** (122409 - color presentation), 86 (color photograph), 91, 106 (122309 - color presentation), 115 (color presentation)*

Trixis californica var. *californica* (see *Trixis californica*)

***Verbesina encelioides* (A.J. Cavanilles) G. Bentham & J.D. Hooker f. ex A. Gray subsp. *exauriculata* (B.L. Robinson & J.M. Greenman) J.R. Coleman: Golden Crownbeard**

SYNONYMY: *Verbesina encelioides* (A.J. Cavanilles) G. Bentham & J.D. Hooker f. ex A. Gray var. *exauriculata* B.L. Robinson & J.M. Greenman. COMMON NAMES: Butter-daisy, Cow Pasture Daisy, Cowpen Daisy, Crownbeard, Girasolillo, Golden Crownbeard, Hierba de la Bruja. DESCRIPTION: Terrestrial annual forb/herb (4 inches to 5 feet in height, plants 8 inches in height and 12 inches in width were reported); the foliage is bluish-green or gray-green, green or silvery; the disk flowers are gold or yellow; the ray flowers are gold, orange-yellow, yellow or yellow-orange; flowering generally takes place between early March and mid-December (additional records: one for late January and one for mid-February). HABITAT: Within the range of this species it has been reported from mountains; mountainsides; sandy mesas; canyons; talus; gravelly and clayey canyon bottoms; bouldery knobs; sandy-

loamy meadows; rolling foothills; stony hills; hilltops; rocky-sandy hillsides; canyons; rocky, cindery, sandy, sandy-loamy, loamy and silty-clayey slopes; gravelly bajadas; rocky outcrops; sand hills; sand dunes; plains; cindery, gravelly, sandy and sandy-loamy flats; valley floors; along bouldery-gravelly, rocky, cindery, gravelly, gravelly-sandy-clayey-loamy, gravelly-loamy, sandy-clayey-loamy and sandy-loamy roadsides; along arroyos; sandy bottoms of arroyos; along draws; bottoms of draws; springs; along creeks; gravelly creekbeds; along gravelly-sandy rivers; along and in sandy-loamy riverbeds; within rocky, stony and sandy washes; within drainage ways; around ponds; around lakes; cienegas; sandy swales; sandy and silty banks of rivers; along gravelly-sandy edges of washes and swales; sandy beaches; terraces; sandy bottomlands; lowlands; sandy floodplains; mesquite bosques; silty-loamy stock tanks; along shores of impoundments; along ditches; sandy riparian areas; waste places, and disturbed areas growing in wet, moist and dry bouldery, bouldery-gravelly, rocky, rocky-gravelly, stony, cindery, gravelly, gravelly-sandy and sandy ground; rocky loam, gravelly loam, gravelly-sandy-clayey loam, sandy loam, sandy-clayey loam, silty loam and loam ground; silty clay and clay ground, and silty ground, occurring from sea level to 10,000 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant has a rank odor. This plant was reported to have been utilized by native peoples of North America and could be investigated to determine its value as a home garden or commercial food crop; it was also noted as having been used as a drug or medication, insecticide, protection, ceremonial items and as a commodity used in personal hygiene. *Verbesina encelioides* subsp. *exauriculata* is native to south-central and southern North America. *5, 6, 15, 28 (color photograph of the species), 43 (062409), 46 (Page 907), 63 (122409 - color presentation), 68 (*Verbesina encelioides* var. *exauriculata* is reported to be an exotic and native to the Old World; however, no other source used reported it as being an exotic.), 80 (This plant is listed as a Rarely Poisonous and Suspected Poisonous Range Plant. This annual forb has been reported to accumulate toxic levels of nitrate.), 85 (122409 - color presentation), 86 (color photograph of the species), 115 (color presentation of species), 127, **HR***

Verbesina encelioides var. *exauriculata* (see *Verbesina encelioides* subsp. *exauriculata*)

Viguiera annua (see *Heliomeris longifolia* var. *annua*)

***Zinnia acerosa* (A.P. de Candolle) A. Gray: Desert Zinnia**

SYNONYMY: *Zinnia pumila* A. Gray. COMMON NAMES: Desert Zinnia, Spinyleaf Zinnia, White Zinnia, Wild Zinnia. DESCRIPTION: Terrestrial perennial forb/herb or subshrub (3 to 20 inches in height and to 2 feet in width); the leaves are gray or gray-green; the disk flowers are green-yellow, yellow or yellow-orange; the ray flowers are cream, cream-white, white, white-cream, yellow or yellow-white; flowering generally takes place between early March and early November (additional records: three for early December). HABITAT: Within the range of this species it has been reported from mountains; sandy mesas; sandy-loamy plateaus; canyons; rocky ridges; rocky ridgetops; foothills; rocky hills; rocky and gravelly hillsides; bouldery, rocky, rocky-gravelly-sandy, gravelly-sandy, sandy and loamy slopes; gravelly, gravelly-sandy, sandy and clayey bajadas; rocky outcrops; sand hills; sand dunes; rocky-gravelly-sandy, rocky-sandy, gravelly and gravelly-sandy-clayey flats; rocky valley floors; gravelly-silty and gravelly-silty-loamy valley bottoms; along gravelly-sandy-clayey-loamy roadsides; arroyos; sandy bottoms of arroyos; washes; sandy drainages; along ponds; edges of swales; gravelly-sandy banks of washes; sandy benches; terraces; floodplains; riparian areas, and disturbed areas growing in damp and dry desert pavement; bouldery, rocky, rocky-gravelly-sandy, rocky-sandy, gravelly, gravelly-sandy and sandy ground; gravelly loam, gravelly-silty loam, gravelly-sandy-clayey loam, sandy loam and loam ground; gravelly-sandy clay and clay soils, gravelly silty ground, and chalky ground, occurring from 1,500 to 6,000 feet in elevation in the woodland, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. This plant was reported to have been utilized by native peoples of North America; it was noted as having been used as a drug or medication. *Zinnia acerosa* is native to southwest-central and southern North America. *5, 6, 13, 15, 16,

18, 28 (color photograph), 43 (062609 - *Zinnia acerosa* A. Gray, Page 897), 46 (recorded as *Zinnia pumila* Gray), 48 (genus), 58, 63 (122509 - color presentation), 77 (color photograph #71), 85 (122509 - color presentation), 115 (color presentation), 127, **HR***

Zinnia pumila (see *Zinnia acerosa*)

Bignoniaceae: The Trumpet-creeper Family

***Chilopsis linearis* (A.J. Cavanilles) R. Sweet subsp. *arcuata* (F.R. Fosberg) J.S. Henrickson: Desert Willow**

SYNONYMY: *Chilopsis linearis* (A.J. Cavanilles) R. Sweet var. *arcuata* F.R. Fosberg. COMMON NAMES: Bow Willow, Catalpa Willow, Desert Catalpa, Desert Willow, Desert-willow, Desertwillow, False-willow, Flor de Mimbre, Flowering Willow, Flowering-willow, Jano, Mimbre, Texas Desert Willow, Willowleaf Catalpa. DESCRIPTION: Terrestrial perennial (cold deciduous) shrub or tree (5 to 33 feet in height, one plant was reported to be 13 feet in height with a crown 13 feet in width); the leaves are curved and roughly 3 to 5½ in length and 1/8 to 1/4 inch in width; the flowers may be pale pink, pink, purple, violet with yellow markings, white, white with maroon-purple or yellow & magenta lines or whitish tinged with lavender and yellow; flowering generally takes place between mid-April and early October (additional record: one for late October); the seeds are dispersed from slender pods (4 to 12 inches in length). HABITAT: Within the range of this species it has been reported from mountains; mesas; canyons; foothills; bedrock, rocky, rocky-sandy, gravelly-sandy and sandy-silty-loamy slopes; sandy bajadas; amongst rocks; breaks; plains; flats; valley floors; along sandy-loamy roadsides; arroyos; along streams; along sandy streambeds; along rocky creeks, along and in rocky, gravelly, gravelly-sandy and sandy washes; drainages; sandy banks of water courses; margins of washes; sand bars; floodplains, and riparian areas growing in dry rocky, rocky-sandy, gravelly, gravelly-sandy and sandy ground and rocky-gravelly loam, sandy loam and sandy-silty loam ground, occurring from sea level to 6,200 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. The species, *Chilopsis linearis*, was reported to have been utilized by native peoples of North America and could be investigated to determine its value as a home garden or commercial fiber crop. The Desert Willow may be useful in controlling erosion. The bee, *Bombus sonorus*, is a pollinator, and hummingbirds are attracted to the flowers and feed on the nectar. *Chilopsis linearis* subsp. *arcuata* is native to southwest-central and southern North America. *5, 6, 13 ("The desert willows have been used widely as ornamentals. They are prized for their graceful habit and large, attractive, sweet-scented flowers."), 18 (species), 26 (color photographs of species, species), 28 (color photograph of species, species), 43 (062609), 46 (Page 794), 48 (species), 52 (color photograph of species, species), 53, 58, 63 (122609 - color presentation), 74 (species), 85 (122609), 86 (color photograph of species), 91 (species), 115 (color presentation of species), 127 (species), **HR***

Chilopsis linearis var. *arcuata* (see *Chilopsis linearis* subsp. *arcuata*)

***Tecoma stans* (C. Linnaeus) A.L. de Jussieu ex K.S. Kunth: Yellow Trumpetbush**

SYNONYMY: *Tecoma stans* (C. Linnaeus) A.L. de Jussieu ex K.S. Kunth var. *angustatum* A. Rehder. COMMON NAMES: Bapsarukua (Hispanic), Bignonia-amarela (Portuguese), Cameri (Purépecha), Corneta Amarilla (Dgo), Esperanza, Flor de Noche (Hispanic), Flor de San Pedro (Hispanic), Geelklokkies (Africans), Giabiche (Zapoteco), Gloria (Sin), Guarã-guarã (Portuguese), Guibelchi o Tulasuchil (Oax), Hierba de San Juan (Hispanic), Hierba de San Nicolás (Hispanic), Hierba de San Pedro (SLP), Hoja de Baño (Hispanic), Ipê-amarelo-de-jardim (Portuguese), Ipezinho-de-jardim (Portuguese), Istamasúchil (Hispanic), Ixnotl (Pue), K´anlol (Maya), Kanló (Hispanic), Kusí Urákame (Hispanic), Lluvia de Oro (Hispanic), Matilimi (Chis), Mazorca (Ver), Miñona (Hispanic), Miñones,

Miñona (NL), Nixtamalxochitl (Hispanic), Nixtamaxochitl (Hispanic), Nixtamaxuchiltl (Hispanic), Palo de Arco (Hispanic), Retama (Hispanic), Sinos-amarelos (Portuguese), Trompeta (Hispanic), Trompetilla (Hispanic), Tronadora (Hispanic), Trumpet-bush, Trumpet Flower, Trumpet-flower, Yellow Bells, Yellow-bells, Yellow Elder, Yellow-elder, Yellow Trumpet, Yellow Trumpet-bush, Yellow Trumpetbush, Yellow Trumpet Flower, Yuku-ñini (Hispanic). DESCRIPTION: Terrestrial perennial evergreen (drops leaves following frost) shrub, (sometimes a liana) or tree (erect stems 3 to 33 feet in height, one plant was observed and described as being 13 feet in height and 20 feet in width); the bark is grayish-brown; the leaves are green, dark green or yellow-green; the flowers are deep orange, salmon-pink, light red, yellow, yellow with orange markings in the throat or yellow-orange; flowering generally takes place between mid-February and late November; the mature slender, long pods are brown. HABITAT: Within the range of this species it has been reported from mountains; mountainsides; bases of mountains; bases of cliffs; rocky canyons; canyonsides; canyon bottoms; rocky bluffs; hills; rocky and gravelly hillsides; bedrock, bouldery, rocky, stony and gravelly slopes; rocky bajadas; amongst boulders; bases of rocks; plains; flats; rocky bowls; roadsides; rocky arroyos; rocky gulches; along streambeds; along and in washes; within rocky drainages; drainage ways; margins of arroyos; floodplains, and disturbed areas growing in moist and dry bouldery, bouldery-rocky, rocky, stony and gravelly ground and clay ground, occurring from sea level to 6,600 feet in elevation in the forest, woodland, scrub, grassland and desertscrub ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. The Yellow Trumpetbush is browsed by Bighorn Sheep (*Ovis canadensis*) and other animals. The Broad-billed Hummingbird (*Cynanthus latirostris*) and Carpenter Bees (*Xylocopa* sp.) have been observed visiting the flowers. *Tecoma stans* is native to southwest-central and southern North America; Central America and coastal islands in the Caribbean Sea, and northern, western and southern South America. *5, 6, 13, 15, 18, 26 (color photograph), 28 (Page 238, color photograph), 30, 43 (082010 - *Tecoma stans* (L.) Kunth, *Tecoma stans* (L.) Kunth var. *angustatum* Rehder), 46 (Pages 794-795), 58, 63 (082010 - color presentation), **77** (color photograph #62), **85** (082010 - color presentation), 91, 115 (color presentation)*

Tecoma stans var. *angustatum* (see *Tecoma stans*)

Boraginaceae: The Borage Family

Amsinckia echinata (see *Amsinckia menziesii* var. *intermedia*)

Amsinckia intermedia (see *Amsinckia menziesii* var. *intermedia*)

Amsinckia intermedia var. *echinata* (see *Amsinckia menziesii* var. *intermedia*)

***Amsinckia menziesii* (J.G. Lehmann) A. Nelson & J.F. Macbride var. *intermedia* (F.E. von Fischer & C.A. Meyer) F.R. Ganders: Common Fiddleneck**

SYNONYMY: *Amsinckia echinata* A. Gray, *Amsinckia intermedia* F.E. von Fischer & C.A. Meyer, *Amsinckia intermedia* F.E. von Fischer & C.A. Meyer var. *echinata* (A. Gray) I.L. Wiggins. COMMON NAMES: Coast Buckthorn, Coast Fiddleneck, Common Fiddleneck, Devil's Lettuce, Fiddle Neck, Fiddleneck, Finger Weed, Kurttukeltalemmikki, Menzies Fiddleneck, Ranchers Fireweed, Sacoto Gordo, Tarweed, Yellow Burnweed, Yellow Burweed, Yellow Burrweed, Yellow Forget Me Not, Yellow Tarweed. DESCRIPTION: Terrestrial annual forb/herb (2 inches to 4 feet in height); the flowers are golden-yellow, orange, orange-yellow, yellow or yellow-orange; flowering generally takes place between late January and late May (additional records: one for mid-June, one for late June and one for late November). HABITAT: Within the range of this species it has been reported from mountains; rocky mountainsides; sandy mesas; plateaus; silty canyons; rocky canyon bottoms; bases of cliffs; clayey ridges; ridgetops; meadows; foothills; rocky and silty hills; clayey hilltops; bouldery and rocky hillsides; bouldery, rocky, rocky-loamy-clayey, shaley-clayey-loamy, cobbly-sandy-loamy, gravelly-loamy and

clayey slopes; rocky-sandy alluvial fans; bajadas; amongst boulders and rocks; boulderfields; along boulders; sand dunes; sand sheets; gravelly, gravelly-sandy, sandy and clayey flats; basins; rocky valley floors; coastal terraces; along roadsides; along arroyos; along bottoms of arroyos; draws; seeps; in clay around springs; along streams; along creeks; along creekbeds; along rivers; riverbeds; along and in rocky-sandy, gravelly-sandy, sandy and sandy-loamy washes; within sandy drainages; sandy drainage ways; marshes; clayey-loamy depressions; swales; sandy banks of streams; edges of washes; margins of washes; mudflats; benches; rocky and gravelly and sandy terraces; loamy bottomlands; silty floodplains; silty impoundments; edges of stock tanks; edges of ditches; riparian areas; recently burned areas of oak woodland and chaparral, and disturbed areas growing in moist and dry bouldery, rocky, rocky-sandy, gravelly, gravelly-sandy and sandy ground; shaley-clayey loam, cobbly-sandy loam, gravelly loam, sandy loam, clayey loam and loam ground; rocky-loamy clay and clay ground, and gravelly-silty and silty ground, occurring from sea level to 5,500 feet in elevation in the woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTE: *Amsinckia menziesii* var. *intermedia* is native to west-central and southern North America. *5, 6, 15 (reported as *Amsinckia intermedia* Fisch. & Mey.), 16 (reported as *Amsinckia intermedia* Fisch. & Mey.), 28 (reported as *Amsinckia intermedia*, color photograph), 43 (122609 - no record for var. *intermedia*), 46 (reported as *Amsinckia intermedia* Fisch. & Meyer, Page 723), 58 (reported as *Amsinckia intermedia* Fisch. & Meyer), 63 (122609 - color presentation), 68 ("The mature seeds have been demonstrated to cause hepatic cirrhosis, known as "hard liver disease" of cattle and swine, and the "walking disease" of horses. Sheep are either immune or highly resistant to the poison. The disease is common in the Pacific Northwest, but not in Arizona. This plant also may cause nitrate poisoning."), 77 (reported as *Amsinckia intermedia* F. & M., color photograph labeled *Amsinckia intermedia* #7), 80 (This plant (*Amsinckia intermedia* and others) is listed as a Rarely Poisonous and Suspected Poisonous Range Plant. "Cattle, horses and swine may be poisoned by an unknown liver toxin from eating large amounts of the seeds of this desert annual. Also plants may cause nitrate poisoning."), **85** (122709 - color presentation), 101, 115 (color presentation)*

***Cryptantha barbigera* (A. Gray) E.L. Greene: Bearded Cryptantha**

COMMON NAMES: Bearded Cat's-eye, Bearded Catseye, Bearded Cryptantha, Bearded Forget-me-not, Bearded Nievitas, Narrowleaf Nievitas, Peluda. DESCRIPTION: Terrestrial annual forb/herb (4 to 16 inches in height, one plant was described as being 4 inches in height and 20 inches in length, one plant was described as being 5 inches in height and 12 inches in width, one plant was described as being 12 inches in height and 10 inches in width); the foliage is deep green; the flowers are cream, white or white with a yellow throat; flowering generally takes place between mid-January and mid-June (additional records: two for late November and one for late December). HABITAT: Within the range of this species it has been reported from mountains; sandy mesas; rim rock; rocky canyons; along rocky and sandy canyon bottoms; rocky spurs; scree; bouldery talus slopes; bases of cliffs; rocky ledges; ridges; ridgetops; sandy meadows; gravelly, gravelly-sandy and sandy foothills; bouldery and rocky hills; rocky hillsides; bedrock, bouldery, bouldery-rocky-sandy, rocky, rocky-gravelly, rocky-sandy, stony-sandy, cobbly-gravelly-sandy, gravelly, sandy and clayey slopes; rocky alluvial fans; bajadas; bouldery and rocky outcrops; amongst boulders and rocks; sand hills; sand dunes; blow-sand deposits; plains; rocky-gravelly, gravelly and sandy flats; basins; valley floors; railroad right-of-ways; along gravelly, sandy and clayey roadsides; arroyos; bottoms of arroyos; draws; within rocky gullies; ravines; springs; along streams; rocky-sandy and gravelly streambeds; beside creeks; creekbeds; along rivers; sandy riverbeds; along and in bedrock, bouldery, rocky, rocky-sandy, cobbly-gravelly-sandy, gravelly, gravelly-sandy, sandy and silty washes; gravelly drainages; sandy bottoms of waterholes; marshes; banks of rivers; rocky edges of arroyos and washes; margins of washes; mudflats; sandy benches; shelves; gravelly terraces; loamy bottomlands; sandy floodplains; riparian areas, and disturbed areas growing in dry desert pavement; bouldery, bouldery-rocky-sandy, rocky, rocky-gravelly, rocky-sandy, cobbly-sandy, gravelly, gravelly-sandy and sandy ground; gravelly-sandy loam and loam ground; gravelly clay and clay ground, and sandy silty and silty ground, occurring from sea level to 7,400 feet in elevation in the woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: One record included an

observation that the taproot contained a purplish dye. *Cryptantha barbigera* is native to southwest-central and southern North America. *5, 6, 15, 16, 43 (122809 - *Cryptantha barbigera* Greene), 46 (Page 721), 58, 63 (122809 - color presentation), 77, **85** (122809 - color presentation of dried material)*

***Cryptantha decipiens* (M.E. Jones) A.A. Heller: Gravelbar Cryptantha**

COMMON NAMES: Forget-Me-Not, Gravel Cryptantha, Gravelbar Cryptantha, Gravel Nievitas, Peluda. DESCRIPTION: Terrestrial annual forb/herb (ascending to erect stems 4 to 16 inches in height); the herbage is gray-green; the flowers are cream-white and white; flowering generally takes place between early March and mid-June (additional record: one for mid-February). HABITAT: Within the range of this species it has been reported from mountains, mesas; rocky canyons; sandy and sandy-loamy canyon bottoms; scree slopes; bases of cliffs; crevices in rocks; ledges; rocky ridges; ridgelines; sandy meadows; foothills; around rocky hills; rocky hillsides; rocky, gravelly, gravelly-silty and sandy slopes; bouldery-stony-gravelly-sandy alluvial fans; gravelly bajadas; amongst rocks; debris flows; gravelly-sandy and sandy flats; gravelly and sandy roadsides; along and in rocky, rocky-gravelly, gravelly-sandy and sandy washes; along rocky-silty-loamy and gravelly drainages; sandy-loamy watercourses; banks of washes; edges of washes; gravelly-sandy benches; floodplains; gravelly-sandy riparian areas; recently burned areas in juniper-pinyon woodlands, and disturbed areas growing in dry bouldery-stony-gravelly-sandy, rocky, rocky-gravelly, rocky-sandy, cobbly-sandy, gravelly, gravelly-sandy and sandy ground; rocky-silty loam and sandy loam ground, and gravelly silty ground, occurring from 800 to 6,000 feet in elevation in the woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTE: *Cryptantha decipiens* is native to southwest-central and southern North America. *5, 6, 43 (071810), 46 (Page 721), 63 (071810), 77, 85 (color presentation)*

***Cryptantha maritima* (E.L. Greene) E.L. Greene: Guadalupe Cryptantha**

COMMON NAMES: Guadalupe Cat's-eye, Guadalupe Cryptantha, White-haired Cryptantha, Whitehair Nievitas. DESCRIPTION: Terrestrial annual forb/herb (ascending to erect stems 4 to 16 inches in height); the stems are red-brown; the flowers are white; flowering generally takes place between early February and late April (additional records: one each for early May and mid-May). HABITAT: Within the range of this species it has been reported from mountains; mesas; cliffs; gravelly canyon bottoms; talus slopes; buttes; gravelly ridges; cinder cones; bases of cinder cones; foothills; hills, bouldery-rocky-gravelly bases of hills; rocky slopes; bajadas; plains; creosote flats; valley floors; along roadsides; arroyos; springs; along and in rocky-sandy, gravelly, gravelly-sandy and sandy washes; along sandy banks of rivers and washes; terraces; stock tanks, and riparian areas growing in dry desert pavement and bouldery-rocky-gravelly, rocky, rocky-gravelly, rocky-sandy, gravelly, gravelly-sandy and sandy ground, occurring from sea level to 3,500 feet in elevation in the desertscrub and wetland ecological formations. NOTE: *Cryptantha maritima* is native to southwest-central and southern North America. *5, 6, 43 (071110 - *Cryptantha maritima* Greene), 46 (Page 719), 63 (071110 - color presentation), 77, **85** (071110 - color presentation, unable to access species information)*

***Cryptantha nevadensis* A. Nelson & P.B. Kennedy: Nevada Cryptantha**

COMMON NAMES: Nevada Cat's-eye, Nevada Catseye, Nevada Cryptantha, Nevada Nievitas, Peluda, Wild Forget-me-not. DESCRIPTION: Terrestrial annual forb/herb (2 to 24 inches in height); the flowers are white; flowering generally takes place between late February and early July (additional record: one for late November). HABITAT: Within the range of this species it has been reported from mountains; rocky mountaintops; rocky mesas; rocky canyons; sandy canyon bottoms; talus slopes; ledges; rocky ridges; meadows; foothills; rocky, cobbly-gravelly-loamy, gravelly and sandy hills; rocky, rocky-cobbly and clayey hillsides; bouldery, bouldery-gravelly, rocky, rocky-gravelly, cobbly, cobbly-gravelly-sandy, cobbly-sandy-loamy, gravelly, gravelly-loamy and sandy slopes; sandy bajadas; bouldery, rocky and clayey outcrops; along and amongst boulders and rocks; sand hills; gravelly outwash fans; gravelly, sandy and sandy-clayey flats; rocky-gravelly-sandy and gravelly valley floors; along gravelly roadsides; within gravelly-loamy arroyos; gulches; within bouldery-rocky and rocky-gravelly gullies; seeps; rocky

streambeds; along and in gravelly, gravelly-sandy and sandy washes; within sandy drainages; drainage ways; lakebeds; playas; gravelly and sandy banks of creeks, rivers and washes; rocky-gravelly edges of washes; cobbly-gravelly margins of washes; benches; gravelly terraces; floodplains; riparian areas; recently burned areas in woodlands, and disturbed areas growing in dry desert pavement; bouldery, bouldery-rocky, bouldery-gravelly, rocky, rocky-gravelly, rocky-gravelly-sandy, rocky-sandy, stony-sandy, cobbly, cobbly-gravelly, cobbly-gravelly-sandy, cobbly-sandy, cindery, gravelly, gravelly-sandy and sandy ground; cobbly-gravelly loam, cobbly-sandy loam and gravelly loam ground; sandy clay and clay ground, and silty ground, occurring from 700 to 7,800 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTE: *Cryptantha nevadensis* is native to southwest-central North America. *5, 6, 15, 16, 43 (122909), 46 (Page 721), 58, 63 (122909), 77, **85** (122909 - color presentation of dried material)*

***Cryptantha pterocarya* (J. Torrey) E.L. Greene: Wingnut Cryptantha**

COMMON NAMES: Wing-fruited Forget-me-not, Wing-nut Forget-me-not, Winged-nut Cryptantha, Winged Pick-me-not, Wingnut Cat's-eye, Wingnut Catseye, Wingnut Cryptantha, Wingnut Nievitas, Peluda. DESCRIPTION: Terrestrial annual forb/herb (4 to 20 inches in height); the foliage is pale grayish, dark green or yellow-green; the flowers are cream, bright white or white (sometimes with a pink tinge) with a yellow throat; flowering generally takes place between early January and late June (additional records: one for late July and one for late November); the winged fruits are green. HABITAT: Within the range of this species it has been reported from mountains; mountaintops; rocky and rocky-sandy mountainsides; pebbly-sandy-silty and silty mesas; rim rock; sandy-clayey canyons; canyon walls; along rocky-sandy, gravelly-sandy and sandy canyon bottoms; talus slopes; bases of cliffs and rock faces; protected clefts in boulders; bluffs; rocky ledges; ridges; rocky ridgetops; sandy cinder cones; foothills; bouldery and rocky hills; hilltops; rocky, rocky-stony, sandy and loamy hillsides; bouldery, rocky, rocky-gravelly, rocky-sandy, cindery, gravelly and sandy slopes; gravelly-sandy and sandy alluvial fans; bajadas; rocky outcrops; amongst boulders and rocks; boulderfields; sandy lava flows; sand hummocks; sand sheets; gravelly breaks; sandy plains; rocky, gravelly, sandy and sandy-clayey flats; valley floors; along rocky, gravelly and sandy-silty roadsides; rocky arroyos; gravelly draws; rocky gullies; along springs; beside streams; along creeks; along rivers; sandy riverbeds; along and in rocky, rocky-gravelly-sandy, rocky-sandy, gravelly, gravelly-sandy and sandy washes; within drainage ways; banks of washes; gravelly and sandy edges of washes; rocky-gravelly-sandy and cobbly-gravelly margins of washes; gravelly benches; shelves; sandy margins of reservoirs; gravelly-sandy and sandy riparian areas; recently burned areas in woodlands, chaparral and desertscrub, and disturbed areas growing in dry desert pavement; bouldery, rocky, rocky-stony, rocky-gravelly, rocky-gravelly-sandy, rocky-sandy, shaley, stony-sandy, cobbly-gravelly, cobbly-sandy, cindery, gravelly, gravelly-sandy and sandy ground; silty loam and loam ground; sandy clay, silty clay and clay ground, and rocky silty, pebbly-sandy silty, sandy silty and silty ground, occurring from 500 to 8,300 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTE: *Cryptantha pterocarya* is native to southwest-central and southern North America. *5, 6, 16, 43 (122909 - *Cryptantha pterocarya* Greene), 46 (Page 720), 58, 63 (122909 - color presentation), 77, **85** (123009 - color presentation of dried material), 115 (color presentation)*

***Harpagonella palmeri* A. Gray: Palmer's Grapplinghook**

COMMON NAMES: Arizona Harpagonella, Arizona Grapplinghook, Grappling Hook, Palmer Grapplinghook, Palmer's Grappling-hook, Palmer's Grapplinghook. DESCRIPTION: Terrestrial annual forb/herb (prostrate or 1 to 12 inches in height); the foliage is gray-green; the flowers are white; flowering generally takes place between mid-January and early June. HABITAT: Within the range of this species it has been reported from mountains; mesas; plateaus; canyons; sandy-loamy canyon bottoms; bases of cliffs; ledges; clayey ridges; clayey ridgetops; clayey patches in chaparral; clayey openings in scrub and grasslands; clayey escarpments; foothills; rocky, rocky-clayey, stony-clayey, cobbly-clayey and clayey hills; rocky and clayey hillsides; bouldery, rocky, rocky-loamy-clayey, stony-clayey, cobbly-clayey,

gravelly and clayey slopes; gravelly bajadas; amongst rocks; clayey lenses; stony, gravelly and clayey flats; clayey valley floors; sea bluffs; coastal plains; along gravelly roadsides; along streams; creeks; creekbeds; along riverbeds; washes; drainage ways; clayey depressions; clayey benches; cobbly-clayey terraces, and disturbed areas growing in dry bouldery, rocky, rocky-sandy, stony and gravelly ground; rocky loam, sandy loam and loam ground, and rocky-loamy clay, rocky clay, stony clay, cobbly clay and clay ground, occurring from sea level to 3,600 feet in elevation in the scrub, grassland, desertscrub and wetland ecological formations. NOTE: *Harpagonella palmeri* is native to southwest-central and southern North America. *5, 6, 15, 16, 43 (123009), 46 (Page 711), 63 (123009 - color presentation), 77, **85** (123109 - color presentation of dried material)*

***Lappula occidentalis* (S. Watson) E.L. Greene var. *occidentalis*: Flatspine Stickseed**

SYNONYMY: *Lappula redowski* auct. non (J.W. Hornemann) E.L. Greene, *Lappula redowskii* (J.W. Hornemann) E.L. Greene var. *desertorum* (E.L. Greene) I.M. Johnston, *Lappula redowskii* (J.W. Hornemann) E.L. Greene var. *occidentalis* (S. Watson) P.A. Rydberg, *Lappula redowskii* (J.W. Hornemann) E.L. Greene var. *redowskii*. COMMON NAMES: Beggar's Tick, Bluebur, Flat-spine Sheepburr, Flatspine Stickseed, Redowski Stickseed, Stickseed, Western Stickseed, Western Sticktight. DESCRIPTION: Terrestrial annual or biennial forb/herb (6 to 32 inches in height); the foliage is gray-green; the flowers may be pale blue, pale blue-white, blue, light pink, purple, sky blue, white or yellow; flowering generally takes place between mid-February and early August (additional records: five for mid-January, one for late August, one for early September and one for late September). HABITAT: Within the range of this species it has been reported from mountains; mountaintops; sandy mesas; along rocky, gravelly-loamy and sandy canyons; sandy canyon bottoms; bouldery-gravelly-sandy gorges; talus; bases of cliffs; bedrock knolls; sandy ridges; rocky ridgetops; around and in rocky and gravelly-sandy meadows; foothills; rocky, gravelly and gravelly-sandy hills; hilltops; hillsides; rocky, shaley, cobbly-loamy, cindery, gravelly, gravelly-sandy, sandy, sandy-clayey, loamy, clayey and silty slopes; bajadas; rocky outcrops; amongst rocks; sheltered rock coves; lava flows; breaks; steppes; rocky, gravelly, sandy and sandy-loamy flats; basins; loamy valley floors; in roadbeds; along gravelly and gravelly-loamy roadsides; rocky and sandy arroyos; bottoms of arroyos; rocky draws; gulches; ravines; springs; along creeks; along rivers; sandy riverbeds; along and in rocky, gravelly, gravelly-sandy-silty and sandy washes; within gravelly drainages; in rocks around ponds; clayey swales; along banks of arroyos, streams and rivers; mudflats; sandy benches; cobbly-loamy and loamy bottomlands; floodplains; along fencelines; edges of stock tanks; ditches; gravelly-sandy-loamy and sandy riparian areas; waste places, and disturbed areas growing in wet, moist and dry bouldery-gravelly-sandy, rocky, shaley, cindery, gravelly, gravelly-sandy and sandy ground; rocky-gravelly-sandy-clayey loam, cobbly loam, gravelly loam, gravelly-sandy loam, sandy loam, clayey loam and loam ground; rocky clay, sandy clay, silty clay and clay ground; gravelly-sandy silty and silty ground, and gravelly-sandy chalky ground, occurring from 700 to 10,500 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant was reported to have been utilized by native peoples of North America and could be investigated to determine its value as a home garden or commercial fodder crop; it was also noted as having been used as a drug or medication. *Lappula occidentalis* var. *occidentalis* is native to northwestern, northern and west-central North America. *5, 6, 15 (recorded as *Lappula redowskii* (Hornem.) Greene var. *redowskii*), 16 (recorded as *Lappula redowskii* (Hornem.) Greene var. *redowskii*), 43 (010110 - *Lappula redowskii* Greene var. *desertorum* (Greene) I.M. Johnst., *Lappula redowskii* (Hornem.) Greene var. *occidentalis* Á. Löve & D. Löve), 46 (recorded as *Lappula redowskii* (Hornem.) Greene, Page 713), 58 (recorded as *Lappula redowskii* (Hornem.) Greene), 63 (010110 - color presentation), 77 (recorded as *Lappula redowskii* (Hornem.) Greene), **85** (010210), 101 (color photograph), 115 (color presentation of species), 127*

Lappula redowskii (see *Lappula occidentalis* var. *occidentalis*)

Lappula redowskii var. *desertorum* (see *Lappula occidentalis* var. *occidentalis*)

Lappula redowskii var. *occidentalis* (see *Lappula occidentalis* var. *occidentalis*)

Lappula redowskii var. *redowskii* (see *Lappula occidentalis* var. *occidentalis*)

***Pectocarya recurvata* I.M. Johnston: Curvenut Combseed**

COMMON NAMES: Arched Bomb-bur, Arched Comb-bur, Arch-nutted Comb-bur, Archnut Combbur, Combbur, Curved Combseed, Curvenut Combseed, Recurve Combseed. DESCRIPTION: Terrestrial annual forb/herb (2 to 8 inches in height); the flowers are white or white with a yellow throat; flowering generally takes place between mid-January and late May (additional record: one for late November). HABITAT: Within the range of this species it has been reported from mountains; clayey mountaintops; rocky mountainsides; rocky mesas; rocky canyons; sandy canyon bottoms; ledges; clayey ridgetops; rocky foothills; rocky hills; rocky and gravelly hillsides; rocky, rocky-cobbly-sandy, rocky-gravelly, rocky-gravelly-sandy, rocky-gravelly-loamy, stony, stony-sandy, cobbly-gravelly, cobbly-gravelly-sandy, cobbly-sandy-loamy, gravelly, gravelly-sandy, sandy and clayey slopes; bouldery-gravelly and rocky-sandy alluvial fans; bajadas; bouldery and rocky outcrops; amongst boulders and rocks; sandy lava fields; dunes; plains; gravelly, sandy and clayey flats; valley bottoms; along sandy roadsides; rocky gullies; sandy springs; along sandy streams; along creeks; along creekbeds; along and in bouldery-gravelly, rocky, rocky-sandy, gravelly, gravelly-sandy and sandy washes; drainages; rocky drainage ways; clayey depressions; rocky-gravelly-sandy and gravelly edges of rivers and washes; rocky-gravelly-sandy margins of washes; shores of lakes; gravelly and clayey benches; terraces; loamy bottomlands; sandy floodplains; mesquite woodlands; riparian areas, and disturbed areas growing in dry desert pavement; bouldery, bouldery-gravelly, rocky, rocky-cobbly-sandy, rocky-gravelly, rocky-gravelly-sandy, rocky-sandy, stony, stony-sandy, cobbly-gravelly, cobbly-gravelly-sandy, gravelly, gravelly-sandy and sandy ground; rocky-gravelly loam, cobbly-sandy loam, cobbly-silty loam, gravelly-clayey loam, silty loam and loam ground, and clay ground, occurring from sea level to 5,300 feet in elevation in the woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTE: *Pectocarya recurvata* is native to southwest-central and southern North America. *5, 6, 15, 16, 43 (010210), 46 (Page 712), 58, 63 (010210 - color presentation), 77, **85** (010210 - color presentation)*

***Plagiobothrys arizonicus* (A. Gray) E.L. Greene ex A. Gray: Arizona Popcornflower**

COMMON NAMES: Arizona Popcorn Flower, Arizona Popcornflower, Blood Weed, Blood-weed, Bloodweed, Lipstick Plant, Pop Corn Flower, Popcorn Flower. DESCRIPTION: Terrestrial annual forb/herb (2 to 16 inches in height); the leaves are dark green with reddish veins; the flowers are white or white with a yellow throat; flowering generally takes place between mid-February and early June (additional records: one for late January, one for late June and one for early October). HABITAT: Within the range of this species it has been reported from mountains; sandy mesas; rocky plateaus; rocky canyons; gravelly and sandy-loamy canyon bottoms; rocky bases of cliffs; knolls; gravelly ridges; rocky ridgetops; rocky-sandy meadows; rocky foothills; rocky, stony-loamy, gravelly and loamy hills; hilltops; rocky hillsides; bouldery-sandy, rocky, rocky-gravelly, rocky-sandy, rocky-loamy, gravelly, gravelly-sandy, gravelly-loamy, gravelly-silty, sandy and silty-clayey slopes; gravelly-sandy and sandy alluvial fans; gravelly bajadas; bouldery and rocky outcrops; amongst boulders and rocks; steppes; sandy plains; gravelly berms; rocky-gravelly, gravelly, gravelly-sandy, sandy and sandy-loamy flats; basins; sandy-loamy valley floors; sandy-loamy valley bottoms; along bouldery and sandy roadsides; arroyos; along rocky-gravelly draws; ravines; around springs; rocky and sandy streambeds; along creeks; sandy creekbeds; along rivers; riverbeds; along and in rocky, rocky-sandy, gravelly, gravelly-sandy and sandy washes; along and in gravelly drainages; within drainage ways; sandy banks of springs and rivers; benches; gravelly terraces; loamy bottomlands; sandy floodplains; sandy-silty edges of stock tanks (charcos); sandy riparian areas; waste places, and disturbed areas growing in moist and dry bouldery, bouldery-sandy, rocky, rocky-gravelly, rocky-sandy, stony, cindery, gravelly, gravelly-sandy and sandy ground; rocky loam, stony loam, gravelly loam, gravelly-clayey loam, sandy loam and loam ground; silty

clay and clay ground, and silty ground, occurring from 1,100 to 6,900 feet in elevation in the woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: Records included observations that parts of this plant (roots, stems and leaf veins) contain a red or reddish-purple sap. This plant was reported to have been utilized by native peoples of North America and could be investigated to determine its value as a home garden or commercial pigment or dye crop. *Plagiobothrys arizonicus* is native to southwest-central and southern North America. *5, 6, 15, 16, 43 (010210), 46 (Page 722), 58, 63 (010210), 77, 80 (*Plagiobothrys* sp. - Species of the genus *Plagiobothrys* have been listed as Rarely Poisonous and Suspected Poisonous Range Plants. "Members of this genus have been reported to accumulate toxic levels of nitrate."), **85** (010310 - color presentation of dried material), 115 (color presentation), 127*

***Plagiobothrys pringlei* E.L. Greene: Pringle's Popcornflower**

COMMON NAMES: Pringle Popcorn-flower, Pringle's Popcorn-flower, Pringle's Popcornflower, Popcorn Flower. DESCRIPTION: Terrestrial annual forb/herb (stems 4 to 16 inches in length); the flowers are white; flowering generally takes place between early March and late February (additional records: one for early February and one for mid-May). HABITAT: Within the range of this species it has been reported from mountains; mountainsides; sandy mesas; bluffs; foothills; rocky hillsides; rocky, gravelly and gravelly-loamy slopes; plains; muddy and sandy flats; valley floors; along rocky, gravelly and sandy roadsides; along streams; along sandy washes; benches; floodplains, and disturbed areas growing in muddy and moist and dry rocky, gravelly and sandy ground and gravelly loam ground, occurring from 1,200 to 4,600 feet in elevation in the woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTE: *Plagiobothrys pringlei* is native to southwest-central and southern North America. *5, 6, 8, 15, 16, 43 (010310), 46 (Page 722), 58, 63 (010310), 77, 80 (*Plagiobothrys* sp. - Species of the genus *Plagiobothrys* have been listed as Rarely Poisonous and Suspected Poisonous Range Plants. "Members of this genus have been reported to accumulate toxic levels of nitrate."), **85** (010310 - color presentation of dried material)*

Brassicaceae (Cruciferae): The Mustard Family

Arabis eremophila (see *Arabis perennans*)

***Arabis perennans* S. Watson: Perennial Rockcress**

SYNONYMY: *Arabis eremophila* E.L. Greene, *Boechera perennans* (S. Watson) W.A. Weber. COMMON NAMES: Perennial Rockcress, Rock Cress, Stiff-arm Rock Cress, Stiffarm Rock Cress. DESCRIPTION: Terrestrial perennial forb/herb or subshrub (8 to 40 inches in height, plants 8 to 12 inches in height and 6 to 17 inches in width were reported); the leaves are gray-green; the flowers may be pale blue-lavender, bluish-purple, cream, lavender, pink, pink-lavender, pinkish-purple, dull mauve, pale purple, purple, purple-magenta, purplish-pink, purplish-rose, reddish-violet, rose-magenta, violet-lavender, white & lavender or white-purple; flowering generally takes place between early February and early July (additional records: one for early January, one for mid-January, one for early August, one for early October and one for early December). HABITAT: Within the range of this species it has been reported from mountains; along mountaintops; rocky mountainsides; sandy mesas; sandy plateaus; rocky cliffs; rock faces; bouldery, rocky and rocky-sandy canyons; rocky and shaley-sandy canyon walls; bedrock, rocky, gravelly-sandy and sandy canyon bottoms; talus slopes; along sandy bases of cliffs; crevices in rocks; bluffs; rocky knobs; summits of laccoliths; rocky ledges; sandy ridges; ridgetops; rocky openings in woodlands; meadows; rocky-gravelly foothills; rocky hills; bouldery and rocky hillsides; sandy bases of escarpments; bedrock, bouldery, bouldery-gravelly, bouldery-sandy, rocky, rocky-shaley, rocky-gravelly, rocky-sandy, rocky-loamy, cobbly-sandy, cobbly-loamy, cindery, gravelly, gravelly-silty, sandy, sandy-loamy and loamy slopes; bajadas; rocky outcrops; amongst boulders and rocks; bases of boulders; lava flows; rocky mounds; flats; basins; along sandy valley floors; along roadbeds; along

gravelly roadsides; rocky walls of arroyos; along draws; gulches; bouldery-sandy and rocky ravines; springs; along streams; gravelly streambeds; along creeks; along rivers; along and in rocky, rocky-gravelly, gravelly and sandy washes; within drainages; bouldery-cobbly drainage ways; marshes; rocky banks of gullies, streams and washes; rocky-loamy and gravelly edges of arroyos, streams and washes; gravelly terraces; rocky and gravelly-sandy riparian areas, and disturbed areas growing in moist and dry bouldery, bouldery-cobbly, bouldery-gravelly, bouldery-sandy, rocky, rocky-shaley, rocky-gravelly, rocky-sandy, shaley, shaley-sandy, cobbly-sandy, cindery, gravelly, gravelly-sandy and sandy ground; rocky loam, rocky-sandy loam, cobbly loam, gravelly-clayey loam, sandy loam, clayey loam and loam ground; sandy clay and clay ground, and gravelly silty and silty ground, occurring from 600 to 9,500 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant was reported to have been utilized by native peoples of North America; it was noted as having been used as a drug or medication. *Arabis perennans* is native to southwest-central and southern North America. *5, 6, 15, 16, 28 (color photograph), 43 (010310), 46 (Page 353), 58, 63 (010310 - color presentation), 77, **85** (010410 - color presentation), 115 (color presentation), 127*

Boechera perennans (see *Arabis perennans*)

***Brassica tournefortii* A. Gouan: Asian Mustard**

COMMON NAMES: African Mustard, Asian Mustard, Desert Mustard, Mediterranean Mustard, Mediterranean Turnip, Moroccan Mustard, Mostaza, Mostaza Africana, Mostaza del Sahara, Mustard, Pale Cabbage, Prickly Turnip, Sahara Mustard, Tournefort's Birdrape, Turnip Weed, Wild Turnip. DESCRIPTION: Terrestrial annual forb/herb (1 to 4 feet in height, a plant 22 inches in height and 40 inches in width was observed and reported, plants 24 to 30 inches in height and 18 inches in width at the base were observed and reported), the large and serrated green leaves form in a basal rosette clasping on the stem, the flowers are green-white, ivory, white, pale yellow, yellow or yellow-cream, flowering generally takes place between mid-January and late May (additional records: one for mid-November, three for early December and one for mid-December). HABITAT: Within the range of this species it has been reported from mountains; sandy mesas; clayey canyons; rocky canyon bottoms; bases of cliffs; bluffs; rocky and rocky-clayey ridgetops; rocky hills; bouldery hillsides; bouldery, rocky, gravelly-sandy, gravelly-sandy-loamy, pebbly-sandy and sandy slopes; alluvial fans; gravelly bajadas; volcanic dikes and plugs; sand hills; sand shelves; sand dunes; sand hummocks; blow-sand deposits; sand sheets; rocky-sandy outwash fans; gravelly-sandy-loamy and silty plains; gravelly-sandy, sandy and silty flats; sandy and silty valley floors; along rocky-clayey, gravelly, gravelly-sandy-loamy and sandy roadsides; arroyos; gullies; about springs; creekbeds; along rivers; along and in rocky, rocky-sandy, gravelly, gravelly-sandy and sandy washes; along drainages; within sandy drainage ways; depressions; gravelly-sandy banks of rivers and washes; sandy edges of arroyos, rivers, washes and playas; sandy margins of washes and ponds; sandy beaches; benches; rocky strands; sandy terraces; loamy bottomlands; floodplains; sandy levees; canal banks; along ditches; recently burned areas of coastal sage scrub; bouldery-cobbly-sandy, gravelly-sandy and sandy riparian areas, and disturbed areas growing in dry desert pavement; bouldery, bouldery-cobbly-sandy, rocky, rocky-sandy, shaley, gravelly, gravelly-sandy, pebbly-sandy and sandy ground; gravelly-sandy loam, sandy loam and loam ground; rocky clay and clay ground, and silty ground, occurring from sea level to 6,600 feet in elevation in the woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: EXOTIC Invasive Plant that poses a significant threat to our native biotic communities. Sahara Mustard is usually a very large and robust plant. *Brassica tournefortii* is native to southern Europe; western, central and southern Asia, and northern Africa. *5, 6, 15, 16, 22, 28, 43 (010410), 46 (Supplement Page 1051), 63 (010410 - color presentation), 77, 80 (The genus *Brassica* is listed as both a Rarely Poisonous and Suspected Poisonous Range Plant "Mustards, both native and escaped, may cause several diseases including goiter and gastroenteritis." and a Poisonous Cropland and Garden Plant "Cultivated mustards may cause numerous diseases including gastroenteritis, blindness, goiter, emphysema, redwater disease, nitrate poisoning, anemia, and photosensitization."), **85** (010410 - color presentation of dried and fresh material), 115 (color presentation), **WTK** (July 4, 2005)*

Caulanthus lasiophyllus (see *Guillenia lasiophylla*)

Caulanthus lasiophyllus var. *lasiophyllus* (see footnote 15 under *Guillenia lasiophylla*)

Caulanthus lasiophyllus var. *utahensis* (see *Guillenia lasiophylla*)

***Draba cuneifolia* T. Nuttall ex J Torrey & A. Gray: Wedgeleaf Draba**

COMMON NAMES: Gasa, Spring Whitlow-grass, Wedge-leaf Draba, Wedgeleaf Draba, Wedge-leaf Whitlow-grass, Wedgeleaf Whitlow Grass, Wedge-leaved Whitlow-grass, Whitlow-grass, Whitlow-grass, Whitlow-wort. DESCRIPTION: Terrestrial annual forb/herb (1½ to 5 inches in height); the leaves are gray-green; the flowers are cream, white or yellow; flowering generally takes place between early January and late April (additional records: one for mid-May, one for late May, one for mid-July, one for mid-September, one for early December and one for late December). HABITAT: Within the range of this species it has been reported from mountains; mesas; plateaus; cliffs; soil pockets on shaded cliff walls; rocky canyons; rocky-sandy, sandy and loamy canyon bottoms; sandy talus slopes; bases of cliffs; rocky and stony ledges; ridges; rocky and clayey hills; rocky hillsides; along bouldery-gravelly, rocky, rocky-clayey-loamy, cindery, gravelly, gravelly-sandy, gravelly-loamy and sandy slopes; gravelly bajadas; rocky outcrops; amongst boulders and rocks; lava flows; rocky, stony-gravelly-clayey, gravelly and sandy flats; along roadsides; along arroyos; seeps, springs; arroyos; sandy bottoms of arroyos; gulches; along streams; sandy streambeds; along creekbeds; along rivers; sandy riverbeds; along and in bedrock, rocky, rocky-sandy, gravelly, gravelly-sandy, sandy and silty washes; along drainage ways; gravelly-sandy bowls; sandy, sandy-silty and silty banks of washes; along sandy shorelines of rivers; gravelly and silty sand-bars; bouldery-sandy beaches; cobbly benches; shelves; sandy and loamy bottomlands; floodplains; gravelly-sandy riparian areas, and disturbed areas growing in moist and dry bouldery, bouldery-gravelly, bouldery-sandy, rocky, rocky-gravelly, rocky-sandy, stony, cobbly, cindery, gravelly, gravelly-sandy and sandy ground; rocky-clayey loam, gravelly loam, gravelly-sandy loam, sandy loam, clayey loam and loam ground; stony-gravelly clay ground, and silty ground, occurring from 400 to 8,100 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTE: *Draba cuneifolia* is native to south-central and southern North America. *5, 6, 16, 43 (010710), 46 (Pages 347-348), 63 (010710 - color presentation), 77, **85** (010810 - color presentation), 115 (color presentation)*

***Draba cuneifolia* T. Nuttall *ex* J Torrey & A. Gray var. *sonorae* (E.L. Greene) S.B. Parish: Sonora Draba**

SYNONYMY: *Draba sonorae* E.L. Greene. COMMON NAMES: Sonora Draba. DESCRIPTION: Terrestrial annual forb/herb (1½ to 5 inches in height); the flowers are white; based on few flowering records located, flowering generally takes place between early January and mid April. HABITAT: Within the range of this species it has been reported from mountains; rocky canyons; foothills; riverbeds; sandy-clayey washes, and bottomlands growing in dry rocky ground and sandy clay ground, occurring from 1,100 to 5,000 in the desertscrub and wetland ecological formations. NOTES: *Draba cuneifolia* var. *sonorae* is native to southwest-central and southern North America. *43 (010810 - *Draba cuneifolia* var. *sonorae* Parish), 46 (*Draba sonorae* Greene is mentioned as being a synonym to *Draba cuneifolia* var. *integrifolia*, Page 348), 63 (010810), **85** (010810), 115 (color presentation of species)*

Draba sonorae (see *Draba cuneifolia* var. *sonorae*)

***Dryopetalon runcinatum* A. Gray: Rockmustard**

COMMON NAMES: Dryopetalon, Rock-mustard, Rockmustard. DESCRIPTION: Terrestrial biennial or perennial forb/herb (12 to 25 inches in height); the foliage is dark green; the flowers are lavender, pink, pale violet, white or white with a purplish tinge; flowering generally takes place between early February and early June (additional record: one for mid-December). HABITAT: Within the range of

this species it has been reported from mountains; mountainsides; mesas; rims of craters; rock cliffs; cliff faces; rocky canyons; bouldery canyon bottoms; talus slopes; bases of cliffs; crevices in and under boulders and rocks; rocky ledges; foothills; hills; hillsides; bouldery, bouldery-gravelly and rocky slopes; rocky outcrops; amongst boulders and rocks; coastal plains; along sandy roadsides; within rocky arroyos; rocky draws; springs; in rocks along streams; along and in rocky streambeds; along creeks; along rivers; along washes; within drainages; rocky banks of arroyos and creeks, and riparian areas growing in moist, damp and dry bouldery, bouldery-gravelly, rocky and sandy ground often in shaded areas, occurring from 100 to 7,600 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetlands ecological formations. NOTE: *Dryopetalon runcinatum* is native to southwest-central and southern North America. *5, 6, 15, 16, 28 (color photograph), 43 (010910), 46 (Page 339), 58, 63 (010910 - color presentation), 77 (color photograph #73), **85** (010910 - color presentation of dried material), 115 (color presentation)*

***Guillenia lasiophylla* (W.J. Hooker & G.A. Arnott) E.L. Greene: California Mustard**

SYNONYMY: *Caulanthus lasiophyllus* (W.J. Hooker & G.A. Arnott) E.B. Payson, *Caulanthus lasiophyllus* (W.J. Hooker & G.A. Arnott) E.B. Payson var. *utahensis* (P.A. Rydberg) E.B. Payson, *Thelypodium lasiophyllum* (W.J. Hooker & G.A. Arnott) E.L. Greene. COMMON NAMES: California Mustard, Coast Wild Cabbage, Cutleaf Thelypody, Hairyleaf Wildcabbage, Wild Cabbage. DESCRIPTION: Terrestrial annual forb/herb (6 to 40 inches in height, one record reported plants at 79 inches in height); the flowers are pale cream, pale cream-yellow, cream, creamy-white, pinkish-brown, white, pale yellow, yellow, yellowish, yellow-cream or yellowish-white; flowering generally takes place between early January and late May (additional records: one for mid-June, one for early July and one for early August). HABITAT: Within the range of this species it has been reported from mountains; bouldery mountainsides; sandy-silty mesas; rocky and stony canyons; sandy canyon bottoms; bases of cliffs; crevices in rocks; ridges; rocky-sandy ridgetops; meadows and meadow-like openings in woodlands; foothills; bouldery, rocky and rocky-loamy hills; clayey hilltops; rocky, rocky-sandy-loamy and stony hillsides; bouldery-rocky rocky, rocky-sandy, stony, stony-sandy, cobbly-sandy, gravelly, gravelly-loamy, sandy, sandy-loamy and clayey slopes; gravelly and sandy alluvial fans; rocky-sandy, gravelly and gravelly-sandy bajadas; bouldery and rocky outcrops; amongst boulders and rocks; lava fields; sand dunes; sand sheets; gravelly outwash fans; gravelly-sandy and sandy plains; cindery, gravelly, gravelly-sandy, sandy, clayey and silty flats; stony valley floors; valley bottoms; in talus at the foot of ocean bluffs; coastal plains; along rocky and rocky-sandy roadsides; gulches; within gullies; springs; along streams; along creeks; sandy creekbeds; clayey-loamy riverbeds; along and in rocky-sandy, gravelly, gravelly-sandy, sandy and silty washes; along sandy drainages; depressions; along gravelly, muddy-sandy and sandy banks of arroyos and washes; sandy edges of washes; along sandy margins of washes; clayey benches; gravelly terraces; loamy bottomlands; floodplains; catchments; along ditches; gravelly-sandy riparian areas; recently burned areas of woodland and chaparral, and disturbed areas growing in muddy and moist and dry desert pavement; bouldery, bouldery-rocky, rocky, rocky-gravelly, rocky-sandy, stony, stony-sandy, cobbly-gravelly-sandy, cobbly-sandy, cindery, gravelly, gravelly-sandy and sandy ground; rocky loam, rocky-sandy loam, gravelly loam, gravelly-sandy loam, gravelly-clayey-silty loam, sandy loam, clayey loam, silty-clayey loam and loam ground; sandy clay and clay ground, and sandy silty and silty ground, occurring from sea level to 5,300 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTE: *Guillenia lasiophylla* is native to southwest-central and southern North America. *5, 6, 15 (recorded as *Caulanthus lasiophyllus* (Hook. & Arn.) Payson var. *lasiophyllus*), 16 (recorded as *Caulanthus lasiophyllus* (Hook. & Arn.) Payson), 43 (010910), 46 (recorded as *Thelypodium lasiophyllum* (Hook. & Arn.) Greene, Page 330), 63 (010910 - color presentation), 77 (recorded as *Caulanthus lasiophyllus* (H.&A.) Payson), 80 (*Thelypodium lasiophyllum* is listed as a Rarely Poisonous and Suspected Poisonous Range Plant. "This annual mustard has been reported to accumulate toxic levels of nitrate."), **85** (010910 - color presentation of dried material), 115 (color presentation)*

***Lepidium lasiocarpum* T. Nuttall: Shaggyfruit Pepperweed**

COMMON NAMES: Hairy-pod Pepperwort, Hairypod Pepperweed, Hispidcress, Pepper Grass, Peppergrass, Pepperweed, Sand Peppergrass, Shaggyfruit Pepperweed. DESCRIPTION: Terrestrial annual or biennial forb/herb (4 to 15 inches in height); the flowers are cream, green, greenish-yellow, white or yellow-green; flowering generally takes place between late December and late June (additional records: one for late August and one for mid-September). HABITAT: Within the range of this species it has been reported from mountains; mesas; plateaus; along rocky and shaley canyons; rocky, gravelly and sandy canyon bottoms; talus slopes; bases of cliffs; buttes; rocky and sandy ledges; sandy ridges; rocky ridgetops; foothills; bouldery and rocky-sandy hills; hilltops; rocky hillsides; rocky, rocky-sandy, cobbly-gravelly-sandy, gravelly, sandy and sandy-loamy slopes; rocky, rocky-sandy and gravelly alluvial fans; gravelly, gravelly-sandy and sandy bajadas; rocky outcrops; amongst boulders and rocks; lava flows; lava beds; sand dunes; sand sheets; sand flats; along rocky-sandy and sandy outwash fans; gravelly-sandy-loamy and sandy-loamy plains; rocky, gravelly, sandy, sandy-loamy and silty flats; sandy basins; sandy and clayey valley floors; coastal bluffs; coastal dunes; coastal plains; tidal shores; along sandy roadsides; along and in arroyos; bottoms of arroyos; rocky chutes; around seeping streams; along creeks; sandy creekbeds; along rivers; sandy riverbeds; along and in bedrock, rocky, rocky-sandy, shaley, gravelly, gravelly-sandy and sandy washes; rocky-sandy drainages; along drainage ways; silty playas; silty depressions; raised areas in saltmarshes; along muddy, gravelly-sandy and sandy banks of rivers and washes; stony-sandy and sandy edges of arroyos, washes and lakebeds; around margins of washes and marshes; shores of lakes; mudflats; gravel and sand bars; sandy beaches; bouldery benches; gravelly terraces; sandy, loamy and clayey bottomlands; lowlands; sandy and silty floodplains; along gravelly-sandy and sandy edges of stock tanks; canal banks; gravelly and sandy riparian areas; recently burned areas in woodlands and desertscrub, and disturbed areas growing in moist and dry desert pavement; bouldery, rocky, rocky-sandy, stony-sandy, shaley, gravelly, gravelly-sandy and sandy ground; rocky loam, gravelly-sandy loam, gravelly-clayey loam, sandy loam and loam ground; silty clay and clay ground, and gravelly-sandy silty, sandy-silty and silty ground, occurring from sea level to 7,400 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant was reported to have been utilized by native peoples of North America and could be investigated to determine its value as a home garden or commercial food crop; it was also noted as having been used as a drug or medication. *Lepidium lasiocarpum* is native to southwest-central and southern North America. *5, 6, 15, 16, 43 (011010), 46 (Page 334), 63 (011010 - color presentation), 68, 77, **85** (011010 - color presentation), 127*

***Lesquerella gordonii* (A. Gray) S. Watson (var. *gordonii* is the variety reported as occurring in Arizona): Gordon's Bladderpod**

SYNONYMY: (for *L.g.* var. *gordonii*: *Physaria gordonii* (A. Gray) S.L. O'Kane & I.A. Al-Shehbaz). COMMON NAMES: Arizona Bladderpod Mustard, Bead-pod, Bladder Pod, Bladderpod Mustard, Gordon Bladder Pod, Gordon Bladder-pod, Gordon Bladderpod, Gordon's Bladderpod, Yellow Bladderpod. DESCRIPTION: Terrestrial annual, biennial or perennial forb/herb (3 inches to 24 inches in height); the foliage is green; the flowers are yellow; flowering generally takes place between early February and mid-May (additional records: one for mid-January, two for early June, one for late June and one for mid-September). HABITAT: Within the range of this species it has been reported from mountains; mesas; plateaus; canyons; gravelly canyon bottoms; ridges; rocky hills; hilltops; rocky and rocky-gravelly hillsides; rocky, rocky-gravelly and gravelly slopes; bajadas; rocky outcrops; rocky-sandy alluvial fans; sandy bajadas; sandy, sandy-loamy and clayey-loamy plains; rocky, gravelly and sandy flats; basins; valley floors; along rocky, gravelly, gravelly-loamy and sandy roadsides; bottoms of arroyos; draws; rocky ravines; streambeds; sandy creekbeds; gravelly riverbeds; along and in bedrock-bouldery, gravelly, sandy and silty washes; along and in drainage ways; banks of creeks and washes; margins of washes; benches; terraces; sandy floodplains; mesquite bosques; along ditches; gravelly-sandy riparian areas, and disturbed areas growing in moist and dry bouldery, rocky, rocky-gravelly, rocky-sandy, gravelly, gravelly-sandy and sandy ground; gravelly loam, sandy loam and clayey loam ground; clayey

ground; silty ground, and chalky ground, occurring from 100 to 7,800 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. *Lesquerella gordonii* is native to southwest-central and southern North America. *5, 6, 15, 16, 28 (color photograph), 34 (genus), 43 (011310), 46 (Page 343), 48 (genus), 58, 63 (011310 - color presentation), 68, 77, **85** (011310 - color presentation), 86 (note under Fendler's Bladderpod), 115 (color presentation)*

***Lesquerella purpurea* (A. Gray) S. Watson: Rose Bladderpod**

COMMON NAMES: Bladder-pod, Purple Bladderpod, Rose Bladderpod, White Bladderpod. DESCRIPTION: Terrestrial perennial forb/herb (sprawling prostrate, decumbent, weakly ascending to nearly erect stems 6 inches to 2 feet in height); the stems may be dark green; the leaves are bluish-green, gray-green or silvery-green; the flowers (to 3/8 inch diameter) are blue, lavender-white, purple, purplish, white (fading to pink or purplish), white-purple, white-violet or whitish-lavender; flowering generally takes place between late January and late May (additional records: one for late June, one for late August, one for early September and two for mid-November). HABITAT: Within the range of this species it has been reported from mountains; mesas; cliffs; rocky canyons; canyon bottoms; talus slopes; bases of cliffs; rocky foothills; rocky hills; rocky hillsides; along rocky, gravelly, gravelly-sandy and sandy-silty slopes; bajadas; sandy bases of rocky outcrops; amongst boulders and rocks; gravelly bases of boulders and rocks; flats; bottoms of arroyos; draws; along creeks; along and in gravelly-sandy-silty washes; drainages; stony-clayey and sandy banks of creeks and rivers, and bouldery-cobbly-sandy and bouldery-gravelly riparian areas growing in wet, moist and dry bouldery, bouldery-cobbly-sandy, bouldery-gravelly, rocky, gravelly, gravelly-sandy and sandy ground; stony clay ground, and rocky-gravelly silty, gravelly-sandy silty and sandy silty ground, occurring from 1,500 to 6,300 feet in elevation in the woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. *Lesquerella purpurea* is native to southwest-central and southern North America. *5, 6, 15, 28 (color photograph), 34 (genus), 43 (071810), 46 (Page 343), 48 (genus), 63 (071810 - color presentation), 77 (color photograph #26), **85** (080110 - color presentation), 115 (color presentation)*

Physaria gordonii (see *Lesquerella gordonii* var. *gordonii*)

***Sisymbrium irio* C. Linnaeus: London Rocket**

COMMON NAMES: London Rocket, Londonrocket, Pamita, Pamiton, Rocket Mustard, Tumble Mustard. DESCRIPTION: Terrestrial annual forb/herb (8 inches to 5 feet in height, plants 8 inches in height and 6 inches in width were reported); the flowers are golden-yellow, white, pale yellow or yellow; the anthers are cream; flowering generally takes place between mid-December and mid-June (additional records: one for early July, one for late July, one for early August, one for mid-August, two for late August, one for mid-September, one for late September, one for early October, one for mid-October, one for early November, one for mid-November and four for late November). HABITAT: Within the range of this species it has been reported from mountains; sandy mesas; plateaus; canyons; along bouldery-gravelly-sandy and sandy canyon bottoms; rocky buttes; rock ledges; ridges; ridgetops; clayey meadows; foothills; rocky hills; rocky hillsides; bouldery, rocky, rocky-sandy, gravelly-sandy, sandy and sandy-loamy slopes; rocky alluvial fans; bajadas; rocky outcrops; amongst boulders and rocks; sandy lava flows; sand dunes; berms; plains; rocky, gravelly, sandy and sandy-silty flats; basins; valley floors; loamy valley bottoms; railroad right-of-ways; gravelly-sandy roadbeds; gravelly, sandy and clayey roadsides; within rocky arroyos; along bottoms of arroyos; bottoms of ravines; seeps; springs; along streams; streambeds; along creeks; bouldery-rocky and rocky creekbeds; along rivers; rocky and rocky-cobbly-sandy riverbeds; along and in rocky, rocky-sandy, gravelly, gravelly-sandy, sandy and sandy-loamy washes; within sandy drainage ways; silty lakebeds; bogs; sandy-loamy and silty depressions; along cobbly-sandy, gravelly-sandy and sandy banks of streams, rivers and washes; rocky edges of springs, streams, creeks, washes and ponds; margins of washes; sandy beaches; sandy benches; terraces; sandy and loamy bottomlands;

floodplains; mesquite bosques; margins of stock tanks; canal edges and walls; along ditches; riparian areas; waste places; recently burned areas of woodland and desertscrub, and disturbed areas growing in muddy and wet, moist, damp and dry bouldery, bouldery-gravelly-sandy, rocky, rocky-cobbly; rocky-cobbly-sandy, rocky-sandy, cobbly-sandy, gravelly, gravelly-sandy and sandy ground; rocky-clayey loam, gravelly-sandy loam, sandy loam and loam ground; sandy clay and clay ground, and sandy silty ground, occurring from sea level to 10,300 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: EXOTIC Invasive Plant that poses a significant threat to our native biotic communities. This plant was reported to have been utilized by native peoples of North America; it was noted as having been used food, beverage and as a drug or medication. *Sisymbrium irio* is native to middle and southern Europe; western, central, eastern and southern Asia, and northern Africa. *5, 6, 15, 16, 22, 28 (color photograph), 43 (011410), 46 (Page 336), 58, 63 (011410 - color presentation), 68, 77, 85 (011510 - color presentation), 101 (color photograph), 115 (color presentation), 127, **HR***

***Streptanthus carinatus* C. Wright ex A. Gray: Lyreleaf Jewelflower**

COMMON NAMES: Lyreleaf Jewelflower, Lyreleaf Twistflower, Lyre-leaved Twistflower, Pecos Twist Flower, Silver Bells, Twist Flower, Twistflower. DESCRIPTION: Terrestrial annual or biennial forb/herb (6 to 42 inches in height); the foliage is bluish-green or grayish-green; the flowers may be cream, creamy-white, cream-yellow, bright golden-yellow, greenish, lemon-yellow, pinkish-cream, purple, purple with yellowish or white margins, red, dark red, red-violet, pale violet, violet, white with purple veins, pale yellow, yellow or deep yellow tipped with maroon or red; flowering generally takes place between mid-February and early May (additional record: one for late May, flowering beginning as early as January has been reported). HABITAT: Within the range of this species it has been reported from mountains; rocky mountainsides; mesas; rocky canyons; along rocky canyon bottoms; rocky bases of cliffs; crevices in rocks; bluffs; rocky ridges; foothills; rocky and gravelly hills; rocky hillsides; bouldery, rocky, rocky-gravelly-loamy and gravelly slopes; gravelly and sandy bajadas; rocky outcrops; amongst boulders and rocks; sandy lava flows; gravelly-sandy banks; rocky, stony-gravelly-clayey and gravelly flats; bowls; along rocky, gravelly, gravelly-clayey-loamy and sandy roadsides; rocky arroyos; along draws; ravines; cobbly-sandy riverbeds; along and in sandy washes; drainages; gravelly edges of arroyos; margins of rivers; bottomlands; floodplains, and disturbed areas growing in moist and dry bouldery, rocky, cobbly, cobbly-sandy, gravelly, gravelly-sandy and sandy ground; rocky-gravelly loam, gravelly loam, gravelly-sandy-clayey loam and gravelly-clayey loam ground, and stony-gravelly clay ground, occurring from 1,500 to 7,000 feet in elevation in the woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTE: *Streptanthus carinatus* is native to southwest-central and southern North America. *5, 6, 28 (color photograph of *Streptanthus arizonicus*), 43 (063009), 46 (Pages 331-332), 63 (011610 - color presentation), 77 (color photograph #74), **85** (011610 - color presentation), 86 (note, color photograph of subspecies *arizonicus*), 115 (color presentation)*

Thelypodium lasiophyllum (see *Guillenia lasiophylla*)

Thysanocarpus amplectens (see *Thysanocarpus curvipes*)

***Thysanocarpus curvipes* W.J. Hooker: Sand Fringepod**

SYNONYMY: *Thysanocarpus amplectens* E.L. Greene, *Thysanocarpus curvipes* W.J. Hooker var. *elegans* (F.E. von Fischer & C.A. von Meyer) B.L. Robinson, *Thysanocarpus curvipes* W.J. Hooker var. *eradiatus* W.L. Jepson, *Thysanocarpus elegans* F.E. von Fischer & C.A. von Meyer. COMMON NAMES: Fringe-pod, Lace Pod, Lace-pod, Lacepod, Lacepod Mustard, Sand Fringepod, Sand Lacepod. DESCRIPTION: Terrestrial annual forb/herb (6 to 32 inches in height, one plant was described as being 10 inches in height with a crown 2 inches in width, plants 16 to 22 inches in height and 4 to 8 inches in width were reported); the foliage is pale gray-green; the flowers may be cream, pale pink, pink, purple, white or white with green midribs; flowering generally takes place between early January and early June. HABITAT: Within the range of this species it has been reported from mountains; rocky mountainsides;

mesas; rocky cliffs; rock faces and walls; rocky canyons; canyon walls; bouldery, rocky and sandy canyon bottoms; talus; bases of cliffs; crevices in bedrock and boulders; buttes; ledges; ridges; rocky ridgetops; meadows; foothills; bouldery and rocky hills; hilltops; bouldery, rocky, rocky-cobbly-gravelly and loamy hillsides; bouldery; bouldery-gravelly, rocky, rocky-gravelly, rocky-clayey-loamy, rocky-silty-loamy, cobbly, cobbly-clayey, gravelly, gravelly-loamy, sandy, sandy-loamy, loamy and clayey slopes; bajadas; amongst boulders and rocks; bases of rocks; lava flows; sand dunes; rocky banks; breaks; rocky and sandy flats; sandy valley floors; railroad right-of-ways; along roadsides; arroyos; draws; rocky chutes; gulches; seeps; along streams; edges of streambeds; along creeks; creekbeds; rocky riverbeds; along and in rocky-sandy, gravelly-sandy, sandy, sandy-loamy and loamy washes; along and in drainages; along and in sandy drainage ways; around pools; rocky and sandy banks of draws, creeks and rivers; cobbly edges of streambeds and washes; margins of washes; shores of lakes; bouldery and rocky benches; rocky-gravelly and sandy terraces; loamy bottomlands; floodplains; along sandy margins of reservoirs; ditches; rocky and sandy riparian areas; recently burned areas in woodlands and chaparral, and disturbed areas growing in moist and dry bouldery, bouldery-rocky-sandy, bouldery-gravelly, rocky, rocky-cobbly-gravelly, rocky-gravelly, rocky-sandy, cobbly, cobbly-sandy, cindery, gravelly, gravelly-sandy and sandy ground; rocky loam, rocky-sandy loam, rocky-clayey loam, rocky-silty loam, cobbly-gravelly loam, gravelly loam, sandy loam and loam ground; rocky clay, cobbly clay, gravelly clay, sandy clay and clay ground, and silty ground often having been reported as growing in shade and amongst grasses, occurring from sea level to 7,000 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant was reported to have been utilized by native peoples of North America and could be investigated to determine its value as a home garden or commercial food crop; it was also noted as having been used as a drug or medication. *Thysanocarpus curvipes* is native to west-central and southern North America. *5, 6, 15 (recorded as *Thysanocarpus elegans* Fisch. & Mey.), 16, 43 (011610), 46 (recorded as *Thysanocarpus amplectens* Greene, Page 348), 58 (recorded as *Thysanocarpus curvipes* Hook. var. *elegans* (Fisch. & Meyer) Robins.), 63 (011610 - color presentation), 77 (recorded as *Thysanocarpus curvipes* Hook. var. *elegans* (F. and M.) Robins.), **85** (011610 - color presentation), 115 (color presentation), 127*

Thysanocarpus curvipes var. *elegans* (see *Thysanocarpus curvipes*)

Thysanocarpus curvipes var. *eradiatus* (see *Thysanocarpus curvipes*)

Thysanocarpus elegans (see *Thysanocarpus curvipes*)

Cactaceae: The Cactus Family

***Carnegiea gigantea* (G. Engelmann) N.L. Britton & J.N. Rose: Saguaro**

SYNONYMY: *Cereus giganteus* G. Engelmann. COMMON NAMES: Giant Cactus, Giant Cereus, Ha:san (Tohono O'odham), Ha Shun (Pima), Mashad (Tohono O'odham), Pitahaya (Spanish Conquistadors), Sage-of-the-desert, Saguaro (Spanish), Sahuaro. DESCRIPTION: Terrestrial perennial stem-succulent tree (erect stems 5 to 60 feet in height and 6 to 30 inches in diameter); the plants are green; the spines are yellow or reddish-brown aging to gray or gray-black; the flowers (2 to 3 inches in diameter) are a waxy creamy-white opening at about 8 p.m. and closing at about 5 p.m. the next day with around four blooms opening per day over a 30 day period; flowering generally takes place between late April and mid-June (additional records: one for late March, one for early July, one for mid-July, two for early September and one for early October), the ripe fruits (2¼ to 3 inches in length and 1 to 1½ inches in diameter) split into 2 to 6 segments that curl back to reveal the red inner lining of the rinds which are sometimes mistakenly thought to be red flowers. HABITAT: Within the range of this species it has been reported from mountains; mesas; canyons; canyon walls; buttes; ridges; ridgelines; rocky foothills; rocky and gravelly hills; rocky hilltops; rocky hillsides; rocky, gravelly, gravelly-loamy and sandy-clayey-loamy

slopes; rocky and gravelly bajadas; rocky outcrops; amongst boulders and rocks; stabilized sandy and sandy-powdery dunes; plains; gravelly and sandy flats; valley floors; along arroyos; along and in riverbeds; within sandy washes; drainages; floodplains, and mesquite bosques growing in dry desert pavement; bouldery, rocky, gravelly, sandy and sandy-powdery ground, and gravelly loam and sandy-clayey loam ground, occurring from sea level to 5,100 feet in elevation in the scrub, grassland and desertscrub ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. This plant was reported to have been utilized by native peoples of North America and could be investigated to determine its value as a home garden or commercial food, fodder (seeds), beverage and/or fiber crop; it was also noted as having been used as tools, ceremonial items and musical instruments, and as an indicator of the changing of the seasons (with the Saguaro harvest marking the beginning of a new year). Saguaros are very slow to establish, a 5 year old plant may be no more than ¼ to ½ inch in height. The growth rate of Saguaros is extremely variable. William G. McGinnies in his book "Discovering the Desert" reports that a plant 36 inches in height may be from 20 to 50 years of age, he also presents a table of typical growth rates reporting the following: 4 inches - 8.0 years, 8 inches - 12.5 years, 16 inches - 19.1 years, 32 inches - 27.3 years, 3.3 feet - 30.3 years, 6.6 feet - 40.5 years, 10 feet - 47.5 years, 13 feet - 54 years, 16 feet - 60.0 years, 18 feet - 74.0 years. 20 feet - 83.0 years, 25 feet - 107.0 years, 30 feet - 131.0 years, and 35 feet - 157.0 years. The growth rate of propagated and cultivated saguaros is much faster. One of the largest known saguaros, located in Saguaro National Monument, was reported to be 52 feet in height, had 52 arms, weighed an estimated 10 tons and was thought to be 235 years of age. Cristate forms have been reported. The Broad-billed Hummingbird (*Cynanthus latirostris*), Broad-tailed Hummingbird (*Selasphorus platycercus*), Costa's Hummingbird (*Calypte costae*), Curved-billed Thrasher (*Toxostoma curvirostre*), Lesser Long-nosed Bat (*Leptonycteris curasoae* subsp. *yerbabuenae*) and Rufous Hummingbird (*Selasphorus rufus*) have been observed visiting the flowers. Coyotes (*Canis latrans*), Desert Mule Deer (*Odocoileus hemionus* subsp. *crooki*), Desert Bighorn Sheep (*Ovis canadensis* subsp. *mexicana*), Javelina (*Peccari tajacu*) and White-winged Doves (*Zenaida asiatica*) as well as other animals and birds feed on the saguaro fruit and seeds. the Gila Woodpecker (*Melanerpes uropygialis*) and Gilded Flicker (*Colaptes chrysoides*) make holes in this plant for their nests which are later utilized by the Ash-throated Flycatcher (*Myiarchus cinerascens*), Cactus Wren (*Campylorhynchus brunneicapillus*), Elf Owl (*Micrathene whitneyi*), House Finch (*Carpodacus mexicanus*), Lucy's Warbler (*Vermivora luciae*), Purple Martin (*Progne subis*) and Cactus Wren (*Campylorhynchus brunneicapillus*). Red-tailed Hawks (*Buteo jamaicensis*), White-winged Doves (*Zenaida asiatica*) and other birds nest on the arms of the plant. *Carnegiea gigantea* is native to southwest-central and southern North America. *5, 6, 12 (recorded as *Cereus giganteus* Engelm., Pages 108-111, color photographs including habitat), 13 (color photographs including habitat with associated species: Plates C.2 and D.3), 15 (color photograph on Page 77 includes habitat and associated species), 16, 18, 26 (color photograph), 27 (recorded as *Cereus giganteus*, Pages 64-65, color photographs: Plates 39, 39A & 39B, Page 102), 28 (recorded as *Cereus giganteus*, color photograph), 38 (color photograph), 43 (011610), 45 (color photograph), 46 (Page 569), 48 (recorded as *Cereus giganteus*), 52 (recorded as *Cereus giganteus*, color photograph), 53 (recorded as *Cereus giganteus* Engelm.), 58 (recorded as *Cereus giganteus* Engelm.), 63 (011610 - color presentation), 77 (color photograph #63), 85 (011610 - color presentation), 86 (recorded as *Cereus gigantea*, color photograph), 91, 107, 115 (color presentation), 119, 127, 134, **HR**, **WTK** (July 4, 2005)*

Cereus giganteus (see *Carnegiea gigantea*)

Cereus greggii var. *transmontanus* (see *Peniocereus greggii* var. *transmontanus*)

***Cylindropuntia acanthocarpa* (G. Engelmann & J. Bigelow) F.M. Knuth: Buck-horn Cholla**

SYNONYMY: *Opuntia acanthocarpa* G. Engelmann & J. Bigelow. COMMON NAMES: Buck-horn Cholla, Buckhorn Cholla, Deer-horn Cactus, Stag-horn Cholla, Yellow Flowered Cane Cactus. DESCRIPTION: Terrestrial perennial stem-succulent shrub (16 inches to 15 feet in height, one plant was

described as being 20 inches in height with a crown 60 inches in width, one plant was described as being 5 feet in height with a crown 10 feet in width, one plant was described as being 67 inches in height with a crown 83 inches in width); the stems are bluish-gray-green, gray-green, green or dark green; the spines are golden, golden-yellow, gray, reddish-brown, tan or yellowish; the flowers (1 to 2¼ inches in diameter) may be bronze, bronze with a reddish mid-stripe, bronze-yellow, burnt-orange, copper-yellow, green-yellow, maroon, orange, purple, purplish, red, dark red, reddish-bronze, yellow, yellow-brown, yellow-magenta, yellow-red or variegated; the anthers are light yellow or yellow; flowering generally takes place between early March and late June (additional records: two for early January, one for mid-July, two for early August and one for mid-November); the mature spiny, dry fruits (1¼ inches in length and 5/8 to3/4 inch in diameter) are brown or tan. HABITAT: Within the range of this species it has been reported from mountains; rocky mountaintops; sandy mountainsides; rocky-sandy and stony mesas; bouldery canyons; canyon bottoms; buttes; ridges; rocky foothills; rocky, gravelly and sandy hills; rocky hillsides; rocky, rocky-gravelly, gravelly and sandy slopes; rocky, gravelly and gravelly-loamy bajadas; rocky outcrops; amongst boulders, rocks and gravels; plains; gravelly and sandy flats; basins; sandy valley floors; along gravelly roadsides; gulches; creekbeds; along and in bouldery, bouldery-gravelly, stony-gravelly, gravelly; gravelly-sandy and sandy washes; banks of washes; along rocky-sandy edges of creeks; margins of washes; rocky benches; gravelly-silty terraces; loamy bottomlands, and sandy riparian areas growing in dry desert pavement; bouldery, bouldery-rocky-sandy, bouldery-gravelly, rocky, rocky-gravelly, rocky-sandy, stony-gravelly, gravelly, gravelly-sandy and sandy ground; rocky loam, rocky-gravelly-sandy loam, rocky-sandy loam, gravelly loam, sandy loam and loam ground; clay ground, and gravelly silty and silty ground, occurring from 500 to 5,200 feet in elevation in the woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. This plant was reported to have been utilized by native peoples of North America and could be investigated to determine its value as a home garden or commercial food crop. The change in nomenclature in USDA NRCS has not been recognized in BONAP, species remains as *Opuntia acanthocarpa* (accessed 041806). *Cylindropuntia acanthocarpa* is native to southwest-central and southern North America. *5, 6, 12 (recorded as *Opuntia acanthocarpa* Engelm. & Bigelow, Pages 34-37), 26 (genus, recorded as *Opuntia*), 27 (Page 17), 28 (recorded as *Opuntia acanthocarpa*, color photograph), 43 (011710 - *Cylindropuntia acanthocarpa* (Engelm. & J.M. Bigelow) F.M. Knuth, *Opuntia acanthocarpa* Engelm. & J.M. Bigelow), 45 (color photograph), 46 (recorded as *Opuntia acanthocarpa* Engelm. & Bigel., Page 585), 48 (genus, recorded as *Opuntia*), 53 (recorded as *Opuntia acanthocarpa* Engelm. & Bigel.), 63 (011710), 77 (recorded as *Opuntia acanthocarpa* Engelm. & Bigel. var. *major* (Engelm. & Bigel.) L. Benson, color photograph labeled *Opuntia acanthocarpa* #66), **85** (011710 - color presentation), 115 (color presentation), 119 (recorded as *Opuntia acanthocarpa* Engelm.), 127*

***Cylindropuntia acanthocarpa* (G. Engelmann & J. Bigelow) F.M. Knuth var. *acanthocarpa*: Buck-horn Cholla**

SYNONYMY: *Opuntia acanthocarpa* G. Engelmann & J. Bigelow, *Opuntia acanthocarpa* G. Engelmann & J. Bigelow var. *acanthocarpa*. COMMON NAMES: Buck-horn Cholla. DESCRIPTION: Terrestrial perennial stem-succulent shrub (40 inches to 10 feet in height, one plant was described as being 32 inches in height and 40 inches in width, one plant was described as being 4 feet in height and 40 inches in width, one plant was described as being 4 feet in height and width, one plant was described as being 78 inches in height and 10 feet in width); the stems are bluish-gray-green or green; the spines are brown, dark brown, golden-yellow, reddish-brown or tan turning gray with age; the glochids are yellow; the flowers (1 to 1¼ inches in diameter) are bronze, green-yellow, yellow or yellow-green sometimes tinged with brown-orange or reddish-orange; the anthers are yellow; based on just a few flowering records located flowering generally takes place between late March and late May (flowering records: one for late March, seven for mid-May and one for late May); the mature spiny, dry fruits (1¼ inches in length and 5/8 to3/4 inch in diameter) are brown or tan. HABITAT: Within the range of this species it has been reported from mountains; mountaintops; canyons; rocky hillsides; rocky and sandy slopes; along drainages, and mesquite bosques growing in dry rocky, gravelly and sandy ground, occurring from 1,300

to 4,700 feet in elevation in the woodland and desertscrub ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. This plant (*Opuntia acanthocarpa*) was reported to have been utilized by native peoples of North America and could be investigated to determine its value as a home garden or commercial food crop. *Cylindropuntia acanthocarpa* var. *acanthocarpa* is native to southwest-central North America. *12 (recorded as *Opuntia acanthocarpa* Engelm. & Bigelow var. *acanthocarpa*, Pages 35 & 37), 26 (genus, recorded as *Opuntia*), 27 (recorded as *Cylindropuntia acanthocarpa* (Engelmann & Bigelow) F.M. Knuth, Page 17), 28 (species, color photograph of *Opuntia acanthocarpa*), 43 (011710 - *Cylindropuntia acanthocarpa* (Engelm. & J.M. Bigelow) F.M. Knuth, *Opuntia acanthocarpa* Engelm. & J.M. Bigelow), 45 (color photograph of species), 46 (recorded as *Opuntia acanthocarpa* Engelm. & Bigel., Page 585), 48 (genus, recorded as *Opuntia*), 53 (recorded as *Opuntia acanthocarpa* Engelm. & Bigel.), 63 (011810 - color presentation), **85** (011810), 115 (color presentation of species), 119 (recorded as *Opuntia acanthocarpa* Engelm.), 127, **HR***

***Cylindropuntia acanthocarpa* (G. Engelmann & J. Bigelow) F.M. Knuth var. *major* (G. Engelmann & J. Bigelow) D.J. Pinkava: Buckhorn Cholla**

SYNONYMY: *Opuntia acanthocarpa* G. Engelmann & J. Bigelow var. *major* (G. Engelmann & J. Bigelow) L.D. Benson, *Opuntia acanthocarpa* G. Engelmann & J. Bigelow var. *ramosa* R.H. Peebles. COMMON NAMES: Buckhorn Cholla, Major Cholla. DESCRIPTION: Terrestrial perennial stem-succulent shrub (2 to 7 feet in height, one plant was described as being 2 feet in height and 8 inches in width, one plant was described as being 32 inches in height with a crown 5 feet in width, one plant was described as being 32 inches in height with a crown 6 feet in width, one plant was described as being 4 feet in height and width, one plant was described as being 4 feet in height with a crown 87 inches in width, one plant was described as being 5 feet in height and width, one plant was described as being 5 feet in height with a crown 98 inches in width, one plant was described as being 6 feet in height with a crown 79 inches in width); the stems are grayish-blue-green or dark green; the spines are dark brown, gray with dark brown tips, purple-brown or red-brown; the flowers (1 to 1¾ inches in diameter) may be brick-red, bronze-red, bronze-yellow, brick-orange, golden, magenta, orange, pink, purple, red, red-pinkish or yellow; the anthers are yellow; flowering generally takes place between early March and early June (additional records: two for early January and two for early August); the mature spiny, dry fruits (1/2 to 7/8 inch in length and ½ to 1 inch in diameter) are brown, light charcoal, gray, grey-beige or tan. HABITAT: Within the range of this species it has been reported from mountains; rocky mountainsides; rocky-sandy mesas; buttes; ridges; ridgelines; gravelly hills; hilltops; rocky hillsides; rocky slopes; gravelly-loamy and sandy bajadas; gravelly and sandy flats; basins; along gravelly-sandy washes, and margins of washes growing in dry rocky, rocky-sandy, gravelly, gravelly-sandy and sandy ground and gravelly loam, clayey loam and loam ground, occurring from 800 to 3,800 feet in elevation in the scrub, grassland and desertscrub ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. The species (*Opuntia acanthocarpa*) was reported to have been utilized by native peoples of North America and could be investigated to determine its value as a home garden or commercial food crop. The change in nomenclature in USDA NRCS has not been recognized in BONAP, species remains as *Opuntia acanthocarpa* (accessed 041806). *Cylindropuntia acanthocarpa* var. *major* is native to southwest-central and southern North America. *5, 6, 12 (recorded as *Opuntia acanthocarpa* Engelmann & Bigelow var. *major* (Engelmann & Bigelow) L. Benson, Page 35 & 37), 26 (genus, recorded as *Opuntia*), 27 (Page 19, color photograph: Plates 14 & 14A, Page 96), 28 (recorded as *Opuntia acanthocarpa*, color photograph of species), 43 (011710 - *Cylindropuntia acanthocarpa* (Engelm. & J.M. Bigelow) F.M. Knuth var. *major* (Engelm.) Pinkava, *Opuntia acanthocarpa* Engelm. & J.M. Bigelow var. *major* (Engelm. & J.M. Bigelow) L.D. Benson, *Opuntia acanthocarpa* Engelm. & J.M. Bigelow var. *ramosa* Peebles), 45 (color photograph of species), 46 (recorded as *Opuntia acanthocarpa* Engelm. & Bigel. var. *ramosa* Peebles, Page 585), 48 (genus, recorded as *Opuntia*), 53 (species, recorded as *Opuntia acanthocarpa* Engelm. & Bigel.), 63 (011710 - color presentation), 77 (recorded as *Opuntia acanthocarpa* Engelm. & Bigel. var. *major* (Engelm. & Bigel.) L. Benson, color photograph labeled

Opuntia acanthocarpa #66), 85 (011710 - color presentation), 115 (color presentation of species), 119 (species, recorded as *Opuntia acanthocarpa* Engelm.), 127, **WTK** (July 4, 2005)*

***Cylindropuntia acanthocarpa* (G. Engelmann & J. Bigelow) F.M. Knuth x *Cylindropuntia spinosior* (G. Engelmann) F.M. Knuth: Cholla**

COMMON NAME: Cholla. ***77***

***Cylindropuntia arbuscula* (G. Engelmann) F.M. Knuth: Arizona Pencil Cholla**

SYNONYMY: *Opuntia arbuscula* G. Engelmann. COMMON NAMES: Arizona Pencil Cholla, Bush Pencil Cholla, Pencil Cholla. DESCRIPTION: Terrestrial perennial stem-succulent shrub (20 inches to 12 feet in height, one plant reported to be 5 feet in height had a crown 5 feet in width, one plant reported to be 78 inches in height had a crown 102 inches in width, one plant reported to be 7 feet in height had a crown 66 inches in width); the stems are blue-green, dull green or yellow-green; the spines are pale yellow or red-brown turning black with age; the glochids are pale yellow; the flowers (¾ to 1½ inches in diameter) are dark bronze, brown, green, greenish-yellow tinged with red, orange-bronze, orange-yellow, red, terra cotta, pale yellow-green or yellow-green; the anthers are yellow; flowering generally takes place between early April and early June (additional record: one for late July); the spineless fleshy pear-shaped fruits (1/2 to 7/8 inch in diameter and 1 to 1¼ inches in length) are green with a pink blush, green tinged with purple or red or yellow-green. HABITAT: Within the range of this species it has been reported from rocky canyon bottoms; hills; rocky hillsides; rocky, sandy and silty-loamy slopes; rocky and gravelly bajadas; plains; gravelly, sandy, sandy-loamy and silty flats; basins; valley floors; along gravelly roadsides; along arroyos; within gullies; riverbeds; along gravelly, gravelly-sandy and sandy washes; along drainages; floodplains, and mesquite bosques growing in damp and dry desert pavement; rocky, gravelly, gravelly-sandy and sandy ground; sandy loam and silty loam ground, and silty ground, occurring from 600 to 4,700 feet in elevation in the grassland and desertscrub ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. This plant was reported to have been utilized by native peoples of North America and could be investigated to determine its value as a home garden or commercial food crop. The fruit is eaten by browsing animals including the Javelina (*Peccari tajacu* subsp. *sonoriensis*). The change in nomenclature in USDA NRCS has not been recognized in BONAP, species remains as *Opuntia arbuscula* (accessed 041806). *Cylindropuntia arbuscula* is native to southwest-central and southern North America. *5, 6, 12 (recorded as *Opuntia arbuscula* Engelm., Pages 58-59), 15 (recorded as *Opuntia arbuscula* Engelm.), 26 (genus, recorded as recorded as *Opuntia*), 27 (Page 3, color photograph: Plate 3, Page 94), 28 (color photograph, recorded as *Opuntia arbuscula*), 43 (011710), 45 (color photograph), 46 (recorded as *Opuntia arbuscula* Engelm., Page 584), 48 (genus, recorded as recorded as *Opuntia*), 58 (recorded as *Opuntia arbuscula* Engelm.), 63 (011710 - color presentation), 77 (recorded as *Opuntia arbuscula* Engelm.), **85** (011710 - color presentation), 91, 115 (color presentation), 119 (recorded as *Opuntia arbuscula* Engelm.), 127*

***Cylindropuntia bigelovii* (G. Engelmann) F.M. Knuth: Teddybear Cholla**

SYNONYMY: *Opuntia bigelovii* G. Engelmann. COMMON NAMES: Arizona Jumping Cactus, "Ball" Cholla, Cholla Guera, Go'te (Seri), Jumping Cactus, Jumping Cholla, Silver Cholla, Teddybear Cactus, Teddy Bear Cholla, Teddy-bear Cholla, Teddybear Cholla. DESCRIPTION: Terrestrial perennial stem-succulent subshrub or shrub (20 inches to 10 feet in height, one plant was reported to be just over 8 feet in height and 40 inches in width with 2 to 3 main trunks); the central trunk is black or dark brown; older branches are dark-brown; the stems (3 to 10 inches in length and 1¼ to 2½ inches in diameter) are bluish, light green, green or bluish-green; the spines are golden, silvery, tan, pale yellow or yellow aging to dark brown; the glochids are yellow; the flowers (1 to 1½ inches in diameter) may be chartreuse-yellow, cream tinged with rose, green, green-yellow, greenish-yellow, magenta, pink, white-yellow, yellow tinged with red-purple or white tinged with lavender; the anthers are yellow, deep yellow, yellow-orange or deep yellow-orange; the stigma lobes are cream, dark chartreuse-green, green, dark green or

olive green; flowering generally takes place between early March and mid-June (additional records: one for late January, one for early February, one for early September, one for mid-November, two for late November and one for early December); the nearly spineless fruits (½ to ¾ inch in length and ½ to ¾ inch in diameter) are greenish-yellow, yellow or yellow-green and fleshy when ripe. HABITAT: Within the range of this species it has been reported from mountains; rocky and sandy mountainsides; canyons; canyon bottoms; cliffs; talus slopes; bluffs; rocky ridges; rocky ridgetops; rocky foothills; rocky and sandy hills; rocky hillsides; rocky, rocky-gravelly, rocky-sandy, gravelly and sandy slopes; rocky alluvial fans; gravelly-loamy bajadas; plains; cobbly-silty, gravelly and silty flats; basins; valley floors; along roadsides; arroyos; along and in rocky, gravelly and sandy washes; sandy drainages; benches; lowlands, and disturbed areas growing in dry desert pavement; rocky, rocky-gravelly, rocky-sandy, gravelly and sandy ground; gravelly loam and silty loam ground; clay ground, and cobbly-silty and silty ground, occurring from sea level to 4,400 feet in elevation in the scrub and desertscrub ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. This plant was reported to have been utilized by native peoples of North America and could be investigated to determine its value as a home garden or commercial food crop. This is the spiniest of the cholla cacti in Arizona. Thomas Kearney and Robert Peebles in their book Arizona Flora had this to say about the Teddybear Cholla: "The combination of barbed spines and densely armed, easily detached joints has earned profound respect for this formidable cholla." Teddy-bear Chollas may live to be 60 or more years of age. The Teddybear Cholla is a preferred nesting site of the Cactus Wren (*Campylorhynchus brunneicapillus*). Pack Rats (*Neotoma* sp.) use the joints of this plant in the construction of their nests. The change in nomenclature in USDA NRCS has not been recognized in BONAP, species remains as *Opuntia bigelovii* (accessed 041806). *Cylindropuntia bigelovii* is native to southwest-central and southern North America. *5, 6, 12 (recorded as *Opuntia bigelovii* Engelm., Pages 50, 52 & 54-55), 15 (recorded as *Opuntia bigelovii* Engelm., color photograph on Page 77 includes habitat and associated species), 18, 26 (genus, recorded as *Opuntia*), 27 (Page 5, color photographs including habitat: Plates 5 & 5A, Page 94), 28 (recorded as *Opuntia bigelovii*, color photograph), 43 (052110), 45 (color photograph), 46 (recorded as *Opuntia bigelovii* Engelm., Page 584), 48, 63 (052110 - color presentation including habitat), 77 (recorded as *Opuntia bigelovii* Engelm., color photograph #13), 85 (052110 - color presentation), 86 (color photograph), 91 (recorded as *Opuntia bigelovii* Engelm.), 115 (color presentation), 119 (recorded as *Opuntia bigelovii* Engelm.), 127, **HR***

***Cylindropuntia fulgida* (G. Engelmann) F.M. Knuth var. *fulgida*: Jumping Cholla**

SYNONYMY: *Opuntia fulgida* G. Engelmann, *Opuntia fulgida* G. Engelmann var. *fulgida*. COMMON NAMES: Chain Cholla, Chain-fruit Cholla, Cholla, Cholla Brincadora, Choya, Jumping Cahin-fruit Cholla, Jumping Cholla, Sonora Jumping Cholla, Velas de Ccoyote. DESCRIPTION: Terrestrial perennial stem-succulent shrub or tree (3 to 15 feet in height, one plant was reported as being 4¼ feet in height and 40 inches in width, one plant was reported as being 4¼ feet in height and 8¼ feet in width, one plant was reported as being 6½ feet in height and 5 feet in width, one plant was reported as being 10 feet in height and 13 feet in width); the stems are green or purple; the spines are golden-yellow turning brown with age; the flowers (¾ to 1 inch in diameter) are cream-yellow, pink, pink-purple, purple, purple-pink, red-purple, rose-pink or yellow tinged with pink; the anthers are white; flowering generally takes place between mid-April and mid-September (additional record: one for early December); the smooth fleshy fruits (¾ to 2 inches in length and ¾ to 1 inch in diameter) are gray-green, green or purple forming clusters or pendulant "chains". HABITAT: Within the range of this species it has been reported from mountains; mesas; canyons; ledges; ridges; hills; hillsides; rocky, gravelly-loamy and sandy slopes; gravelly bajadas; plains; rocky-gravelly, gravelly, sandy and sandy-silty flats; along valley floors; along rocky-gravelly and sandy roadsides; along creeks; along and in washes; banks of streams, creeks and washes; edges of washes; terraces, and floodplains growing in dry desert pavement; rocky, rocky-gravelly, gravelly and sandy soils; gravelly loam and silty-clayey loam ground; clay ground, and sandy silty ground, occurring from 800 to 4,100 feet in elevation in the grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. This plant

was reported to have been utilized by native peoples of North America and could be investigated to determine its value as a home garden or commercial food crop. Each year, following flowering, additional fruits are added to the end of the chains. Chain-fruit Chollas may live to be from 40 to 80 years of age. The Chain-fruit Cholla is a preferred nesting site of the Cactus Wren (*Campylorhynchus brunneicapillus*). The Costa's Hummingbird (*Calypte costae*) has been observed visiting the flowers. Deer and Javelina feed on the fruits. The change in nomenclature in USDA NRCS has not been recognized in BONAP, species remains as *Opuntia fulgida* (accessed 041806). *Cylindropuntia fulgida* var. *fulgida* is native to southwest-central and southern North America. *5, 6, 12 (recorded as *Opuntia fulgida* Engelm. var. *fulgida*, Pages 49-52), 15 (recorded as *Opuntia fulgida* Engelm. var. *fulgida*), 16 (recorded as *Opuntia fulgida* Engelm.), 26 (genus, recorded as *Opuntia*), 27 (species, Pages 10-11, color photograph: Plate 10, Page 96), 28 (recorded as *Opuntia fulgida*, color photograph), 43 (011810), 45 (species, color photograph of species), 46 (recorded as *Opuntia fulgida* Engelm., Page 585), 48 (genus, recorded as *Opuntia*), 52 (recorded as *Opuntia fulgida*, color photograph), 53 (recorded as *Opuntia fulgida* Engelm.), 63 (011810 - color presentation), 77 (recorded as *Opuntia fulgida* Engelm. var. *fulgida*), 85 (011810 - color presentation), 91 (recorded as *Opuntia fulgida* Engelm. var. *fulgida*), 115 (color presentation of species), 119 (recorded as *Opuntia fulgida* Engelm.), 127, **WTK** (July 4, 2005)*

***Cylindropuntia fulgida* (G. Engelmann) F.M. Knuth var. *mamillata* (A.C. Schott ex G. Engelmann) C. Backeberg: Jumping Cholla**

SYNONYMY: *Opuntia fulgida* G. Engelmann var. *mamillata* (A.C. Schott ex G. Engelmann) J.M. Coulter, *Opuntia fulgida* G. Engelmann var. *mamillata* (A.C. Schott ex G. Engelmann) J.M. Coulter forma *monstrosa* J.M. Coulter, *Opuntia mamillata* A.C. Schott ex G. Engelmann. COMMON NAMES: Cholla Brincadora, Cholla, Club Cactus, Jumping Cholla, Smooth Chain-fruit Cholla, Velas de Coyote. DESCRIPTION: Terrestrial perennial stem-succulent shrub or tree (2 to 9 feet in height, one plant was reported as being 6 feet in height and 4 feet in width, one plant was reported as being 8 feet in height and 8 feet in width); the stems are drab green or green; the flowers (¾ to 1 inch in diameter) are cream tinged with magenta, light pink, pink, pink-purple, rose-pink or violet; flowering generally takes place between late May and mid-September (additional records: one for mid-April and one for late April); the smooth fleshy fruits (¾ to 2 inches in length and ¾ to 1 inch in diameter) are gray-green or green forming pendulant "chains". HABITAT: Within the range of this species it has been reported from mountains; ridges; rocky ridgetops; foothills; hills; rocky slopes; bajadas; sand dunes; plains; gravelly and sandy flats; roadsides; along washes; rocky-sandy benches; floodplains, and disturbed areas growing in dry rocky, rocky-sandy, gravelly and sandy ground, occurring from sea level to 3,900 feet in elevation in the grassland and desertscrub ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. The plant, *Opuntia fulgida*, was reported to have been utilized by native peoples of North America and could be investigated to determine its value as a home garden or commercial food crop. Each year, following flowering, additional fruits may be added to the end of the chains. Chain-fruit Cholla may live to be from 40 to 80 years of age. Cristate forms (forma *monstrosa* J.M. Coulter) have been reported. The Chain-fruit Cholla is a preferred nesting site of the Cactus Wren (*Campylorhynchus brunneicapillus*). The Costa's Hummingbird (*Calypte costae*) has been observed visiting the flowers. Deer and Javelina feed on the fruits. The change in nomenclature in USDA NRCS has not been recognized in BONAP, species remains as *Opuntia fulgida* (accessed 041806). *Cylindropuntia fulgida* var. *mamillata* is native to southwest-central and southern North America. *5, 6, 12 (recorded as *Opuntia fulgida* Engelm. var. *mammillata* (Schott) Coulter, Pages 50 & 52), 15 (recorded as *Opuntia fulgida* var. *mammillata* (Schott) Coult.), 26 (genus, recorded as *Opuntia*), 27 (Pages 12 & 13 (forma *monstrosa*) , color photograph: Plate 11, Page 96), 43 (011810 - recorded as *Opuntia fulgida* Engelm. var. *mamillata* (A. Schott) J.M. Coult., no record for *Opuntia fulgida* var. *mamillata* forma *monstrosa*), 45 (species, color photograph of species), 46 (recorded as *Opuntia fulgida* Engelm. var. *mammillata* (Schott) Coult., Page 585), 48 (genus, recorded as *Opuntia*), 53 (recorded as *Opuntia fulgida* Engelm. var. *mammillata* (Schott) Coult.), 63 (011810), 58 (recorded as *Opuntia fulgida* Engelm. var. *mammillata* (Schott) Coult.), 77 (recorded as *Opuntia fulgida* Engelm. var. *mammillata* (Schott) Coult.), 85 (011810 - color presentation),

91 (recorded as *Opuntia fulgida* Engelm. var. *mammillata* (Schott) Coult.), 115 (color presentation of species), 127, **HR***

***Cylindropuntia leptocaulis* (A.P. de Candolle) F.M. Knuth: Christmas Cactus**

SYNONYMY: *Opuntia leptocaulis* A.P. de Candolle. COMMON NAMES: Agujilla, Alfilerillo (Spanish), Catalineria (Spanish), Christmas Cactus, Christmas Cholla, Darning Needle Cactus, Desert Christmas Cactus, Desert Christmas Cholla, Diamond Cactus, Holycross Cholla, Naf (or Nav?, Gila River Pima), Pencil Cactus, Pencil Cholla, Pencil-joint Cholla, Pipestem Cactus, Rat-tail Cactus, Rattail Cactus, Slender-stem Cactus, Tajasilla, Tasajilla (Hispanic), Tasajillo (Spanish), Tasajo (Spanish), Tesajo (Hispanic), Tesajo Cactus (Christmastree Cacti). DESCRIPTION: Terrestrial perennial stem-succulent shrub (1 to 6 feet in height (sometimes becoming vine-like and growing upwards with support 8 to 15 feet in height), one plant was reported as being 2 feet in height and 2 feet in width, one plant was reported as being 30 inches in height and 5 feet in width, one plant was reported as being 40 inches in height and 5 feet in width, one plant was reported as being 4 feet in height and 8 feet in width, one plant was reported as being 5 feet in height and 8¼ feet in width); the stems are gray-green, green, purplish or yellow-green; the spines gray-brown, purple-brown, red-brown or yellow-brown often being paler toward the tip; the glochids are reddish-brown or yellow; the anthers are yellow; the flowers (3/8 to 3/4 inch in diameter) are bronze, cream, light green-cream, cream-yellow, green, green-yellow, greenish-cream, greenish-yellow, pale yellow, yellow or whitish; flowering generally takes place between late March and late June (additional records: two for mid-July, one for late July, one for early August, one for early October, one for mid-October and one for late October); the spineless (with glochids) fleshy fruits (1/2 to 3/4 inch in length and 1/4 to 7/16 inch in diameter) are coral, orange, orange-red, red, reddish-orange, scarlet, scarlet-red or yellow when mature. HABITAT: Within the range of this species it has been reported from mountains; sandy mountainsides; rocky-sandy and silty mesas; along cliffs; rocky canyons; rocky canyon bottoms; rocky talus slopes; rocky ledges; gravelly ridges; foothills; rocky and rocky-gravelly hills; hilltops; rocky hillsides; rocky, gravelly, gravelly-sandy-loamy, sandy and silty-loamy slopes; clayey-loamy alluvial fans; gravelly, gravelly-silty and sandy bajadas; rocky and gypsum outcrops; amongst cobbles; sand hills; sandy lava flows; lava beds; breaks; sandy and clayey-loamy plains; rocky-sandy, gravelly, gravelly-sandy and sandy flats; basins; valley floors; gravelly and gravelly-sandy roadsides; within gravelly and sandy arroyos; bottoms of arroyos; along ravines; riverbeds; along and in rocky, gravelly and sandy washes; sandy drainages; along cobbly-sandy banks of rivers and drainages; edges of arroyos, ravines and washes; rocky and sandy benches; terraces; bottomlands; floodplains; along fencelines; along ditches; riparian areas, and disturbed areas growing in dry desert pavement; rocky, rocky-gravelly, rocky-sandy, cobbly-sandy, gravelly, gravelly-sandy and sandy ground; gravelly-sandy loam, clayey loam, silty loam and loam ground; rocky-sandy clay and loamy clay ground, and gravelly silty and silty ground often found growing within grasses, shrubs or trees, occurring from sea level to 5,900 feet in elevation in the woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. This plant was reported to have been utilized by native peoples of North America and could be investigated to determine its value as a home garden or commercial food crop. The Desert Christmas Cactus is believed to have a life span of about 50 years. A high mortality rate is to be expected with plants coming into contact with fire. Hummingbirds have been observed visiting the flowers; the fruits are eaten by birds and small mammals, and Cochineal Scale (*Dactylophius coccus*) has been observed growing on this plant. The change in nomenclature in USDA NRCS has not been recognized in BONAP, species remains as *Opuntia leptocaulis* (accessed 041806). *Cylindropuntia leptocaulis* is native to southwest-central and southern North America. *5, 6, 12 (recorded as *Opuntia leptocaulis* DC., Pages 56-58), 15 (recorded as *Opuntia leptocaulis* DC.), 16 (recorded as *Opuntia leptocaulis* DC.), 18, 26 (genus, recorded as *Opuntia*), 27 (Page 2, color photograph: Plate 2, Page 94), 28 (recorded as *Opuntia leptocaulis*, color photograph), 43 (011910), 45 (color photograph), 46 (recorded as *Opuntia leptocaulis* DC., Page), 48 (genus, recorded as *Opuntia*), 58 (recorded as *Opuntia leptocaulis* DC.), 63 (011910 - color presentation), 77 (recorded as *Opuntia leptocaulis* DC.), 85 (011910 - color presentation), 86 (recorded as *Opuntia leptocaulis*, color

photograph), 91 (recorded as *Opuntia leptocaulis* DC.), 115 (color presentation), 119 (recorded as *Opuntia leptocaulis* DC.), 127, **WTK** (July 4, 2005)*

***Cylindropuntia spinosior* (G. Engelmann) F.M. Knuth: Walkingstick Cactus**

SYNONYMY: *Opuntia spinosior* (G. Engelmann) J.W. Toumey. COMMON NAMES: Cane Cholla, Cardenche, Handgrip Cholla, Spiny Cholla, Tasajo, Tourney-cane Cholla (Arizona), Walkingstick Cactus, Walking Stick Cholla. DESCRIPTION: Terrestrial perennial stem-succulent shrub (16 inches to 10 feet in height, one plant was described as being 6½ feet in height and 5 to 6½ feet in width, one plant was described as being 6½ feet in height and 10 feet in width); the stems may be brown-green, grayish-maroon, grayish-purple, green, purple or purplish-green; the spines may be brown, gray, pale pink, pink, purplish-gray, reddish-gray or tan; the glochids may be tan, yellow or yellowish-white aging to gray; the flowers (1¾ to 2 inches in diameter) may be bronze-purple, brown, greenish-yellow, magenta, magenta-red, maroon, orange, pink, dark pink, light purple, purple, purple-pink, red, dark red, red-purple, red & yellow, saffron, salmon-pink, terra-cotta, white or yellow; the anthers are yellow; flowering generally takes place between early April and early August (additional records: three for early January, two for early February and one for late September); the fleshy ripe fruits (1 to 1¾ inches in length and ¾ to 1 inch in diameter) are bright lemon-yellow, red, bright yellow, pale yellow, yellow, yellow-green, yellowish-green or yellow with a reddish cast and remain on the plant for some time. HABITAT: Within the range of this species it has been reported from mountains; mountaintops; mountainsides; mesas; rocky canyons; canyon bottoms; talus, ridgelines; foothills; rocky hills; rocky hillsides; along rocky, rocky-sandy and sandy slopes; bajadas; rock outcrops; amongst rocks; plains; gravelly, gravelly-sandy and silty flats; grassy valley floors; roadsides; arroyos; rocky draws; springs; along creeks; creekbeds; along sandy washes; drainages; along drainage ways; sandy flood channels; terraces; floodplains; mesquite bosques; riparian areas, and disturbed areas growing in dry rocky, rocky-sandy, gravelly, gravelly-sandy and sandy ground; silty-clayey loam, silty loam and loam ground, and silty ground, occurring from 900 to 7,200 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. This plant was reported to have been utilized by native peoples of North America and could be investigated to determine its value as a home garden or commercial food crop. The Cactus Wren (*Campylorhynchus brunneicapillus*) nests in the branches. The change in nomenclature in USDA NRCS has not been recognized in BONAP, species remains as *Opuntia spinosior* (accessed 041806). *Cylindropuntia spinosior* is native to southwest-central and southern North America. *5, 6, 12 (recorded as *Opuntia spinosior* (Engelm.) Toumey, Pages 39-43, color photograph), 15 (recorded as *Opuntia spinosior* (Engelm.) Toumey), 16 (recorded as *Opuntia spinosior* (Engelm.) Toumey), 26 (genus, recorded as *Opuntia*), 27 (Page 14, color photograph: Plate 12, Page 96), 28 (color photograph), 43 (063009), 45 (color photographs), 46 (recorded as *Opuntia spinosior* (Engelm. & Bigel.) Toumey, Page 585), 48 (genus, recorded as *Opuntia*), 53, 58 (recorded as *Opuntia spinosior* (Engelm.) Toumey), 63 (011910 - color presentation), 77 (recorded as *Opuntia spinosior* (Engelm.) Toumey), **85** (012010 - color presentation), 115 (color presentation), 119, 127, **WTK** (July 4, 2005)*

***Cylindropuntia* x *tetracantha* (J.W. Toumey) F.M. Knuth (pro sp.) [*Cylindropuntia acanthocarpa* x *Cylindropuntia leptocaulis*]: Tucson Cholla**

SYNONYMY: *Opuntia kleiniae* A.P. de Candolle var. *tetracantha* (J.W. Toumey) W.T. Marshall, *Opuntia* x *tetracantha* J.W. Toumey (pro sp.) [*Opuntia acanthocarpa* x *Opuntia leptocaulis*]. COMMON NAMES: Candle Cholla, Cane Cholla, Four-spined Cholla, Four-spined Klein's Cholla, Hybrid Pencil Cholla, Klein Pencil Cholla, Pencil Joint Cholla, Tucson Cholla, sometimes referred to as the Tucson Prickly-pear or Tucson Pricklypear. DESCRIPTION: Terrestrial perennial stem-succulent shrub (1 to 8 feet in height, plants were described as bein 20 inches in height and 32 inches in width, one plant was described as being 4 feet in height and width); the stems are gray-green, green (often reported with a gray wax) or reddish; the spines are purple-brown or yellow; the glochids are dark brown or yellow; the flowers (3/4 to 1 3/8 inches in diameter) are green edged with brown, maroon or red, greenish-bronze,

dirty pink, pink-purple-red over yellow, light reddish, dirty reddish-purple, red-magenta, yellow-green suffused with purple-brown; the anthers are pale green; flowering generally takes place between mid-April and late May (additional records: one for early February, one for late March, one for mid-September and one for late September); the egg-shaped fleshy to dry fruits are green turning yellow with a red blush or red with age; the ripe fruits (3/4 to 1 inch in length and 1/2 to 5/8 inch in diameter) are green, green-red, greenish-yellow, red or reddish-orange. HABITAT: Within the range of this species it has been reported from mountains; canyons; ridgetops; rocky hills; rocky slopes; gravelly bajadas; rocky and gravelly flats; roadsides; gullies; along washes; banks of arroyos, and mesquite bosques growing in damp and dry desert pavement and rocky and gravelly ground, occurring from 700 to 4,400 feet in elevation in the grassland and desertscrub ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. The change in nomenclature in USDA NRCS has not been recognized in BONAP, species remains as *Opuntia* x *tetracantha* (accessed 041806). *Cylindropuntia* x *tetracantha* is native to southwest-central and southern North America. *5, 6, 12 (recorded as *Opuntia kleiniae* DC. var. *tetracantha* (Toumey) W.T. Marshall), 15 (recorded as *Opuntia kleiniae* DC. var. *tetracantha* (Toumey) W.T. Marshall), 16 (recorded as *Opuntia kleiniae* DC. var. *tetracantha* (Toumey) Marshall), 26 (genus, recorded as *Opuntia*), 27 (recorded as *Opuntia kleiniae* DeCandolle var. *tetracantha* (Toumey) F.M, Knuth, Marshall, Page 4, color photograph: Plate 4, Page 94), 43 (012010), 46 (recorded as *Opuntia tetracantha* Toumey, Page 584), 48 (genus, recorded as *Opuntia*), 63 (012010), 77 (recorded as *Opuntia* x *tetracantha* Toumey), **85** (012110 - color presentation of dried material), **WTK** (July 4, 2005)*

***Cylindropuntia versicolor* (G. Engelmann ex J.M. Coulter) F.M. Knuth: Staghorn Cholla**

SYNONYMY: *Opuntia versicolor* G. Engelmann ex J.M. Coulter. COMMON NAMES: Deer Horn Cactus, Deer Horn Cholla, Deerhorn Cholla, Morada Cholla (Spanish), Staghorn Cholla, Tree Cholla. DESCRIPTION: Terrestrial perennial stem-succulent shrub (3 to 15 feet in height, one plant was reported to be 40 inches in height with a crown 40 inches in width, one plant was reported to be 40 inches in height with a crown 6½ feet in width, one plant was reported to be 50 inches in height with a crown 40 inches in width, one plant was reported to be 51 inches in height with a crown 6½ feet in width, one plant was reported to be 63 inches in height with a crown 87 inches in width, one plant was reported to be 75 inches in height with a crown 87 inches in width); the stems are green, green-purple, greenish-red, maroon, purple, purple-green or dark purple-red; the spines are dark brown, gray, pinkish, purple-brown, dark reddish-brown or whitish; the glochids are reddish-brown, yellow or dark yellow; the flowers (1¼ to 2¼ inches in diameter) are bronze, bronze-red, brown, burnt orange, gold, green, lavender, magenta, orange, orange-brown, orange-red, orange-rust, pink-red, purple, red, rose, rose-purple, yellow, yellow-green or yellow-green-bronze; the anthers are yellow; flowering generally takes place between early April and mid-June (additional records: one for early January, one for early March, one for late August and one for mid-September); the fleshy, spineless or nearly spineless pear-shaped fruits (¾ to 1¾ inches in length and ¾ inch in diameter) are green tinged with lavender, purple, straw-yellow, red, bright yellow or yellowish-green sometimes tinged with purple or red, sometimes forming chains of 2 to 4 fruits. HABITAT: Within the range of this species it has been reported from mountains; rocky mountainsides; mesas; rocky and sandy canyons; rocky canyon bottoms; ridges; foothills; rocky and rocky-gravelly hills; rocky hillsides; rocky slopes; gravelly-sandy alluvial fans; rocky and gravelly-sandy bajadas; sand dunes; plains; gravelly and gravelly-sandy flats; sandy valley floors; along roadsides; along arroyos; ravines; along sandy streambeds; along sandy washes; playas; sandy gravelbars; strands, and riparian areas growing in dry rocky, rocky-gravelly, gravelly, gravelly-sandy and sandy ground, occurring from sea level to 5,000 feet in elevation in the woodland, grassland and desertscrub ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. This plant was reported to have been utilized by native peoples of North America and could be investigated to determine its value as a home garden or commercial food crop. Varied flower colors between plants, the cascading branches of the larger plants, along with pendulous fruits make this an attractive plant. The change in nomenclature in USDA NRCS has not been recognized in BONAP, species remains as *Opuntia versicolor* (accessed 041806). *Cylindropuntia versicolor* is native to southwest-central and southern North America. *5, 6, 12

(color photograph, recorded as *Opuntia versicolor*, Pages 43 & 45-46), 15 (recorded as *Opuntia versicolor* Engelm.), 16 (recorded as *Opuntia versicolor* Engelm.), 26 (genus, recorded as *Opuntia*), 27 (Pages 6, color photograph: Plates 6, 6A & 6B, Page 95), 28 (color photograph), 43 (012110 - *Cylindropuntia versicolor* (Engelm.) F.M. Knuth), 45 (color photograph), 46 (recorded as *Opuntia versicolor* Engelm., Page 585), 48 (genus, recorded as *Opuntia*), 58 (recorded as *Opuntia versicolor* Engelm.), 63 (012110 - color presentation), 77 (recorded as *Opuntia versicolor* Engelm., color photograph #15), 85 (012110 - color presentation), 115 (color presentation), 119 (recorded as *Opuntia versicolor* Engelm.), 127, **HR***

***Cylindropuntia* x *vivipara* (J.N. Rose) F.M. Knuth (pro sp.) [*arbuscula* x *versicolor*]: Cortaro Cholla**

SYNONYMY: *Opuntia vivipara* J.N. Rose, *Opuntia* x *vivipara* J.N. Rose (pro sp.). COMMON NAME: Cortaro Cholla, Hybrid Cholla. DESCRIPTION: Terrestrial perennial stem-succulent shrub (40 inches to 7 feet in height); the flowers are dark bronze or burnt orange; the stigmas are light green; based on few records located, flowering generally takes place between mid-April and early June (flowering records: one for mid-April, one for early May, one for late May and one for early June). HABITAT: Within the range of this species it has been reported from bajadas; roadsides; along washes, and disturbed areas growing in dry ground, occurring from 2,200 to 2,300 feet in elevation in the desertscrub ecological formation. NOTES: This plant may be an attractive component of a restored native habitat. This is a PERIPHERAL POPULATION. The change in nomenclature in USDA NRCS has not been recognized in BONAP, species remains as *Opuntia* x *vivipara* (accessed 041806). *Cylindropuntia* x *vivipara* is native to southwest-central North America. *5, 6, 12 (*Opuntia vivipara* Rose and *Cylindropuntia vivipara* F.M. Knuth is included as a synonym for *Cylindropuntia arbuscula*, Pages 58-59), 26 (genus, recorded as *Opuntia*), 27 (*Opuntia vivipara* Rose is included as a synonym for *Cylindropuntia arbuscula*, Page 3), 43 (081710 - *Cylindropuntia vivipara* (J.N. Rose) F.M.Knuth), 46 (note under *Opuntia arbuscula*, Page 584), 48 (genus, recorded as *Opuntia*), 63 (081710), 77, 85 (081710 - color presentation including habitat), **WTK** (September 8, 2005)*

***Echinocereus coccineus* G. Engelmann var *arizonicus* (J.N. Rose ex C.R. Orcutt) W. Ferguson?: Arizona Hedgehog Cactus**

SYNONYMY: *Echinocereus triglochidiatus* G. Engelmann var. *arizonicus* (J.N. Rose & C.R. Orcutt) L.D. Benson, *Echinocereus triglochidiatus* G. Engelmann var. *neomexicanus* auct. non (P.C. Standley) W.T. Marshall. COMMON NAMES: Arizona Claret-cup Cactus, Arizona Hedgehog Cactus, Giant Claret-cup Hedgehog, Mexican Claret-cup Hedgehog. DESCRIPTION: Terrestrial perennial stem-succulent shrub (ascending to erect stems 4 to 18 inches in height and 1¼ to 4 inches in diameter in clusters of 4 to 50+ stems); the flowers are magenta, orange-red, red or dark red; the anthers are brick-red; the stigmas are green; flowering generally takes place between late March and early July. HABITAT: Within the range of this species it has been reported from mountains; canyons; ledges; bouldery ridges; hills; hillsides; rocky and rocky-loamy slopes; rocky outcrops, and amongst boulders and rocks growing in dry bouldery, bouldery-gravelly and rocky ground; rocky loam ground, and humusy ground, occurring from 3,000 to 9,600 feet in elevation in the forest, woodland, scrub, grassland and desertscrub ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. The species, *Echinocereus coccineus*, was reported to have been utilized by native peoples of North America and could be investigated to determine its value as a home garden or commercial food crop; it was also noted as having been used as a drug or medication. Leaf-foot bugs (*Coreidae* spp.) feed on the stems, the fruits are eaten by rodents. *Echinocereus coccineus* var *arizonicus* is native to southwest-central and southern North America. *5, 6, 8, 9, 12 (recorded as *Echinocereus triglochidiatus* Engelm. var. *arizonicus* (Rose ex Orcutt) L. Benson, Pages 124 & 129, color photograph, Page 127 and *Echinocereus triglochidiatus* Engelm. var. *neomexicanus* (Standley) Standley ex W.T. Marshall, Pages 124 & 128-129), 18 (species), 27 (recorded as *Echinocereus triglochidiatus* Engelmann var. *arizonicus* (Rose & Orcutt) L. Benson, Page 72, color photograph, Plate: 43, Page 103 and *Echinocereus triglochidiatus* Engelmann var. *neomexicanus* (Standley) W.T. Marshall, Page 70), 28 (species), 45 (species, color photograph of species),

46 (species, Page), 48 (genus), 63 (081610 - color presentation), **77** (recorded as *Echinocereus triglochidiatus* G. Engelm.), 85 (081610), 86 (species), 127 (species), **HR** (recorded as *Echinocereus triglochidiatus* var. *neomexicanus*, it is doubtful that this plant is "*Echinocereus coccineus* var *arizonicus*"; the classification of *Echinocereus coccineus* / *Echinocereus triglochidiatus* remains a mystery to this author)*

***Echinocereus fasciculatus* (G. Engelmann ex B.D. Jackson) L.D. Benson: Pinkflower Hedgehog Cactus**

SYNONYMY: *Echinocereus fasciculatus* (G. Engelmann) L.D. Benson var. *fasciculatus*, *Echinocereus fendleri* (G. Engelmann) F. Sencke ex J.N. Haage var. *fasciculatus* (G. Engelmann ex B.D. Jackson) N.P. Taylor, *Echinocereus fendleri* (G. Engelmann) F. Sencke ex J.N. Haage var. *robustus* (R.H. Peebles) L.D. Benson, *Mammillaria fasciculata* G. Engelmann ex B.D. Jackson (possibly incorrectly applied). COMMON NAMES: Bundle Hedgehog, Bundle Hedgehog Cactus, Bundle-spine Hedgehog, Magenta-flower Hedgehog Cactus, Pinkflower Hedgehog Cactus, Robust Hedgehog, Robust Hedgehog Cactus, Short-spine Strawberry Cactus, Strawberry Cactus. DESCRIPTION: Terrestrial perennial stem-succulent shrub (ascending to erect stems 2 to 18 inches in height and 1½ to 3 inches in width either single or in clusters of up to 30 stems, one plant was reported to have 150 stems); the stems are green or dark green; the spines often with zones of differing colors including black, gray, grayish-black-purplish, reddish-brown, whitish or yellowish turning gray with age; the flowers (2 to 3 inches in diameter) are cerise, lavender-pink, pale magenta, magenta, magenta-maroon, magenta-pink, magenta-purple, magenta-red, pink, pink-purple, purple, reddish-purple, rose-pink or white; the anthers are yellow; the stigma lobes are green, dark green or olive green; flowering generally takes place between late March and late June (additional records: one for early October, one for mid-October, one for late October, two for early November and one for early December); the mature fruits (¾ to 1¼ inches in length and ½ to 1 inch in diameter) are orange-red or bright red. HABITAT: Within the range of this species it has been reported from mountains; mesas; cliffs; canyons; canyonsides; bases of cliffs; buttes; knolls; ledges; ridges; along rocky and stony ridgetops; foothills; rocky, gravelly and sandy hills; rocky hilltops; rocky and sandy hillsides; rocky, stony and gravelly slopes; bajadas; rocky outcrops; amongst rocks and gravels, plains; gravelly flats; valley floors; along cobbly creeks; along and in washes; rocky and sandy banks, and floodplains growing in dry rocky, rocky-gravelly, stony, cobbly, gravelly and sandy ground, occurring from 1,800 to 6,300 feet in elevation in the woodland, scrub, grassland and desertscrub ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. The species, *Echinocereus fendleri*, was reported to have been utilized by native peoples of North America and could be investigated to determine its value as a home garden or commercial food crop. The fruits are eaten by birds and other animals. *Echinocereus fasciculatus* is native to southwest-central and southern North America. *5, 6, 8, 12 (color photograph - recorded as *Echinocereus fasciculatus* (Engelm.) L. Benson var. *fasciculatus*, Pages 132-135), 15 (recorded as *Echinocereus fasciculatus* (Engelm.) L. Benson var. *fasciculatus*), 16 (recorded as *Echinocereus fasciculatus* (Engelm.) L. Benson), 27 (Page 81, color photograph: Plate 50, Page 104), 43 (012110), 45 (color photograph), 46 (recorded as *Echinocereus fendleri* (Engelm.) Rümpler var. *robustus* (Peebles) L. Benson, Page 572 and *Echinocereus fendleri* (Engelm.) Rümpler var. *robustus* (Peebles) L. Benson, Page 572), 48 (genus), 58 (recorded as *Echinocereus fasciculatus* (Engelm.) L. Benson var. *fasciculatus*), 63 (012110), 77 (recorded as *Echinocereus fasciculatus* (Engelm.) L. Benson, color photograph #64), 85 (012110 - color presentation), 115 (color presentation), 119 (species, recorded as *Echinocereus fendleri* (Engelm.) Rümpler), 127, **HR***

Echinocereus fasciculatus var. *fasciculatus* (see *Echinocereus fasciculatus*)

Echinocereus fendleri var. *fasciculatus* (see *Echinocereus fasciculatus*)

Echinocereus fendleri var. *robustus* (see *Echinocereus fasciculatus*)

Echinocereus triglochidiatus var. *arizonicus* (see *Echinocereus coccineus* var *arizonicus*)

Echinocereus triglochidiatus var. *neomexicanus* (see *Echinocereus coccineus* var *arizonicus*)

***Ferocactus cylindraceus* (G. Engelmann) C.R. Orcutt: California Barrel Cactus**

COMMON NAMES: Barrel Cactus, Bisnaga, Biznaga, California Barrel Cactus, California Barrelcactus, California Fire Barrel, California Fire Barrel Cactus, Cliff Barrel Cactus, Compass Barrel Cactus, Compass Plant, Desert Barrel Cactus, Golden-spine Barrel Cactus, Golden-spined Barrel Cactus, Le Conte Barrel Cactus, Spiny Barrel, Mountain Barrel Cactus, Spiny Barrel Cactus. DESCRIPTION: Terrestrial perennial stem-succulent shrub (erect stem 8 inches to 10 feet in height and 8 inches to 2 feet in width); the stem is blue-gray-green, blue-greenish-gray, green or yellow-green; the central and large radial spines are brown, creamy-yellow, golden-yellow, golden-yellow-pink, golden with reddish tints, gray, pink, pink-yellow, pinkish-gray with golden tips, red, dull red, reddish, white, whitish, yellow, yellowish or yellowish-red aging gray; the flowers (1¼ to 2½ inches in diameter) are maroon & yellow, maroon with cream-yellow or light yellow margins, orange to red with a darker red mid-stripe, yellow or yellow with a magenta or pink mid-stripe; the anthers are light cream, light yellow, yellow, dark yellow, light yellow-cream, yellow-green or yellow-orange; the stigma lobes are light cream, light yellow, yellow to red; flowering generally takes place between late April and late June (additional records: one for early January, two for early March, two for mid-March, one for late March, two for early April, three for mid-July, four for late July, four for early August, one for mid-August, six for late August, one for early September, one for mid-September, seven for late September and one for late October); the ripe, fleshy scaly fruits (1¼ to 1½ inches in length and ½ to ¾ inch in diameter) are reddish or yellow. HABITAT: Within the range of this species it has been reported from mountains; canyons; canyon walls; buttes; rocky ridges; ridgetops; rocky-gravelly saddles; rocky foothills; rocky and gravelly hills; rocky and gravelly hillsides; bouldery, rocky, rocky-sandy and gravelly-sandy-loamy slopes; sandy alluvial fans; bajadas; rocky outcrops; amongst boulders and rocks; sand dunes; plains; gravelly and sandy flats; valley floors; arroyos; gullies; along rocky and stony-gravelly washes; sandy watersheds; margins of washes, and disturbed areas growing in dry desert pavement; bouldery, rocky, rocky-gravelly, rocky-sandy, stony-gravelly, gravelly and sandy ground, and rocky loam, gravelly-sandy loam and loam ground, occurring from sea level to 5,300 feet in elevation in the woodland, scrub, grassland and desertscrub ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. The fruits and seeds are eaten by birds, rodents, Mule Deer (*Odocoileus hemionus*), Bighorn Sheep (*Ovis canadensis*) and Javelina (*Peccari tajacu*), cactus beetles (including *Moneilema gigas* and others), jackrabbits, pack rats and Javelina (*Peccari tajacu*) feed on the plants. *Ferocactus cylindraceus* is native to southwest-central and southern North America. *5, 6, 12 (recorded as *Ferocactus acanthodes* (Lemaire) Britton & Rose, Pages 164-167; *Ferocactus acanthodes* (Lemaire) Britton & Rose var. *acanthodes*, Page 165 & 167, and *Ferocactus acanthodes* (Lemaire) Britton & Rose var. *LeContei* (Engelm.) Lindsay, Pages 165-167), 18, 26 (genus, color photograph), 27 (recorded as *Ferocactus acanthodes* (Lemaire) Britton & Rose, Page 121 and *Ferocactus acanthodes* Lemaire var. *LeContei* (Engelmann) Lindsay, Page 122), 43 (052210), 45 (color photograph), 46 (recorded as *Ferocactus acanthodes* (Lemaire) Britton & Rose, Page 573 and *Ferocactus lecontei* (Engelm.) Britt. & Rose, Pages 573-574), 63 (052210), 77 (color photograph #9), **85** (052210 - color presentation including habitat), 86 (recorded as *Ferocactus acanthodes*, color photograph), 91*

***Ferocactus wislizeni* (G. Engelmann) N.L. Britton & J.N. Rose: Candy Barrelcactus**

SYNONYMY: *Echinocactus wislizeni* G. Engelmann. COMMON NAMES: Arizona Barrel Cactus, Barrel Cactus, Bisnaga, Biznaga, Biznaga de Agua (Spanish), Biznagre, Candy Barrel, Candy Barrel Cactus, Candy Barrelcactus, Compass Barrel, Compass Plant, Fish-hook Barrel, Fishhook Barrel Cactus, Fishhook Cactus, Southwest Barrel Cactus, Southwestern Barrel Cactus, Visnaga, Viznaga Hembra (Spanish), Wislizenus Barrel, Yellow-spined Barrel Cactus. DESCRIPTION: Terrestrial perennial stem-succulent shrub or tree (erect stem 1 to 11 feet in height and 8 to 40 inches in diameter);

the stem is green or blue-gray-green; the central spines and larger radial spines are gray, dull pink, reddish or tan; the smaller radial spines are white; the flowers (1½ to 2½ inches in diameter) are orange, orange-yellow, orange-red, orange-yellow, parchment, pinkish-red, reddish, red-orange, yellow or yellow-orange; flowering generally takes place between mid-July and mid-October (additional records: one for early January, three for early March, five for mid-March, two for late March, one for early April, one for mid-April, one for late April and two for early June); the mature fruits (1¼ to 2 inches in length and 1 to 1½ inches in diameter) are greenish-brown, bright yellow or yellow-green and may remain on the plant until the next flowering period. HABITAT: Within the range of this species it has been reported from mountains; rocky mountainsides; mesas; rocky canyons; canyon walls; sandy canyon bottoms; bluffs; foothills; bouldery, rocky, gravelly and sandy hills; hillsides; rocky, cobbly and clayey-loamy slopes; rocky, gravelly and sandy alluvial fans; bajadas; rocky outcrops; plains; rocky, gravelly and sandy flats; valley floors; along roadsides; arroyos; sandy bottoms of arroyos; along washes; rocky, gravelly and sandy margins of washes; floodplains, and mesquite bosques growing in dry desert pavement; bouldery, rocky, cobbly, gravelly and sandy ground, and sandy-clayey loam and clayey loam ground, occurring from 500 to 5,600 feet in elevation in the woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. This plant was reported to have been utilized by native peoples of North America and could be investigated to determine its value as a home garden or commercial food and/or beverage crop; it was also noted as having been used as a tool (the spines were heated and used to make fishing hooks). Fishhook Barrel Cacti are very slow to establish. A 4 year old plant may be no more than 1½ inches in height and 2 inches in width, and an 8 year old plant may be no more that 4¼ inches in height and 4¾ inches in width. The growth rate of propagated and cultivated barrel cacti is much faster. The life-span of Fishhook Barrel Cacti is reported to be from 50 to over 130 years of age. Some plants tend to lean to the south with age. Cristate forms have been reported. The fruits are eaten by Mule Deer (*Odocoileus hemionus*), Javelina (*Peccari tajacu*) and other animals, and the seeds are eaten by birds and rodents. *Ferocactus wislizeni* is native to southwest-central and southern North America. *5, 6, 12 (Pages 166-170, color photograph), 15, 16, 18, 26 (genus, color photograph of genus), 27 (Page 120, color photographs: Plates 60, 60A, 60B & 60C Pages 106), 28, 43 (063009 - *Ferocactus wislizeni* Britton & Rose), 45 (color photograph), 46 (Page 573), 48 (genus), 58, 63 (012210 - color presentation), 77 (color photograph #10), 85 (012210 - color presentation, also recorded as *Ferocactus wislizeni* var. *wislizeni*), 91, 115 (color presentation), 119, 127, **WTK** (July 4, 2005)*

Echinocactus wislizeni (see *Ferocactus wislizeni*)

Ferocactus wislizeni var. *wislizeni* (see footnote 85 under *Ferocactus wislizeni*)

Mammillaria fasciculata (see *Echinocereus fasciculatus* and/or *Mammillaria thornberi*)

***Mammillaria grahamii* G. Engelmann: Graham's Nipple Cactus**

SYNONYMY: *Mammillaria grahamii* G. Engelmann var. *grahamii* G. Engelmann, *Mammillaria grahamii* G. Engelmann var. *oliviae* (C.R. Orcutt) L.D. Benson, *Mammillaria microcarpa* G. Engelmann, *Mammillaria oliviae* C.R. Orcutt. *Neomammillaria microcarpa* (G. Engelmann) N.L. Britton & J.N. Rose, *Neomammillaria milleri* N.L. Britton & J.N. Rose, *Neomammillaria oliviae* (C.R. Orcutt) N.L. Britton & J.N. Rose. COMMON NAMES: Arizona Fishhook, Arizona Fishhook Cactus, Biznaguita, Cabeza de Viejo Cekida, Cactus, Corkseed Cactus, Fishhook Cactus, Fishhook Mammillaria, Fishhook Pincushion, Graham Fishhook, Graham Nipple Cactus, Graham's Fishhook Cactus, Graham's Nipple Cactus, Graham Pincushion Cactus, Lizard Catcher, Nipple Cactus, Olive Pincushion, Pin-cushion Cactus. DESCRIPTION: Terrestrial perennial stem-succulent shrub (ascending to erect stems 1 to 12 inches in height and 1 to 3 inches in diameter, one plant was reported to be 1¼ inches in height and 1½ inches in width); the stems are gray-green or green; the central spines are black, golden-brown, purplish-brown or reddish; the radial spines are whitish; the flowers (½ to 1½ inches in diameter) may be lavender,

pink, pink with a darker mid-stripe, pink-lavender, rose-pink, rose-purple or white, the anther are yellow; the stigma lobes are green; flowering generally takes place between mid-May and early August and one week after a heavy rains between mid-March and late September; the mature club-shaped fruits (1/2 to 1 1/8 inches in length and 3/16 to 1/2 inch in diameter) are carmine, bright orange, orange-red, bright red, scarlet or yellow. HABITAT: Within the range of this species it has been reported from rocky mountains; sandy mountain slopes; rocky canyons; canyon bottoms; crevices in boulders and rocks; ridges; foothills; rocky and gravelly hills; rocky hillsides; rocky slopes; bajadas; rocky outcrops; amongst boulders and rocks; bases of boulders; protected clefts; gravelly and sandy flats; valley floors; along and in bouldery and sandy washes; edges of streams, and riparian areas often in the shade of other plants growing in dry bouldery, rocky, gravelly and sandy ground; gravelly loam ground; clay ground; silty ground, and humusy ground, occurring from 200 to 5,200 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. This plant was reported to have been utilized by native peoples of North America and could be investigated to determine its value as a home garden or commercial food crop; it was also noted as having been used as a drug or medication. Birds and rodents feed on the fruits. *Mammillaria grahamii* is native to southwest-central and southern North America. *5, 6, 12 (recorded as *Mammillaria grahamii* Engelm., Pages 156 &159-161; *Mammillaria grahamii* Engelm. var. *grahamii*, Pages 159-160; *Mammillaria grahamii* Engelm. var. *oliviae* (Orcutt) L. Benson, Pages 160-161, and *Mammillaria microcarpa* Engelm., Pages 152-153 &156, color photographs), 15 (recorded as *Mammillaria grahamii* Engelm. var. *grahamii*; *Mammillaria grahamii* Engelm. var. *oliviae* (Orcutt) L. Benson, and *Mammillaria microcarpa* Engelm.), 16 (recorded as *Mammillaria microcarpa* Engelm.), 18 (genus), 27 (recorded as *Mammillaria grahamii*, Page 172, color photograph: Plate 94, Page 113; *Mammillaria grahamii* Engelmann var. *oliviae* (Orcutt) L. Benson, Pages 173, color photograph: Plate 95, Page 113, and *Mammillaria microcarpa* Engelmann, Page 179, color photograph: Plate 99, Page 114), 28 (recorded as *Mammillaria microcarpa*, color photograph), 43 (012210), 45 (color photograph), 46 (recorded as *Mammillaria microcarpa* Engelm., Page 578 and *Mammillaria oliviae* Orcutt, Page 578), 48 (genus), 58 (recorded as *Mammillaria microcarpa* Engelm.), 63 (012210 - color presentation), 77 (color photograph #11), 85 (012210 - restricted distribution information, color presentation), 86 (recorded as *Mammillaria microcarpa*, color photograph), 115 (color presentation), 119 (recorded as *Neomammillaria microcarpa* (Engelm.) B. & R., *Neomammillaria milleri* B. & R.), 127, **WTK** (July 4, 2005)*

Mammillaria grahamii var. *grahamii* (see *Mammillaria grahamii*)

Mammillaria grahamii var. *oliviae* (see *Mammillaria grahamii*)

Mammillaria microcarpa (see *Mammillaria grahamii*)

Mammillaria oliviae (see *Mammillaria grahamii*)

Neomammillaria microcarpa (see *Mammillaria grahamii*)

Neomammillaria milleri (see *Mammillaria grahamii*)

Neomammillaria oliviae (see *Mammillaria grahamii*)

Opuntia acanthocarpa var. *major* (see *Cylindropuntia acanthocarpa* var. *major*)

Opuntia acanthocarpa var. *ramosa* (see *Cylindropuntia acanthocarpa* var. *major*)

Opuntia acanthocarpa x *Oopuntia spinosior* (see *Cylindropuntia acanthocarpa* x *Cylindropuntia spinosior*)

Opuntia arbuscula (see *Cylindropuntia arbuscula*)

Opuntia bigelovii (see *Cylindropuntia bigelovii*)

***Opuntia chlorotica* G. Engelmann & J. Bigelow: Dollarjoint Pricklypear**

COMMON NAMES: Clockface Prickly-pear, Dollarjoint Pricklypear, Flapjack Prickly-pear, Nopal, Nopal Rastrera, Pancake Pear, Pancake-pear, Pancake Prickly Pear, Pancake Prickly-pear, Silver-dollar Cactus, Smooth Clock-face Pricklypear. DESCRIPTION: Terrestrial perennial stem-succulent shrub (2 to 10 feet in height with a definite trunk to 12 inches in height and 3 to 8 inches in width); the orbicular paddle-shaped stems (4 to 8 inches in diameter) are bluish-green, green or gray-green; the glochids and spines are golden, straw, light yellow or yellow turning brown, grayish or reddish-brown with age; the flowers (1½ to 2½ inches in diameter) are pale yellow, pale yellow-green, yellow-green, yellow-orange or yellow with a reddish flush; flowering generally takes place between early April and mid-July (additional records: one for late August and one for mid-September); the ripe barrel-shaped fruits (1½ to 2½ inches in length and ¾ to 1½ inches in diameter) are purple or red aging bluish or grayish tinged with purple or red. HABITAT: Within the range of this species it has been reported from mountains; mountaintops; mountainsides; mesas; cliffs; rocky canyons; bases of cliffs; ledges; rocky ridges; ridgetops; foothills; rocky hills; hilltops; rocky hillsides; bouldery, bouldery-rocky-gravelly and rocky slopes; bajadas; rocky outcrops; amongst rocks; lava flow fields; sandy flats; valley floors; along rocky and gravelly roadsides; arroyos; draws; seeps; springs; creekbeds; along rivers; drainages; edges of washes; sandy floodplains, and riparian areas growing in dry bouldery, bouldery-rocky-gravelly, rocky, gravelly, gravelly-sandy and sandy soils; clayey loam soils, and silty soils, occurring from 900 to 9,000 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. This plant was reported to have been utilized by native peoples of North America and could be investigated to determine its value as a home garden or commercial food crop. *Opuntia chlorotica* is native to southwest-central and southern North America. *5, 6, 12 (Pages 103&105-106), 15, 26 (genus), 27 (Page 69, color photograph: Plate 35, Page 101), 43 (011710 - *Opuntia chlorotica* Engelm. & J.M. Bigelow), 45 (color photograph), 46 (Page 582), 48 (genus - *Opuntia*), 63 (062610 - color presentation), 77, 85 (062610 - color presentation including habitat, unable to access species information), 91, 119, 127, **HR***

Opuntia discata (see *Opuntia engelmannii* var. *engelmannii*)

***Opuntia engelmannii* J.F. Salm-Reifferscheid-Dyck ex G. Engelmann var. *engelmannii*: Cactus Apple**

SYNONYMY: *Opuntia discata* D. Griffiths, *Opuntia phaeacantha* G. Engelmann var. *discata* (D. Griffiths) L.D. Benson & D.L. Walkington. COMMON NAMES: Abrojo, Cactus Apple, Desert Pricklypear Cactus, Engelmann Prickly Pear, Engelmann's Prickly-pear, Engelmann Pricklypear, Flaming Pricklypear, Joconostle, Nopal, Prickly Pear, Vela de Coyote. DESCRIPTION: Terrestrial perennial stem-succulent shrub (forms clumps 20 inches to 8 feet in height and 20 inches to 10 feet or more in width, one plant was reported as being 20 inches in height and 8¼ feet in width, one plant was reported as being 3 feet in height and 4½ feet in width, one plant was reported as being 3 feet in height and 6 to 12 feet in width, one plant was reported as being 3 feet in height and 8 feet in width, one plant was reported as being 40 inches in height and 79 inches in width, one plant was reported to be 40 inches in height and 10 feet in width); the paddle-shaped stems (8 to 16 inches in length and 6½ to 12 inches in width) are bluish-green, gray-green, green, dark green or yellow-green; the spines are brown-red, chalky-white, pale straw or pale yellow-brown usually with red or red-brown bases aging to black or gray; the glochids are yellow; the flowers (2¼ to 3½ in diameter) may be lemon-yellow, pink, pink-red, red-pink, rose-red, salmon, tannish-yellow, yellow, light yellow-orange, yellow-orange or yellow-peach turning to orange, orange-yellow or pink-orange with age; the anthers are yellow; the stigma lobes are lime green; flowering

generally takes place between mid-March and late June (additional records: one for early January, two for mid-February, one for mid-July, two for mid-August, one for early September, six for mid-September, three for early October and one for late December); the mature fruits (also known as tunas are 2½ to 3¼ in length and 1¼ inches in diameter) are magenta-rose, purple, red or reddish-purple. HABITAT: Within the range of this species it has been reported from mountains; mountaintops; sandy mountainsides; bedrock mesas; edges of cliffs; canyons; canyon bottoms; talus slopes; ledges; ridges; rocky ridgetops; rocky hills; bouldery, rocky and gravelly hillsides; bouldery, rocky, rocky-gravelly and sandy slopes; bajadas; rocky outcrops; amongst boulders and rocks; lava beds; breaks; steppes; plains; rocky, gravelly and sandy and silty flats; basins; valley floors; along roadsides; along and in gravelly and gravelly-humusy arroyos; gullies; along streams; along creeks; creekbeds; along and in washes; along and in gravelly-sandy drainages; banks of rivers; benches; shelves; terraces; sandy floodplains; amongst mesquites; ditches, and gravelly-sandy and sandy riparian areas growing in dry bouldery, rocky, rocky-gravelly, rocky-sandy, shaley, gravelly, gravelly-sandy and sandy ground; clayey ground; silty ground, and gravelly humusy ground, occurring from 1,000 to 7,500 feet in elevation in the woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. The species, *Opuntia engelmannii*, was reported to have been utilized by native peoples of North America and could be investigated to determine its value as a home garden or commercial food, beverage, cooking agent or paint crop; it was also noted as having been used as a tool, as a lubricant (var. *engelmannii*) and as a drug or medication. The flowers open around 8 AM and remaining open for one or two days, and may live to be 30 or more years of age. The juicy fruits (tunas) with edible pulp are fed on by many browsing animals, including Black Bear (*Ursus americanus amblyceps*), Coyote (*Canis latrans mearnsi*), Javelina (*Peccari tajacu sonoriensis*) and Desert Tortoise (*Gopherus agassizi*) among others, and birds. The plant provides cover for many desert animals. *Opuntia engelmannii* var. *engelmannii* is native to southwest-central and southern North America. *5, 6, 12 (recorded as *Opuntia phaeacantha* Engelm. var. *discata* (Griffiths) Benson & Walkington "This is the largest and, in especially southern Arizona, one of the best-known native prickly pears of the Southwestern Deserts of the United States. It is variable in habit of growth, shape and size of joints, and size and distribution of spines. It is almost always found growing with var. *major*, which has longer brown spines restricted largely to the upper part of the narrower joint. Almost everywhere there are intergrading forms with many character recombinations. Var. *discata* is rarely stable but apparently a fringe-population extreme tied in closely with the more abundant and wide-ranging var. *major*.", Pages 99 & 101-103, color photograph), 15 (recorded as *Opuntia phaeacantha* Engelm. var. *discata* (Griffiths) Benson & Walkington), 16 (recorded as *Opuntia phaeacantha* Engelmann var. *discata* (Griffiths) L. Benson - "Rocky slopes and gravelly flats; common; intergrading with *O. p.* var. *major*."), 26 (species), 27 (recorded as *Opuntia phaeacantha* Engelmann var. *discata* (Griffiths) L. Benson, Pages 53 & 99-100, color photographs: Plates 30 & 30A, Pages 99 & 100), 28 (color photograph), 43 (063009), 45 (species, color photograph), 46 (species, Page 583), 48 (genus), 58 (recorded as *Opuntia phaeacantha* Engelm. var. *discata* (Griffiths) Benson & Walk.), 63 (0123110 - color presentation), 77 (recorded as *Opuntia phaeacantha* var. *discata* (Griffiths) Benson & Walkington, color photograph #14 labeled as *Opuntia phaeacantha*), 85 (012310 - color presentation), 91 (recorded together with *Opuntia engelmannii* Salm-Dyck. *Opuntia phaeacantha* var. *discata* (Griffiths) Benson & Walkington / *Opuntia phaeacantha* var. *major* Engelmann: "Both species are sympatric throughout much of their range and often can be found together."), 115 (color presentation of the species), 119 (recorded as *Opuntia discata* Griffiths), 127 (variety *engelmannii* and species)*

Opuntia fulgida (see *Cylindropuntia fulgida* var. *fulgida*)

Opuntia fulgida var. *fulgida* (see *Cylindropuntia fulgida* var. *fulgida*)

Cylindropuntia fulgida var. *mamillata* forma *monstrosa* (see NOTES under *Cylindropuntia fulgida* var. *mamillata*)

Opuntia fulgida var. *mamillata* (see *Cylindropuntia fulgida* var. *mamillata*)

Opuntia fulgida var. *mamillata* forma *monstrosa* (see NOTES under *Cylindropuntia fulgida* var. *mamillata*)

Opuntia gilvescens (see *Opuntia phaeacantha*)

Opuntia kleiniae var. *tetracantha* (see *Cylindropuntia* x *tetracantha*)

Opuntia leptocaulis (see *Cylindropuntia leptocaulis*)

Opuntia mamillata (see *Cylindropuntia fulgida* var. *mamillata*)

***Opuntia phaeacantha* G. Engelmann: Tulip Pricklypear**

SYNONYMY: *Opuntia gilvescens* D. Griffiths, *Opuntia phaeacantha* G. Engelmann var. *major* G. Engelmann, *Opuntia phaeacantha* G. Engelmann var. *phaeacantha*, *Opuntia phaeacantha* G. Engelmann var. *superbospina* (D. Griffith) L.D. Benson. COMMON NAMES: Abrojo, Brown-spine Pricklypear, Brownspine Pricklypear, Brown-spined Prickly-pear, Desert Prickly-pear, Joconostle, Major Prickly-pear, Major Pricklypear, Mojave Prickly-pear, Mojave Pricklypear, New Mexico Prickly-pear, Nopal, Purple-fruit Prickly-pear, Sprawling Prickly Pear, Tulip Pricklypear, Vela de Coyote, Yellow Pricklypear, Yellow-spine Prickly-pear. DESCRIPTION: Terrestrial perennial stem-succulent shrub (10 inches to 7 feet in height and 3 to 10 feet in width sometimes forming clumps up to 75 feet in width, sometimes developing a definite trunk, one plant was reported to be 10 inches in height and 40 inches in width, one plant was reported to be 1 foot in height and 3 feet in width, one plant was reported to be 14 inches in height and 52 inches in width, plants were reported that were 16 inches in height and 40 inches in width, one plant was reported to be 16 inches in height and 48 inches in width, one plant was reported to be 16 inches in height and 60 inches in width, one plant was reported to be 18 inches in height and 8 to 10 feet in width, one plant was reported to be 20 inches in height and 13 feet in width, one plant was reported to be 2 feet in height and 5 to 6 feet in width, one plant was reported to be 30 inches in height and 5 feet in width, plants were reported to be 3 feet in height and 4 to 10 feet in width); the paddle-shaped stems (4 to 10 inches in length and 3 to 8 inches in width) may be bluish-green, gray-brown, gray-green, dull green, green, dark green, greenish-yellow, purple, reddish or yellow-gray-green; the spines are blackish, brown, charcoal, gray, reddish, red-brown, white or yellow; the glochids are golden, reddish-brown or tan; the flowers (1½ to 3 inches in diameter) may be golden-apricot (with yellow-green mid-stripes), orange, orange-yellow, pink, pink-purple, red, red-pink, pale yellow, yellow (with an orange or red center or brown, greenish, greenish-brown or red mid-stripes) or yellow-orange aging to red-orange; the anthers are yellow; the stigma lobes are green or yellow-green; flowering generally takes place between mid-March to early July (additional records: one for early January, one for late January, one for early February, one for late July, three for mid-August, two for late August, one for late September and one for early October); the mature pear-shaped fruits (1¼ to 3½ inches in length and 1 to 1¼ inches in width) are maroon, purple, purple-red, red, dark red, red-brown or wine-red. HABITAT: Within the range of this species it has been reported from mountains; mesas; plateaus; cliffs; canyons; canyon bottoms; rocky rincons; talus slopes; bases of cliffs; bluffs; rocky-gravelly-sandy buttes; knolls; rocky ledges; ridges; ridgetops; foothills; rocky and gravelly hills; cobbly and sandy hilltops; bouldery, rocky, gravelly and gravelly-sandy-loamy hillsides; bouldery, rocky, rocky-gravelly, gravelly, sandy and silty slopes; gravelly bajadas; rocky outcrops, amongst rocks; on boulders and rocks; lava beds; blow-sand; prairies; sandy llanos; plains; rocky, cindery and sandy flats; valleys; along sandy roadsides; in rocky and sandy arroyos; bottoms of arroyos; draws; springs; along creeks; along and in sandy riverbeds; along gravelly washes; sandy drainages; silty-loamy and silty-clayey-loamy dry lakebeds; along sandy banks of rivers; cobbly-sandy-silty and gravelly-sandy terraces; sandy-loamy bottomlands; sandy floodplains; mesquite

bosques; riparian areas, and disturbed areas growing in dry bouldery; rocky, rocky-gravelly, rocky-gravelly-sandy, shaley, cobbly, cindery, gravelly, gravelly-sandy and sandy ground; gravelly-sandy loam, sandy loam, sandy-clayey loam and silty loam and silty-clayey loam ground; gravelly-sandy clay ground; cobbly-sandy silty and silty ground, and humusy ground, occurring from 800 to 7,900 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. This plant was reported to have been utilized by native peoples of North America and could be investigated to determine its value as a home garden or commercial food, beverage and/or cooking agent crop; it was also noted as having been used for tools, in pottery making and as a drug or medication. This plant provides cover for many desert animals. Deer, Javelina (*Peccari tajacu sonoriensis*) and rodents feed on the stems, and the fruits are eaten by deer, grasshoppers, Javelina and other desert animals (including grasshoppers). Cristate forms have been reported. The change in nomenclature in USDA NRCS has not been recognized in BONAP, varieties remain as varieties of *Opuntia phaeacantha* (accessed 041806). *Opuntia phaeacantha* is native to southwest-central and southern North America. *5, 6, 12 (recorded as *Opuntia phaeacantha* Engelm., Pages 95-101; *Opuntia phaeacantha* Engelm. var. *major* Engelm., Pages 99-101, and *Opuntia phaeacantha* Engelm. var. *phaeacantha*, Pages 97-98), 15 (recorded as *Opuntia phaeacantha* var. *major* Engelm., color photograph on Page 77 includes habitat and associated species), 16 (recorded as *Opuntia phaeacantha* Engelm. var. *major* Engelm.), 26 (color photograph), 27 (recorded as *Opuntia phaeacantha* Engelmann, Pages 50, color photograph: Plate 28, Page 99; *Opuntia phaeacantha* Engelmann var. *major* Engelmann, Pages 51, color photograph: Plate 29, Page 99, and *Opuntia phaeacantha* Engelmann var. *superbospina* (Griffith) L. Benson, Pages 54, color photograph: Plate 31, Page 100), 43 (070109), 45 (color photograph), 46 (recorded as *Opuntia phaeacantha* Engelm., Page 583 and *Opuntia gilvescens* Griffiths, Page 583), 48 (genus - recorded as *Opuntia*), 58 (recorded as *Opuntia phaeacantha* Engelm. var. *major* Engelm.), 63 (012310 - color presentation), 77 (recorded as *Opuntia phaeacantha* Engelm. var. *major* Engelm., color photograph #14 labeled as *Opuntia phaeacantha*), 85 (012310 - color presentation), 91 (recorded together with *Opuntia engelmannii* Salm-Dyck. (*Opuntia phaeacantha* var. *discata* (Griffiths) Benson & Walkington) / *Opuntia phaeacantha* var. *major* Engelmann - "Both species are sympatric throughout much of their range and often can be found together."), 119, 127, **WTK** (recorded as *Opuntia phaeacantha* var. *major*, July 4, 2005)*

Opuntia phaeacantha var. *discata* (see *Opuntia engelmannii* var. *engelmannii*)

Opuntia phaeacantha var. *major* (see *Opuntia phaeacantha*)

Opuntia phaeacantha var. *phaeacantha* (see *Opuntia phaeacantha*)

Opuntia phaeacantha var. *superbospina* (see *Opuntia phaeacantha*)

Opuntia spinosior (see *Cylindropuntia spinosior*)

Opuntia tetracantha (see footnote 46 under *Cylindropuntia* x *tetracantha*)

Opuntia x *tetracantha* (see *Cylindropuntia* x *tetracantha*)

Opuntia versicolor (see *Cylindropuntia versicolor*)

Opuntia vivipara (see *Cylindropuntia* x *vivipara*)

Opuntia x *vivipara* (see *Cylindropuntia* x *vivipara*)

***Peniocereus greggii* (G. Engelmann) N.L. Britton & J.N. Rose var. *transmontanus* (G. Engelmann) C. Backeberg: Nightblooming Cereus**

SYNONYMY: *Cereus greggii* G. Engelmann var. *transmontanus* G. Engelmann. COMMON NAMES: Arizona Night-blooming Cereus, Arizona Queen-of-the-night, Chaparral Cactus, Deer-horn Cactus, Desert Night-blooming Cereus, Desert Threadcereus, Nightblooming Cereus, Queen of the Night, Queen-of-the-night, Reina-de-la-noche. DESCRIPTION: Terrestrial perennial root- and stem-succulent shrub (1 to 8 feet in height and ¼ to ½ inch in width), the large white flowers (2 to 5 inches in diameter and 6 to 8½ inches in length) open after dusk and last only one night, flowering generally takes place between late May and early July (additional records: one for early January, two for mid-March and one for early December), the ripe fruits (1¼ to 4 inches in length and ¾ to 2 inches in diameter) are orange red or bright red. HABITAT: Within the range of this species it has been reported from mountains; mesas; ridges; ridge crests; rocky hillsides; rocky and gravelly slopes; gravelly bajadas; sand dunes; gravelly-sandy plains; gravelly flats; valley floors; arroyos; along sandy washes; drainages; edges of washes, and bottomlands growing in dry desert pavement; rocky, gravelly and sandy ground, and gravelly loam, gravelly-sandy loam, sandy loam and clayey loam ground, occurring from 800 to 3,500 feet in elevation in the grassland and desertscrub ecological formations. NOTES: This plant may be an attractive component of a restored native habitat, the flowers are fragrant. The plant, *Peniocereus greggii* var. *greggii*, was reported to have been utilized by native peoples of North America and could be investigated to determine its value as a home garden or commercial food and/or beverage crop; it was also noted as having been used as a drug or medication. Plant with other desert shrubs and trees, such as the Creosote Bush (*Larrea tridentata* var. *tridentata*), Foothill Paloverde (*Parkinsonia microphylla*) and Velvet Mesquite (*Prosopis velutina*), that will provide support and protection. Birds feed on the fruit and seeds. *Peniocereus greggii* is native to southwest-central and southern North America. *5, 6, 12 (recorded as *Cereus greggii* Engelm. var. *transmontanus* Engelm., Pages 112 & 118, color photograph Fig. 2.5), 15, 27 (species, recorded as *Cereus greggii* Engelmann, Pages 61, color photograph: Plates 36 &36A, Page), 28 (color photograph), 43 (012310), 45 (color photograph of species), 46 (species, Page 568), 48, 63 (012310), 85 (012310 - color presentation of dried material), 86, 115 (color presentation of the species), 119 (species), 127 (records found under *Peniocereus greggii* var. *greggii*), **HR***

Campanulaceae: The Bellflower Family

***Nemacladus glanduliferus* W.L. Jepson: Glandular Threadplant**

COMMON NAMES: Glandular Nemacladus, Glandular Threadplant, Silver Stem Threadplant, Thread Plant, Threadplant, Threadstem. DESCRIPTION: Terrestrial annual forb/herb (2 to 16 inches in height); the stems are reddish-brown; the foliage is brown; the flowers are pinkish-white, purple and white, white, whitish, white-blue-pink, white-cream-lavender, white and maroon or white tinged with purple; flowering generally takes place between mid-February and late May. HABITAT: Within the range of this species it has been reported from mountains; gravelly mesas; rocky canyons; rocky canyon bottoms; talus slopes; crevices in rocks; buttes; chalky ridges; ridgetops; rocky hills; rocky hillsides; rocky, gravelly, gravelly-loamy, loamy and clayey slopes; gravelly bajadas; sand dunes; ridges on sand dunes; rocky-sandy and sandy plains; gravelly, sandy and loamy flats; valley floors; gravelly-sandy roadsides, along and in gravelly and sandy arroyos; sandy bottoms of arroyos; along and in sandy streambeds; in sand along creeks; riverbeds; along and in rocky, rocky-sandy, gravelly, gravelly-sandy and sandy washes; along and in drainages; gravelly banks of washes; sandy edges of drying pools; beaches; benches; sandy terraces; sandy bottomlands; sandy floodplains; sandy riparian areas, and disturbed areas growing in dry rocky, cindery, gravelly, gravelly-sandy, sandy and chalky ground; gravelly loam, sandy-clay loam and loam ground; clay ground, and chalky ground occurring from sea level to 5,000 feet in elevation in the grassland, desertscrub and wetland ecological formations. NOTE:

Nemacladus glanduliferus is native to southwest-central and southern North America. *5, 6, 43 (012310), 46 (Page 827), 63 (070310), 77, **85** (070310 - color presentation), 115 (color presentation)*

Caryophyllaceae: The Pink Family

***Silene antirrhina* C. Linnaeus: Sleepy Silene**

COMMON NAMES: Alfinetes-da-terra-miúdo (Portuguese), Catchfly, Desert Sleepy Catchfly, Sleepy Catchfly, Silène Muflier (French), Sleepy Silene, Tjärglim (Swedish). DESCRIPTION: Terrestrial annual forb/herb (4¾ inches to 3 feet in height); the stems may be purple; the flowers may be lavender, magenta, magenta-pink, pink, pinkish-whitish, purple, purple-pink, red, rose, white with pink or dark purple-tipped lobes or white fading to deep pink; flowering generally takes place between mid-February and early July (additional records: one for mid-September and one for early November). HABITAT: Within the range of this species it has been reported from mountains; mesas; cliffs; rocky canyons; sandy canyon bottoms; gorges; talus slopes; bouldery and rocky ledges; ridges; ridgetops; foothills; rocky hills; rocky hillsides; along bouldery-silty-clayey, rocky, gravelly, sandy-loamy and loamy-clayey slopes; rocky-sandy alluvial fans; gravelly bajadas; rocky, gravelly and sandy flats; basins; along gravelly and gravelly-loamy roadsides; rocky arroyos; rocky draws; clayey gulches; ravines; seeps; in sand along streams; along rocky, rocky-sandy and sandy streambeds; in sand along creeks; along creekbeds; along rivers; along and in rocky, gravelly-sandy and sandy washes; within drainages; sandy banks of washes; rocky-gravelly edges of streambeds, rivers and ponds; sandy-loamy margins of streambeds and rivers; benches; terraces; sandy and loamy bottomlands; floodplains; mesquite bosques; ditches; gravelly-sandy, gravelly-sandy-loamy and sandy riparian areas; waste places, and recently burned areas in woodlands and chaparral growing in wet, moist and dry bouldery, rocky, rocky-gravelly, rocky-sandy, gravelly, gravelly-sandy and sandy ground; gravelly loam, gravelly-sandy loam, sandy loam, clayey loam and loam ground; bouldery-silty clay, loamy clay and clay ground, and gravelly-sandy silty and silty ground, occurring from sea level to 8,500 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTE: *Silene antirrhina* is native to central and southern North America. *5, 6, 15, 16, 28 (color photograph), 43 (012610), 46 (Page 302), 58, 63 (012610 - color presentation), 77, 85 (012710 - color presentation), 101 (note under *Silene alba*), 115 (color presentation)*

Chenopodiaceae: The Goosefoot Family

***Atriplex canescens* (F.T. Pursh) T. Nuttall: Fourwing Saltbush**

COMMON NAMES: Atahi'xp (Seri), Cenizo (Spanish), Chamere (Spanish), Chamiso (preferred usage over Chamise), Chamiso Cenizo, Chamiza, Chamizo (Spanish), Costilla de Vaca, Diwoozhii Ibehi (Navajo), Four-wing Salt-bush, Four-wing Saltbush, Fourwing Saltbush, Ke'ma:we (Zuni - "salt weed" refers to the salty taste of the flowers), Narrow-leaf Saltbush, Narrowleaf Wingscale, Thinleaf Fourwing Saltbush, Grey Sage Brush, Orache, Saladillo, Sha'ashkachk Iibatkam (River Pima), Shadscale, Wngscale, Yup (Seri). DESCRIPTION: Terrestrial perennial evergreen (winter-deciduous in cold climates) shrub (1 to 10 feet in height, one plant was reported to be 4½ feet in height and 4½ feet in width, one plant was reported to be 40 inches in height and 5 feet in width, plants were reported that were 6 ½ feet in height and width, one plant was reported to be 5 feet in height and width, plants were reported that were 6 ½ feet in height and width, one plant was reported to be 7 feet in height and 13 feet in width, plants were reported that were 8 feet in height and 15 feet in width); the leaves are gray, gray-green, light green or green; the flowers (male and female flowers are usually borne on separate plants) are brown, cream, green, greenish, greenish-white, greenish-yellow, white-brown, pale yellow, yellow or yellowish; flowering generally takes place between early February and late October (additional records: one for mid-January, four for mid-November, one for late November and one for early December); the mature four-winged fruits (0.4 to 1 inch square bracts) are green or yellow-green drying to pale brown or tan.

HABITAT: Within the range of this species it has been reported from mountains; rocky mountainsides; mesas; rocky plateaus; along rocky, rocky-sandy and sandy rims; cliffs; rocky, sandy and clayey canyons; sandy canyon walls; sandy and clayey canyon bottoms; gorges; rocky scree; talus slopes; along gravelly-sandy bluffs; knolls; rocky ledges; rocky ridges; rocky-sandy, rocky-loamy and sandy ridgetops; meadows; foothills; rocky, gravelly-sandy and silty-loamy hills; rocky-gravelly hilltops; bouldery, rocky, gravelly and clayey hillsides; bedrock, bouldery, rocky, rocky-sandy, shaley, stony-loamy, cindery, sandy, sandy-loamy, sandy-loamy-silty-powdery, sandy-clayey, sandy-silty, clayey and silty-loamy slopes; alluvial fans; sandy bajadas; rocky and gypsum outcrops; amongst rocks; sandy lava flows; sand hills; sand dunes; blow-sand deposits; bouldery debris flows; sandy and sandy-loamy plains; rocky, gravelly, gravelly-loamy, sandy, sandy-loamy and clayey flats; basins; sandy and sandy-loamy valley floors; coastal dunes; sandy coastal plains; coastal flats; coastal saltmarshes; along rocky, gravelly, gravelly-sandy, sandy and sandy-loamy roadsides; arroyos; bottoms of arroyos; draws; gulches; ravines; seeps; around springs; streambeds; along creeks; along sandy creekbeds; along rivers; sandy riverbeds; along rocky and sandy washes; along and in drainages; lakebeds; playas; freshwater and saltwater marshes; around and in swamps; depressions; clayey pans; sinks; swales; along gravelly-sandy, sandy and clayey banks of arroyos, rivers and drainages; cindery edges of washes, ponds, lakes and salt marshes; margins of drainages; gravel bars; beaches; sandy and clayey benches; sandy-loamy terraces; sandy bottomlands; Galleta lowlands; floodplains; mesquite bosques; ditches; sandy riparian areas, and disturbed areas growing in muddy and moist and dry bouldery, rocky, rocky-gravelly, rocky-sandy, shaley, cindery, gravelly, gravelly-sandy and sandy ground; rocky loam, stony loam, gravelly loam, sandy loam, clayey loam, silty loam and loam ground; sandy clay and clay ground; rocky silty, sandy silty and silty ground, and sandy-loamy-silty powdery ground, occurring from sea level to 8,800 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. This plant was reported to have been utilized by native peoples of North America and could be investigated to determine its value as a home garden or commercial food, fodder, cooking agent (ashes used in place of baking soda and also to give a greenish-blue color to dough), spice and/or dye crop; it was also noted as having been used as tools, as a drug or medication, to make ceremonial items (including prayer sticks - pahos) and as a commodity used in personal hygiene. The life span of the Fourwing Saltbush has been reported to be from 29 to over 100 years. Fourwing Saltbush may be useful in controlling erosion. Mule Deer (*Odocoileus hemionus*), White-tailed Deer (*Odocoileus virginianus*), Elk (*Cervus elaphus*), Black-tailed Jackrabbits (*Lepus californicus*), Pronghorn (*Antilocapra americana*), and Bighorn Sheep (*Ovis canadensis*); as well as, other small mammals browse this plant, and Grouse, Gray Partridge (*Perdis perdix*), Scaled Quail (*Callipepla squamata*) and other birds as well as Kangaroo Rats, Pocket Mice and other small rodents feed on the seeds. This plant is a larval food plant for the Pygmy Blue (*Brefidium exile*). Possible predation was reported by the exotic Puncturevine Seed Weevil (*Microlarinus lareynii*). The keying out of Four-wing Saltbushes may be difficult due to intraspecific variation and introgression with other saltbush species. *Atriplex canescens* is native to west-central and southern North America. *5, 6, 13, 15, 16, 18, 26 (color photograph), 28 (color photograph), 43 (012710), 46 (Page 259), 48, 63 (012710 - color presentation), 77, 82, 85 (012710 - color presentation), 91 ("As a secondary or facultative absorber of selenium, *Atriplex canescens* can be mildly poisonous to livestock where selenium occurs in the soil."), 115 (color presentation), 127, **WTK** (July 4, 2005)*

***Atriplex polycarpa* (J. Torrey) S. Watson: Cattle Saltbush**

COMMON NAMES: All-scale, Cattle Saltbush, Cattle Spinach, Cattle-spinach, Cenizo, Chamizo, Chamiso Cenizo, Cow Spinach, Desert Sage, Desert Saltbush, Desert Salt-bush, Kokomaki Sha'l (Pima), Littleleaf Saltbush, Sage, Sagebrush, Shadscale. DESCRIPTION: Terrestrial perennial deciduous shrub (1 to 6½ feet in height, one plant was reported to be a round bush 2 feet in height, plants were described as being 5 feet in height and 6½ feet in width); the leaves are gray, gray-green, gray-white, silvery, silvery-gray or silvery-green; the inconspicuous flowers (male and female flowers may be borne on separate plants) are greenish, greenish-white, yellow or yellowish; the anthers are yellow; flowering

generally takes place between early September and early November (additional records: two for early January, one for late January, two for early February, two for mid-February, one for late February, one for mid-March, one for late March, two for early April, two for late April, one for late May, three for late June, one for early July, two for early August and one for late December); the ripe fruits are orange. HABITAT: Within the range of this species it has been reported from mountains; foothills; rocky canyons; along sandy canyon bottoms; talus slopes; foothills; hills; hilltops; bedrock, rocky, gravelly, gravelly-loamy and sandy slopes; alluvial fans; gravelly and gravelly-sandy bajadas; amongst rocks; sand dunes; sand hummocks; sandy plains; gravelly and sandy flats; gravelly-sandy valley floors; valley bottoms; coastal dunes; coastal plains; along railroad right-of-ways; along silty roadsides; bottoms of arroyos; silty springs; along rivers; riverbeds; along and in gravelly, gravelly-sandy, gravelly-loamy and sandy washes; along drainages; clayey playas; sinks; on gravelly-loamy and sandy banks of washes; edges of washes and playas; gravelly and sandy margins of seeps, washes and playas; along shores of lakes; rocky benches; terraces; bottomlands; sandy floodplains; canal right-of-ways; sandy riparian areas; waste places, and disturbed areas growing in dry rocky, gravelly, gravelly-sandy and sandy ground; gravelly loam and silty loam ground; clay ground, and silty ground, occurring from sea level to 6,100 feet in elevation in the grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat, it is relatively drought resistant. This plant was reported to have been utilized by native peoples of North America and could be investigated to determine its value as a home garden or commercial food crop; it was also noted as having been used as a drug or medication. *Atriplex polycarpa* is native to southwest-central and southern North America. *5, 6, 13, 18, 28 (note under *Atriplex canescens*), 43 (012810 - *Atriplex polycarpa* S. Watson), 46 (Page 258-259), 48, 63 (012810 - color presentation of seeds), 77, 85 (012810 - color presentation), 91, 127, 135, **WTK** (July 4, 2005)*

Chenopodium arizonicum (see *Chenopodium neomexicanum* var. *neomexicanum*)

Chenopodium fremontii var. *incanum* (see *Chenopodium incanum* var. *incanum*)

***Chenopodium incanum* (S. Watson) A.A. Heller var. incanum: Mealy Goosefoot**

SYNONYMY: *Chenopodium fremontii* S. Watson var. *incanum* S. Watson. COMMON NAMES: Mealy Goosefoot. DESCRIPTION: Terrestrial annual forb/herb (spreading to slightly ascending stems 3 to 12 inches in height/length); flowering generally takes place between late May and early September. HABITAT: Within the range of this species it has been reported from mountains; rocky mountainsides; grassy mesas; hills; rocky, gravelly-loamy, sandy-clayey and clayey-loamy slopes; rocky outcrops; prairies; bouldery-gravelly plains; grassy valley floors; along railroad right-of-ways; along rocky-sandy roadsides; within washes; rocky-sandy drainages; lakebeds; playas; banks of rivers; margins of streams and rivers; lowlands; riparian areas, and waste places growing in dry bouldery-gravelly, rocky, rocky-sandy and sandy ground; gravelly loam and clayey loam ground, and sandy clay ground, occurring from 700 to 8,500 feet in elevation in the forest, woodland, scrub, grassland and desertscrub ecological formations. NOTES: This plant was reported to have been utilized by native peoples of North America and could be investigated to determine its value as a home garden or commercial food crop; it was also noted as having been used as a drug or medication (antidote). *Chenopodium incanum* is native to west-central North America. *43 (082010), 46 (recorded as *Chenopodium fremontii* Wats. var. *incanum* Wats., Page 253-254), 63 (082010), **77** (recorded as *Chenopodium incanum* (S. Wats.) Heller [*C. fremontii* S. Wats. var. *incanum* S. Wats.]), 85 (082010), 127*

***Chenopodium neomexicanum* P.C. Standley (var. *neomexicanum* is the variety reported as occurring in Arizona): New Mexico Goosefoot**

SYNONYMY: (for *C.m.* var. *neomexicanum*: *Chenopodium arizonicum* P.C. Standley). COMMON NAMES: Choal, Fishy Goosefoot, Goosefoot, New Mexico Goosefoot. DESCRIPTION: Terrestrial annual forb/herb (4 inches to 5 feet in height); the stems may be reddish; the inconspicuous

flowers are green; flowering generally takes place between late August and late October (additional record: one for mid-July, flowering as late as November has been reported). HABITAT: Within the range of this species it has been reported from mountains; rocky canyons; canyon bottoms; bases of cliffs; ridgetops; edges of meadows; foothills; rocky hills; rocky hillsides; rocky, cindery and sandy slopes; rocky bajadas; amongst boulders and rocks; boulder fields; gravelly and gravelly-sandy flats; valleys; along roadsides; along rocky arroyos; bottoms of arroyos; ravines; springs; along creeks; along and in stony-sandy and sandy washes; sandy floodplains, and riparian areas growing in moist and dry rocky, cindery, gravelly, gravelly-sandy and sandy ground; loam ground, and bouldery silty ground, occurring from 700 to 8,300 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant may have a strong odor, similar to that of sardines or rotting fish. *Chenopodium neomexicanum* is native to southwest-central and southern North America. *5, 6, 43 (013010), 46 (*Chenopodium arizonicum* Standl., Page 253), 63 (013010), 77, **85** (013010 - color presentation of dried material)*

Salsola australis (see *Salsola tragus*)

Salsola iberica (see *Salsola tragus*)

Salsola kali (see *Salsola tragus*)

Salsola kali subsp. *tenuifolia* (see *Salsola tragus*)

Salsola kali L. var. *tenuifolia* (see *Salsola tragus*)

Salsola kali subsp. *tragus* (see *Salsola tragus*)

***Salsola tragus* C. Linnaeus: Prickly Russian Thistle**

SYNONYMY: *Salsola australis* R. Brown, *Salsola iberica* (f. Sennen & C. Pau) V.P. Botschantzev ex S.K. Czerepanov, *Salsola kali* C. Linnaeus, *Salsola kali* C. Linnaeus subsp. *tenuifolia* C.H. Moquis-Tandon, *Salsola kali* C. Linnaeus var. *tenuifolia* I.F. Tausch, *Salsola kali* C. Linnaeus subsp. *tragus* (C. Linnaeus) L.J. Čelakovský. COMMON NAMES: Cardo Ruso, Chamiso, Chamiso Valador, Ci Sha Peng (transcribed Chinese), Coast Saltwort, Common Russian Thistle, Hari Hijikii (transcribed Japanese), Leap the Field; Prickly Russian Thistle, Russian-cactus, Russian Thistle, Russian-thistle, Russian Tumbleweed, Soude Epineuse (French), Soude Roulante (French), Spineless Saltwort, Tumbleweed, Tumbling Thistle, Ukraine Salzkraut (German), Volador, Wind Witch. DESCRIPTION: Terrestrial annual forb/herb (2 inches to 7 feet in height, plants were observed that were 4 feet in height and 3 feet in width); the foliage may be blue-green, green, grayish-green, purple or red striped, reddish-purple or yellow-green; the inconspicuous flowers (without petals) are brown, pale green, green, green-red, pink, white, whitish, whitish-green, white-pink, white-yellow or yellowish-green; flowering generally takes place between late April and mid-November (additional records: one for early February, one record for early April and one for mid-March); the fruit is a reddish top-shaped pod with papery wings. HABITAT: Within the range of this species it has been reported from mountains; gravelly mountainsides; sandy mesas; plateaus; canyon rims; cliffs; rocky and sandy canyons; bouldery-gravelly-sandy, rocky and sandy canyon bottoms; rocky-sandy rims of craters; rocky, sandy and sandy-loamy ridges; rocky-clayey foothills; hills; rocky, gravelly and sandy hillsides; sandy bases of escarpments; rocky, cindery, gravelly, gravelly-loamy, gravelly-sandy-loamy, sandy, sandy-loamy, clayey and silty slopes; bajadas; rocky outcrops; sand dunes; prairies; sandy plains; gravelly, sandy-loamy and silty flats; basins; gravelly, gravelly-sandy and sandy valley floors; valley bottoms; coastal dunes; sandy coastal beaches; coastal salt marshes; along gravelly-clayey railroad right-of-ways; gravelly roadbeds; along gravelly, gravelly-sandy, sandy and sandy-loamy roadsides; sandy arroyos; bottoms of arroyos; draws; gravelly gullies; seeps; along streams; along streambeds; along cobbly-loamy, sandy and sandy-silty creekbeds; along rivers;

along rocky-sandy and sandy riverbeds; along bouldery, sandy, sandy-loamy and sandy-clayey washes; within clayey drainages; pondbeds; around lakes; sandy-loamy playas; marshes; gravelly and gravelly-sandy swales; sandy and clayey-loamy banks of springs, rivers and washes; sandy edges of creeks and marshes; shores of lakes; sandy-clayey beaches; sandy and clayey benches; gravelly terraces; sandy-clayey bottomlands; along sandy and sandy-clayey floodplains; mesquite bosques; along fencelines; around stock tanks; shores of reservoirs; along ditches; along sandy ditch banks; bouldery-cobbly-sandy, gravelly and sandy riparian areas; waste places, and disturbed areas growing in wet and dry desert pavement; bouldery, bouldery-cobbly-sandy, bouldery-gravelly-sandy, rocky, rocky-sandy, cindery, gravelly, gravelly-pebbly, gravelly-sandy and sandy ground; cobbly loam, gravelly loam, gravelly-sandy loam, sandy loam, clayey loam. silty loam and loam ground; rocky clay, gravelly clay, sandy clay and clay ground, and silty ground, occurring from sea level to 8,900 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: EXOTIC Invasive Plant. This plant was reported to have been utilized by native peoples of North America; it was noted as having been used for food, fodder and as a drug or medication. Russian Thistle is a host plant of the Beet Leafhopper which transmits the Curly Top Virus to Sugarbeets *Salsola tragus* is native to northern, central, eastern and southern Europe; Asia, and northern Africa. *5, 6, 15 (recorded as *Salsola iberica* Sennen & Pau), 16 (recorded as *Salsola iberica* Sennen & Pau), 28 (recorded as *Salsola iberica*, color photograph), 43 (070309), 46 (recorded as *Salsola kali* L. and *Salsola kali* L. var. *tenuifolia* Tausch, Page 264), 58 (recorded as *Salsola iberica* Sennen & Pau), 63 (013010 - color presentation), 68 (of *Salsola kali* L. var. *tenuifolia* Tausch, "It is a host plant for the sugarbeet leafhopper which carries the virus causing curly top in beets. It is also the source of "blight" in other crop plants such as tomatoes, spinach and beans. ... May store toxic amounts of nitrates after periods of fast growth."), 77 (recorded as *Salsola australis* R. Br.), 80 (*Salsola kali* L. var. *tenuifolia* is listed as a Major Poisonous Range Plant. "Russian thistle is capable of storing up toxic quantities of nitrate, particularly during the flush period of growth. *Salsola* has also been suspected of causing oxalate poisoning in Australia. ... Large-scale control can best be accomplished through range improvement to replace the thistle with grass." See text for additional information.), 85 (013010 - color presentation, J.J. Thornber reported on August 8, 1913, that Russian Thistle (*Salsola kali* L.) was recently introduced and rapidly spreading at a population observed in the Rillito bottomlands east of Tucson,), 101 (recorded as *Salsola iberica* Sennen, color photograph), 115 (color presentation), 127, **HR***

Convolvulaceae: The Morning-glory Family

***Evolvulus nuttallianus* J.A. Schultes: Shaggy Dwarf Morning-glory**

SYNONYMY: *Evolvulus pilosus* T. Nuttall. COMMON NAMES: Blue Evolvulus, Blue Eyes, Nuttall Evolvulus, Prostrate Evolvulus, Shaggy Dwarf Morning-glory, Shaggy Dwarf Morningglory, Silver Wild Morningglory. DESCRIPTION: Terrestrial perennial forb/herb or subshrub (ascending to erect stems 4 to 6 inches in height); the leaves are gray-green or silvery; the flowers (3/8 to1/2 inch in diameter) are light blue-lavender, blue, light lavender, lavender, lavender with a white throat, light purple, purple or pale violet; flowering generally takes place between early April and late September (additional record: one for early March). HABITAT: Within the range of this species it has been reported from mountains; gravelly and sandy mesas; canyons; rocky canyon bottoms; talus slopes; rocky-gravelly and sandy bluffs; gravelly buttes; gravelly and sandy knolls; ledges; rocky, gravelly, sandy and clayey-loamy ridges, gravelly-clayey ridgetops; openings in woodlands; sandy meadows; foothills; bouldery-cindery and sandy hills; gravelly and gravelly-clayey hilltops; rocky, gravelly-loamy, sandy and sandy-loamy hillsides; along sandy escarpments; sandy bases of escarpments; rocky, rocky-gravelly, rocky-gravelly-loamy, rocky-sandy, rocky-loamy, shaley, stony-cobbly, stony-gravelly, stony-sandy, cobbly, cobbly-sandy, cindery, gravelly, gravelly-loamy, gravelly-clayey, sandy, sandy-loamy, sandy-clayey, loamy, clayey and silty-loamy slopes; rocky outcrops; sandy sandhills; sandy edges of sand dunes; breaks; rocky, sandy and silty-loamy prairies; stony, stony-sandy and sandy plains; rocky, rocky-gravelly, stony, sandy

and sandy-clayey flats; river valleys; railroad right-of-ways; along sandy roadsides; arroyos, ravines; sandy streambeds; within creeks; creekbeds; riverbeds; within gravelly, gravelly-sandy and sandy washes; within rocky and sandy drainages; (sandy) banks of rivers; (sandy) margins of lakes; stony-gravelly benches; cobbly-sandy, gravelly, sandy and sandy-loamy terraces; sandy bottomlands; sandy floodplains; fencerows; riparian areas, and disturbed areas growing in dry bouldery-cindery, rocky, rocky-gravelly, rocky-sandy, shaley, stony, stony-cobbly, stony-gravelly, stony-sandy, cobbly, cobbly-sandy, cindery, gravelly, gravelly-sandy and sandy ground; rocky loam, rocky-gravelly loam, gravelly loam, sandy loam, sandy-clayey loam, clayey loam, silty loam and loam ground; gravelly clay, sandy clay and clay ground; silty ground, and chalky ground, occurring from 1,900 to 8,000 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetlands ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. This plant was reported to have been utilized by native peoples of North America; it was noted as having been used as a drug or medication. *Evolvulus nuttallianus* is native to southwest-central and southern North America. *5, 6, 15 (recorded as *Evolvulus pilosus* Nutt.), 43 (082110 - *Evolvulus nuttallianus* Roem. & Schult.), 46 (recorded as *Evolvulus pilosus* Nutt., Page 672), 58 (recorded as *Evolvulus pilosus* Nutt.), 63 (082110), 77 (color photograph #24), **85** (082110 - color presentation), 127*

Evolvulus pilosus (see *Evolvulus nuttallianus*)

***Ipomoea coccinea* C. Linnaeus: Redstar**

COMMON NAMES: Red Morning-glory, Red Morningglory, Redstar, Scarlet Creeper, Scarlet-creeper, Scarlet Morning Glory, Scarlet Morning-glory, Scarlet Morningglory, Star Glory, Star-glory, Starglory, Star Ipomoea. DESCRIPTION: Terrestrial annual forb/herb or vine (twining stems 5 inches to 10 feet in length); the stems are reddish; the heart-shaped leaves are dark green; the narrowly trumpet-shaped flowers (1/2 to 2/3 inch in diameter) are orange-red, red, reddish-orange, reddish-purple or scarlet; flowering generally takes place between mid-August and late October (additional record: one for late June, flowering beginning as early as May has been reported). HABITAT: Within the range of this species it has been reported from mountains; canyons; canyon bottoms; hillsides; rocky and gravelly slopes; amongst rocks; lava flows; gravelly flats; along gravelly-sandy and gravelly-sandy-loamy roadsides; along streams; along rock-gravelly creekbeds; along rocky, gravelly and gravelly-sandy washes; banks of rivers; terraces; floodplains; ditches; ditch banks; riparian areas, and disturbed areas growing in moist and dry rocky, rocky-gravelly, gravelly and gravelly-sandy ground and gravelly-sandy loamy and loam ground , occurring from 2,000 to 7,000 feet in elevation in the woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. *Ipomoea hederifolia* C. Linnaeus, once considered to be a variety of *Ipomoea coccinea* (*I.c.* var. *hederifolia* (L.) A. Gray) has leaves that are 3 to 5 lobed. Hummingbirds visit the flowers. *Ipomoea coccinea* is native to southwest-central and southern North America. *5, 6, 15, 18 (genus), 28 (color photograph), 43 (013110), 46 (Page 676), 48 (genus), 58, 63 (013110 - color presentation, the NRCS Database shows this plant as being native to southeast- central North America and as not being native to Arizona), 68, **85** (013110 -), 86 (note under *Ipomoea cristulata*), 101 (color photograph)*

***Ipomoea costellata* J. Torrey: Crestrib Morning-glory**

COMMON NAME: Crestrib Morning-glory. DESCRIPTION: Terrestrial annual forb/herb or vine (clambering, twining and spreading-ascending to erect stems 12 to 30 inches in length); the flowers (to ½ inch in diameter) may be light blue-lavender-pink, blue, blue-violet, cream with lavender margins, pale lavender, lavender, light pink, pink, pink-lavender, pink-purple, pink-violet, pinkish-purple, purple, purple & white or reddish-purple; the anthers are cream; flowering generally takes place between late July and late October. HABITAT: Within the range of this species it has been reported from mountains; mountainsides; rocky mesas; rocky canyons; along sandy and loamy canyon bottoms; ridges; gravelly ridgetops; shaley and gravelly openings in woodlands; meadows; foothills; rocky hills; rocky and rocky-

gravelly-loamy hillsides; rocky, rocky-gravelly, rocky-loamy, gravelly, sandy, loamy and clayey-loamy slopes; bajadas; bedrock and rocky outcrops; sandy lava flows; amongst rocks; plains; rocky, gravelly and sandy flats; basins; valley floors; along rocky, rocky-gravelly, gravelly and gravelly-sandy-clayey-loamy roadsides; within arroyos; sandy bottoms of arroyos; within draws; seeps; springs; along streams; along rocky-sandy streambeds; along rivers; within gravelly and sandy washes; along drainages; along lakes; lakebeds; (sandy) banks of arroyos, streams and drainages; (gravelly-sandy) edges of drainages; benches; rock shelves; sandy terraces; floodplains; mesquite bosques; stock tanks; riparian areas, and disturbed areas growing in wet, moist, damp and dry rocky, rocky-gravelly, rocky-sandy, shaley, gravelly, gravelly-sandy and sandy ground; rocky loam, gravelly loam, gravelly-sandy-clayey loam, clay loam and loam ground, and clay ground, occurring from (one record for 656 feet) 1,900 to 7,200 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. *Ipomoea costellata* is native to southwest-central and southern North America and Central America. *5, 6, 15, 18 (genus), 43 (082110), 46 (Page 677), 48 (genus), 58, 63 (082110), 77, **85** (082110 - color presentation), 115 (color presentation)*

***Ipomoea cristulata* H.G. Hallier: Trans-Pecos Morning-glory**

COMMON NAMES: Scarlet Creeper, Scarlet Morning Glory, Star Glory Morning-glory, Trans-Pecos Morning-glory, TransPecos Morningglory. DESCRIPTION: Terrestrial annual forb/herb or vine (climbing and/or twining stems 8 inches to 11½ feet in length); the entire, 3 to 5 parted or palmately-lobed leaves are green or dark green; the trumpet-shaped flowers (to ¾ inch in width) may be bright orange, orange-red, bright red, red, red-orange, reddish-orange or scarlet; flowering generally takes place between mid-August and late October (additional records: one for mid-November and two for late December). HABITAT: Within the range of this species it has been reported from mountains; mountainsides; mesas; rocky canyons; canyon bottoms; chasms; foothills; rocky hills; rocky, rocky-gravelly-loamy and rocky-clayey hillsides; rocky, gravelly-loamy, sandy and clayey-loamy slopes; bajadas; amongst rocks; sandy lava flows; clayey-loamy flats; valley floors; along rocky roadsides; sandy arroyos; sandy draws; within gullies; along and in rocky and rocky-sandy streambeds; along creeks; along and in rocky and sandy creekbeds; sandy soils along rivers; along and in sandy washes; within drainages; sandy and silty banks of creeks, rivers and washes; edges of washes; margins of arroyos; sandy terraces; bottomlands; floodplains; mesquite bosques; along rocky, gravelly and sandy riparian areas, and disturbed areas growing in moist and dry rocky, rocky-sandy, gravelly and sandy ground; rocky-gravelly loam, gravelly loam, gravelly-clayey loam and clayey loam ground; rocky clay soils, and silty ground, occurring from 100 to 9,100 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. The flowers open about 10 AM. Hummingbirds may visit the flowers. *Ipomoea cristulata* is native to southwest-central and southern North America. *5, 6, 18 (genus), 43 (071910 - no record), 46 (no record of species), 48 (genus), 63 (071910), **77**, **85** (070309 - color presentation), 86 (color photograph), 115 (color presentation)*

Cucurbitaceae: The Cucumber Family

***Tumamoca macdougalii* J.N. Rose: Tumamoc Globeberry**

COMMON NAMES: Globeberry, MacDougal Tumamoc Globe-berry, Tumamoc Globeberry. DESCRIPTION: Terrestrial perennial forb/herb or vine (clambering stem 28 inches to 5 feet in length); the leaves are dark green; the flowers (one-eighth inch in diameter) are greenish, greenish-yellow, white or yellow; flowering generally takes place between late July and late September; the mature berry-like fruit (½ to ¾ inch in diameter) is orange-red, bright red or yellow. HABITAT: Within the range of this species it has been reported from mountains; rocky hills; rocky hillsides; rocky slopes; rocky bajadas; amongst rocks; gravelly flats; valley floors; sandy valley bottoms; coastal plains; valley floors; along arroyos; along gullies; along sandy washes; along stony drainages; along edges of arroyos, poolbeds and

swales; along margins of washes; terraces, and mesquite bosques growing in dry rocky, stony, gravelly and sandy ground and sandy-silty ground usually with the support of and/or in the shade of shrubs and trees, occurring from sea level to 3,000 feet in elevation in the scrub, grassland and desertscrub ecological formations. NOTES: This plant may be an attractive component of a restored native habitat, plants remains dormant during winter and early spring, vines die back after fruiting or are killed by frost, consider planting beneath shrubs and low growing trees that will give support to the vines. The flowers are pollinated by moths. Cardinals, thrashers, Gambel Quail (*Callipepla gambelii*) and Gila Woodpeckers (*Melanerpes uropygialis*) feed on the fruits and seeds, and Javelinas (*Peccari tajacu*) feed on the tuberous roots. *Tumamoca macdougalii* is native to southwest-central and southern North America. *5, 6, 8, 9 (color photograph), 16 (recorded in the 1909 Thornber Listing as *Maximowiczia tripartita* Cogni. var. *tenuisecta* Wats.), 43 (020110), 46 (Pages 821-822), 63 (020110), 77, **85** (020110 - color presentation, detailed locality information is restricted), 91, **HR***

Euphorbiaceae: The Spurge Family

***Chamaesyce abramsiana* (L.C. Wheeler) D.L. Koutnik: Abrams' Sandmat**

SYNONYMY: *Euphorbia abramsiana* L.C. Wheeler. COMMON NAMES: Abrams Sandmat, Abrams' Sandmat, Abrams' Spurge, Abram Spurge, Golondrina, Spurge. DESCRIPTION: Terrestrial annual forb/herb (mat-forming, prostrate to erect stems); the herbage is gray-brown or dark green; the flower-like cups are white; flowering generally takes place between early August and early November (additional records: one for early January and one for mid-February). HABITAT: Within the range of this species it has been reported from mountains; mesas; rocky ridges; rocky hillsides; rocky and gravelly-sandy slopes; alluvial fans; rocky bajadas; amongst rocks; lava flows; dunes; plains; gravelly, sandy and sandy-silty flats; valley floors; sandy-silty and loamy valley bottoms; coastal dunes; coastal plains; along and in roadbeds; along rocky-sandy and gravelly roadsides; bottoms of arroyos; draws; along and in rocky, gravelly-sandy, sandy and silty washes; playas; sandy-silty depressions; sandy banks of washes; gravelly-silty edges of washes; mudflats; along sandy floodplains; clayey mesquite bosques; riparian areas; sandy banks of riparian areas, and disturbed areas growing in muddy and wet, moist and dry rocky, rocky-sandy, gravelly, gravelly-sandy and sandy ground; loam soils; clay ground, and gravelly-silty, sandy silty and silty ground, occurring from sea level to 4,500 feet in elevation in the woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTE: The stems have a milky sap. *Chamaesyce abramsiana* is native to southwest-central and southern North America. *5, 6, 15, 18 ("All euphorbias have milky white sap that is irritating on contact or toxic, if ingested, (degree of irritation or toxicity varies, depending on the species)."), 43 (020210), 46 (recorded as *Euphorbia abramsiana* L.C. Wheeler, Page 520), 63 (020210), 68 (see: Poisonous Properties of Spurges, Page 202), 77 (recorded as *Euphorbia abramsiana* L.C. Wheeler), 80 (Species of the genus *Euphorbia* are considered to be Secondary Poisonous Range Plants. "The milky juice of Spurge is considered poisonous. Plants may cause skin irritation, diarrhea, photosensitization, and cyanogenetic poisoning. Cattle, horses, sheep, and humans may be affected. The green plants are generally unpalatable but the dried plants in hay are more palatable and remain toxic. ... Poisoning may be prevented by keeping animals off areas heavily infested with spurge when other desirable feed is unavailable, and by not feeding contaminated hay. Range improvement will both reduce spurge infestations through grass competition, and decrease consumption by making more desirable forage available." See text for additional information.), **85** (020210 - color presentation of dried material), 86 ("Most members of the family (Euphorbiaceae) are poisonous, and their milky sap will irritate the membranes of the eyes and mouth.")*

***Chamaesyce arizonica* (G. Engelmann) J.C. Arthur: Arizona Sandmat**

SYNONYMY: *Euphorbia arizonica* G. Engelmann. COMMON NAMES: Arizona Euphorbia, Arizona Sandmat, Arizona Spurge, Spurge. DESCRIPTION: Terrestrial perennial forb/herb (prostrate to ascending stems 6 to 12 inches in height); the foliage is reddish or reddish-purple; the flower-like cups

have maroon glands (centers) with pink or white petaloid appendages; flowering generally takes place between mid-January and early December. HABITAT: Within the range of this species it has been reported from bouldery mountains; rocky-sandy mountaintops; bouldery-rocky cliffs; bouldery and rocky canyons; rocky and gravelly canyon bottoms; scree; gravelly bases of cliffs; bluffs; ridgetops; foothills; rocky hills; rocky hillsides; rocky slopes; amongst boulders and rocks; boulderfields; plains; gravelly and sandy flats; valley floors; roadsides; sandy arroyos; rocky bottoms of arroyos; gulches; sandy seeps; damp sand of seeping streams; along sandy streams; along and in rocky-gravelly streambeds; along and in creeks; sandy creekbeds; along rivers; riverbeds; along and in bedrock, rocky, rocky-sandy, gravelly, gravelly-sandy and sandy washes; along and in drainages; swales; banks of washes; edges of creeks and washes; sandy-clayey bars; riparian areas, and disturbed areas growing in damp and dry bouldery, bouldery-rocky, rocky, rocky-gravelly, rocky-sandy, gravelly, gravelly-sandy and sandy ground; gravelly loam ground; sandy-clayey, and bouldery silty and silty ground, occurring from 100 to 5,000 feet in elevation in the woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: The stems have a milky sap. *Chamaesyce arizonica* is native to southwest-central and southern North America. *5, 6, 18 ("All euphorbias have milky white sap that is irritating on contact or toxic, if ingested, (degree of irritation or toxicity varies, depending on the species)."), 43 (020310), 46 (recorded as *Euphorbia arizonica* Engelm., Pages 519-520), 58, 63 (020310), 68 (see: Poisonous Properties of Spurges, Page 202), 77, 80 (Species of the genus *Euphorbia* are considered to be Secondary Poisonous Range Plants. "The milky juice of Spurge is considered poisonous. Plants may cause skin irritation, diarrhea, photosensitization, and cyanogenetic poisoning. Cattle, horses, sheep, and humans may be affected. The green plants are generally unpalatable but the dried plants in hay are more palatable and remain toxic. ... Poisoning may be prevented by keeping animals off areas heavily infested with spurge when other desirable feed is unavailable, and by not feeding contaminated hay. Range improvement will both reduce spurge infestations through grass competition, and decrease consumption by making more desirable forage available." See text for additional information.), **85** (020310 - color presentation of dried material), 86 ("Most members of the family (Euphorbiaceae) are poisonous, and their milky sap will irritate the membranes of the eyes and mouth.")*

***Chamaesyce gracillima* (S. Watson) C.F. Millspaugh: Mexican Sandmat**

SYNONYMY: *Euphorbia gracillima* S. Watson. COMMON NAMES: Mexican Broomspurge, Mexican Erect, Mexican Sandmat, Mexican Skeletonspurge, Spurge. DESCRIPTION: Terrestrial annual forb/herb (ascending stems); flowering generally takes place between mid-August and early October (additional record: one for late October). HABITAT: Within the range of this species it has been reported from mountains; rocky mountainsides; mesas; rocky foothills; rocky hills; rocky hillsides; rocky and gravelly slopes; bajadas; amongst rocks; grassy plains; gravelly flats; along rocky-sandy roadsides; sandy bottoms of arroyos; along streambeds; along and in rocky-sandy washes; sandy banks of streams and rivers, and rocky margins of arroyos growing in dry rocky and stony desert pavement and rocky, rocky-sandy, stony, gravelly and sandy ground, occurring from 300 to 4,400 feet in elevation in the forest, scrub and desertscrub ecological formations. NOTES: The stems have a milky sap. *Chamaesyce gracillima* is native to southwest-central and southern North America. *5, 6, 15, 18 ("All euphorbias have milky white sap that is irritating on contact or toxic, if ingested, (degree of irritation or toxicity varies, depending on the species)."), 43 (020410), 46 (recorded as *Euphorbia gracillima* Wats., Page 519), 63 (020410), 68 (see: Poisonous Properties of Spurges, Page 202), 77 (recorded as *Euphorbia gracillima* S. Wats.), 80 (Species of the genus *Euphorbia* are considered to be Secondary Poisonous Range Plants. "The milky juice of Spurge is considered poisonous. Plants may cause skin irritation, diarrhea, photosensitization, and cyanogenetic poisoning. Cattle, horses, sheep, and humans may be affected. The green plants are generally unpalatable but the dried plants in hay are more palatable and remain toxic. ... Poisoning may be prevented by keeping animals off areas heavily infested with spurge when other desirable feed is unavailable, and by not feeding contaminated hay. Range improvement will both reduce spurge infestations through grass competition, and decrease consumption by making more desirable forage available." See text for additional information.), **85** (020410 - color presentation), 86 ("Most members of

the family (Euphorbiaceae) are poisonous, and their milky sap will irritate the membranes of the eyes and mouth.")*

***Chamaesyce hyssopifolia* (C. Linnaeus) J.K. Small: Hyssopleaf Sandmat**

SYNONYMY: *Euphorbia hyssopifolia* C. Linnaeus. COMMON NAMES: Hyssop Spurge, Hyssopleaf Euphorbia, Hyssop-leaf Sandmat, Hyssopleaf Sandmat, Hyssopleaf Spurge, Leafy Spurge. DESCRIPTION: Terrestrial annual or perennial forb/herb (prostrate to ascending stems 4 to 20 inches (4 feet?) in height); the stems are red or reddish; the leaves are green; the inconspicuous flower-like cups have pink glands with pink, white or white-pink petaloid appendages; flowering generally takes place between early July and mid-November (additional records: one for early January, one for mid-January, one for late January, one for mid-March, one for mid-April, one for early May, one for early June, one for mid-December and three for late December). HABITAT: Within the range of this species it has been reported from bouldery mountains; rocky mesas; rocky canyons; rocky canyon bottoms; pockets of soil in bedrock; ridges; rocky ridge crests; sandy-loamy meadows; rocky foothills; rocky hills; rocky hillsides; bouldery, rocky, gravelly and clayey slopes; alluvial fans; gravelly bajadas; bedrock and rocky outcrops; amongst boulders and rocks; bouldery-sandy, gravelly, sandy and clayey flats; valley floors; along railroad right-of-ways; along rocky-sandy, gravelly, gravelly-sandy-loamy and gravelly-sandy-clayey-loamy roadsides; sandy soils along and in rocky-gravelly and sandy arroyos; sandy bottoms of arroyos; gulches; gullies; ravines; seeps; springs; rocky soils along streams; along and in rocky, cobbly and gravelly-silty-loamy streambeds; in rocks along and in creeks; creekbeds; sandy-clayey soils along rivers; gravelly-sandy and sandy-clayey riverbeds; along and in rocky, stony, gravelly, gravelly-sandy, sandy and clayey washes; within drainages; along sandy drainage ways; playas; bogs; clayey swales; along sandy and silty banks of arroyos, streams, creeks, rivers and lakes; sand and sandy-clayey bars; rocky-sandy benches; rocky shelves; terraces; bottomlands; floodplains; bosques; bottoms of dry stock tanks (charcos); along and in sandy ditches; sandy-clayey ditch banks; gravelly and sandy riparian areas; waste places, and disturbed areas growing in wet, moist and dry bouldery, bouldery-sandy, rocky, rocky-gravelly, rocky-gravelly-sandy, rocky-sandy, stony, gravelly, gravelly-sandy and sandy ground; gravelly-sandy loam, gravelly-sandy-clayey loam, gravelly-silty loam and sandy loam ground, and sandy clay and clay ground, occurring from sea level to 7,700 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: EXOTIC Invasive Plant. The stems have a milky sap. *Chamaesyce hyssopifolia* is native to southeast-central (many sources report this plant as being native to areas outside of southern Florida in the continental United States) and southern North America, Central America and South America. *5, 6, 15, 16 (recorded as *Euphorbia hyssopifolia* L.), 18 ("All euphorbias have milky white sap that is irritating on contact or toxic, if ingested, (degree of irritation or toxicity varies, depending on the species)."), 43 (070509), 46 (recorded as *Euphorbia hyssopifolia* L., Page 518), 58, 63 (020410 - color presentation), 68 (recorded as *Euphorbia hyssopifolia* L. - see: Poisonous Properties of Spurges, Page 202), 77 (recorded as *Euphorbia hyssopifolia* L.), 80 (Species of the genus *Euphorbia* are considered to be Secondary Poisonous Range Plants. "The milky juice of Spurge is considered poisonous. Plants may cause skin irritation, diarrhea, photosensitization, and cyanogenetic poisoning. Cattle, horses, sheep, and humans may be affected. The green plants are generally unpalatable but the dried plants in hay are more palatable and remain toxic. ... Poisoning may be prevented by keeping animals off areas heavily infested with spurge when other desirable feed is unavailable, and by not feeding contaminated hay. Range improvement will both reduce spurge infestations through grass competition, and decrease consumption by making more desirable forage available." See text for additional information.), **85** (020410 - color presentation), 86 ("Most members of the family (Euphorbiaceae) are poisonous, and their milky sap will irritate the membranes of the eyes and mouth."), 115 (color presentation)*

***Chamaesyce melanadenia* (J. Torrey) C.F. Millspaugh: Red-gland Spurge**

SYNONYMY: *Euphorbia melanadenia* J. Torrey. COMMON NAMES: Red-gland Spurge, Spurge, Squaw Spurge, Squaw Sandmat, Spurge. DESCRIPTION: Terrestrial perennial forb/herb

(prostrate, decumbent, ascending to erect stems 2¾ to 8 inches in height); the stems may be red or reddish; the leaves are green turning reddish with age; the flower-like cups have white petaloid appendages each having a dark purple gland; flowering generally takes place between early January and mid-November. HABITAT: Within the range of this species it has been reported from mountains; sandy mesas; rocky canyons; sandy canyon bottoms; talus; along bases of cliffs; rocky and gravelly-loamy ridgetops; rocky ridgelines; foothills; rocky hills; bouldery, rocky, cobbly and sandy hillsides; bouldery-rocky, bouldery-gravelly-loamy, rocky, stony, gravelly, gravelly-loamy and sandy slopes; rocky outcrops; bases of rock outcrops; amongst boulders and rocks; gravelly-loamy and sandy flats; basins; along silty-clayey roadsides; arroyos; sandy bottoms of arroyos; springs; along streams; along creeks; in rocky and sandy creekbeds; along and in rocky, rocky-sandy, gravely and sandy washes; along and in gravelly-sandy and sandy drainages; along sandy banks of creeks, rivers and drainages; terraces; sandy bottomlands; sandy-loamy floodplains; bouldery-sandy, gravelly-sandy and sandy riparian areas, and disturbed areas growing in moist and dry bouldery, bouldery-rocky, bouldery-sandy, rocky, stony, cobbly, gravelly, gravelly-sandy, pebbly and sandy ground; bouldery-gravelly loam, rocky-sandy loam, rocky-clayey loam, gravelly loam and sandy loam ground; loamy clay and silty clay ground, and gravelly-sandy humusy ground often found amongst shrubs, occurring from 500 to 5,600 feet in elevation in the woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant was reported to have been utilized by native peoples of North America; it was noted as having been used as a drug or medication. The stems have a milky sap. *Chamaesyce melanadenia* is native to southwest-central and southern North America. *5, 6, 15, 18 ("All euphorbias have milky white sap that is irritating on contact or toxic, if ingested, (degree of irritation or toxicity varies, depending on the species)."), 43 (071910), 46 (recorded as *Euphorbia melanadenia* Torr., Page 519), 63 (071910 - color presentation), 68 (see: Poisonous Properties of Spurges, Page 202), 77, 80 (Species of the genus *Euphorbia* are considered to be Secondary Poisonous Range Plants. "The milky juice of Spurge is considered poisonous. Plants may cause skin irritation, diarrhea, photosensitization, and cyanogenetic poisoning. Cattle, horses, sheep, and humans may be affected. The green plants are generally unpalatable but the dried plants in hay are more palatable and remain toxic. ... Poisoning may be prevented by keeping animals off areas heavily infested with spurge when other desirable feed is unavailable, and by not feeding contaminated hay. Range improvement will both reduce spurge infestations through grass competition, and decrease consumption by making more desirable forage available." See text for additional information.), **85** (080110 - color presentation), 86 ("Most members of the family (Euphorbiaceae) are poisonous, and their milky sap will irritate the membranes of the eyes and mouth."), 127*

***Chamaesyce setiloba* (G. Engelmann ex J. Torrey) J.B. Norton: Yuma Sandmat**

SYNONYMY: *Euphorbia setiloba* G. Engelmann ex J. Torrey. COMMON NAMES: Bristlelobe Sandmat, Bristle-lobed Sandmat, Bristlelobe Spurge, Golondrina, Hamítom Hant Cocpétis (Seri), Fringed Spurge, Spurge, Yuma Sandmat, Yuma Spurge. DESCRIPTION: Terrestrial annual forb/herb (prostrate to ascending stems 1½ to 20 inches in height); the foliage is green, reddish or yellow-green; the flower-like cups have maroon or red glands with light pink, pink, pinkish-white, white or white-pink petaloid appendages; flowering generally takes place between mid-January and mid-May and early August and late November (additional records: three for mid-December). HABITAT: Within the range of this species it has been reported from mountains; rocky mountaintops; mountainsides; mesas; rocky and sandy canyons; bouldery and rocky canyon bottoms; rocky talus; crevices in boulders; rocky foothills; bouldery and rocky hills; rocky and shaley hillsides; bouldery-rocky, rocky, rocky-gravelly, gravelly, sandy and sandy-silty slopes; cobbly-gravelly-sandy alluvial fans; gravelly-sandy and sandy bajadas; sand dunes; sandy plains; rocky, gravelly and sandy flats; basins; valley floors; valley bottoms; coastal plains; rocky-gravelly, rocky-sandy and gravelly roadsides; within sandy arroyos; rocky, gravelly and gravelly-sandy and sandy bottoms of arroyos; gravelly draws; within rocky gullies; along creeks; rocky, gravelly-sandy and sandy riverbeds; along and in rocky-sandy, cobbly, gravelly, gravelly-sandy, sandy and clayey washes; sandy-loamy drainage ways; waterholes; saltmarshes; banks of washes; along gravelly, gravelly-silty and sandy edges of arroyos, rivers and washes; along margins of pools; mudflats; gravel bars; sandy

beaches; sandy deltas; terraces; gravelly, sandy and sandy-loamy floodplains; mesquite bosques; riparian areas, and disturbed areas growing in wet, moist and dry desert pavement; bouldery, bouldery-rocky, rocky, rocky-gravelly, rocky-sandy, shaley, cobbly, cobbly-gravelly-sandy, gravelly, gravelly-sandy and sandy ground; sandy loam and loam ground; clay ground, and gravelly silty and sandy silty ground, occurring from sea level to 5,500 feet in elevation in the woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: The stems have a milky sap. *Chamaesyce setiloba* is native to southwest-central and southern North America. *5, 6, 15, 16 (recorded as *Euphorbia setiloba* Engelm.), 18 ("All euphorbias have milky white sap that is irritating on contact or toxic, if ingested, (degree of irritation or toxicity varies, depending on the species)."), 43 (020510 - *Chamaesyce setiloba* (G. Engelmann ex J. Torrey) C.F. Millspaugh), 46 (recorded as *Euphorbia setiloba* Engelm., Page 520), 58, 63 (020510 - color presentation), 68 (see: Poisonous Properties of Spurges, Page 202), 77 (recorded as *Euphorbia setiloba* Engelm.), 80 (Species of the genus *Euphorbia* are considered to be Secondary Poisonous Range Plants. "The milky juice of Spurge is considered poisonous. Plants may cause skin irritation, diarrhea, photosensitization, and cyanogenetic poisoning. Cattle, horses, sheep, and humans may be affected. The green plants are generally unpalatable but the dried plants in hay are more palatable and remain toxic. ... Poisoning may be prevented by keeping animals off areas heavily infested with spurge when other desirable feed is unavailable, and by not feeding contaminated hay. Range improvement will both reduce spurge infestations through grass competition, and decrease consumption by making more desirable forage available." See text for additional information.), **85** (020510 - color presentation), 86 ("Most members of the family (Euphorbiaceae) are poisonous, and their milky sap will irritate the membranes of the eyes and mouth.")*

Euphorbia abramsiana (see *Chamaesyce abramsiana*)

Euphorbia arizonica (see *Chamaesyce arizonica*)

***Euphorbia eriantha* G. Bentham: Beetle Spurge**

COMMON NAMES: Beetle Spurge, Desert Poinsettia, Threaded Spurge, Woollyflower Euphorbia. DESCRIPTION: Terrestrial annual forb/herb (erect stems 6 to 40 inches in height, one plant was observed and described as being 22 inches in height with a crown 12 to 18 inches in diameter, one plant was observed and described as being 23 inches in height with a crown averaging 22 inches in diameter); the stems are green; the leaves are bronze-green, green or green tinged with red; the glands are pale light green, greenish, orange-red or reddish with or without green or white petaloid appendages; flowering generally takes place between early February and mid-May and again between early August and early January (additional record: one for mid-June). HABITAT: Within the range of this species it has been reported from mountains; mountaintops; mountainsides; rocky mesas; rocky canyons; rocky canyon bottoms; crevices in rocks; buttes; ridges; rocky ridgelines; foothills; rocky-sandy hills; rocky hilltops; rocky, stony and sandy hillsides; bouldery, rocky, rocky-gravelly and gravelly-sandy slopes; rocky-gravelly alluvial fans; sandy bajadas; rocky outcrops; sand dunes; sandy plains; rocky-sandy, gravelly and sandy flats; cobbly basin floors; valley floors; coastal dunes; sandy coastal plains; along railroad right-of-ways; along rocky-loamy, gravelly and sandy roadsides; sandy arroyos; bottoms of arroyos; runnels; within rocky streambeds; along and in rocky-sandy, gravelly, gravelly-sandy and sandy washes; within rocky drainages; banks of washes; edges of arroyos and washes; along (rocky) margins of arroyos and gullies; mudflats; strands; benches; sandy floodplains; gravelly-sandy riparian areas, and disturbed areas growing in dry desert pavement; bouldery, rocky, rocky-gravelly, rocky-sandy, stony, cobbly, gravelly, gravelly-sandy and sandy ground; rocky loam ground, and sandy clay ground, occurring from near sea level to 5,400 feet in elevation in the woodland and desertscrub ecological formations. NOTES: This plant has a milky sap. *Euphorbia eriantha* is native to southwest-central and southern North America. *5, 6, 18 ("All euphorbias have milky white sap that is irritating on contact or toxic, if ingested, (degree of irritation or toxicity varies, depending on the species)."), 28 (color photograph), 43 (070710), 46 (Page 515), 63 (070710), 68 (see: Poisonous Properties of Spurges, Page 202), 77, 80 (Species of the genus

Euphorbia are considered to be Secondary Poisonous Range Plants. "The milky juice of Spurge is considered poisonous. Plants may cause skin irritation, diarrhea, photosensitization, and cyanogenetic poisoning. Cattle, horses, sheep, and humans may be affected. The green plants are generally unpalatable but the dried plants in hay are more palatable and remain toxic. ... Poisoning may be prevented by keeping animals off areas heavily infested with spurge when other desirable feed is unavailable, and by not feeding contaminated hay. Range improvement will both reduce spurge infestations through grass competition, and decrease consumption by making more desirable forage available." See text for additional information.), **85** (082710 - color presentation), 86 ("Most members of the family (Euphorbiaceae) are poisonous, and their milky sap will irritate the membranes of the eyes and mouth.")*

Euphorbia gracillima (see *Chamaesyce gracillima*)

***Euphorbia heterophylla* C. Linnaeus: Mexican Fireplant**

COMMON NAMES: Adeus-Brazil (Portuguese), Amendoim-Bravo (Portuguese), Caca Poule (French), Café-do-diabo (Portuguese), Catalina, Fiddler's Spurge, Flor-do-poeta (Portuguese), Japanese Poinsettia, Hierba de Lec (Spanish), Leiteira (Portuguese), Mexican Fireplant, Mexican-fireplant, Milkweed, Painted Euphorbia, Painted Spurge, Paintedleaf, Picachalih, Summer Poinsettia, Wild Poinsettia. DESCRIPTION: Terrestrial annual or perennial forb/herb (ascending stems 8 inches to 5 feet in height); the stems are green; the leaves are green; the flowers are cream, light green, green, white or white & green; the glands are yellow without petaloid appendages; the floral bracts (below the flowering cluster) may be partly colored light green, pink, red, white or yellow; the inconspicuous flowers may be cream, green or white; flowering generally takes place between early August and late October (additional records: one for early January, one for mid-January, one for mid-March and two for mid-July); the ripe fruits are reddish. HABITAT: Within the range of this species it has been reported from rocky mountains; mountainsides; rocky canyons; sandy canyon bottoms; ridges; bouldery-rocky and sandy-clayey meadows; foothills; hillsides; rocky, gravelly, sandy-clayey and clayey slopes; along rocky outcrops; amongst rocks and cobbles, bases of rocks; grassy plain; gravelly and clayey flats; valley floors; along roadsides; within sandy arroyos; bottoms of arroyos; gulches; ravines; along streams; cobbly and sandy streambeds; along creeks; sandy creekbeds; along and in washes; within drainage ways; cienegas; marshes; sandy banks of rivers and washes; edges of washes; margins of arroyos; terraces; bottomlands; floodplains; mesquite bosques; ditches; grassy riparian areas, and disturbed areas growing in wet, moist and dry bouldery-rocky, rocky, stony, cobbly, gravelly and sandy ground and sandy clay and clay ground, occurring from sea level to 7,600 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. This plant has a milky sap. *Euphorbia heterophylla* is native to south-central and southern North America; Central America, and South America; however, the exact native range in the neotropics is obscure. *5, 6, 15, 16, 18 ("All euphorbias have milky white sap that is irritating on contact or toxic, if ingested, (degree of irritation or toxicity varies, depending on the species)."), 43 (070709), 46, 58, 63 (020510 - color presentation), 68 (see: Poisonous Properties of Spurges, Page 202), 77, 80 (Species of the genus *Euphorbia* are considered to be Secondary Poisonous Range Plants. "The milky juice of Spurge is considered poisonous. Plants may cause skin irritation, diarrhea, photosensitization, and cyanogenetic poisoning. Cattle, horses, sheep, and humans may be affected. The green plants are generally unpalatable but the dried plants in hay are more palatable and remain toxic. ... Poisoning may be prevented by keeping animals off areas heavily infested with spurge when other desirable feed is unavailable, and by not feeding contaminated hay. Range improvement will both reduce spurge infestations through grass competition, and decrease consumption by making more desirable forage available." See text for additional information.), **85** (020510 - color presentation), 86 ("Most members of the family (Euphorbiaceae) are poisonous, and their milky sap will irritate the membranes of the eyes and mouth.")*

Euphorbia hyssopifolia (see *Chamaesyce hyssopifolia*)

Euphorbia melanadenia (see *Chamaesyce melanadenia*)

Euphorbia setiloba (see *Chamaesyce setiloba*)

***Jatropha cardiophylla* (J. Torrey) J. Müller Argoviensis: Sangre de Cristo**

COMMON NAMES: Limberbush, Matacora, Nettlespurge, Sangre de Cristo, Sangre-de-Cristo, Sangre-de-drago, Sangregrado, Sangrengado, Sangringada, Torote. DESCRIPTION: Terrestrial perennial deciduous, semi-succulent shrub (1 to 7 feet in height); the flexible stems are basally branches; the bark is reddish; the leaves shiny green; the small bell-shaped flowers may be cream-white, pink, white or yellow; flowering generally takes place between mid-July and late September. HABITAT: Within the range of this species it has been reported from mountains; mesas; rocky canyons; canyon bottoms; foothills; rocky hills; rocky hillsides; rocky slopes; rocky and gravelly bajadas; boulderfields; gravelly plains; gravelly-sandy flats; basins; valley floors; rocky roadsides; within sandy arroyos; bottoms of arroyos; cobbly and cobbly-gravelly-loamy draws; along and in sandy washes; margins of washes; floodplains; riparian areas, and disturbed areas growing in dry bouldery, rocky, cobbly, gravelly, gravelly-sandy and sandy ground and cobbly-gravelly loam and gravelly loam ground, occurring from 100 to 4,800 feet in elevation in the scrub, grassland and desertscrub ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. This plant was reported to have been utilized by native peoples of North America and could be investigated to determine its value as a home garden or commercial fiber crop for use in making baskets. The shiny heart-shaped emerald green leaves appear around the time of the first rains and then provide color when the leaves turn gold in the fall. *Jatropha cardiophylla* is native to southwest-central and southern North America. *5, 6, 13 (color photograph), 15, 16, 43 (020510), 45 (color photograph), 46 (Page 509), 48, 58, 63 (020510), 77, 80 (Species of the genus *Jatropha* are considered to be Rarely Poisonous and Suspected Poisonous Range Plants. "Seeds of several species of *Jatropha* are toxic to humans and livestock but no poisoning has been reported from Arizona."), 85 (020510 - color presentation), 91, 115 (color presentation), 127, **HR***

***Tragia nepetifolia* A.J. Cavanilles: Catnip Noseburn**

COMMON NAMES: Catnip Noseburn, Noseburn, Ortiguilla (Hispanic), Ra´oke (Purépecha), Ra´uli (Purépecha). DESCRIPTION: Terrestrial perennial forb/herb (6 to 18 inches in height); the foliage is reddish; the flowers are maroon, reddish or yellow; flowering generally takes place between early March and mid-December. HABITAT: Within the range of this species it has been reported from mountains; forested mountainsides; mesas; rocky cliffs; along rocky canyons; canyon walls; sandy canyon bottoms; talus slopes; crevices; rocky buttes; ridge crests; clearings in forests; foothills; hills; rocky hillsides; rocky, cobbly-gravelly-loamy, gravelly and sandy slopes; gravelly bajadas; bases of rock outcrops; amongst boulders, rocks and cobbles; lava beds; rocky flats; valley floors; along rocky and rocky-gravelly-sandy-clayey-loamy roadsides; along and in arroyos; along rocky ravines; along rocky and rocky-gravelly streams; streambeds; along creeks; creekbeds; along and in gravelly and sandy washes; drainages; along in drainage ways; rocky banks of washes; edges of washes; around lakes; benches; terraces; riparian areas, and disturbed areas growing in dry rocky desert pavement; bouldery, rocky, rocky-gravelly, rocky-sandy, stony, cobbly, gravelly and sandy ground and rocky-gravelly-sandy-clayey loam, cobbly-gravelly loam, gravelly loam, gravelly-clayey loam and sandy loam ground, occurring from 100 to 9,000 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant was reported to have been utilized by native peoples of North America; it was noted as having been used as a drug or medication. This vining or semi-vining herb has stinging hairs on the leaves; Richard S. Felger (SEINet record 02 Dec 2000) reported that the pain, from the mildly stinging hairs of variety *dissecta*, lasted for about 10 minutes. *Tragia nepetifolia* is native to southwest-central and southern North America. *5, 6, 15, 16, 30, 43 (020610), 46 (Page 508), 58, 63 (020610), 77, **85** (020610 - color presentation of dried material), 127*

Fabaceae (Leguminosae): The Pea Family

***Acacia constricta* G. Bentham: Whitethorn Acacia**

SYNONYMY: *Vachellia constricta* (G. Bentham) D.S. Seigler & J.E. Ebinger. COMMON NAMES: All-thorn Acacia, Chaparo Prieta, Chaparro Prieto, Common Whitethorn, Garabato, Gidag (Tohono O'odham), Gigantillo, Huisache, Largoncillo, Mescat Acacia, Twinthorn Acacia, Vara Prieta, Vinorama, Whitethorn Acacia, White Thorn, Yellow Cat Claw. DESCRIPTION: Terrestrial perennial deciduous (drought and cold) shrub or tree (1 to 20 feet in height with crowns to about the same in width, one plant was described as being 8 feet in height with a crown 8 feet in width); the bark may be light gray, mahogany or nearly black; the stems may be red; the spines on the branches and stems are gray or white; the small pinnate leaves are green; the small flowers have been described as being golden, golden-yellow, orange-yellow, light yellow, yellow or yellowish-orange; flowering generally takes place between late March and late October (additional records: two for early March and one for late December); the seedpods are brown, purple-red, reddish or rusty-brown. HABITAT: Within the range of this species it has been reported from mountains; mesas; cliffs; canyons; canyon sides; sandy canyon bottoms; sandy ridges; foothills; rocky and gravelly hills; bouldery hilltops; rocky and gravelly hillsides; escarpments; rocky, rocky-clayey-loamy and clayey-loamy slopes; gravelly bajadas; rocky outcrops; amongst boulders; sandy-loamy plains; gravelly flats; valley floors; coastal plains; along rocky, rocky-gravelly-loamy, rocky-gravelly-clayey loam, rocky-clayey-loamy, gravelly, gravelly-sandy, gravelly-sandy-loamy, gravelly-sandy-clayey-loamy, gravelly-loamy, gravelly-clayey loam and sandy roadsides; along and in rocky arroyos; bottoms of arroyos; rocky gulches; along streambeds; creeks; along and in sandy creekbeds; rivers; along and in gravelly, gravelly-sandy, sandy and silty-clayey washes; drainages; swales; along gravelly-sandy and sandy banks of streams, creeks, rivers and washes; along edges of washes; rocky margins of arroyos and washes; mudflats; benches; alluvial terraces; sandy bottomlands; floodplains; mesquite bosques; riparian areas, and disturbed areas growing in dry bouldery, rocky, rocky-sandy, gravelly, gravelly-sandy and sandy ground; rocky-gravelly loam, rocky-gravelly-clayey loam, rocky-clayey loam, gravelly loam, gravelly-sandy loam, gravelly-sandy-clayey loam, gravelly-clayey loam, sandy loam, sandy-clayey loam, clayey loam and loam ground, and silty clay ground, occurring from 1,100 to 6,500 feet (infrequently as low as 500 feet and as high as 9,200 feet) in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat, plants may live to be more than 72 years of age and the flowers may be fragrant. Whitethorn Acacia is used for food (but not extensively) by the Desert Mule Deer (*Odocoileus hemionus*) and Scaled Quail (*Callipepla squamata*), Merriam's Kangaroo Rats (*Dipodomys merriami*), Bailey's Pocket Mice (*Chaetodipus baileyi*) and Rock Pocket Mice (*Chaetodipus intermedius*) as well as a variety of other birds and mammals feed on the seeds. *Acacia constricta* is native to southwest-central and southern North America. *5, 6, 13 (color photograph), 15, 16, 18, 26 (color photograph), 28 (color photograph), 43 (080409), 46 (Page 399), 48, 53 (note under *Acacia farnesiana*), 63 (020710 - color presentation), 68, 77, 80 (This species is listed as a Major Poisonous Range Plant. "The plants are high in cyanide forming-compounds and have been reported to cause death of cattle in Arizona. In general, the plants are not palatable to livestock although the pods are grazed. However, in the fall of the year at or near frost time, when the range grasses become less palatable, cattle may eat heavily of these plants and death is likely to result. ... Animals should be removed from heavily infested areas during the early frost period or considerable death losses may occur." See text for additional information.), 85 (020710 - color presentation), 91, 115 (color presentation), 134, **HR***

***Acacia greggii* A. Gray var. *greggii*: Catclaw Acacia**

SYNONYMY: *Acacia greggii* A. Gray var. *arizonica* D. Isely. COMMON NAMES: Acacia, Algarroba, Arizona Acacia (applied to var. *greggii*), Cat Claw, Cat Claw Acacia, Catclaw, Catclaw Acacia, Cat's-claw, Devil's Catclaw, Devil's Claw, Devil's-claw, Devilsclaw, Di:s (Seri), Gatuno, Gregg Catclaw, Gregg's Acacia, Tearblanket, Tepame, Tesota, Texas Catclaw, Texas Mimosa, Una de Gato, Wait-a-

minute, Wait-a-minute Bush. DESCRIPTION: Terrestrial perennial winter-deciduous shrub or tree (40 inches to 25 feet in height with a broad crown); the bark is gray-black or red-brown; the leaves are gray-green or green; the flowers may be cream, cream-white, cream-yellow, green, greenish-yellow, lemon-yellow, white, yellow, yellow-cream or yellow-green in catkins; flowering generally takes place between early March and mid-July (additional record: one for mid-October); the mature fruits (straight or twisted pods) are brown or brownish-red. HABITAT: Within the range of this species it has been reported from mountains; mountainsides; mesas; canyons; rocky and sandy canyon bottoms; rocky bluffs; rocky and sandy ridges; ridgetops; hillsides; rocky, rocky-clayey-loamy, sandy and loamy slopes; amongst boulders; alluvial fans; sandy flats; valley floors; gravelly-sandy-clayey-loamy and sandy roadsides; sandy edges of arroyos; draws; ravines; along streams; along creeks; along rivers; along gravelly and sandy washes; within drainages; along banks of rivers and washes; along edges of washes; margins of arroyos; floodplains; mesquite bosques, and riparian areas growing in dry bouldery, rocky, rocky-sandy, gravelly, gravelly-sandy and sandy ground; rocky-gravelly loam, rocky-clayey loam, gravelly-sandy-clayey loam, sandy loam and clayey loam ground, and gravelly clay ground, occurring from slightly above sea level to 5,300 feet in elevation in the woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat; the flowers are fragrant, it may live to be up to 120 years of age. The species, *Acacia greggii*, was reported to have been utilized by native peoples of North America and could be investigated to determine its value as a home garden or commercial food, fodder and/or fiber crop; it was also noted as having been used as a fuel, tool and for making perfumed sachets. Catclaw Acacia provides food, shelter, protection, shade, nesting sites, roosting sites and nesting material to a wide variety of species of wildlife. *Acacia greggii* var. *greggii* is native to southwest-central and southern North America. *5, 6, 13 (color photograph of species, species), 16 (recorded as *Acacia greggii* Gray var. *arizonica* Isely), 18 (species), 26 (species, color photograph of species), 28 (species, color photograph of species), 43 (020710), 46 (species, "This is probably the most heartily disliked plant in the state, the sharp, strong prickles tearing the clothes and lacerating the flesh."), 48 (species - "A good honey plant but a poisonous weed on range lands.", Page 398), 52 (species) 53, (species), 63 (020710), 80 (The species is listed as a Secondary Poisonous Range Plant. "Plants contain cyanide-forming compounds and symptoms are typical of cyanide poisoning. The new foliage is relished by cattle in the early spring. It also may be grazed considerably during dry seasons or drouth periods when other feed is short. Plants are most dangerous in the fall during first frosts. Cattle are most often poisoned, but losses in Arizona are not heavy. Poisoning may be prevented by deferring heavily infested areas during the early frost periods." See text for additional information.), 85 (020710), 91 (species), 115 (color presentation of the species), 127 (species), **HR***

Acacia greggii var. *arizonica* (see *Acacia greggii* var. *greggii*)

***Astragalus arizonicus* A. Gray: Arizona Milkvetch**

COMMON NAMES: Arizona Locoweed, Arizona Milkvetch, Locoweed. DESCRIPTION: Terrestrial perennial forb/herb (prostrate stems 3 to 10 inches in height and 10 to 18 inches in length); the foliage is gray-green, grayish, silvery, silvery-gray or silvery-gray-green; the flowers may be blue, blue-purple, blue-white-cream, blue & cream, pale lavender-blue, lavender & white, magenta-violet, pink-purple, pale purple, purple, dark purple, dingy-purple, purplish, purple-blue, red-purple, reddish-purple, red-violet fading to blue, violet fading to blue, dark violet, white with blue margins, white & pink, bright yellow or yellowish with lavender tips; flowering generally takes place between late February and mid-June (additional records: one for late July and one for late August). HABITAT: Within the range of this species it has been reported from mountains; mesas; canyons; sandy canyon bottoms; ridges; foothills; gravelly hills; hillsides; bouldery, rocky, rocky-sandy and gravelly slopes; bajadas; rocky outcrops; banks; plains; flats; railroad right-of-ways; along rocky, gravelly and sandy roadsides; sandy arroyos; along streams; along stony, gravelly-sandy and sandy washes; along gravelly-sandy banks of streams; benches; bottomlands; sandy-clayey lowlands; riparian areas, and disturbed areas growing in dry bouldery, rocky, rocky-sandy, stony, gravelly, gravelly-sandy and sandy ground; gravelly-sandy loam ground, and sandy

clay and clay ground, occurring from 1,100 to 7,000 feet in elevation in the woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTE: *Astragalus arizonicus* is native to south-central and southern North America. *5, 6, 15, 43 (081610), 46 (this plant probably causes loco disease, but this has not been experimentally proven, Page 468), 58, 63 (011407), 63 (081610 - color presentation of seed), 77, **85** (081610 - color presentation)*

***Astragalus nuttallianus* A.P. de Candolle: Smallflowered Milkvetch**

COMMON NAMES: Locoweed, Nuttall Locoweed, Nuttall Milkvetch, Small-flowered Milkvetch, Smallflowered Milkvetch, Texas-pea, Turkeypeas. DESCRIPTION: Terrestrial annual or perennial forb/herb (2 to 4 inches in height with stems 1½ to 21 inches in length, one plant was described as being 4 inches in height and 12 inches in width, plants were described as being 4 inches in height and 16 inches in width); the foliage is grayish; the flowers may be pale blue, blue, pale bluish, blue-indigo, blue-lavender, blue & purple, blue-violet, blue-white, cream-bluish, pale lavender, lavender, lavender & white, maroon-lavender; pink, light purple, purple, purple-blue, purple & white, red-violet, pale violet, white, white tinged with lavender, white tinged with purple or whitish; flowering generally takes place between late January and early July (additional records: one for early January, one for late January, one for early August, one for mid-August, two for early October, one for mid-October, three for late October and one for late November). HABITAT: Within the range of this species it has been reported from mountains; rocky mountainsides; volcanic cones; rocky and gravelly mesas; plateaus; rock cliffs; along canyon rims; along rocky canyons; gravelly and sandy canyon bottoms; talus slopes; bases of cliffs; chalky bluffs; knolls; rocky ledges; rocky ridges; foothills; rocky, stony-gravelly and rocky-clayey hills; rocky and sandy hillsides; rocky, rocky-gravelly, rocky-clayey, gravelly, sandy and sandy-clayey slopes; alluvial fans; gravelly bajadas; rocky outcrops; amongst boulders and rocks; sandy lava flows; lava fields; sand hills; sand dunes; sandy and sandy-silty plains; rocky, cindery, gravelly, sandy-clayey and sandy-clayey-loamy flats; basins; valley floors; along sandy railroad right-of-ways; along rocky, gravelly, gravelly-sandy, gravelly-loamy, gravelly-clayey-loamy, sandy and sandy-silty roadsides; rocky, gravelly and sandy arroyos; gravelly bottoms of arroyos; bottoms of draws; gulches; along streams; streambeds; along creeks; along and in gravelly and gravelly-sandy creekbeds; along rivers; riverbeds; along and in rocky, rocky-sandy, gravelly, gravelly-sandy and sandy washes; sandy drainage ways; silty lakebeds; sandy depressions; sandy-clayey swales; sandy and silty-loamy banks of creeks and rivers; gravel bars; gravelly and sandy beaches; rocky and sandy benches; shorelines; rocky shelves; terraces; sandy bottomlands; sandy floodplains; clayey ditches; gravelly-sandy and sandy riparian areas; waste places, and sandy disturbed areas growing in dry desert pavement; bouldery, bouldery-gravelly, rocky, rocky-gravelly, stony, stony-gravelly, cindery, gravelly, gravelly-sandy and sandy ground; rocky-gravelly loam, rocky-sandy loam, gravelly loam, gravelly-clay loam, sandy loam, sandy-clay loam, silty loam, humusy loam and loam ground; rocky clay, sandy clay and clay ground; and gravelly-sandy silty and sandy silty ground, and chalky ground, occurring from sea level to 9,000 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTE: *Astragalus nuttallianus* is native to south-central and southern North America. *5, 6, 16, 43 (070709), 46 (Page 468), 58, 63 (020810 - color presentation), 68, **85** (020810 - color presentation)*

***Calliandra eriophylla* G. Bentham: Fairyduster**

SYNONYMY: *Calliandra eriophylla* G. Bentham var. *eriophylla*. COMMON NAMES: Cabelleto de Angel, Cabeza Angel, Desert Fairy-duster, Fairy Duster, Fairy-duster, Fairyduster, False Mesquite, False Mesquite Calliandra, Guajillo, Hairy-leaved Calliandra, Huajillo, Mesquitella (Spanish), Mesquitilla, Mock Mesquite. DESCRIPTION: Terrestrial perennial deciduous subshrub or shrub (4 inches to 5 feet in height, one plant was described as being 40 inches in height with a crown 80 inches in width); the stems are bluish, light gray, whitish or white-gray; the leaves may be leaves grayish, dark green or red; the flowers are cream-white, pink, pink-red, pink-white, purple, red, red and white, reddish-purple, rose or violet-red; flowering generally takes place between early February and mid-June (additional records: two for mid-January, four for mid-August, two for late August, one for early

September, one for mid-September, one for early October, three for mid-October, four for late October, two for early November, one for mid-November, two for late November, one for early December, one for mid-December and two for late December). HABITAT: Within the range of this species it has been reported from mountains; rocky peaks; mesas; plateaus; rocky canyons; along canyon bottoms; buttes; knolls; sandy ridges; rocky ridgetops; rocky, shaley-sandy and gravelly-clayey-loamy foothills; rocky hills; hilltops; rocky hillsides; along bedrock, bouldery, rocky, rocky-clayey, gravelly and gravelly-sandy-loamy slopes; gravelly bajadas; rocky outcrops; amongst boulders and rocks; boulderfields; interior dunes; plains; rocky, gravelly and sandy flats; basins; valley floors; along rocky and sandy roadsides; along rocky-sandy arroyos; within gullies; around seeps; around springs; around seeping streams; along and in gravelly and sandy washes; within bouldery drainage ways; along water courses; rocky banks of arroyos and lakes; edges of washes and drainage ways; shores of lakes; gravelly terraces; ditches; riparian areas, and disturbed areas growing in dry desert pavement; bouldery, rocky, rocky-sandy, shaley-sandy, gravelly and sandy ground; pebbly-clayey loam, gravelly-sandy loam, gravelly-clayey loam and sandy loam ground, and rocky clay ground, occurring from sea level to 6,900 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat, and is a soil binder. This plant was reported to have been utilized by native peoples of North America; it was noted as having been used as a drug or medication. Fairy Duster is browsed by wildlife and found to be highly palatable by Mule Deer (*Odocoileus hemionus*) and White-tailed Deer (*Odocoileus virginianus*), and hummingbirds have been observed visiting the flowers. *Calliandra eriophylla* is native to southwest-central and southern North America. *5, 6, 13, 15, 16, 18, 28 (color photograph), 43 (080409), 46 (Page 397), 48, 58, 63 (020910 - color presentation), 77 (color photograph #32), 85 (020910 - color presentation), 86 (color photograph), 91, 115 (color presentation), 127, **HR***

Calliandra eriophylla var. *eriophylla* (see *Calliandra eriophylla*)

Cassia bauhinioides (see *Senna bauhinioides*)

Cassia bauhinioides var. *arizonica* (see *Senna bauhinioides*)

Cassia covesii (see *Senna covesii*)

Cercidium floridum (see *Parkinsonia florida*)

Cercidium floridum subsp. *floridum* (see *Parkinsonia florida*)

Cercidium microphyllum (see *Parkinsonia microphylla*)

***Dalea pogonathera* A. Gray (var. *pogonathera* is the variety reported as occurring in Arizona): Bearded Prairie Clover**

COMMON NAMES: Bearded Dalea, Bearded Pogonanthera, Bearded Prairie Clover, Herba del Corazon, Heirba del Corazo, Pea-bush. DESCRIPTION: Terrestrial perennial forb/herb (8 inches to 2 feet in height); the flowers (a spike 2 to 4 inches in length) may be pale blue-lavender, bluish-purple, brown, lavender, pink, light purple, purple, violet, white or yellow; flowering generally takes place between mid-March and mid-October (additional records: one for mid-February, one for early November and one for early December). HABITAT: Within the range of this species it has been reported from mountains; mesas; canyons; stony talus; rocky ridges; foothills; rocky and gravelly hills; rocky, rocky-gravelly and rocky-sandy hillsides; bedrock, rocky, rocky-sandy-clayey, stony-clayey, gravelly and gravelly-sandy slopes; bajadas; rocky and gravelly piedmonts; rocky outcrops; amongst rocks; rocky flats; rocky valley floors; along bouldery-rocky, rocky-gravelly, rocky-gravelly-loamy, rocky-gravelly-clayey-loamy, gravelly, gravelly-sandy, gravelly-sandy-loamy, gravelly-loamy, gravelly-clayey, gravelly-clayey-

loamy and sandy roadsides; arroyos; rocky draw; rocky gullies; rocky-gravelly streambeds; along creeks; washes; drainages; edges of gullies; terraces; floodplains, and disturbed areas growing in dry rocky desert pavement; bouldery-rocky, rocky, rocky-gravelly, rocky-sandy, stony, gravelly, gravelly-sandy and sandy ground; rocky-gravelly loam, rocky-gravelly-clayey loam, gravelly-sandy loam, gravelly loam and gravelly-clayey loam ground; rocky-sandy clay, stony clay and gravelly clay ground, and sandy silty ground, occurring from 300 to 8,000 feet in elevation in the forest, woodland, grassland and desertscrub ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. *Dalea pogonathera* is native to southwest-central and southern North America. *5, 6, 15, 18 (genus), 43 (020910), 46 (Page 438), 58, 63 (020910 - color presentation), 77, **85** (020910 - color presentation of dried material)*

***Desmodium procumbens* (P. Miller) A.S. Hitchcock: Western Trailing Ticktrefoil**

COMMON NAMES: Beggar Ticks, Tick Clover, Western Trailing Ticktrefoil. DESCRIPTION: Terrestrial annual forb/herb (sprawling or twining with prostrate, decumbent or erect stems to 2 feet in height); the flowers may be pale blue, pale bluish-green, bluish-purple, cream-white, green & white, pale lavender, lavender, light pink, pink, pink-purple, pinkish-purple, purple, rose-pink, rose-violet, white, pale yellowish-cream or yellowish; based on few records located, flowering generally takes place between late August and late November (additional records: one for mid-March, one for mid-May, one for mid-June, one for mid-July, two for early August and one for late December). HABITAT: Within the range of this species it has been reported from mountains; gravelly mesas; rocky canyons; along gravelly-sandy canyon bottoms; bases of cliffs; ridges; rocky hills; rocky hilltops; rocky-gravelly-clayey hillsides; rocky, rocky-loamy and gravelly slopes; rocky outcrops; amongst boulders; llanos; cobbly plains; bouldery valley floors; along roadsides; within arroyos; bottoms of arroyos; ravines; along and in sandy washes; drainages; bases of waterfalls; depressions; sandy and silty banks of arroyos, creeks and rivers; sandy margins of watercourses; rocky shelves; gravelly, gravelly-sandy and sandy riparian areas, and disturbed areas growing in dry bouldery, rocky, cobbly, gravelly, gravelly-sandy and sandy ground; rocky loam ground; rocky-gravelly-clayey ground, and silty ground, occurring from sea level to 6,600 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTE: *Desmodium procumbens* is native to southwest-central and southern North America; Central America and coastal islands, and northern South America. *5, 6, 43 (080210), 46 (Page 475), 63 (080210), **85** (080210 - color presentation of dried material)*

***Galactia wrightii* A. Gray: Wright's Milkpea**

COMMON NAMES: Cliff Bean, Wright Milkpea, Wright's Milkpea. DESCRIPTION: Terrestrial perennial forb/herb or vine (prostrate, climbing, scrambling, trailing or twining stems 20 inches to 2 feet in height); the leaves are dark green above and gray-green below; the flowers may be pale blue, cream-yellow, greenish-yellow, light lavender & yellowish-cream, lavender, lavender-purple, magenta-rose, pink, pink-lavender, pink & white, pink with yellow markings, pale purple, purple, purplish, purplish-pink, red-purple, rose, rose-pink, rose-purple, white, yellow-orange and yellow-purple; flowering generally takes place between early June and late October (additional records: one for late January, one for mid-February and one for late April). HABITAT: Within the range of this species it has been reported from mountains; rocky mesas; cliffsides; rocky canyons; along rocky canyon bottoms; bases of cliffs; crevices in boulders; stony ledges; along rocky ridges; rocky ridgetops; rocky crests of ridges; rocky-sandy meadows; rocky hilltops; rocky, rocky-gravelly-loamy and rocky-clayey hillsides; bouldery-rocky, rocky, rocky-gravelly, rocky-silty, shaley, stony and clayey-loamy slopes; rocky-sandy bases of slopes; rocky outcrops; amongst boulders and rocks; along rocky banks; plains; open flats; rocky-gravelly-loamy and gravelly roadsides; bottoms of ravines; along and in streams; in rocky streambeds; along creeks; along and in rocky washes; along and in drainages; bouldery-cobbly-sandy and rocky banks of gullies, creeks, rivers and drainages, and riparian areas growing in moist and dry bouldery, bouldery-rocky, bouldery-cobbly-sandy, rocky, rocky-gravelly, rocky-sandy, shaley and gravelly ground; rocky-gravelly loam, gravelly-sandy-clayey loam and clayey loam ground; rocky clay ground, rocky-silty and sandy silty

ground, occurring from 100 to 7,600 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTE: *Galactia wrightii* is native to southwest-central and southern North America. *5, 6, 15, 43 (071910), 46 (Page 480), 58, 63 (071910), 77, **85** (080210 - color presentation of dried material)*

Hoffmanseggia densiflora (see footnote 46 under *Hoffmannseggia glauca*)

Hoffmannseggia densiflora (see *Hoffmannseggia glauca*)

***Hoffmannseggia glauca* (C. Gómez de Ortega) I.J. Eifert: Indian Rushpea**

SYNONYMY: *Hoffmannseggia* (alternate spelling: *Hoffmanseggia*) *densiflora* G. Bentham. COMMON NAMES: Camote de Raton (Mouse's Sweet Potato), Camote-de-raton, Hog Potato, Hog-potato, Hogpotato, Indian-potato, Indian Rush-pea, Indian Rushpea, Mesquite Weed, Pignut, Shoe String Weed, Shoestring Weed, Sicklepod Rushpea, Shahd (Pima). DESCRIPTION: Terrestrial perennial forb/herb or subshrub (4 to 12 inches in height, one "patch" was described as being 20 feet in diameter); the flowers may be golden-yellow, maroon & orange, orange, orange & red, orangish-red, orange-yellow, orangish-yellow, reddish-orange, yellow, dull yellow, dark yellow, yellow-orange, yellow & orange or yellow & red, the anthers may be purple or red; flowering generally takes place between late February and mid-November. HABITAT: Within the range of this species it has been reported from mountains; clayey mesas; canyons; ridges; foothills; rocky-gravelly-loamy hills; gravelly-loamy hillsides; rocky-clayey and sandy-loamy slopes; sandy lava flows; sandy lava beds; clayey breaks; sandy prairies; sandy-loamy plains; sandy and clayey flats; basin bottoms; sandy and clayey valley floors; railroad right-of-ways; cobbly-loamy roadbeds; along rocky, rocky-gravelly-loamy, gravelly, gravelly-sandy, gravelly-sandy-loamy, gravelly-sandy-clayey-loamy, gravelly-sandy-silty, gravelly-loamy, gravelly-clayey, gravelly-clayey-loamy, sandy, sandy-loamy, clayey and clayey-loamy roadsides; arroyos; draws; creekbeds; along and in sandy and clayey-loamy washes; drainages; sandy dry lakes; lakebeds; sandy and clayey playas; cienegas; swamps; sandy-silty depressions; grassy swales; along sandy edges of lakes, marshes and swales; alluvial terraces; channel bars; floodplains; mesquite bosques; stock tanks; silty ditches; ditch banks; clayey riparian areas; waste places, and disturbed areas growing in moist and dry rocky, gravelly, gravelly-sandy and sandy ground; rocky-gravelly loam, cobbly loam, gravelly-loam, gravelly-sandy loam, gravelly-sandy-clayey loam, gravelly-clayey loam, sandy loam and clayey loam ground; rocky clay, gravelly clay and clay ground, and gravelly-sandy silty, sandy silty and silty ground, occurring from areas located below sea level to 7,600 feet in elevation in the forest, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. This plant was reported to have been utilized by native peoples of North America and could be investigated to determine its value as a home garden or commercial food crop. The Indian Rushpea provides food for quail and Whitetail Deer (*Odocoileus virginianus couesi*). *Hoffmannseggia glauca* is native to southwest-central and southern North America and western and southern South America. *5, 6, 16, 43 (021010), 46 (*Hoffmanseggia densiflora* Benth., Pages 408-409), 63 (021010), 68, 77, **85** (021010 - color presentation), 86 (color photograph), 101 (color photograph), 115 (color presentation), 127*

Hosackia brachycarpa (see *Lotus humistratus*)

Hosackia rigida (see *Lotus rigidus*)

Hosackia tomentella (see *Lotus strigosus* var. *tomentellus*)

***Lotus humistratus* E.L. Greene: Foothill Deervetch**

SYNONYMY: *Hosackia brachycarpa* G. Bentham. COMMON NAMES: Bird's Foot Lotus, Colchita, Deer Vetch, Deer-vetch, Foothill Deervetch, Hill Deervetch, Hill Lotus, Foothill Deervetch,

Maresfat, Short Podded Lotus. DESCRIPTION: Terrestrial annual forb/herb (4 to 18 inches in height or length); the leaves are gray-green or green; the small flowers are orange, orange-yellow, yellow, yellow-orange , yellow & orange-red and yellow & red; flowering generally takes place between late January and mid-June (additional records: one for late August and one for early October); the mature pods are brown. HABITAT: Within the range of this species it has been reported from mountains; mountaintops; sandy mesas; plateaus; cliffs; rocky, rocky-gravelly and stony canyons; sandy-loamy canyon bottoms; scree; bluffs; rocky and clayey-loamy ridges; rocky and clayey ridgetops; ridgelines; rocky-sandy meadows; foothills; bases of foothills; bedrock, rocky and clayey hills; clayey hilltops; rocky, rocky-gravelly-loamy, rocky-pebbly-sandy-silty, stony, cobbly-sandy-loamy, gravelly and clayey hillsides; rocky, rocky-gravelly, rocky-sandy, rocky-clayey-loamy, cobbly-sandy-loamy, gravelly, clayey and clayey-loamy slopes; rocky-sandy and sandy alluvial fans; gravelly bajadas; rocky outcrops; amongst rocks; clay lenses; plains; rocky-sandy, gravelly, gravelly-sandy, sandy and clayey flats; benchlands; clayey basins; gravelly-sandy-loamy, sandy and clayey valley floors; along rocky, gravelly and silty roadsides; along and in rocky and sandy arroyos; bottoms of arroyos; within draws; gulches; gullies; along seeping washes; springs; along streams; sandy soils along creeks; bouldery-rocky, stony, cobbly, gravelly, gravelly-sandy and sandy creekbeds; sandy soils along rivers; sandy riverbeds; along and in gravelly, gravelly-sandy, gravelly-loamy, sandy and clayey washes; within drainage ways; along rocky-silty, gravelly-loamy and sandy banks of streams, streambeds, rivers and washes; gravel bars; clayey benches; terraces; sandy and loamy bottomlands; cobbly-sandy and sandy floodplains; along canals; gravelly-sandy and sandy riparian areas, and disturbed areas growing in wet and dry bouldery-rocky, rocky, rocky-gravelly, rocky-sandy, cobbly, cobbly-sandy, gravelly, gravelly-sandy and sandy ground; rocky-gravelly loam, rocky-sandy loam, rocky-clayey loam, cobbly-sandy loam, gravelly-sandy loam, gravelly-clayey loam, sandy loam, clayey loam and loam ground; clay ground, and rocky-pebbly-sandy silty, rocky-silty and silty ground, occurring from sea level to 6,000 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant was reported to have been utilized by native peoples of North America; it was noted as having been used as a drug or medication. *Lotus humistratus* is native to southwest-central and southern North America. *5, 6, 15, 16, 43 (071009), 46 (Page 427), 48 (genus), 58, 63 (021010 - color presentation of seeds), 77, **85** (021010 - color presentation), 86 (color photograph), 115 (color presentation), 127*

***Lotus rigidus* (G. Bentham) E.L. Greene: Shrubby Deervetch**

SYNONYMY: *Hosackia rigida* G. Bentham. COMMON NAMES: Desert Rock-pea, Shrubby Deervetch, Wiry Lotus. DESCRIPTION: Terrestrial perennial forb/herb or subshrub (erect stems 1 to 5 feet in height, one plant was observed and described as being 20 inches in height and 2 feet in width, one plant was observed and described as being 40 inches in height and width); the foliage is gray-green, grayish-green or green; the flowers may be amber, bright orange, orange-red, orange-yellow, yellow, yellow tinged with orange, yellow-orange or yellow & red; flowering generally takes place between early January and late June (additional records: one for early August, one for mid-August, one for early September, two for mid-October, two for early November, one for mid-November and three for early December); the mature pods are brown. HABITAT: Within the range of this species it has been reported from mountains; mountainsides; mesas; plateaus; rocky canyons; bouldery, bouldery-sandy and sandy canyon bottoms; crevices in boulders and rocks; ledges; ridges; ridgetops; foothills; rocky hills; rocky hillsides; rocky, rocky-gravelly, rocky-loamy, gravelly, sandy and sandy-loamy slopes; bajadas; rocky outcrops; amongst boulders, rocks and cobbles; boulderfields; lava hills; sandy flats; along gravelly and sandy roadsides; arroyos; rocky and sandy arroyo bottoms; draws; ravines; around streams; rocky streambeds; along creeks; sandy creekbeds; along and in bouldery, bouldery-sandy, rocky, rocky-sandy and sandy washes; along rocky drainages; (rocky-gravelly) edges of washes and drainages; riparian areas, and disturbed areas growing in dry bouldery, bouldery-sandy, rocky, rocky-gravelly, rocky-sandy, cobbly, gravelly, gravelly-sandy and sandy ground and rocky loam and sandy loam ground, occurring from 600 to 8,400 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This is the most drought-tolerant Lotus in Arizona. *Lotus rigidus* is native to

southwest-central and southern North America. *5, 6, 15, 28 (color photograph), 43 (081810), 46 (Page 427), 48 (genus), 63 (081810 - color presentation), 77 (color photograph #79), **85** (081810 - color presentation), 91, 115 (color presentation)*

***Lotus strigosus* (T. Nuttall) E.L. Greene (var. *tomentellus* D. Isely is the variety reported from Arizona): Strigose Bird's-foot Trefoil**

SYNONYMY: (for *L.s*. var. *tomentellus*: *Hosackia tomentella* (E.L. Greene) L. Abrams, *Lotus tomentellus* E.L. Greene). COMMON NAMES: Annual Lotus, Bishop's Lotus, Desert Deervetch, Desert Lotus, Greene's Desert Deervetch, Hairy Deer Vetch, Hairy Lotus, Strigose Bird's-foot Trefoil, Strigose Bird's-foot-trefoil. DESCRIPTION: Terrestrial annual forb/herb (prostrate, ascending and clambering stems 2 to 10 inches in length, one prostrate plant mat was described as being 2½ inches in height and 16 inches to 2 feet in width, prostrate to ascending plants were described as being 8 inches to 1 foot in height and 1 foot in width); the herbage is gray-green; the leaves are grayish; the flowers are pale golden-yellow, orange-yellow, pale yellow, yellow and yellow-orange & reddish-orange aging to cream-orange, cream-yellow, orange, orange-red, orange-yellow, red, reddish or yellow-orange; flowering generally takes place between early February and late June (additional records: two for mid-January, one for late January, one for late August, one for early September and one for early October). HABITAT: Within the range of this species it has been reported from mountains; rocky-clayey mountaintops; bedrock, bouldery and rocky mountainsides; sandy mesas; plateaus; canyons; bouldery-gravelly-sandy, rocky, rocky-gravelly-sandy, rocky-sandy, gravelly-sandy, gravelly-sandy-loamy, sandy and sandy-loam canyon bottoms; clayey-loamy and silty-loamy ridges; along sandy-loamy and clayey-loamy ridgetops; bouldery meadows; cindery cinder cones; foothills; bouldery, rocky, loamy and silty-loamy hills; rocky and rocky-clayey-loamy hilltops; rocky hillsides; rocky-cobbly bases of hills; escarpments; along bedrock, bouldery, bouldery-gravelly, rocky, rocky-gravelly, rocky-sandy, cobbly-sandy-loamy, gravelly, gravelly-loamy, sandy-loamy, clayey-loamy, loamy, loamy-clayey and clayey slopes; rocky-sandy-loamy alluvial fans; bajadas; rocky outcrops; amongst boulders and rocks, rocky coves; lava fields; sand hills; sand dunes; bajadas; clayey banks; rocky berms; plains; rocky-sandy-loamy, gravelly, gravelly-sandy, gravelly-sandy-loamy, sandy and loamy flats; basins; along rocky, gravelly, gravelly-sandy, sandy, clayey and silty roadsides; within sandy arroyos; sandy draws; springs; along streams; rocky-sandy streambeds; along creeks; along sandy creekbeds; sandy riverbeds; along and in rocky, rocky-sandy, stony-sandy-silty, gravelly, gravelly-sandy and sandy washes; sandy drainages; gravelly drainage ways; muddy, gravelly and sandy banks of arroyos, creeks, rivers, washes and lakes; edges of marshes; margins of washes; gravel bars; benches; sandy cutbanks; gravelly-sandy and sandy terraces; loamy bottomlands; floodplains; bouldery-gravelly-sandy, rocky-gravelly-sandy and rocky-sandy riparian areas; recently burned areas in woodlands and chaparral, and disturbed areas growing in muddy and wet, moist and dry desert pavement; bouldery, bouldery-gravelly, bouldery-gravelly-sandy, bouldery-sandy, rocky, rocky-cobbly, rocky-gravelly, rocky-gravelly-sandy, rocky-sandy, cobbly-sandy, cindery, gravelly, gravelly-sandy and sandy ground; rocky-sandy loam, rocky-clayey loam, cobbly-sandy loam, gravelly loam, gravelly-sandy loam, sandy loam, clayey loam, silty loam and loam ground; rocky clay, loamy clay and clay ground, and stony-sandy silty and silty ground, occurring from sea level to 7.600 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant was reported to have been utilized by native peoples of North America and could be investigated to determine its value as a home garden or commercial food crop. *Lotus strigosus* is native to southwest-central and southern North America. *5, 6, 15, 16 (*Lotus tomentellus* Greene), 28 (color photograph, *Lotus tomentellus*), 43 (021110), 46 (*Lotus tomentellus* Greene, Page 427), 48 (gen.), 63 (021010 - color presentation), 77, **85** (021110), 115 (color presentation of *L.s.* var. *tomentellus*), 127*

***Lotus strigosus* (T. Nuttall) E.L. Greene var. *tomentellus* D. Isely: Strigose Bird's-foot Trefoil**

SYNONYMY: *Hosackia tomentella* (E.L. Greene) L. Abrams, *Lotus tomentellus* E.L. Greene. COMMON NAMES: Annual Lotus, Desert Deer Vetch, Desert Deer-vetch, Desert Deervetch, Desert Lotus, Greene's Desert Deervetch, Hairy Deer Vetch, Hairy Lotus, Strigose Bird's-foot Trefoil.

DESCRIPTION: Terrestrial annual forb/herb (prostrate stems 2 to 10 inches in length); the herbage is gray-green; the flowers are light yellow or yellow; flowering generally takes place between mid-January and late May (additional record: one for early September). HABITAT: Within the range of this species it has been reported from mountains; bedrock, bouldery and rocky mountainsides; mesas; canyons; bouldery, rocky and sandy-loamy canyon bottoms; foothills; bouldery and sandy hills; rocky hilltops; bouldery-sandy and rocky hillsides; along bedrock, bouldery, rocky, rocky-gravelly, rocky-sandy, gravelly and sandy slopes; alluvial fans; gravelly-sandy bajadas; rocky outcrops; amongst boulders and rocks, lava fields; sand hills; sand dunes; plains; gravelly, gravelly-sandy and sandy flats; sandy coastal flats; along rocky, sandy and silty roadsides; rocky arroyos; sandy draws; springs; along and in rocky, rocky-sandy, gravelly, gravelly-sandy and sandy washes; gravelly drainage ways; backwater playas; gravelly banks; gravel bars; rocky benches; sandy terraces; loamy bottomlands; floodplains; along canals; canal banks, and riparian areas growing in damp and dry desert pavement; bouldery, bouldery-sandy, rocky, rocky-gravelly, rocky-sandy, gravelly, gravelly-sandy and sandy ground; sandy loam, clayey loam and loam ground; silty ground, and chalky ground, occurring from sea level to 4,400 feet in elevation in the woodland, desertscrub and wetland ecological formations. NOTES: The species, *Lotus strigosus*, was reported to have been utilized by native peoples of North America and could be investigated to determine its value as a home garden or commercial food crop. The foliage may appear to be somewhat succulent. *Lotus strigosus* var. *tomentellus* is native to southwest-central and southern North America. *5, 6, 15, 16 (*Lotus tomentellus* Greene), 28 (color photograph, *Lotus tomentellus*), 43 (021010), 46 (*Lotus tomentellus* Greene, Page 427), 48 (gen.), 63 (021010), 77, **85** (021110 - color presentation of dried material), 115 (color presentation), 127 (species)*

Lotus tomentellus (see *Lotus strigosus* var. *tomentellus*)

***Lupinus sparsiflorus* G. Bentham: Coulter's Lupine**

COMMON NAMES: Arizona Lupine, Coulter Lupine, Coulter's Lupine, Desert Lupine, Loose-flowered Lupine, Lupine, Mojave Lupine, Tash Mahad (or possibly Tash Mahot - River Pima). DESCRIPTION: Terrestrial annual forb/herb (6 to 32 inches in height, one plant was described as being 11 inches in height and 12 inches in width); the leaves are dark green; the flowers may be light blue-lavender-white, blue, dark blue, blue-lavender, blue-lavender-reddish, blue-lilac, blue-purple, blue-violet, blue & white, magenta-pink, magenta-pink with a yellow spot on the banner, magenta & purple, pinkish, pinkish-lavender, light purple, purple, purplish-blue, violet, deep violet, violet-blue or white; flowering generally takes place between early January and late June (additional records: three for early September, one for early October and one for early November). HABITAT: Within the range of this species it has been reported from mountains; sandy mesas; sandy rims of canyons; cliffs; rocky and rocky-gravelly canyons; along sandy-loamy canyon bottoms; scree; talus slopes; buttes; rocky and sandy ridges; ridgetops; clearings in forests; sandy meadows; gravelly-sandy and sandy foothills; rocky hills; rocky hilltops; rocky and sandy hillsides; rocky, stony, cobbly-sandy-loamy, gravelly, sandy and sandy-loam slopes; rocky alluvial fans; gravelly bajadas; gravel slides; rocky outcrops; amongst rocks; gravelly plains; gravelly and sandy flats; basins; sandy valley floors; along railroad right-of-ways; along rocky, rocky-sandy, gravelly, gravelly-sandy, sandy and clayey roadsides; in arroyos; in gravelly-silty draws; along gravelly-loamy ravines; springs; along streams; rocky-sandy streambeds; along creeks; along and in gravelly-sandy creekbeds; sandy riverbeds; along and in bouldery-sandy, rocky, cobbly, gravelly, gravelly-sandy and sandy washes; drainages; within cobbly, gravelly, sandy and sandy-loamy drainage ways; along sandy and sandy-clayey banks of arroyos, streams, rivers and drainage ways; rocky edges of rivulets and washes; margins of washes; sand bars; gravelly benches; gravelly and sandy terraces; sandy and loamy bottomlands; cobbly and cobbly-sandy floodplains; ditches; bouldery, rocky-clayey, gravelly-sandy and sandy riparian areas, and disturbed areas growing in dry desert pavement; bouldery, bouldery-sandy, rocky, rocky-gravelly, rocky-sandy, stony, cobbly, cobbly-sandy, gravelly, gravelly-sandy and sandy ground; cobbly-sandy loam, gravelly loam, gravelly-clayey loam, sandy loam, clayey loam and loam ground; rocky clay, sandy clay and clay ground, and gravelly-sandy silty and gravelly silty ground,

occurring from 100 to 6,500 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. *Lupinus sparsiflorus* is native to southwest-central and southern North America. *5, 6, 16, 18 (genus), 28 (color photograph), 43 (071409), 46 (Page 416), 48 (genus), 58, 63 (021210 - color presentation), 77 (color photograph #81), 80 (This species is listed as a Secondary Poisonous Range Plant. "The lupines contain numerous poisonous alkaloids. They are mostly dangerous to sheep but cattle, goats, horses, hogs and deer have also been poisoned. The seeds and pods are most poisonous but both young and dried plants may be dangerous. However, not all species are poisonous and some may furnish moderately palatable and nutritious forage for sheep. ... Animals will seldom eat a toxic dose if desirable forage is available. Losses can generally be avoided by good range management to improve forage, by keeping animals away from dense lupine patches (particularly in late summer or on the trail), or by grazing with cattle." See text for additional information.), **85** (021210 - color presentation), 86 (color photograph), 115 (color presentation) *

***Medicago sativa* C. Linnaeus: Alfalfa**

COMMON NAMES: Alfalfa, Alfalfa Amarilla (Spanish - subsp. *falcata*), Alfalfa Sueca (Spanish - subsp. *falcata*), Alfalfa Verdadeira (Portuguese - subsp. *falcata*), Alfafa-de-provença (Portuguese - subsp. *falcata*), Alfalfa-falciforme (Portuguese - subsp. *falcata*), Blaue Luzerne (German - subsp. *sativa*), Burgundy Trefoil, Hayalimna:we (Zuni - "grass that keeps growing", refers to the ability of the plant to re-grow from the roots after cutting), Lucerne, Luzerna (Portuguese - subsp. *sativa*), Luzerna-de-sequeiro (Portuguese - subsp. *falcata*), Luzerne (German - subsp. *sativa*), Luzerne de Suède (French - subsp. *falcata*), Luzerne Jaune (French - subsp. *falcata*), Mielga (Spanish - subsp. *sativa*), Murasaki-umagoyashi (transcribed Japanese - subsp. *sativa*), Purple Medic, Sichelklee (German - subsp. *falcata*), Sichelluzerne (German - subsp. *falcata*), Sickle Alfalfa (subsp. *falcata*), Sickle Medic (subsp. *falcata*), Snailclover, Yellow Alfalfa (subsp. *falcata*), Yellow Lucerne (subsp. *falcata*), Yellow-flower Alfalfa (subsp. *falcata*). DESCRIPTION: Terrestrial annual or perennial forb/herb (8 inches to 3 feet, one record for 5 feet, in height); the leaves are dark green; the flowers are blue, blue-purple, blue-deep purple, bluish-purple, blue-violet, light lavender-purple, lavender, purple, purplish, dark purple, purple-blue, purple-violet, violet, violet-blue or white; flowering generally takes place between mid-March and late October. HABITAT: Within the range of this species it has been reported from mountains; along mesas; canyons; clearings in forests; gravelly-clayey-loamy meadows; rocky and sandy-loamy hills; hillsides; gravelly slopes; benchlands; sandy flats; basins; valley floors; along railroad right-of-ways; along rocky-gravelly-loamy, gravelly-sandy-loamy, gravelly-sandy-clayey-loamy, gravelly-loamy, gravelly-clayey-loamy, sandy, sandy-loamy and sandy-clayey-loamy roadsides; arroyos; along creeks; rocky-gravelly-sandy and sandy riverbeds; along washes; depressions; swales; along banks of creeks and rivers; muddy edges of streams and creeks; margins of cienegas; silty-loamy terraces; sandy terrace banks; floodplains; lowlands; along fencelines; along and in ditches; riparian areas; waste places, and disturbed areas growing in muddy and wet, moist, damp and dry rocky, rocky-gravelly-sandy, gravelly, gravelly-sandy and sandy ground; rocky-gravely loam, gravelly loam, gravelly-sandy loam, gravelly-sandy-clayey loam, gravelly-clayey loam, sandy loam, sandy-clayey loam, silty loam and loam ground, and gravelly-sandy clay ground, occurring from sea level to 9,500 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formation. NOTES: EXOTIC Invasive Plant. This plant was reported to have been utilized by native peoples of North America; it was noted as having been used as fodder, as a spice (placed in cooking pits, above and below black tree lichen and camas, to add sweet flavor) and as a drug or medication. *Medicago sativa* is native to northern, central, eastern, and southern Europe; Asia, and northern Africa. *5, 6, 28 (color photograph), 43 (021210), 46 (Pages 420-421), 63 (021210 - color presentation), 68, 77, 80 (The species is listed as a Poisonous Cropland and Garden Plant. "Alfalfa and Bur Clover may cause photosensitization, saponin and nitrate poisoning, and bloat."), **85** (021310 - color presentation), 115 (color presentation), 127*

***Olneya tesota* A. Gray: Desert Ironwood**

COMMON NAMES: Arizona Ironwood, Comitin, Desert Iron Wood, Desert Ironwood, Ho Id Cam (Pima), Ironwood, Palo de Hierro, Palo-de-hierro, Palo Fierro, Tesota. DESCRIPTION: Terrestrial perennial evergreen shrub or tree (10 to 33 feet in height); the bark is gray; the twigs are gray, green or yellow-green becoming light brown; the leaves are bluish-green, gray or gray-green; the flowers may be (½ inch in length) blue & white, lavender, pink, pink-lavender, purplish, rose-purple & whitish, violet, white or yellowish; flowering generally takes place between early April and late June (additional records: one for early January, one for early March and one for mid-July) with flowering lasting for a few weeks, the mature seedpods (2 to 2½ inches in length) are brown. HABITAT: Within the range of this species it has been reported from mountains; rocky mountaintops; gravelly and sandy mesas; rocky and sandy canyons; canyon bottoms; along bluffs; buttes; ridges; ridgetops; rocky foothills; hills; rocky hillsides; rocky, rocky-sandy and gravelly slopes; bajadas; rocky outcrops; amongst boulders; sand dunes; plains; rocky, gravelly and sandy flats; valley floors; roadsides; rocky and sandy arroyos; around seeping streams; along and in rocky, rocky-sandy, gravelly, gravelly-sandy and sandy washes; along gravelly-sandy and sandy banks of washes; along edges of washes; margins of washes; shores of oceans; benches; terraces; floodplains, and gravelly riparian areas growing in dry desert pavement and bouldery, rocky, gravelly, gravelly-sandy and sandy ground, occurring from sea level to 3,200 feet in elevation in the scrub and desertscrub ecological formation. NOTES: This plant may be an attractive component of a restored native habitat. This plant was reported to have been utilized by native peoples of North America and could be investigated to determine its value as a home garden or commercial food and/or fiber crop; it was also noted as having been used as fuel, tools, and for musical instruments. The trees are browsed by Bighorn Sheep (*Ovis canadensis*). Hummingbirds including the Costa's Hummingbird (*Calypte costae*), Carpenter Bees (*Xylocopa* spp.) and the Solitary Bee (*Centris pallida*) have been observed visiting the flowers. The seeds are an important food for the Desert Wood Rat (*Neotoma lepida*) and other desert animals. *Olneya tesota* is native to southwest-central and southern North America. *5, 6, 10, 13, 16, 18, 26 (color photograph), 28 (color photograph), 43 (021310), 46 (Pages 442-443), 48, 52 (color photograph), 53, 63 (021310 - color presentation), 77, 85 (021310 - color presentation), 91, 115 (color presentation), 127, **WTK** (July 4, 2005)*

***Parkinsonia aculeata* C. Linnaeus: Jerusalem Thor**n

COMMON NAMES: Arrêtenègre (French), Bacapore, Bagota, Barbados Flowerfence, Cina-cina (Portuguese), Espinheiro-de-Jerusalém (Portuguese), Espinho-de-jerusalém (Portuguese), Espinillo (Spanish), Guacoporo, Horse Bean, Horsebean, Jerusalem Thorn, Jerusalem-thorn, Jerusalemdorn (German), Junco, Long-leaf Paloverde, Mexican Palo Verde, Mexican Paloverde, Mezquite Verde, Palo de Rayo (Spanish), Palo Verde Mejicano (Spanish), Retaima, Retama, Rosa-da-turquia (Portuguese), Sessaban (transliterated Arabic), Turco (Portuguese). DESCRIPTION: Terrestrial perennial drought- and possibly cold-deciduous shrub or tree (10 to 40 feet in height); the older bark is brown or gray; the younger bark, branches and twigs are green or yellow-green; the leaves are green; the flowers (¾ to 1 inch in width) are golden-yellow, orange, yellow, yellow with orange or red spots or golden-yellow; flowering generally takes place between mid-February and early July (additional records: two for late July, four for early August, one for mid-August, two for late August, one for mid-September, two for late September, one for mid-October, three for late October, one for mid-September, one for early October, one for late October, one for early November, one for mid-November and one for late November) with the bloom generally lasting 3 to 4 weeks; the mature seedpods (2 to 4 inches in length) are brown. HABITAT: Within the range of this species it has been reported from mountains; mesas; rocky and gravelly canyons; canyon bottoms; foothills; bouldery hills; hillsides; rocky-gravelly-sandy-clayey-loamy slopes; bajadas; gravelly and sandy alluvial fans; sand hummocks; sandy plains; sandy flats; basin bottoms; valley floors; coastal flats; railroad right-of-ways; along rocky-gravelly, gravelly and sandy-loamy roadsides; along sandy-silty arroyos; bottoms of arroyos; along streams; along rocky streambeds; along rivers; rocky-cobbly-sandy and sandy riverbeds; along and in sandy and silty washes; along watercourses; clayey pondbeds; banks of creeks and rivers; edges of ponds; shores of rivers; beaches; terraces; bottomlands; gravelly-sandy and sandy-silty-clayey floodplains; bosques; along canals; along canal banks; along

ditches; riparian areas; waste places, and disturbed areas growing in moist and dry bouldery, rocky-cobbly, rocky-cobbly-sandy, rocky-gravelly, gravelly, gravelly-sandy and sandy ground; rocky-gravelly-sandy-clayey loam, rocky-sandy loam and sandy loam ground; sandy-silty clay and clay ground, and sandy silty and silty ground, occurring from sea level to 4,100 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant was observed as an escaped and naturalized ornamental. This plant was reported to have been utilized by native peoples of North America and could be investigated to determine its value as a home garden or commercial food crop. This plant may be an attractive component of a restored native habitat; however, outside of its native range it may become weedy, especially so in riparian areas and along roadsides. In Arizona, the Jerusalem Thorn is native to the Castle Dome Mountains in Yuma County and the foothills of the Baboquivari, Coyote and Quinlan Mountains in Pima County. The foliage and pods are browsed by wildlife. *Parkinsonia aculeata* is native to southwest-central and southern North America. *5, 6, 13, 16, 18, 26 (color photograph), 28 (color photograph), 43 (021310), 46 (Page 407), 48, 52 (color photograph), 53, 58, 63 (021310 - color presentation), 77, 80 (This species is listed as a Poisonous Cropland and Garden Plant. "This ornamental shrub or small tree has been reported to accumulate toxic levels of nitrate."), 85 (021310 - color presentation), 91, 115 (color presentation), 127, **HR***

***Parkinsonia florida* (G. Bentham ex A. Gray) S. Watson: Blue Paloverde**

SYNONYMY: *Cercidium floridum* G. Bentham, *Cercidium floridum* G. Bentham var. *floridum*. COMMON NAMES: Blue Palo Verde, Blue Palo-verde, Blue Paloverde, Caro (Mayo), Palo Verde (Spanish for Green Pole, Green Stick or Green Tree), Paloverde, Stedak U'us (Pima), Studuk U'us (Bajo Pima). DESCRIPTION: Terrestrial perennial deciduous shrub or tree (40 inches to 40 feet in height); the bark may be blue-green, green, yellow or yellow-green, and gray on the older trunks; the leaves are blue-green; the flowers (¾ to 1 inch in width) are yellow or seldom white; flowering generally takes place between early March and mid-June (additional records: two for early February, two for mid-August, two for early September, one for late September, one for early October, two for mid-October, one for late October, two for early November, one for mid-November and one for early December); the mature fruits (1½ to 4 inches in length) are light brown. HABITAT: Within the range of this species it has been reported from mountains; mountainsides; mesas; along canyons; canyon walls; sandy canyon bottoms; buttes; gravelly-clayey ridges; foothills; rocky, rocky-sandy, gravelly-loamy and sandy hills; bajadas; rocky, rocky-sandy and sandy slopes; sand hills; sand dunes; rocky-sandy, cindery, sandy and sandy-silty flats; valley floors; valley bottoms; coastal slopes; along rocky-gravelly-sandy, gravelly-sandy and sandy roadsides; along gravelly arroyos; along sandy bottoms of arroyos; rocky draws; seeps; streambeds; creekbeds; along rivers; along riverbeds; along and in rocky, rocky-sandy, gravelly, gravelly-sandy and sandy washes; drainages; watercourses; playas; along rocky and sandy banks of arroyos, rivers and washes; edges of draws and washes; margins of rivers and washes; gravelly sand bars; benches; gravelly terraces; loamy bottomlands; clayey lowlands; sandy-loamy floodplains; mesquite bosques; fencerows; catchments; stock tanks; along canals; along canal banks; gravelly-sandy riparian areas, and disturbed areas growing in dry rocky, rocky-gravelly-sandy, rocky-sandy, cindery, gravelly, gravelly-sandy and sandy ground; gravelly loam, sandy loam and loam ground; gravelly clay and clay ground, and sandy silty ground, occurring from sea level to 5,000 feet in elevation in the woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat, it has a very showy display of yellow flowers in very showy in late March and April. This plant was reported to have been utilized by native peoples of North America and could be investigated to determine its value as a home garden or commercial food crop; it was also noted as having been used for shelter and for tools. The Blue Paloverde may be useful in controlling erosion. Bighorn Sheep (*Ovis canadensis*), Mule Deer (*Odocoileus hemionus*) and other wildlife browse the fruits, leaves and twigs and the seeds are eaten by birds and rodents and used by Bruchid Beetles. *Parkinsonia florida* is native to southwest-central and southern North America. *5, 6, 13 (recorded as *Cercidium floridum* Bentham, color photograph of habitat Plate S.2), 15, 16 (recorded as *Cercidium floridum* Benth.), 18, 26 (recorded as *Cercidium floridum*, color photograph), 28 (recorded as *Cercidium floridum*, color photograph), 43

(021310 - *Cercidium floridum* Benth. ex A. Gray, *Parkinsonia florida* S. Watson), 46 (recorded as *Cercidium floridum* Benth., Page 407), 48, 52 (recorded as *Cercidium floridum* Benth. ex Gray, color photograph), 53 (recorded as *Cercidium floridum* Benth.), 58, 63 (021310 - color presentation), 77 (recorded as *Cercidium floridum* Benth.), 85 (021410 - color presentation), 86 (recorded as *Cercidium floridum*, color photograph), 91 (recorded as *Cercidium floridum* Benth.), 115 (color presentation), 127, **HR***

***Parkinsonia microphylla* J. Torrey: Yellow Paloverde**

SYNONYMY: *Cercidium microphyllum* (J. Torrey) J.N. Rose & I.M. Johnston. COMMON NAMES: Dipua, Foothill Palo Verde, Foothill Paloverde, Hillside Paloverde, Horsebean, Kuk Cehedagi (Tohono O'odham), Little Horsebean, Littleleaf Horsebean, Little Leaf Paloverde, Little-leaf Palo Verde, Little-leaf Palo-verde, Little-leaf Paloverde, Littleleaf Palo Verde, Littleleaf Paloverde, Palo Verde (Spanish for Green Pole, Green Stick or Green Tree), Palo-verde, Paloverde, Yellow-Palo-verde, Yellow Paloverde. DESCRIPTION: Terrestrial perennial drought deciduous shrub or tree (40 inches to 26 feet in height with a crown diameter of 12 to 18, one plant was described as being 6 feet in height and 7 feet in width, one plant was described as being 9 feet in height and width, one plant was described as being 16 feet in height and width); the bark is green, olive-green or yellow-green, and gray on older trunks; the ends of the leafy branchlets are spine-like; the small leaflets are green, greenish-gray or yellow-green; the flowers (½ inch in width) are lemon-yellow, whitish & yellow, yellow, yellow-green or yellow & white; the styles are pale yellow or pale yellow-green; the filaments are pale yellow or pale yellow-green; the anthers are orange; flowering generally takes place between mid-March and mid-June (additional records: one for mid-August and one for mid-October); the mature seedpods (2 to 3 inches in length) are light brown or tan. HABITAT: Within the range of this species it has been reported from mountains; rocky mountaintops; mesas; cliffs; rocky walls; rocky canyons; canyon walls; canyon bottoms; bluffs; buttes; ledges; ridges; bouldery and rocky foothills; bases of foothills; rocky hills; rocky hillsides; rocky and sandy slopes; alluvial fans; rocky, gravelly and gravelly-silty bajadas; boulder fields; bouldery and rocky outcrops; plains; gravelly and sandy flats; valley floors; sandy valley bottoms; along rocky and gravelly roadsides; within gravelly-sandy arroyos; along and in rocky, gravelly, gravelly-sandy and sandy washes; drainages; rocky-sandy banks of arroyos and rivers; along edges of washes; margins of arroyos and washes; rocky sand bars; coves; gravelly terraces; floodplains; ditches; riparian areas, and disturbed areas growing in dry desert pavement; bouldery, rocky, gravelly, gravelly-sandy and sandy ground; sandy loam, clay loam and loam ground; clay ground, and gravelly silty ground, occurring from sea level to 4,000 feet in elevation in the grassland and desertscrub ecological formations. NOTES: This plant may be an attractive component of a restored native habitat and may live to be more than 400 years of age. This plant was reported to have been utilized by native peoples of North America and could be investigated to determine its value as a home garden or commercial food crop. To reduce water loss during extended periods of drought a tree may undergo a natural drought-pruning process where entire branches die back The Foothill Paloverde is a common "nurse plant" of the Saguaro or Giant Cactus (*Carnegiea gigantea*) and provides a sheltered microhabitat in which other desert plants are able to become established. Bighorn Sheep (*Ovis canadensis*), Mule Deer (*Odocoileus hemionus*), jackrabbits and other small mammals browse the fruits, leaves and twigs; the Collard Peccary (*Peccari tajacu*) feed on the fruit, and the seeds are used by Bruchid Beetles. The Foothill Paloverde is considered a significant foraging site for birds; it is used as a nesting site by the Black-tailed Gnatcatcher (*Polioptila melanura*) and Verdins, and as a roosting site by Gambel's Quail (*Callipepla gambelii* subsp. *gambelii*). The Costa's Hummingbird (*Calypte costae*) has been observed visiting the flowers. *Parkinsonia microphylla* is native to southwest-central and southern North America. *5, 6, 10, 13 (recorded as *Cercidium microphyllum*, color photograph in habitat Plate T.1), 15, 16 (recorded as *Cercidium microphyllum* (Torr.) Rose & Johnst.), 18, 26 (recorded as *Cercidium microphyllum*, color photograph), 28 (recorded as *Cercidium microphyllum*, color photograph), 43 (021410 - *Cercidium microphyllum* Rose & I.M. Johnst.), 46 (recorded as *Cercidium microphyllum* (Torr.) Rose & Johnston, Page 407), 48, 52 (recorded as *Cercidium microphyllum* (Torr.) Rose & I.M. Johnst., color photograph), 53 (recorded as *Cercidium microphyllum*

(Torr.) Rose & Johnst.), 63 (021410 - color presentation), 77 (recorded as *Cercidium microphyllum* (Torr.) Rose & Johnst.), 85 (021410 - color presentation), 86 (note under *Cercidium floridum*), 91 (recorded as *Cercidium microphyllum* (Torr.) Rose & I.M. Johnston), 115 (color presentation), 127, 134, **WTK** (July 4, 2005)*

***Phaseolus acutifolius* A. Gray var. *tenuifolius* A. Gray: Tepary Bean**

COMMON NAMES: Ejotillo (Spanish), Frejolillo (Spanish), Tepary, Tepary Bean, Wild Bean, Wild Tepary Bean. DESCRIPTION: Terrestrial annual forb/herb or vine (climbing stems); the flowers are lavender or pink; flowering generally takes place between late August and early October (additional records: one for early August, one for late October and one for mid-November). HABITAT: Within the range of this species it has been reported from mountains; rocky cliffs; rocky canyons; canyon bottoms; pockets of soil; gravelly openings in woodlands; hills; hillsides; rocky, gravelly and clayey slopes; rocky outcrops; amongst rocks; sandy flats; valley floors; gravelly roadsides; streambeds; along creeks; along sandy washes; drainages; banks of aroyos; riparian areas, and disturbed areas growing in moist and dry bouldery, rocky, gravelly and sandy ground and clay ground, occurring from 2,500 to 8,200 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. The species, *Phaseolus acutifolius*, was reported to have been utilized by native peoples of North America and could be investigated to determine its value as a home garden or commercial food crop; it was also noted as having been used as a drug or medication and as a ceremonial item. *Phaseolus acutifolius* var. *tenuifolius* is native to southwest-central and southern North America. *15, 43 (082210 - *Phaseolus acutifolius* var. *tenuifolius* A. Gray), 46 (Page 483, this is the common wild form in Arizona. "All of the native beans (*Phaseolus* spp.) improve the soil, make a good ground cover, and provide excellent forage for livestock."), 48 (genus), 63 (082210), **77**, 85 (082210 - color presentation of dried material), 127 (species)*

***Phaseolus filiformis* G. Bentham: Slimjim Bean**

SYNONYMY: *Phaseolus wrightii* A. Gray. COMMON NAMES: Desert Bean, Slimjim Bean, Wright Bean, Wright's Limabean. DESCRIPTION: Terrestrial annual or perennial forb/herb or vine (slender sprawling, trailing or twining stems 2 to 7 feet in height/length); the leaves are gray-green; the flowers are bluish, magenta, pink, pink-purple, purple, reddish, rose, rose-purple or violet; flowering generally takes place between early February and mid-May and between early August and early January (additional records: two for early June and one for late June; flowering taking place throughout the year has also been reported), the fruits are green pods. HABITAT: Within the range of this species it has been reported from bouldery mountains; cliffs; rocky canyons; rocky canyon bottoms; rocky and gravelly talus slopes; bases of cliffs; sandy pockets of soil in boulders; crevices; foothills; rocky hills; rocky hillsides; rocky and rocky-gravelly-clayey-loamy slopes; bajadas; rocky outcrops; amongst boulders, rocks and pebbles; lava flows; sand dunes; sandy flats; sandy coastal hills; coastal terraces; along stony, gravelly-sandy-loamy and sandy roadsides; arroyos; bottoms of arroyos; rocky draws; springs; sandy streambeds; along and in rocky-silty and gravelly washes; waterholes; shore lines; strands; edges of tanks; riparian areas, and disturbed areas growing in wet, moist and dry bouldery, rocky, rocky-sandy, stony, gravelly, pebbly, pebbly-sandy and sandy ground; rocky-gravelly-clayey loam and gravelly-sandy loam ground; rocky clay ground and rocky silty ground sometimes in the shade of trees, occurring from sea level to 6,500 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. *Phaseolus filiformis* is native to southwest-central and southern North America. *5, 6, 28 (recorded as *Phaseolus wrightii*, color photograph), 43 (071410), 46 (recorded as *Phaseolus wrightii* Gray - "All of the native beans (*Phaseolus* spp.) improve the soil, make a good ground cover, and provide excellent forage for livestock.", Page 484), 48 (genus), 63 (071410 - color presentation), 77, **85** (071410 - color presentation)*

Phaseolus wrightii (see *Phaseolus filiformis*)

Prosopis juliflora var. *velutina* (see *Prosopis velutina*)

***Prosopis velutina* E.O. Wooton: Velvet Mesquite**

SYNONYMY: *Prosopis juliflora* (O. Swartz) A.P. de Candolle var. *velutina* (E.O. Wooton) C.S. Sargent. COMMON NAMES: Algarroba, Chachaca, Fluweelprosopis (Afrikaans), Kvi (or possibly Kui - Tohono O'odham), Mesquite, Mezquite, Mizquitl, Velvet Mesquite. DESCRIPTION: Terrestrial perennial deciduous shrub or tree (2 to 56 feet in height, one plant was reported to be 6½ feet in height with a canopy 6½ feet in width, one plant was reported to be 13 feet in height with a canopy 16½ feet in width, one tree was reported to be 20 feet in height and 40 feet in width); the bark on the trunk and older branches is dark brown, dark brownish-green or dark gray; the leaves are gray-green; the flowers (cylindrical spikes 2 to 5 inches in length) are cream, cream-yellow, green-yellow, greenish-white, pale yellow, yellow, yellow-green or yellowish-green; flowering generally takes place between mid-March and late August (additional records: one for early October and one for early November); the mature seedpods (3 to 8 inches in length) are red, tan, yellow or mottled. HABITAT: Within the range of this species it has been reported from mountains; mesas; plateaus; canyons; along sandy canyon bottoms; rocky bases of cliffs; buttes; rocky and sandy ridges; foothills; rocky hills; rocky hillsides; rocky and rocky-loamy slopes; alluvial fans; gravelly bajadas; rocky outcrops; rocky plains; gravelly and sandy flats; sandy valley floors; valley bottoms; along rocky-gravelly-loamy, gravelly-clayey-sandy-loamy and silty-clayey roadsides; along and in sandy arroyos; rocky-gravelly-loamy draws; seeps; springs; around seeping streams; along streams; along rocky streambeds; along creeks; creekbeds; along rivers; along rocky-sandy riverbeds; along and in rocky, gravelly-sandy and sandy washes; along drainages; within drainage ways; playas; cienegas; banks of streams, creeks and rivers; gravelly and sandy edges of rivers, washes and ponds; sandy-loamy benches; gravelly and gravelly-sandy terraces; bottomlands; floodplains; mesquite bosques; along fencelines; around stock tanks; around reservoirs; along canals; canal banks; ditches; along ditch banks; riparian areas, and disturbed areas growing in dry rocky, rocky-gravelly, rocky-sandy, gravelly, gravelly-sandy and sandy ground; rocky loam, rocky-gravelly loam, gravelly-clayey-sandy loam, sandy loam, clayey loam and loam ground; silty clay ground, and sandy silty, clayey silty and silty ground, occurring from 100 to 6,300 feet in elevation in the woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat, it may live to be more than several hundred years of age. This plant was reported to have been utilized by native peoples of North America and could be investigated to determine its value as a home garden or commercial food, beverage, fiber and/or dye or paint (boiled resin used as a pottery paint) crop; it was also noted as having been used as fuel, as a tool, as toys, as a drug or medication and as a guide for determining a planting season. The Velvet Mesquite is a common "nurse plant" of the Saguaro or Giant Cactus (*Carnegiea gigantea*). Much of the mesquite forest (bosques) originally found along the desert water courses have been lost to fuel wood cutting and clearing for agricultural fields and commercial and residential development. Velvet Mesquite Bosques were small, open, park-like woodlands with the Velvet Mesquite often occurring in nearly pure stands and interspersed with other common species such as the Netleaf Hackberry (*Celtis laevigata* var. *reticulata*), Catclaw Acacia (*Acacia greggii* var. *greggii*), Mexican Elder (*Sambucus nigra* subsp. *canadensis*), Desert Hackberry (*Celtis ehrenbergiana*), Greythorn (*Ziziphus obtusifolia* var. *canescens*), Wolfberry (*Lycium* spp.), Four-wing Salt-bush (*Atriplex canescens*) and Vine Mesquite Grass (*Panicum obtusum*). The Velvet Mesquite provides food and shelter for many species of wildlife. The plant is a food source for quail, Desert Mule Deer (*Odocoileus hemionus crooki*) and Desert Bighorn Sheep (*Ovis canadensis mexicana*). Coyotes (*Canis latrans*), Round-tailed Ground Squirrels (*Spermophilus tereticaudus*), Desert Cottontails (*Sylvilagus audubonii*) and many other wild animals feed on the seed pods. Velvet Mesquite is the host for a Drywood Termite (*Incisitermes banksi*). Bruchid Beetles feed on the fruits and seeds. *Prosopis velutina* is native to southwest-central and southern North America. *5, 6, 13 (recorded as *Prosopis juliflora* (Swartz) DC. var. *velutina* (Wooton) Sarg., color photograph), 15, 16, 18, 26 (color photograph), 28 (color photograph), 43 (071609), 46 (recorded as *Prosopis juliflora* (Swartz) DC. var. *velutina* (Wooton) Sarg., Page 402), 48, 52 (color photograph), 53

(species: recorded as *Prosopis juliflora* (Sw.) DC.), 58, 63 (021610), 68, 77, 80 (This species is listed as a Rarely Poisonous and Suspected Poisonous Range Plant. "Heavy, long-continued consumption of pods and leaves of these common desert shrubs may cause rumen impaction and poisoning."), 85 (021610 - color presentation), 91), 115 (color presentation), 127, 134, ADS (Arizona Daily Star, Sunday, July 26, 2009, Tucson & Region, B1: Mesquite Pods are of Consuming Interest), **WTK** (July 4, 2005)*

***Rhynchosia senna* J. Gillies ex W.J. Hooker var. *texana* (J. Torrey & A. Gray) M.C. Johnston: Texas Snoutbean**

SYNONYMY: *Rhynchosia texana* J. Torrey & A. Gray. COMMON NAMES: Rosary Bean, Rosary Bean Vine, Texas Snoutbean. DESCRIPTION: Terrestrial perennial forb/herb or vine (a climbing, scrambling sprawling, trailing and/or slightly twining vine 8 to 40 inches in length); the leaves are dark green; the small flowers (1/8 inch in width and 1/4 inch in length) are pale yellow-orange, yellow, deep yellow and/or dark yellow-orange; flowering generally takes place between early April and early October (additional record: one for early March); the flat seedpods (¾ inch in length) are green. HABITAT: Within the range of this species it has been reported from mountains; mountainsides; clayey mesas; cliffs; along bouldery and rocky canyons; canyon bottoms; along rocky and gravelly ridges; clearings in woodlands; foothills; gravelly hills; along bouldery and rocky and rocky-gravelly-loamy hillsides; bouldery-rocky-sandy, rocky, rocky-gravelly, rocky-gravelly-clayey-loamy, rocky-loamy and sandy-clayey-loamy slopes; rocky bajadas; rocky outcrops; amongst boulders and rocks; plains; gravelly-clayey flats; basins; bouldery-silty valley floors; along rocky-gravelly-loamy, rocky-gravelly-clayey-loamy, gravelly, gravelly-sandy-loamy, gravelly-sandy-clayey-loamy, gravelly-loamy and gravelly-clayey-loamy roadsides; sandy draws; gulches; springs; along streams; along creeks; along and in rocky-gravelly and sandy washes; within rocky drainages; lakebeds; (clayey) banks of arroyos and streams; edges of creeks and lakes; terraces; bottomlands; floodplains; sandy-clayey ditches; riparian areas, and disturbed areas growing in dry desert pavement; bouldery, bouldery-rocky-sandy, rocky, rocky-gravelly, gravelly and sandy ground; rocky-loam, rocky-gravelly loam, rocky-gravelly-clayey loam; gravelly-sandy loam, gravelly-sandy-clayey loam, gravelly loam, gravelly-clayey loam, sandy-clayey loam and loam ground; gravelly clay, sandy clay and clay ground, and bouldery silty ground, occurring from 1,300 to 7,400 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat, consider using it as a ground cover and/or to control erosion. White-tailed Deer (*Odocoileus virginianus*) browse this plant. *Rhynchosia senna* var. *texana* is native to southwest-central and southern North America and central and southern South America. *5, 6, 28 (recorded as *Rhynchosia texana*, color photograph), 43 (100609), 46 (recorded as *Rhynchosia texana* Torr. & Gray, Page 481), 58, 63 (100609 - color presentation), **77** (recorded as *Rhynchosia senna* Gill. [*R. texana* T. & G.]), 85 (082210 - color presentation of dried material)*

Rhynchosia texana (see *Rhynchosia senna* var. *texana*)

***Senna bauhinioides* (A. Gray) H.S. Irwin & R.C. Barneby: Twinleaf Senna**

SYNONYMY: *Cassia bauhinioides* A. Gray, *Cassia bauhinioides* A. Gray var. *arizonica* B.L. Robinson ex J.F. MacBride. COMMON NAMES: Bauhinia Senna, Senna, Shrubby Senna, Twinleaf Senna, Two-leaf Desert Senna, Two-leaved Senna. DESCRIPTION: Terrestrial perennial forb/herb or subshrub (4 inches to 2 feet in height); the leaves are grayish; the flowers are orange-yellow, white, yellow, dark yellow, pale yellow-orange, yellow-light orange, yellow-orange or yellowish-orange; flowering generally takes place between mid-April and early November (additional record: one for late March). HABITAT: Within the range of this species it has been reported from mountains; mountainsides; grassy mesas; gravelly cliffs; canyons; rocky and rocky clayey ridges; foothills; sandy hills; hilltops; stony and gravelly hillsides; escarpments; rocky and sandy-loamy slopes; gravelly bajadas; rocky outcrops; sand dunes; tablelands; plains; rocky, sandy and sandy-loamy flats; valley floors; along rocky-gravelly-sandy-loamy, gravelly-clayey, gravelly-clayey-loamy and sandy-loamy roadsides; within

arroyos; draws; gulches; gullies; creekbeds; along rivers; sandy riverbeds; along and in gravelly, gravelly-sandy and sandy washes; drainages; depressions; fringes of playas; sandy beaches; benches; terraces; floodplains; riparian areas, and disturbed areas growing in damp and dry rocky desert pavement; rocky, stony, gravelly, gravelly-sandy and sandy ground; rocky-gravelly-sandy loam, gravelly-sandy loam, gravelly-sandy-clayey loam and sandy loam ground, and rocky clay and gravelly clay ground, occurring from 2,000 to 6,700 feet in elevation in the woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. *Senna bauhinioides* is native to southwest-central and southern North America. *5, 6, 15, 16, 43 (021610 - *Cassia bauhinioides* A. Gray var. *arizonica* B.L. Robins.), 46 (recorded as *Cassia bauhinioides* Gray, Page 406 and *Cassia bauhinioides* Gray var. *arizonica* Robins., Page 406), 58 (recorded as *Cassia bauhinioides* Gray var. *arizonica* Robins.), 63 (021610 - color presentation), 68, **77** (color photograph #35), 85 (021610 - color presentation of dried materials), 86 (recorded as *Cassia bauhinioides*, color photograph)*

***Senna covesii* (A. Gray) H.S. Irwin & R.C. Barneby: Coves' Cassia**

SYNONYMY: *Cassia covesii* A. Gray. COMMON NAMES: Coves Cassia, Coves' Cassia, Cove Senna, Dais, Daisillo, Desert Senna, Hojasen, Kau Ohasen (Yaqui), Rosemaria, Rattlebox, Rattlebox Senna, Rattleweed, Senna. DESCRIPTION: Terrestrial perennial forb/herb or subshrub (10 to 32 inches in height); the leaves are gray or gray-green; the flowers (½ to 1 inch in width) golden, orange-yellow, rusty-yellow, pale yellow, yellow, yellow-orange or yellow with reddish veins; flowering generally takes place between early March and early December (additional records: one for early February and two for mid-February); the mature seedpods (1 to 2 inches in length) are brown. HABITAT: Within the range of this species it has been reported from mountains; mesas; canyons; canyonsides; gravelly canyon bottoms; along rocky and rocky-sandy ridges; ridgetops; foothills; rocky hills; rocky and sandy hillsides; along rocky, rocky-gravelly, rocky-clayey and gravelly slopes; alluvial fans; gravelly bajadas; amongst grasses; sandy-loamy plains; gravelly, sandy and silty flats; basins; valley floors; along rocky, gravelly, gravelly-sandy and sandy roadsides; sandy bottoms of arroyos; gulches; along streams; streambeds; creeks; sandy creekbeds; along rivers; sandy riverbeds; along and in bouldery, rocky, rocky-sandy, gravelly, gravelly-sandy and sandy washes; gravelly drainage ways; waterholes; around ponds; gravelly-sandy banks of rivers and washes; margins of washes; gravel bars; sandy beaches; sandy loamy benches; gravelly terraces; sandy, sandy-loamy, loamy and silty floodplains; mesquite bosques; gravelly and sandy riparian areas, and disturbed areas growing in dry bouldery, rocky, rocky-gravelly, rocky-sandy, gravelly, gravelly-sandy and sandy ground; rocky-clayey loam, sandy loam, sandy-clayey loam and loam ground; rocky clay ground, and silty ground, occurring from sea level to 6,700 feet in elevation in the woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. The Cove Cassia is a larval food plant of the Cloudless Sulfur (*Phoebis sennae*) and Sleepy Orange (*Eurema nicippe*) and is used for food by Gambel's Quail (*Callipepla gambelii gambelii*). *Senna covesii* is native to southwest-central and southern North America. *5, 6, 15, 16, 28 (recorded as *Cassia covesii*, color photograph), 43 (021710), 46 (recorded as *Cassia covesii* Gray, Page 406), 63 (021710), 68, 77, 82, 85 (021710 - color presentation), 115 (color presentation), **HR***

Vachellia constricta (see *Acacia constricta*)

Vicia exigua (see *Vicia ludoviciana*)

***Vicia ludoviciana* T. Nuttall (subsp. *ludoviciana* is the subspecies reported as occurring in Arizona): Louisiana Vetch**

SYNONYMY: (for *V.l.* var. *ludoviciana*: *Vicia exigua* T. Nuttall). COMMON NAMES: Deer-pea Vetch, Deerpea Vetch, Louisiana Vetch, Slender Vetch, Slim Vetch, Vetch. DESCRIPTION: Terrestrial annual forb/herb or vine (twining stems 4 inches to 3 feet in height/length); the flowers are pale blue,

blue, pale blue-lavender, blue & white, cream, cream & purple, light lavender, lavender, lavender-white, pink, pinkish; pinkish-purple, pinkish, pinkish-white, light purple, violet, violet & white, white, white & blue-lavender or white-lavender; flowering generally takes place between late February and late May (additional records: three for early February, one for early July, two for mid-July, one for mid-August and one for mid- September). HABITAT: Within the range of this species it has been reported from mountains; rocky mountainsides; rocky mesas; plateaus; rock cliffs; bouldery canyons; canyon bottoms; talus slopes; bases of cliffs; crevices in lava flows; ledges; ridges; rocky ridgetops; foothills; rocky hills; bouldery, rocky, rocky-clayey and gravelly-sandy hillsides; rocky, rocky-gravelly, rocky-clayey, stony, gravelly, gravelly loamy, sandy and clayey slopes; bedrock bajadas; rocky outcrops; amongst boulders and rocks; amongst grasses; sandy lava flows; lava fields; sand dunes; clay lenses; loamy and clayey flats; basins; valley floors; railroad right-of-ways; along rocky-sandy and gravelly roadsides; gullies; seeps; springs; along sandy streams; along and in streambeds; along creeks; along rivers; along and in rocky, rocky-gravelly, rocky-loamy, gravelly-loamy and sandy washes; in sandy drainages; sandy banks of arroyos, streams and washes; edges of washes; sandy-silty and silty depressions; banks of creeks; cobbly edges of washes; benches; mesquite bosques; loamy floodplains; sandy riparian areas, and disturbed areas growing in moist and dry bouldery, rocky, rocky-sandy, stony, cobbly, gravelly and sandy ground; rocky loam, gravelly loam, sandy loam and loam ground; rocky clay and clay ground, and sandy silty and silty ground, occurring from 600 to 9,600 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTE: *Vicia ludoviciana* is native to south-central and southern North America. *5, 6, 16, 43 (021810), 46 (*Vicia exigua* Nutt., Page 477), 48 (genus), 58, 63 (021810 - color presentation of seeds), 77, 80 (Species of the genus *Vicia* are considered to be Rarely Poisonous and Suspected Poisonous Range Plants. "Cultivated species of Vetch may cause liver damage, cyanide poisoning, and photosensitization, but native species have not been incriminated." and also Poisonous Cropland and Garden Plants. "Species of Vetch occasionally develop lethal concentrations of cyanogenetic glycosides or produce photosensitization but are rarely responsible for deaths."), **85** (021810 - color presentation)*

Fagaceae: The Beech Family

***Quercus turbinella* E.L. Greene: Sonoran Scrub Oak**

SYNONYMY: *Quercus turbinella* E.L. Greene subsp. *turbinella*. COMMON NAMES: California Scrub Oak, Desert Scrub Oak, Scrub Oak, Scrub Live Oak, Shrub Live Oak, Sonoran Scrub Oak, Toa (for genus, Tohono O'odham), Turbinella ("like a little top" refers to the shape of the acorns) Oak, Tucker Oak. DESCRIPTION: Terrestrial perennial evergreen shrub or tree (10 inches to 8 feet or rarely a small tree to 15 to 25 feet (several reports for 33 feet and two reports of a tree reaching 50 to 60 feet) in height with an open and widely spreading rounded crown, one plant was observed and described as being 40 inches in height and 5 feet in width, one plant was observed and described as being 10 feet in height and 16½ feet in width); the scaly bark is light gray, gray or dark gray; the young twigs are reddish-brown and may be densely woolly and the older twigs are gray; the leaves are a glaucous (whitish bloom) blue-green, gray-green or dark green above and yellow-green below; the flowers are yellow; the stigmas are green; flowering generally takes place between late March and mid-October (additional record: one for mid-February); the acorns (5/8 to 1 inch in length and ¼ to ½ inch in width) are brownish. HABITAT: Within the range of this species it has been reported from mountains; mountainsides; mesas; rocky chutes; rocky rims of canyons; cliffs; along rocky canyons; pockets of soil in canyonsides; along rocky, rocky-loamy and loamy canyon bottoms; talus slopes; rocky bases of cliffs; sand-filled crevices; pockets of soil on canyon walls; rocky knolls; gravelly tops of knolls; bedrock and bouldery ledges; ridges; cinder cones; foothills; hills; gravelly-sandy hilltops; bouldery bases of hills; rocky, gravelly and silty hillsides; bouldery, rocky, rocky-shaley, rocky-sandy, rocky-loamy, rocky-clayey, rocky-clayey-loamy, gravelly, sandy, loamy, clayey and clayey-loamy slopes; rocky-sandy and gravelly-sandy bajadas; rocky outcrops; amongst boulders and rocks; prairies; plains; shaley flats; rocky valley floors; along rocky, gravelly-sandy

and sandy roadsides; within bouldery-rocky-loamy arroyos; rocky draws; along rocky and silty ravines; rocky bottoms of ravines; springs; along streams; along and in rocky, rocky-gravelly and gravelly streambeds; along bouldery creeks; along and in creekbeds; along and in rocky, rocky-cobbly and sandy washes; along and in drainages; within drainage ways; depressions; along rocky-sandy banks of arroyos, streams and creeks; edges of arroyos and marshes; gravelly terraces, and gravelly-sandy riparian areas growing in dry bouldery, rocky, rocky-shaley, rocky-stony, rocky-cobbly, rocky-gravelly, rocky-sandy, gravelly, gravelly-sandy and sandy ground; bouldery-rocky-loam, bouldery-sandy-clayey loam, rocky loam, rocky-clayey loam, gravelly loam, clayey loam and loam ground; rocky clay, gravelly-sandy-silty, silty clay and clay ground, and silty ground, occurring from 1,500 to 9,000 feet elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat and may be useful in controlling erosion. The Sonoran Scrub Oak often forms thickets. This plant was reported to have been utilized by native peoples of North America; it was noted that the acorn was used for food and the wood was used in the making of hoes and axe handles. The leaves are browsed by wildlife and the acorns are used for food by birds and other wild animals. *Quercus turbinella* is native to southwest-central and southern North America. *5, 6, 13, 15, 18, 28 (color photograph), 43 (071910), 46 (Page 218), 48, 52 (color photograph), 53, 58, 63 (071910 - color presentation), 68 (genus), **77**, **85** (080510 - color presentation including habitat), 127, 134*

Quercus turbinella subsp. *turbinella* (see *Quercus turbinella*)

Fouquieriaceae: The Ocotillo Family

***Fouquieria splendens* G. Engelmann: Ocotillo**

SYNONYMY: *Fouquieria splendens* G. Engelmann subsp. *splendens* G. Engelmann. COMMON NAMES: Albarda, Barda, Barda, Candle Bush, Candlewood, Coach Whip, Coach-whip, Coachwhip, Coachwhip Cactus, Flamingsword, Jacob's Staff, Monkey-tail, Ocotillo, Ocotillo del Corral, Slimwood, Vine-cactus, Vine Cactus. DESCRIPTION: Terrestrial perennial cold- and drought-deciduous semi- and stem-succulent shrub (5 to 33 feet in height with a crown width of 5 to 15 feet); the stems (cluster of 5 to 100 wand-like stems branching from the base) are gray, gray & dark gray, gray-green or green; the leaves are green; the flowers (2 to 10 inch long clusters at the tips of the stems) may be coral-red, cream, cream-white, orange, orange-red, pinkish-purple, red, reddish-orange, red & yellow, salmon, scarlet, scarlet-coral, white or yellow; flowering generally takes place over a period of 50 to 60 days between early February and early June (additional records: two for late June, two for early July, one for mid-July, one for late July, one for early August, one for late August, two for mid-September, one for late September, one for mid-October, two for late October, two for early November and two for early December); the mature fruits are capsules containing winged seeds. HABITAT: Within the range of this species it has been reported from mountains; mountainsides; gravelly-sandy and sandy mesas; crags; canyon rims; cliffs; bouldery and rocky canyons; crevices in rocks; gravelly ridges; rocky ridgetops; ridgelines; foothills; rocky and rocky-sandy hills; rocky hilltops; rocky and gravelly hillsides; bedrock, bouldery-cobbly, rocky, rocky-gravelly, shaley-sandy, stony, gravelly, gravelly-sandy and gravelly-loamy slopes; alluvial fans; rocky and sandy bajadas; rocky outcrops; amongst boulders; lava flows; sand hills; sand dunes; dune swales; gravelly outwash fans; gravelly and sandy plains; gravelly and gravelly-sandy flats; basins; rocky and sandy valley floors; valley bottoms; along gravelly roadsides; rocky arroyos; gullies; along rivers; along sandy washes; bedrock, bouldery-cobbly and sandy banks of rivers and washes; rocky-sandy shores of lakes; benches; along floodplains and riparian areas growing in dry desert pavement; bouldery, bouldery-cobbly, rocky, rocky-gravelly, rocky-sandy, shaley-sandy, stony, gravelly, gravelly-sandy and sandy ground; gravelly loam ground, and clay ground, occurring from sea level to 7,500 feet in elevation in the woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. This plant was reported

to have been utilized by native peoples of North America and could be investigated to determine its value as a home garden or commercial food, beverage and/or fiber crop; it was also noted as having been used as a fuel, tool, drug or medication, ceremonial item and as an ornamental landscape plant. Older plants may be 150 to 200 years of age. This "vase-shaped" plant has been described by Benson and Darrow as being "one of the most distinctive shrubs in the Southwestern Deserts, and it is one of the plants giving outstanding character to the flora of the region". Desert Bighorn Sheep (*Ovis canadensis* subsp. *mexicana*), Mule Deer (*Odocoileus hemionus*) and Whitetailed Deer (*Odocoileus virginianus* subsp. *couesi*) browse this plant. The Broad-billed Hummingbird (*Cynanthus latirostris*), Butterflies, Carpenter Bee (*Xylocopa californica*), Costa's Hummingbird (*Calypte costae*), Finches, Orioles, Rufous Hummingbird (*Selasphorus rufus*), Solitary Bees, Syrphid Flies, Verdins, and Warblers have been observed visiting the flowers. The Ocotillo is a preferred food plant of the Costa's Hummingbird. *Fouquieria splendens* is native to southwest-central and southern North America. *5, 6, 10, 13 (color photograph: Plate N), 15, 16, 18, 26 (color photograph), 28 (color photograph), 43 (080309), 45 (color photograph), 46 (Page 640), 48, 58, 63 (021810 - color presentation), 77 (color photograph #27), 85 (021810 - color presentation), 86 (color photograph), 91, 106 (021810 - color presentation), 107, 115 (color presentation), 127, **HR***

Fouquieria splendens subsp. *splendens* (see *Fouquieria splendens*)

Gentianaceae: The Gentian Family

***Centaurium arizonicum* (A. Gray) A.A. Heller: Arizona Centaury**

SYNONYMY: *Centaurium calycosum* (S.B. Buckley) M.L. Fernald (var. *arizonicum* (A. Gray) I. Tidestrøm is the variety reported as occurring in Arizona). COMMON NAMES: Arizona Centaury, Buckley's Centaury, Canchalagua, Centaury, Rosita. DESCRIPTION: Terrestrial annual or biennial forb/herb (5 to 32 inches in height, plants 12 inches in height and 8 inches in width were observed and recorded); the leaves are light green or yellow-green; the flowers (to 1 inch in diameter) may be cerise-pink, lavender, magenta, magenta-purple with a white throat, orangish-dark pink, pink, pink-purple, pink & white, pink & yellow, pinkish-purple, purple-pink, rose-pink, rose-purple & yellow, scarlet, violet or rarely white, the anthers are yellow; flowering generally takes place between late March and late October (additional records: one for early January, one for mid-February, one for mid-November and one for mid-December, flowering year-round in favorable locations has also been reported). HABITAT: Within the range of this species it has been reported from mountains; rocky canyons; canyon bottoms; bases of cliffs; meadows; hillsides; slopes; bases of slopes; amongst rocks; prairies; flats; along rocky-sandy-loamy roadsides; sandy draws; within gulches; silty ravines; seeps; around and in springs; in sand along streams; along sandy streambeds; in gravel along creeks; within rocky-gravelly creekbeds; along rivers; riverbeds; along and in gravelly and sandy washes; along sandy drainages; around pools; cienegas; within marshy areas; along (sandy-loamy) banks of streams, streambeds and rivers; along edges of seeps, creeks and rivers; margins of creeks; shores of rivers; sand bars; mud banks; rocky beaches; grassy bottomlands; sandy floodplains; along ditches; stock tanks; riparian areas, and disturbed areas growing in muddy and wet, moist, damp and dry rocky, rocky-gravelly, gravelly and sandy ground; rocky-sandy loam and sandy loam ground; silty clay ground, and silty ground, occurring from 150 to 8,700 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. Variety *arizonicum* is the variety of *Centaurium calycosum* reported as occurring in Arizona. *Centaurium arizonicum* is native to southwest-central and southern North America. *5, 6, 15 (recorded as *Centaurium calycosum* (Buckl.) Fern.), 28 (recorded as *Centaurium calycosum*, color photograph), 43 (081810 - *Centaurium calycosum* Fernald), 46 (recorded as *Centaurium calycosum* (Buckl.) Fern., Page 646), 63 (081810), 77 (recorded as *Centaurium calycosum* (Buckl.) Fern., color photograph #28), **85** (081810 - color presentation), 86*

Centaurium calycosum (see NOTES under *Centaurium arizonicum*)

Centaurium calycosum var. *arizonicum* (see *Centaurium arizonicum*)

Hydrophyllaceae: The Waterleaf Family

***Eucrypta chrysanthemifolia* (G. Bentham) E.L. Greene (var. *bipinnatifida* (J. Torrey) L. Constance is the variety reported as occurring in Arizona): Spotted Hideseed**

COMMON NAMES: Common Eucrypta, Green Spotted Hideseed, Spotted Hideseed, Torrey Eucrypta. DESCRIPTION: Terrestrial annual forb/herb (sprawling or trialing stems 4 to 40 inches in height); the bell-shaped flowers are pale blue, blue, cream-white, lavender, pale purple, white or white-blue; flowering generally takes place between mid-January and early June (additional records: four for late June and one for mid-September). HABITAT: Within the range of this species it has been reported from mountains; rocky mountainsides; sandy mesas; plateaus; rock cliffs; rocky canyons; canyon walls; along rocky, sandy and sandy-loamy canyon bottoms; talus; bases of cliffs; crevices in rocks; buttes; rocky knobs; ledges; rocky ridges; ridgetops; sandy meadows; bouldery and rocky hills; stony-sandy-silty and clayey hilltops; rocky and clayey hillsides; bouldery, rocky, rocky-gravelly, gravelly, gravelly-loamy, gravelly-clayey, sandy and clayey slopes; bouldery-stony-gravelly-sandy and rocky alluvial fans; sandy bajadas; amongst boulders and rocks, rocky and shaley outcrops; amongst boulders and rocks; bases of boulders; sand dunes; sandy-loamy and clayey plains; gravelly and sandy flats; basins; sandy valley floors; coastal plains; along rocky and rocky-gravelly roadsides; arroyos; gullies; ravines; seeps; springs; along seeping streams; along creeks; along sandy creekbeds; along rivers; along and in rocky-sandy, gravelly-sandy, gravelly-sandy-silty and sandy washes; within drainages; vernal pools; rocky depressions; along banks of washes; along rocky edges of streams and rivers; shores of lakes; benches; sandy terraces; floodplains; riparian areas and disturbed areas growing in the shade of rocks or shrubs or trees in dry bouldery, bouldery-stony-gravelly-sandy, rocky, rocky-gravelly, rocky-sandy, shaley, gravelly, gravelly-sandy and sandy ground; gravelly loam, sandy loam and loam ground; gravelly clay and clay ground, and stony-sandy silty and gravelly-sandy silty ground, occurring from sea level to 7,600 feet in elevation in the woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: The foliage may be sweet-scented. *Eucrypta chrysanthemifolia* is native to southwest-central and southern North America. *5, 6, 16, 43 (072209), 46 (Page 698), 63 (022110), 77, **85** (022110 - color presentation of dried material)*

Nama demissa (see footnote 43 under *Nama demissum*)

***Nama demissum* A. Gray: Purplemat**

SYNONYMY: (*Nama demissa* A. Gray). COMMON NAMES: Leafy Nama, Morada, Purple Mat, Purplemat, Purple Nama. DESCRIPTION: Terrestrial annual forb/herb (½ to 3 inches in height, stems may trail to 8 inches in length); the stems may be purple; the leaves are green; the bell-shaped flowers are blue-violet, magenta (fading bluish), magenta with a yellow throat, pink, pink-lavender, dark pink, purple, purple-red, purplish, purplish-red, red-purple, red-violet, rose, rose-purple or violet; flowering generally takes place between early January and mid-June (additional record: one for early October). HABITAT: Within the range of this species it has been reported from mountains; canyons; sandy canyon bottoms; gravelly talus slopes; bouldery and sandy hills; rocky-gravelly hilltops; rocky hillsides; rocky, rocky-sandy, gravelly, gravelly-sandy, gravelly-loamy and sandy slopes; sandy hillocks; sand dunes; deposits of wind-blown sand; gravelly and sandy banks; desert plains; rocky-sandy, gravelly, sandy and silty flats; gravelly valley floors; road beds; along sandy roadsides; along streams; along creeks; creekbeds; riverbeds; along and in gravelly, gravelly-sandy and sandy washes; marshes; lakebeds; gravelly and gravelly-sandy terraces; sandy bottomlands; floodplains; mesquite bosques; riparian areas; recently burned areas of pinyon woodland, and disturbed areas growing in dry desert pavement; bouldery,

rocky, rocky-sandy, gravelly, gravelly-sandy and sandy ground; gravelly loam, gravelly-sandy loam and sandy loam ground, and sandy clay and clay ground, occurring from 100 to 6,800 feet in elevation in the woodland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. *Nama demissum* is native to southwest-central and southern North America. *5, 6, 28 (color photograph), 43 (072010 - *Nama demissa* A. Gray), 46 (recorded as *Nama demissum* Gray var. *deserti* Brand, Page 706), 63 (072010 - color presentation), 77, **85** (080510 - color presentation), 86 (color photograph)*

Phacelia ambigua (see *Phacelia crenulata* var. *ambigua*)

Phacelia ambigua var. *ambigua* (see footnote 85 under *Phacelia crenulata* var. *ambigua*)

***Phacelia bombycina* E.O. Wooten & P.C. Standley: Mangas Spring Phacelia**

COMMON NAMES: Mangas Spring Phacelia, Mangus Spring Scorpion-weed, Mangus Spring Scorpion Weed, Spring Phacelia. DESCRIPTION: Terrestrial annual forb/herb (12 to 20 inches in height); the flowers are light blue, light blue-lavender, blue-violet, bluish, bluish-purple, purple, deep purple or violet; flowering generally takes place between mid-March and mid-June. HABITAT: Within the range of this species it has been reported from mountains; mountainsides; mesas; rocky chutes; canyons; sandy canyon bottoms; chalky talus slopes; crevices; sandy and clayey ridges; gravelly foothills; rocky hills; rocky, gravelly and gravelly-sandy hillsides; bouldery, rocky, gravelly and sandy slopes; rocky bajadas; rocky outcrops; amongst rocks; in the shade of large boulders; gravelly-sandy banks; flats; bowls; valley floors; along railroad right-of-ways; along rocky-gravelly, stony, stony-silty, gravelly-sandy-loamy and silty roadsides; along and in gravelly and sandy arroyos; gulches; ravines; creeks; sandy riverbeds; along sandy washes; along drainages; along banks of washes; edges of flowing streams; sandy bottomlands; riparian areas, and disturbed areas growing in dry bouldery, rocky, rocky-gravelly, stony, gravelly, gravelly-sandy and sandy ground; gravelly-sandy loam and clayey loam ground; clay ground; stony silty and silty ground, and chalky ground, occurring from 1,600 to 6,300 feet in elevation in the woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. *Phacelia bombycina* is native to southwest-central and southern North America. *5, 6, 15, 46 (genus, no entry for this species, Pages 698-704), 63 (081810), **85** (081810 - color presentation)*

Phacelia caerulea (see *Phacelia coerulea*)

***Phacelia coerulea* E.L. Greene: Skyblue Phacelia**

SYNONYMY: *Phacelia caerulea* E.L. Greene [orthographic variant]. COMMON NAMES: Blue Phacelia, Caterpillar Weed, Skyblue Phacelia, Skyblue Scorpionweed. DESCRIPTION: Terrestrial annual forb/herb (6 to 20 inches in height); the flowers are pale blue-violet, blue, bluish-purple, pale lavender, pale lavender-white, lavender, lavender-white, magenta, purple, pale violet, violet or whitish; flowering generally takes place between late February and late May. HABITAT: Within the range of this species it has been reported from mountains; mountaintops; bouldery mountainsides; mesas; along rocky canyons; canyon bottoms; rocky talus slopes; knolls; along rocky ridges, ridgetops; foothills; rocky and gravelly hills; hilltops; rocky and rocky-gravelly hillsides; rocky, rocky-gravelly, gravelly-loamy, loamy and clayey slopes; gravelly bajadas; amongst rocks; sandy lava flows; gravelly and silty flats; valley floors; railroad right-of-ways, along rocky, rocky-gravelly, gravelly and sandy roadsides; rocky arroyos; draws; along streams; sandy creekbeds; riverbeds; along and in gravelly-sandy and sandy washes; drainages; gravelly banks of draws; channel bars; sandy-loamy terraces; floodplains, and sandy riparian areas growing in dry desert pavement; bouldery, rocky, rocky-gravelly, gravelly, gravelly-sandy and sandy ground; gravelly loam, gravelly-sandy loam, sandy loam and loam ground; clay ground, and silty ground, occurring from 900 to 7,100 feet in elevation in the woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat.

Phacelia coerulea is native to southwest-central and southern North America. *5, 6, 15, 43 (022310 - *Phacelia coerulea* Auct.), 46 (Page 704), 58, 63 (022410 - color presentation), 77, **85** (022410 - color presentation)*

***Phacelia crenulata* J. Torrey ex S. Watson: Cleftleaf Wildheliotrope**

COMMON NAMES: Caterpillar Weed, Cleftleaf Wildheliotrope, Common Phacelia, Desert Heliotrope, Scalloped Phacelia, Scorpion-weed, Wild-heliotrope. DESCRIPTION: Terrestrial annual forb/herb (3 to 18 inches in height); the leaves are dark green; the bell-shaped flowers may be blue, blue-lavender, blue-magenta, blue-purple, dark blue-violet, cream-white, indigo-purple, lavender-blue-purple, lavender-purple, magenta-lavender, pink-purple, purple, purple-blue, purple-white, rose-purple, pale violet, violet, violet-purple, violet-white or white; flowering generally takes place between early January and early July (additional records: one for early August, one for early September, one for mid-October and two for mid-December). HABITAT: Within the range of this species it has been reported from mountains; gravelly-clayey mountainsides; rocky mesas; plateaus; gravelly rims of canyons; cliffs; canyons; scree; talus slopes; bases of cliffs; buttes; bouldery-gravelly knolls; ledges; bouldery-gravelly, rocky and clayey ridges; ridgetops; cinder cones; foothills; rocky hills; rocky-gravelly hilltops; rocky, rocky-gravelly and gravelly hillsides; along sandy escarpments; bouldery, rocky, rocky-sandy-loamy, shaley, shaley-stony, cindery, gravelly, gravelly-sandy, sandy and clayey slopes; rocky alluvial fans; gravelly and gravelly-sandy bajadas; rocky outcrops; amongst boulders and rocks; lava flows; lava fields; sand dunes; sandy outwash fans; barren breaks; plains; gravelly, gravelly-sandy, sandy, loamy and silty flats; basins; sandy valley floors; railroad right-of-ways; along rocky, gravelly, gravelly-sandy, sandy and sandy-loamy roadsides; arroyos; draws; gulches; gullies; along creeks; creekbeds; along rivers; sandy riverbeds; along and in bouldery, bouldery-gravelly, rocky, rocky-sandy, gravelly, gravelly-sandy and sandy washes; drainages; silty lakebeds; depressions; gravelly and sandy banks of rivers and washes; shores of lakes; sandy beaches; benches; gravelly and gravelly-sandy terraces; floodplains; gravelly-sandy riparian areas, and disturbed areas growing in dry desert pavement; bouldery, bouldery-gravelly, rocky, rocky-gravelly, rocky-sandy, shaley, shaley-stony, shaley-sandy, stony, cindery, gravelly, gravelly-sandy and sandy ground; rocky-sandy loam, cobbly-silty loam, gravelly loam, sandy loam, clayey loam and loam ground; gravelly clay, sandy clay and clay ground, and sandy silty ground, occurring from sea level to 7,500 feet in elevation in the woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. This plant was reported to have been utilized by native peoples of North America; it was noted that it was used as a veterinary aid. *Phacelia crenulata* is native to southwest-central and southern North America. *5, 6, 16, 28 (color photograph), 43 (022410), 46 (Page 704), 63 (022410 - color presentation), 77, 80 (Phacelia (*Phacelia crenulata* and *Phacelia pedicellata*) is listed as a Rarely Poisonous and Suspected Poisonous Range Plant. "These annual forbs have caused liver damage in horses, hogs and cattle. Also their glandular hairs may cause severe dermatitis to susceptible persons."), **85** (022410 - color presentation), 115 (color presentation), 127*

***Phacelia crenulata* J. Torrey ex S. Watson var. *ambigua* (M.E. Jones) J.F. Macbride: Purplestem Phacelia**

SYNONYMY: *Phacelia ambigua* M.E. Jones. COMMON NAMES: Caterpillar Plant, Caterpillar Weed, Caterpillar-weed, Notch-leaf Phacelia, Notch-leaved Phacelia, Phacelia, Purplestem Phacelia, Purplestem Scorpionweed, Scorpion-weed, Wild Heliotrope, Wild-heliotrope, Ytamoosh-oohit (Desert Tortoise Food). DESCRIPTION: Terrestrial annual forb/herb (4 to 40 inches in height); the flowers may be blue, blue-lavender, blue-purple, blue-violet, lavender, lavender-blue, purple or violet; flowering generally takes place between early January and early June (additional records: one for early September, one for late November, one for early December and three for mid-December). HABITAT: Within the range of this species it has been reported from mountains; mountainsides; rocky and gravelly mesas; canyons; along gravelly canyon bottoms; bases of cliffs; crevices in rocks; ledges; ridges; foothills; hills; rocky, rocky-gravelly and gravelly hillsides; rocky, rocky-gravelly-sandy, rocky-loamy and gravelly

slopes; rocky and sandy alluvial fans; bajadas, amongst rocks; sandy lava fields; sand dunes; breaks; plains; rocky-gravelly-sandy, gravelly, sandy and loamy flats; basins; stony valley floors; along rocky, gravelly-sandy and sandy roadsides; arroyos; rocky draws; gulches; gravelly springs; along creeks; sandy riverbeds; along and in rocky, gravelly, gravelly-sandy and sandy washes; gravelly, gravelly-sandy and sandy banks of rivers and washes; edges of washes; along shores of lakes; gravelly sandbars; benches; rocky shelves; along edges and banks of canals; riparian areas, and disturbed areas growing in dry desert pavement; rocky, rocky-gravelly, rocky-gravelly-sandy, rocky-sandy, stony, gravelly, gravelly-sandy and sandy ground; rocky loam, gravelly loam, clayey loam ground; sandy clay ground, and sandy silty and silty ground, occurring from sea level to 6,400 feet in elevation in the woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. The species, *Phacelia crenulata*, was reported to have been utilized by native peoples of North America; it was noted that it was used as a veterinary aid. *Phacelia crenulata* var. *ambigua* is native to southwest-central and southern North America. *5, 6, 28 (color photograph of the species), 43 (022410), 46 (Page 704), 63 (022410 - color presentation), 80 (Phacelia (*Phacelia crenulata* and *Phacelia pedicellata*) is listed as a Rarely Poisonous and Suspected Poisonous Range Plant. "These annual forbs have caused liver damage in horses, hogs and cattle. Also their glandular hairs may cause severe dermatitis to susceptible persons."), **85** (022410 - also recorded as *Phacelia ambigua* var. *ambigua* M.E. Jones, color presentation), 115 (color presentation of the species), 127 (species)*

***Phacelia distans* G. Bentham: Distant Phacelia**

SYNONYMY: *Phacelia distans* G. Bentham var. *australis* A. Brand. COMMON NAMES: Blue Phacelia, Caterpillar Phacelia, Caterpillar Weed, Distant Phacelia, Distant Scorpion-weed, Fern-leaf Phacelia, Scorpion-weed, Wild Heliotrope. DESCRIPTION: Terrestrial annual or perennial forb/herb (3 to 40 inches in height, one plant was reported to be 20 inches in height and 20 inches in width); the fern-like leaves are green, the flowers may be light blue-purple, blue, blue-lavender, blue-lavender-purple, blue-pink, blue-purple, blue-violet, bluish-lavender, bluish-white, pale lavender, lavender, lavender-blue, lavender-pink, light purple, purple, purplish-blue, dark purplish-blue, pale violet, violet-blue or white; flowering generally takes place between mid-January and late June (additional records: one for mid-July, one for late July, one for early August, one for early September, two for early November, one for mid-November and two for late November). HABITAT: Within the range of this species it has been reported from mountains; rocky mountainsides; bases of mountains; gravelly-loamy mesas; sandy plateaus; rocky and rocky-silty canyons; bouldery, rocky, rocky-sandy, gravelly-sandy and sandy canyon bottoms; chasms; scree; bases of cliffs; rocky knobs; rocky ridges; sandy ridgetops; meadows; foothills; bouldery and rocky hills; hilltops; bouldery and rocky hillsides; bouldery, rocky, rocky-gravelly, rocky-sandy, rocky-clayey-loamy, gravelly, gravelly-sandy-loamy, gravelly-loamy, sandy, clayey and silty-clayey slopes; rocky, rocky-gravelly, rocky-sandy and rocky-sandy-loamy alluvial fans; gravelly, gravelly-sandy and sandy bajadas; bouldery and rocky outcrops; amongst boulders and rocks; bases of rocks; sand dunes; sandy-loamy plains; gravelly, gravelly-sandy, sandy and clayey flats; basins; rocky and gravelly valley floors; coastal plains; sandy coastal strands; sandy railroad right-of-ways; along gravelly and sandy roadsides; along arroyos; along bottoms of arroyos; rocky draws; ravines; seeps; springs; along streams; sandy streambeds; along creeks; creekbeds; along and in bouldery-gravelly-sandy, rocky, rocky-sandy, gravelly, gravelly-sandy and sandy washes; in gravelly-sandy and sandy drainages; sandy lakebeds; ponds; bogs; rocky-sandy depressions; sandy banks of arroyos, streams, creeks, rivers and washes; along gravelly-sandy edges of streams and washes; margins of washes; along rocky-sandy and rocky-loamy benches; sandy and silty-loamy terraces; loamy bottomlands; sandy floodplains; along canals; bouldery-sandy and sandy riparian areas; recently burned areas of woodland, chamise chaparral and sage scrub, and disturbed areas often reported as growing in the shade of boulders, shrubs and trees in moist and dry desert pavement; bouldery, bouldery-gravelly-sandy bouldery-sandy, rocky, rocky-gravelly, rocky-sandy, gravelly, gravelly-sandy and sandy ground; rocky loam, rocky-sandy loam, rocky-clayey loam, gravelly loam, gravelly-sandy loam, sandy loam, silty loam and loam ground; silty clay and clay ground, and rocky silty ground, occurring from sea level to 7,100 feet in elevation in the forest, woodland, scrub,

grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. This plant was reported to have been utilized by native peoples of North America and could be investigated to determine its value as a home garden or commercial food crop. *Phacelia distans* is native to southwest-central and southern North America. *5, 6, 15, 16, 28 (color photograph), 43 (022410 - *Phacelia distans* var. *australis* Brand), 46 (Page 703), 58, 63 (022410 - color presentation), 77 (color photograph 29), **85** (022410 - color presentation), 86 (color photograph), 115 (color presentation), 127*

Phacelia distans var. *australis* (see *Phacelia distans*)

***Pholistoma auritum* (J. Lindley) N. Lilja: Blue Fiestaflower**

COMMON NAMES: Arizona Fiestaflower, Arizona Pholistoma, Blue Fiesta Flower, Blue Fiesta-flower, Desert Fiestaflower, Fiesta-flower, Sticky Waterleaf. DESCRIPTION: Terrestrial annual forb/herb or vine (clambering, sprawling or trailing stems 3 to 40 inches in height/length, one dense patch of this plant was reported to be about 10 feet in diameter); the flowers are pale blue-lavender, blue, blue-lavender, blue-purple, blue-purple-lavender, bluish-purple, light lavender-blue, lavender, pink-purple, purple, purplish-blue, violet, violet-purple or white; flowering generally takes place between mid-January and mid-May (additional records: one for early June, one for mid-June and two for mid-July). HABITAT: Within the range of this species it has been reported from mountains; mountainsides; rocky canyons; canyon bottoms; bases of cliffs; crevices in boulders and rocks; bluffs; rocky ledges; ridges; rocky ridgetops; meadows; rocky foothills; rocky and gravelly hills; rocky and gravelly hillsides; bouldery, rocky, sandy and loamy slopes; rocky outcrops; amongst boulders and rocks; sandy basins; valley floors; coastal bluffs; along roadsides; along arroyos; ravines; seeps; springs; along streams; along creeks; creekbeds; along and in rocky, rocky-sandy, gravelly, gravelly-sandy and sandy washes; within sandy drainages; along (rocky and sandy) banks of streams, creeks, rivers and washes; loamy bottomlands; floodplains; ditches; rocky riparian areas, and disturbed areas growing in moist, damp and dry bouldery, rocky, rocky-sandy, gravelly, gravelly-sandy and sandy ground; rocky loam and loam ground, and clay ground often reported as growing beneath shrubs and trees and in shaded and sheltered areas, occurring from sea level to 6,300 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTE: *Pholistoma auritum* is native to southwest-central and southern North America. *5, 6, 43 (022510 - *Pholistoma aurita* (Lindl.) Lilja), 46 (Page 697), 63 (022510), 77, **85** (022510 - color presentation), 115 (color presentation)*

Krameriaceae: The Ratany Family

***Krameria erecta* C.L. von Wildenow ex J.A. Schultes: Littleleaf Ratany**

SYNONYMY: *Krameria parviflora* G. Bentham. COMMON NAMES: Chacate, Coashui, Littleleaf Krameria, Little-leaf Kramaria, Littleleaf Ratany, Pima, Pima Ratany, Purple Heather, Range Ratany, Range Ratany, Range Rhatany, Small-flower Ratany, Spiny Little-leaf Kramaria, Sticky Little-leaf Kramaria, Wood Ratany. DESCRIPTION: Terrestrial perennial subshrub or shrub (2 to 40 inches (possibly to 79 inches) in height, one plant was reported to be 8 to 10 inches in height and 3 feet in width, one plant was reported to be 12 inches in height and 16 inches in width, one plant was reported to be 20 inches in height and 6½ feet in width); the older stems may be gray or greenish; the leaves are blue-gray-green, gray, gray-green, gray-red or greenish; the flowers may be burgundy, lavender-purple, magenta, maroon, maroon-magenta, maroon-purple, maroon-red, pink, pink-purple, purple, dark purple, purple-magenta, purple-pink, purple-red, reddish, red-purple, reddish-violet, rose-pink, rose-purple, scarlet-purple, violet-red and white turning pink; flowering generally takes place between early March and late November (additional record: one for early January). HABITAT: Within the range of this species it has been reported from mountains; mountainsides; rocky, sandy and sandy-loamy mesas; along cliffs; bouldery and rocky canyons; canyon sides; rocky canyon bottoms; buttes; clayey knolls; sandy ledges;

rocky and rocky-gravelly ridges; bouldery and rocky ridgetops; rocky-gravelly ridgelines; foothills; rocky, gravelly and sandy hills; rocky-gravelly hilltops; rocky, rocky-sandy, rocky-sandy-loamy and gravelly hillsides; bedrock, rocky, rocky-gravelly, rocky-sandy, gravelly, gravelly-sandy-clayey-loamy, sandy and sandy-clayey-loamy slopes; gravelly bajadas; rocky outcrops; amongst boulders and rocks; boulderfields; lava flows; sand dunes; gravelly, gravelly-sandy-loamy, gravelly-loamy and sandy plains; rocky, gravelly, pebbly-sandy and sandy flats; basins; valley floors; gravelly-loamy roadsides; arroyos; along bottoms of arroyos; rocky draws; gulches; along creeks; along rivers; along and in rocky-gravelly, gravelly and sandy washes; along and in rocky drainages; playas; depressions; banks of rivers and washes; sandy edges of washes and drainage ways; benches, and riparian areas growing in dry bouldery, bouldery-rocky-sandy, rocky, rocky-gravelly, rocky-sandy, cindery, gravelly, pebbly-sandy and sandy ground; rocky-sandy loam, gravelly loam, gravelly-sandy loam, gravelly-sandy-clayey loam, gravelly-clayey loam, sandy loam and sandy-clayey loam ground; silty clay and clay ground; sandy silty ground, and chalky ground, occurring from sea level to 5,700 feet in elevation in the woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. This plant was reported to have been utilized by native peoples of North America and could be investigated to determine its value as a home garden or commercial dye crop; it was also noted as having been used as a drug or medication. The roots of this plant form grafts with other Littleleaf Ratany plants, as well as, other species. This plant is browsed by Mule Deer (*Odocoileus hemionus crooki*) and Whitetail Deer (*Odocoileus virginianus couesi*) and pocket mice, rattlesnakes, whiptails and other animals use the plant for cover. *Krameria erecta* is native to southwest-central and southern North America. *5, 6, 13, 15, 16, 28 (color photograph), 43 (022610 - *Krameria erecta* Wild. ex Schult., *Krameria erecta* Wild. *ex* Schult. & Schult.f.), 46 (recorded as *Krameria parviflora* Benth., Page 404), 48 (genus), 58, 63 (022610 - color presentation), 77 (color photograph #30), **85** (022610 - color presentation), 115 (color presentation), 127*

***Krameria grayi* J.N. Rose & J.H. Painter: White Ratany**

COMMON NAMES: Chacate, Cosahui, Crimson-beak, Gray's Krameria, Gray Ratany, Gray's Ratany, Range Ratany, Ratany, White Ratany, White Rhatany. DESCRIPTION: Terrestrial perennial subshrub or shrub (8 inches to 5 feet in height and to 5 feet in width, one plant was reported to be 18 inches in height with a crown 24 inches in width, one plant was reported to be 2 feet in height with a crown 30 inches in width, one plant was reported to be 28 inches in height with a crown 40 inches in width, one plant was reported to be 30 inches in height with a crown 36 inches in width, one plant was reported to be 4 feet in height with a crown 5 feet in width); the foliage is blue-gray, blue-green, gray, grayish-purple or purple, the flowers may be lavender, deep lavender, magenta, maroon, maroon-purple, pink, pinkish-purple, light purple fading to white, purple, dull raspberry-red, red-purple, red-violet, reddish-purple, rose, rose-purple, violet, violet-purple or white turning pink or purple; flowering generally takes place between mid-March and mid-July and again between early September and late November (additional records: one for mid-February, two for mid-August and one for mid-December). HABITAT: Within the range of this species it has been reported from mountains; mountainsides; rocky mesas; bouldery canyons; rocky canyon bottoms; rocky talus slopes; rocky ledges; ridges; rocky ridgetops; bouldery and rocky foothills; rocky and gravelly-sandy hills; hilltops; rocky and gravelly hillsides; bedrock, bouldery, bouldery-rocky-sandy, bouldery-cobbly, rocky, rocky-gravelly-sandy, gravelly and sandy slopes; gravelly-sandy and sandy alluvial fans; gravelly and sandy bajadas; bouldery and rocky outcrops; amongst boulders; sand dunes; sandy plains; rocky, gravelly, sandy and sandy-clayey-loamy flats; loamy basins; sandy valley floors; beach dunes; along rocky roadsides; along arroyos; rocky gullies; around seeping streams; along and in gravelly, gravelly-sandy and sandy washes; cienegas; swampy areas; benches; rocky terraces; bottomlands; riparian areas, and disturbed areas growing in dry desert pavement; bouldery, bouldery-rocky-sandy, bouldery-cobbly, rocky, rocky-gravelly-sandy, shaley, gravelly, gravelly-sandy and sandy ground and sandy-clayey loam and loam ground, occurring from sea level to 4,400 feet in elevation in the woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat, the flowers

are reported to be fragrant. This plant was reported to have been utilized by native peoples of North America and could be investigated to determine its value as a home garden or commercial dye crop; it was also noted as having been used as a drug or medication. The roots of this plant form grafts with other White Ratany plants, as well as, other species. White Ratany is browsed by Black-tailed Jack Rabbits (*Lepus californicus*), Desert Bighorn Sheep (*Ovis canadensis mexicana*), Mule Deer (*Odocoileus hemionus crooki*) and Whitetail Deer (*Odocoileus virginianus couesi*) and the Scaled Quail (*Callipepla squamata*) feeds on the seeds. *Krameria grayi* is native to southwest-central and southern North America. *5, 6, 13, 16, 28 (color photograph), 43 (022610), 46 (Page 404), 48 (genus), 63 (022610 - color presentation), 77, **85** (022610 - color presentation), 115 (color presentation), 127*

Krameria parviflora (see *Krameria erecta*)

Lamiaceae (Labiatae): The Mint Family

***Hedeoma nana* (J. Torrey) J.I. Briquet: Dwarf False Pennyroyal**

COMMON NAMES: Dwarf False Pennyroyal, False Pennyroyal, Low Hedeoma, Mock-pennyroyal, Oregano, Penny Royal. DESCRIPTION: Terrestrial annual or perennial forb/herb (4 to 16 inches in height, one plant was reported to be 9 inches in height and 12 inches in width); the flowers may be albino, blue, blue-lavender, light lavender, lavender, lavender-blue, lavender-pink, magenta-purple, light pink, pink, pinkish, pinkish-purple, light purple, purple, purple-blue, rose-purple, white, whitish-lavender or whitish-purple; flowering generally takes place between mid-February and late October. HABITAT: Within the range of this species it has been reported from mountains; cliffs; canyon rims; along bouldery and rocky canyons; sandy canyon walls; canyonsides; along bouldery, bouldery-rocky, rocky, gravelly and sandy canyon bottoms; crevices in bedrock and boulders; buttes; rocky ledges; bedrock and bouldery ridges; rocky ridgetops; foothills; rocky hills; rocky and rocky-sandy hillsides; bedrock, bouldery, rocky, stony, gravelly-loamy and sandy-clayey-loamy slopes; bajadas; rocky outcrops; amongst boulders and rocks; sandy lava flows; rocky plains; gravelly flats; basins; rocky valley floors; along rocky-gravelly roadsides; arroyos; stony draws; springs; along streams; along creeks; rocky and stony creekbeds; along rivers; riverbeds; along and in rocky, rocky-sandy, gravelly and sandy washes; bouldery and bouldery-rocky drainages; marshes; banks of streams and creeks; borders of washes; edges of lakes; terraces; gravelly bottomlands; floodplains; riparian areas and disturbed areas growing in moist and dry rocky desert pavement; bouldery, bouldery-rocky, rocky, rocky-gravelly, rocky-sandy, stony, pebbly, gravelly and sandy ground; gravelly loam and sandy-clayey loam ground, and silty ground, occurring from 400 to 7,800 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant was reported to have been utilized by native peoples of North America and could be investigated to determine its value as a home garden or commercial food, beverage and/or spice crop; it was also noted as having been used as a drug or medication and as a commodity used in personal hygiene. The crushed herbage is very aromatic. *Hedeoma nana* is native to southwest-central and southern North America. *5, 6, 15, 43 (022710), 46 (recorded as *Hedeoma nanum* (Torr.) Briq., Page 745), 63 (022710 - color presentation), **77**, 85 (022710 - color presentation of dried material), 127*

Hedeoma nanum (see footnote 46 under *Hedeoma nana*)

***Hyptis emoryi* J. Torrey: Desert Lavender**

COMMON NAMES: Bee Sage, Bee-sage, "Chia" (name given to the seeds of this plant, and also to the seeds of several species of *Salvia*, which are used in cooking), Desert Lavender, Desert-lavender, Lavender, Mariola (Yaqui), Salvia. DESCRIPTION: Terrestrial perennial evergreen shrub (8 inches to 15 feet in height, one plant was reported to be 8 feet in height and 8 feet in width); the leaves are gray, gray-green, grayish-white or green-gray; the flowers may be blue, blue-lavender, blue-purple, blue-violet, dark

blue, lavender, pink-purple, purple, purple-indigo, violet, violet-blue or white; the styles are purple; the filaments are white; the anthers are purple; flowering generally takes place between mid-January and mid-June and between early September and mid-June (additional records: one for early July, one for mid-July and two for mid-August). HABITAT: Within the range of this species it has been reported from rocky mountains; rocky mountainsides; bouldery-clayey-loamy mesas; along and in bouldery, rocky and rocky-sandy canyons; along rocky, gravelly and sandy canyon bottoms; rocky talus slopes; bases of cliffs; crevices in rocks; buttes; ledges; rocky and gravelly ridges; bouldery ridgetops; rocky foothills; rocky hills; rocky, rocky-gravelly and gravelly hillsides; bouldery, bouldery-rocky, rocky, rocky-gravelly-loamy, stony and sandy slopes; rocky alluvial fans, bajadas; rocky outcrops; amongst boulders and rocks; sand dunes; rocky-gravelly and sandy plains; gravelly flats; coastal plains; coast lines; along roadsides; rocky and rocky-gravelly arroyos; along rocky and gravelly bottoms of arroyos; troughs; along seepage streams; along streambeds; bouldery-rocky-sandy creekbeds; along and in bouldery, bouldery-gravelly, bouldery-gravelly-sandy, rocky, gravelly, gravelly-sandy and sandy washes; within rocky and rocky-gravelly drainages; rocky banks of streams and washes; along sandy edges of washes; along margins of washes and drainage ways; gravelly shores; floodplains; bouldery-cobbly-sandy riparian areas, and disturbed areas growing in dry desert pavement; bouldery, bouldery-rocky-sandy, bouldery-cobbly-sandy, bouldery-gravelly, bouldery-gravelly-sandy, rocky, rocky-gravelly, rocky-sandy, stony, gravelly, gravelly-sandy and sandy ground; bouldery-clayey loam, rocky-gravelly loam, rocky-sandy loam, sandy loam and clayey loam ground, and rocky clay and clay ground, occurring from sea level to 6,000 feet in elevation in the woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat, but is sensitive to frosts. This plant was reported to have been utilized by native peoples of North America; it was noted as having been used as a drug or medication. The foliage is fragrant, having the odor of lavender or turpentine. Native bees and hummingbirds visit the flowers and the seeds provide food for wildlife. *Hyptis emoryi* is native to southwest-central and southern North America. *5, 6, 13, 16, 18, 28 (color photograph), 43 (022710), 46 (Page 748), 48, 63 (022710), 77 (color photograph #31), 85 (022710 - color presentation), 91, 115 (color presentation), 127, **HR***

***Salvia columbariae* G. Bentham (var. *columbariae* is the variety reported as occurring in Arizona): Chia**

COMMON NAMES: California Chia, California Sage, Chia, Desert Chia, Desert Sage, Sage. DESCRIPTION: Terrestrial annual forb/herb (4 to 40 inches in height); flowers may be blue, blue-purple, blue-violet, dark blue, bluish, bluish-lavender, lavender, purple, dark purple, purplish, purplish-blue, royal blue, violet or white; flowering generally takes place between late January and late July (additional records: one for mid-August, one for late August and one for mid-November). HABITAT: Within the range of this species it has been reported from mountains; bouldery mountainsides; rocky-sandy and sandy mesas; rocky plateaus; along rocky cliffs; rocky canyons; rocky canyon bottoms; rocky bluffs; buttes; rocky and clayey-loamy ridges; rocky-gravelly-loamy ridgetops; meadows; foothills; bedrock, bouldery, rocky, rocky-loamy-clayey, gravelly, sandy and clayey hills; clayey hilltops; bouldery, bouldery-sandy, rocky, rocky-sandy and sandy hillsides; bouldery, rocky, rocky-gravelly-loamy, rocky-sandy, rocky-loamy, rocky-clayey, shaley, cobbly-gravelly-sandy, gravelly, gravelly-sandy, sandy, sandy-loamy, clayey and silty slopes; rocky and rocky-sandy alluvial fans; gravelly, gravelly-sandy and silty bajadas; rocky outcrops; amongst boulders and rocks; sand dunes; blow-sand deposits; rocky-sandy outwash fans; plains; bouldery-sandy, rocky, gravelly and sandy flats; bouldery-sandy valley floors; sandy bases of coastal bluffs; coastlines; along rocky, rocky-gravelly-loamy, gravelly and sandy roadsides; along arroyos; within draws; along streams; along creeks; along gravelly-sandy creekbeds; sandy riverbeds; along and in rocky, rocky-sandy, rocky-clayey, stony-sandy-silty, gravelly, gravelly-sandy, pebbly-sandy, sandy and silty washes; sandy drainages; in bouldery and sandy drainage ways; around pools; silty depressions; gravelly and sandy banks of arroyos, streams, creeks, rivers and washes; sandy edges of arroyos and washes; along margins of washes; gravel bars; sandy benches; gravelly and sandy terraces; sandy and loamy bottomlands; floodplains; silty impoundments; gravelly-sandy and sandy-silty riparian

areas; recently burned areas in woodlands, chaparral and coastal sage scrub, and disturbed areas growing in moist and dry bouldery, bouldery-sandy, rocky, rocky-sandy, shaley, cobbly-gravelly-sandy, gravelly, gravelly-sandy, pebbly-sandy and sandy ground; rocky loam, rocky-gravelly loam, sandy loam, clayey loam and loam ground; rocky-loamy clay, rocky clay and clay ground, stony-sandy silty, sandy silty, silty and powdery silty ground, occurring from sea level to 7,200 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formation. NOTES: This plant may be an attractive component of a restored native habitat. This plant was reported to have been utilized by native peoples of North America and could be investigated to determine its value as a home garden or food, beverage, spice and/or fiber crop; it was also noted as having been used as a drug or medication. The foliage has a strong, pleasant, sweet odor of sage. *Salvia columbariae* is native to southwest-central and southern North America. *5, 6, 15, 16, 18 (genus), 28 (color photograph), 43 (022710), 46 (Page 741), 48 (genus), 63 (022710 - color presentation), 77, **85** (022710 - color presentation), 86 (color photograph), 115 (color presentation), 127*

***Salvia pinguifolia* (M.L. Fernald) E.O. Wooton & P.C. Standley: Rock Sage**

COMMON NAME: Rock Sage. DESCRIPTION: Terrestrial perennial subshrub or shrub (20 inches to 6½ feet in height, one plant was observed and described as being 4 to 6 feet in height and width); the foliage is gray-green; the flowers are blue, blue-lavender, blue-violet & white & blue, Blue & white, deep blue, royal blue, bluish-white, lavender, lavender-blue, light purple, purple, purplish-blue or violet; the stigmas are white; flowering generally takes place between late July and early November (additional records: one for mid-April, one for late April, two for mid-May, one for late June, two for early July and one for late December). HABITAT: Within the range of this species it has been reported from mountains; mountaintops; rocky edges of cliffs; rocky canyons; rocky canyon bottoms; gravelly bases of cliffs; bases of bluffs; ridges; ridgetops; hillsides; rocky and stony slopes; amongst rocks; sandy lava flows; lava beds; basins; along roadsides, rocky arroyos; rocky draws; gulches; rocky ravines; along and in rocky-sandy and clayey washes; bouldery drainages; (rocky) margins of arroyos; rocky riparian areas, and disturbed areas growing in dry bouldery, rocky, rocky-sandy, gravelly, gravelly-sandy and sandy ground; rocky-clayey loam ground, and rocky clay and clay ground, occurring from 2,700 to 7,900 feet in elevation in the woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat, the leaves are reportedly aromatic. *Salvia pinguifolia* is native to southwest-central and southern North America. *5, 6, 13, 18 (genus), 43 (082110- *Salvia pinguifolia* Wooton & Standl.), 46 (Page 742), 48 (genus), 63 (082110 - color presentation), **77** (color photograph #77), 85 (082210 - color presentation of dried material)*

Linaceae: The Flax Family

***Linum lewisii* F.T. Pursh (var. *lewisii* is the variety reported as occurring in Arizona): Lewis Flax**

SYNONYMY: (for *L.l.* var. *lewisii*: *Linum perenne* C. Linnaeus subsp. *lewisii* (F.T. Pursh) O.E. Hultén). COMMON NAMES: Blue Flax, Flax, Lewis Blue Flax, Flax, Lewis Flax, Lewis' Blue Flax, Lewis' Flax, Prairie Flax, Western Blue Flax, Wild Blue Flax, Wild Flax. DESCRIPTION: Terrestrial semi-evergreen perennial forb/herb or subshrub (4 to 40 inches in height); the leaves are grayish-green or green; the flowers (¾ to 2 inches in width) may be pale blue, blue, blue-purple, cerulean-blue, lavender, purple, purplish-blue, deep sky blue, violet or white; flowering generally takes place between mid-February and late October (additional record: one for early January). HABITAT: Within the range of this species it has been reported from mountains; mountaintops; rocky and gravelly-loamy mountainsides; rocky-sandy and clayey-loamy mesas; plateaus; canyon rims; cliffs; rocky canyons; along canyon bottoms; talus slopes; rocky ledges; rocky ridges; ridgetops; clearing in forests; rocky, rocky-sandy, gravelly, loamy and clayey meadows; foothills; rocky hills; hilltops; rocky and sandy-loamy hillsides; bouldery-cobbly, rocky, rocky-clayey, shaley, shaley-sandy, gravelly, gravelly-loamy, gravelly-silty, sandy-clayey-loamy and loamy slopes; bajadas; bouldery outcrops; steppes; prairies; plains; rocky flats;

basins; hollows; cindery valley floors; valley bottoms; along railroad right-of-ways; along rocky, rocky-sandy-clayey, cindery, gravelly-sandy, sandy and sandy-loamy roadsides; springs; along streams; along and in streambeds; along creeks; along rivers; in sandy washes; boggy areas; marshes; gravelly-clayey-loamy swampy areas; sumps; clayey-loamy banks of creeks; along rocky shores of lakes; benches; gravelly-sandy-loamy and sandy terraces; bottomlands; floodplains; ditches; ditch banks; gravelly-sandy and sandy riparian areas, and disturbed areas growing in moist, damp and dry bouldery-cobbly, rocky, rocky-sandy, shaley, shaley-sandy, cindery, gravelly, gravelly-sandy and sandy ground; rocky loam, gravelly loam, gravelly-sandy loam, gravelly-clayey loam, sandy loam, sandy-clayey loam, clayey loam and loam ground; rocky clay, rocky-sandy clay and clay ground, and gravelly silty ground, occurring from 1,300 to 12,000 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. This plant was reported to have been utilized by native peoples of North America and could be investigated to determine its value as a home garden or commercial food, fodder, cooking agent and/or fiber crop; it was also noted as having been used as a drug or medication and as a commodity used in personal hygiene. This plant grows in areas receiving 10 to 23 inches of annual precipitation doing best in areas with around 16 inches of annual precipitation; taking 2 to 3 years to establish, mature and flower, the flowers open at sunrise with petal drop occurring around noon. This plant is browsed by Elk (*Cervus elaphus*), Pronghorn Antelope (*Antilocapra americana*), Mule Deer (*Odocoileus hemionus*) and White-tailed Deer (*Odocoileus virginianus*) and the seeds may be eaten by birds and deer mice. *Linum lewisii* is native to northwestern, northern, central and southern North America. *5, 6, 15, 16, 18 (genus), 28 (color photograph), 43 (022810), 46 (Page 489), 48 (genus), 58, 63 (022810 - color presentation), 77 (color photograph #36), 80 (*Linum lewisii*, *Linum neomexicanum* and others are considered to be Rarely Poisonous and Suspected Poisonous Range Plant. "These forbs are potentially cyanogenetic but reports of losses on rangelands have not been confirmed."), **85** (022810 - color presentation), 86 (color photograph of *Linum perenne*), 115 (color presentation), 127*

Linum perenne subsp. *lewisii* (see *Linum lewisii* var. *lewisii*)

Loasaceae: The Blazingstar Family

***Mentzelia albicaulis* (W.J Hooker) J. Torrey & A. Gray: Whitestem Blazingstar**

COMMON NAMES: Blazing Star, Small-flowered Blazingstar, White Blazingstar, White-stem Blazing-star, White-stem Stickleaf, Whitestem Blazingstar, Whitestem Stickleaf. DESCRIPTION: Terrestrial annual forb/herb (4 inches to 2 feet in height, plants were reported that were 8 to 12 inches in height and 4 to 10 inches in width); the stems are pink-tan or shiny white; the leaves are gray-green; the flowers are lemon-yellow, mustard-yellow, orangish, yellow or yellow-orange; flowering generally takes place between mid-February and late July (additional records: two for early January and one for mid-January). HABITAT: Within the range of this species it has been reported from mountains; cobbly-sandy mountainsides; mesas; cliffs; rocky and shaley canyons; rocky and sandy canyon bottoms; gorges; talus slopes; clayey bluffs; buttes; shaley knolls; rocky and gravelly ridges; rocky and gravelly-sandy ridgetops; foothills; rocky, gravelly and sandy hills; bouldery-rocky, rocky, rocky-gravelly-loamy, cobbly, sandy and clayey hillsides; bouldery, bouldery-gravelly, rocky, rocky-sandy, shaley, shaley-clayey, stony-gravelly, cindery, cindery-sandy; gravelly, gravelly-silty-clayey, sandy and clayey slopes; sandy alluvial fans; gravelly and gravelly-sandy bajadas; rocky outcrops; amongst boulders and rocks; sand dunes; silty hummocks; sandy plains; breaks; gravelly, gravelly-clayey, sandy, sandy-loamy, sandy-clayey, sandy-powdery-loamy and silty-loamy flats; basins; sandy valley floors; valley bottoms; along railroad right-of-ways; along shaley, gravelly, gravelly-sandy-clayey-loamy, sandy and clayey roadsides; sandy arroyos; along draws; along gulches; streambeds; along creeks; along rivers; along and in gravelly, gravelly-sandy, sandy and sandy-clayey washes; drainages; silty lakebeds; boggy areas; clayey depressions; along sandy banks of creeks and washes; sandy edges of washes, lakes and playas; gravelly-sandy and sandy shores of

lakes; sandy beaches; rocky-sandy, cobbly-loamy and sandy benches; floodplains; rocky mesquite bosques; along sandy fencelines; sandy ditches; recently burned areas; sandy riparian areas; waste places, and disturbed areas growing in dry bouldery, bouldery-rocky, bouldery-gravelly, rocky, rocky-gravelly-sandy, rocky-sandy, shaley, stony, stony-gravelly, cobbly, cobbly-sandy, cindery, cindery-sandy, gravelly, gravelly-sandy and sandy ground; rocky-gravelly loam, cobbly loam, gravelly loam, gravelly-sandy-clayey loam, gravelly-clayey loam, sandy loam, sandy-powdery loam, clayey loam, silty loam and loam ground; shaley clay, gravelly clay, gravelly-silty clay, sandy clay and clay ground, and rocky-silty, gravelly silty, sandy silty and silty ground, occurring from 400 to 9,000 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant was reported to have been utilized by native peoples of North America and could be investigated to determine its value as a home garden or commercial food crop; it was also noted as having been used as a drug or medication. *Mentzelia albicaulis* is native to west-central and southern North America. *5, 6, 15, 16, 18 (genus), 43 (030110 - *Mentzelia albicaulis* (Douglas *ex* Hook.) Douglas ex Torr. & A. Gray), 46 (Page 566), 48 (genus), 58, 63 (030110 - color presentation), 77, **85** (030210 - color presentation of dried material), 127*

Malpighiaceae: The Barbados-cherry Family

***Janusia gracilis* A. Gray: Slender Janusia**

COMMON NAMES: Desert Vine, Fermina, Slender Janusia. DESCRIPTION: Terrestrial perennial deciduous forb/herb or vine (clambering, climbing, scrambling or twining stems 16 inches to 10 feet in length, one plant was reported to have been 16 inches in height with a crown 10 inches in diameter); the leaves are grayish-green or reddish; the flowers (to ½ inch in width) are orange-yellow or yellow; flowering generally takes place between early March and mid-November (additional records: two for early January, one for late January, one for early December, one for mid-December and one for late December); the winged fruits (paired samaras) are pink, purple-red, red, red-green or reddish. HABITAT: Within the range of this species it has been reported from mountains; rocky mountaintops; rocky mountainsides; mesas; cliffs; rocky canyons; sandy canyon bottoms; gravelly-sandy bases of cliffs; amongst crevices; rocky buttes; rocky knolls; rocky and gravelly ridges; rocky ridgetops; foothills; rocky hills; rocky hillsides; along bouldery-rocky, rocky, rocky-gravelly, rocky-clayey-loamy and gravelly slopes; alluvial fans; gravelly bajadas; volcanic plugs; bouldery and rocky outcrops; amongst rocks; plains; gravelly flats; basins; valley floors; rocky-gravelly roadsides; along rocky arroyos; bottoms of arroyos; draws; within gullies; ravines; along streams; along rocky streambeds; along creeks; bouldery-rocky-sandy creekbeds; along and in gravelly and sandy washes; along drainages; waterholes; palm oases; rocky banks of streams; edges of washes; benches; floodplains, and riparian areas growing in dry bouldery, bouldery-rocky, bouldery-rocky-sandy, rocky, rocky-gravelly, gravelly, gravelly-sandy and sandy ground and rocky-clayey loam and clayey loam ground, occurring from sea level to 7,000 feet in elevation in the woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. It is small woody vine often reported as scrambling over rocks, twining among shrubs or forming small tangled shrublets. Slender Janusia is browsed by the Sonoran Desert Tortoise (*Gopherus agassizi*), Desert Mule Deer (*Odocoileus hemionus* subsp. *crooki*) and Whitetail Deer (*Odocoileus virginianus* subsp. *couesi*). *Janusia gracilis* is native to southwest-central and southern North America. *5, 6, 13, 15, 16, 28 (color photograph), 43 (030310), 46 (Page 497), 48, 58, 63 (030310 - color presentation), 77 (color photograph #83), **85** (030310 - color presentation), 115 (color presentation), **WTK** (July 4, 2005)*

Malvaceae: The Mallow Family

***Abutilon* P. Miller*:* Indian Mallow**

COMMON NAME: Indian Mallow. *43 (062710), 46 (Pages 538-540), 63 (062710 - color presentation), **HR***

Abutilon crispum (see *Herissantia crispa*)

***Abutilon malacum* S. Watson: Yellow Indian Mallow**

COMMON NAMES: Indian Mallow, Yellow Abutilon, Yellow Indian Mallow. DESCRIPTION: Terrestrial perennial subshrub or shrub (12 to 40 inches in height); the leaves are grayish or gray-green; the flowers are golden, light orange, orange, orange-yellow, dull tan-apricot, yellow or yellow-orange; flowering generally takes place between mid-January and early December (flowering records: one for mid-January, two for late February, two for early March, one for late March, four for early April, four for mid-April, one for late April, two for early May, two for mid-May, two for early June, one for mid-June, one for early July, five for mid-August, three for late August, three for early September, eight for mid-September, seven for late September, one for early October, three for mid-October, one for late October, two for late November and two for early December. HABITAT: Within the range of this species it has been reported from mountains; bases of mountains; cliffs; rocky canyons; hilltops; bouldery rocky hillsides; bouldery and rocky slopes; bajadas; amongst rocks; bases of boulders; gravelly-loamy roadsides; along arroyos; along bottoms of arroyos; rocky ravines; springs; along rocky and sandy washes; along drainages, and floodplains growing in dry bouldery, rocky, gravelly and sandy ground and gravelly loam ground, occurring from 1,700 to 4,900 feet in elevation in the scrub, grassland and desertscrub ecological formations. NOTE: *Abutilon malacum* is native to southwest-central and southern North America. *5, 6, 18 (genus), 43 (072010), 63 (072010), 77, **85** (080710 - color presentation)*

***Abutilon parishii* S. Watson: Parish's Indian Mallow**

COMMON NAMES: Indian Mallow, Parish Indian Mallow,Parish's Abutilon, Parish's Indian Mallow, Pima Indian Mallow, Tucson Indian Mallow. DESCRIPTION: Terrestrial perennial forb/herb, subshrub or shrub (40 inches to 6 feet in height), the flowers have been described as being yellow-orange; flowering generally takes place between April and August. HABITAT: Within the range of this species it has been reported from mountains; rocky canyons; canyon walls; canyon bottoms; talus slopes; bases of cliffs; ledges; rocky hillsides; rocky slopes; bajadas; amongst boulders and rocks; drainage ways, and shores of lakes growing in dry bouldery and rocky ground, occurring from 400 to 4.900 feet in elevation in the scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. *Abutilon parishii* is native to southwest-central and southern North America. *5, 6, 8, 9, 18 (genus), 43 (062610), 46 (Page 539 incorrectly shown as being a synonym of *Abutilon palmeri* Gray, Supplement, Page 1060), 63 (062610), **77** (color photograph #84), 85 (062610 - color presentation of dried material, unable to access species information), **HR***

***Abutilon parvulum* A. Gray: Dwarf Indian Mallow**

COMMON NAMES: Indian Mallow, Dwarf Indian Mallow, Small Leaf Indian Mallow, Small-leaved Abutilon. DESCRIPTION: Terrestrial perennial forb/herb or subshrub (trailing stems 6 to 24 inches in length, one plant was described as being 12 inches in height and 20 inches in width; sometimes prostrate); the leaves are gray-green; the flowers may be golden, orange, orange-peach, orange-red, orange-salmon, orange-yellow, orange-yellow-brown, pink, salmon, golden yellow or yellow-orange, flowering generally takes place between early April and late October (additional records: one for mid-March and one for mid-November; however, it was note that flowering may take place throughout the year). HABITAT: Within the range of this species it has been reported from mountains; mesas; canyons; canyon walls; crevices in rocks; ledges; ridges; foothills; hills; gravelly hillsides; rocky slopes; bajadas; rocky outcrops; amongst boulders, rocks and gravels; plains; gravelly flats; roadsides; gulches; creeks; along rocky and gravelly washes; gravelly terraces; bottomlands; floodplains; riparian areas, and disturbed areas growing in dry bouldery, rocky, rocky-gravelly, rocky-sandy, gravelly, gravelly-sandy and sandy ground and gravelly loam and sandy loam ground, occurring from 1,500 to 5,700 feet in elevation

in the woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTE: *Abutilon parvulum* is native to southwest-central and southern North America. *5, 6, 15, 18 (genus), 43 (072010), 46 (Page 539), 58, 63 (072010), **77**, 85 (color presentation)*

Gayoides crispum (see *Herissantia crispa*)

***Herissantia crispa* (C. Linnaeus) G.K. Brizicky: Bladdermallow**

SYNONYMY: *Abutilon crispum* (C. Linnaeus) F.K. Medikus, *Gayoides crispum* (C. Linnaeus) J.K. Small. COMMON NAMES: Bladder Mallow, Bladder-mallow, Bladdermallow, Curly Abutilon, False Indian Mallow, Netvein Herissantia. DESCRIPTION: Terrestrial annual or perennial forb/herb or subshrub (prostrate, sprawling or trailing stems 8 inches to 4 feet in height/length); the leaves are light green; the flowers are cream, pale orange-cream, orange, orange-cream, orange-yellow, pink-orange, pale peach, salmon, white, light yellow, light yellow-orange, yellow or yellowish; the anthers are yellow; flowering generally takes place between mid-January and mid-May and again between early August and late December (additional records: one for late June, two for early July and one for mid-July); the fruit is green. HABITAT: Within the range of this species it has been reported from mountains; rocky mesas; rocky cliffs; rocky canyons; along gravelly canyon bottoms; rocky talus slopes; bases of cliffs; crevices in rocks; rocky ledges; ridgetops; rocky and stony hills; bouldery-rocky and rocky hillsides; bouldery and rocky slopes; rocky and sandy alluvial fans; bajadas; rocky outcrops; amongst boulders and rocks; sandy bases of boulders and rocks; sand dunes; plains; gravelly flats; valley bottoms; coastal beaches; along roadsides; gravelly streambeds; sandy creekbeds; along and in rocky, rocky-gravelly, gravelly, gravelly-sandy and sandy washes; bouldery drainages; edges of arroyos; sandy beaches; benches; floodplains; riparian areas, and disturbed areas growing in dry bouldery, bouldery-rocky, rocky, rocky-gravelly, rocky-sandy, stony, gravelly, gravelly-sandy and sandy ground and clayey loam ground, occurring from sea level to 4,800 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. The Bladdermallow is a food and nesting plant of the caterpillar of the Erichson's White-skipper (*Heliopetes domicella*). *Herissantia crispa* is native to south-central and southern North America and coastal islands in the Caribbean Sea. *5, 6, 15, 16, 28 (color photograph), 43 (030410), 46 (recorded as *Gayoides crispum* (L.) Small, Page 540), 48 (genus), 58, 63 (030410 - color presentation), 77 (color photograph #37), **85** (030410 - color presentation), 115 (color presentation)*

***Hibiscus biseptus* S. Watson: Arizona Rosemallow**

COMMON NAMES: Arizona Rosemallow, Malvita, Sonoran Rose Mallow. DESCRIPTION: Terrestrial perennial forb/herb, subshrub or shrub (erect stems 18 to 40 inches in height, one plant was described as being 18 inches in height and 14 inches in diameter); the leaves may turn red-green before falling; the flowers are cream-yellow, lavender, white with red centers; light yellow, yellow with a purplish or violet basal spot or yellowish-white with a purple center; flowering generally takes place between early August and mid-October (additional records: one for early April, one for early May, one for mid-December and one for late December). HABITAT: Within the range of this species it has been reported from mountains; mountaintops; rocky canyons; canyon bottoms; bases of cliffs; crevices in rocks; ledges; rocky hills; hilltops; hillsides; rocky and gravelly slopes; rocky bajadas; amongst boulders; sandy-silty plains; flats; along roadsides; within gravelly-sandy arroyos; bottoms of arroyos; along washes; at waterholes; edges of ponds; floodplains, and riparian areas growing in wet and dry bouldery, rocky, gravelly and gravelly-sandy ground; gravelly-sandy loam ground, and sandy silty ground, occurring from sea level to 5,200 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. *Hibiscus biseptus* is native to southwest-central and southern North America. *5, 6, 13, 15, 43 (072010), 46 (Page 553), 48 (genus), 58, 63 (072010), **77** (color photograph #38), **85** (080810 - color presentation of dried material)*

***Sida abutifolia* P. Miller: Spreading Fanpetals**

SYNONYMY: *Sida diffusa* K.S. Kunth, *Sida filicaulis* J. Torrey & A. Gray, *Sida procumbens* O. Swartz. COMMON NAMES: Spreading Fanpetals, Spreading Sida. DESCRIPTION: Terrestrial annual or perennial forb/herb (prostrate stems 8 inches to 4 feet in length); the stems are pinkish; the leaves are dark green; the flowers (to 7/8 inch in width) may be pale apricot, apricot, cream-yellow, golden, pale orange, orange, orange-yellow, peach, white, pale yellow-orange, yellow, yellow-orange, yellow-salmon or yellowish-orange; flowering generally takes place between early April and mid-November (additional records: one for late February, one for mid-March, one for early December and one for mid-December, it has been reported that flowering may take place throughout the year). HABITAT: Within the range of this species it has been reported from rocky mountains; sandy mesas; rocky canyons; stony canyon walls; canyon bottoms; crevices in rocks; ledges; rocky-gravelly ridges; clayey-loamy meadows; foothills; rocky hills; rocky hillsides; bases of hills; bouldery-gravelly, rocky, gravelly and clayey slopes; alluvial fans; stony and gravelly bajadas; rocky outcrops; amongst boulders; cobbly, gravelly-sandy-loamy, sandy and sandy-loamy plains; rocky-loamy, gravelly, gravelly-sandy, sandy and clayey flats; valleys; along rocky-gravelly-sandy-clayey-loamy, rocky-gravelly-clayey-loamy, gravelly, gravelly-sandy-loamy and sandy roadsides; rocky arroyos; bottoms of arroyos; gulches; springs; along streams; along streambeds; creeks; along and in bouldery-rocky-sandy, gravelly-sandy and sandy washes; along rocky-gravelly-sandy drainage ways; banks of arroyos, rivers; flanks of streams; benches; terraces; bottomlands; floodplains; mesquite bosques; along fence lines; sandy riparian areas, and disturbed areas in , bouldery, bouldery-rocky-sandy, bouldery-gravelly, rocky, rocky-gravelly, rocky-gravelly-sandy, stony, cobbly, gravelly, gravelly-sandy and sandy soils; rocky loam, rocky-gravelly-sandy clayey loam, rocky-gravelly-clayey loam, gravelly loam, gravelly-sandy loam, gravelly-sandy-clayey loam, sandy loam and clay loam soils, and clay soils, occurring from 100 to 6,600 feet in elevation in the woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. *Sida abutifolia* is native to south-central and southern North America; Central America; northern South America, and coastal islands in the Caribbean Sea. *5, 6, 15 (*Sida procumbens* Sw.), 16 (*Sida procumbens* Sw.), 28 (*Sida filicaulis*, *Sida procumbens*), 43 (072409 - no record of *Sida abutifolia*), 46 (*Sida procumbens* Sw., Page 550), 58 (*Sida procumbens* Sw.), 63 (030610), 77, **85** (030610 - color presentation), 115 (color presentation)*

Sida diffusa (see *Sida abutifolia*)

Sida filicaulis (see *Sida abutifolia*)

Sida procumbens (see *Sida abutifolia*)

***Sphaeralcea ambigua* A. Gray: Desert Globemallow**

COMMON NAMES: Apricot Globemallow (for *Sphaeralcea ambigua* subsp. *ambigua*), Apricot Mallow (for subsp. *ambigua*), Apricot-mallow, Coyóco (Seri), Desert Globemallow, Desert Hollyhock, Desert-hollyhock, Desert Mallow, Desert-mallow, Globe Mallow, Globemallow, Mal de Ojo, Mountain Apricot Mallow (for subsp. *ambigua*), Plantas Muy Malas (very bad plants), Rose Globemallow (for subsp. *rosacea*), Sore-eye Poppy. DESCRIPTION: Terrestrial perennial forb/herb or subshrub (16 to 78 inches in height, one plant was reported to be 2 feet in height and 2 feet in width, one plant was reported to be 3 feet in height and 2 feet in width); the stems are silvery, tan, whitish or yellow; the leaves are grayish or silvery; the flowers (½ to 1½ inches in width) may be apricot-coral, apricot-reddish, brick-red, coral-orange, grenadine, grenadine-red, lavender, magenta, orange, orange-peach, orange-red, deep orange, orangish, light pink-lavender, pink, pink-lavender, pink-orange, plum-blue, purple, purplish-pink, red, red-orange, reddish-salmon, rose, rose-pink, salmon, salmon-orange, salmon-pink, scarlet or white; flowering generally takes place between late January and late July (additional records: one for mid-August, two for late August, three for mid-September, two for late September, two for early October, six for mid-October, one for late October, three for early November, four for mid-November, one for late

November, two for mid-December, one for late December, it has been reported that flowering may take place throughout the year). HABITAT: Within the range of this species it has been reported from mountains; mountaintops; mesas; sandy plateaus; cliffs; stony-cobbly-sandy, gravelly and sandy canyons; sandy canyon bottoms; talus slopes; bluffs; ridges; bouldery ridgetops; cindery cinder cones; foothills; bouldery, rocky and gravelly hills; bouldery-sandy and rocky hillsides; bouldery-rocky, rocky, gravelly, gravelly-loamy, gravelly-silty and sandy slopes; alluvial fans; bajadas; rock and sandy outcrops; amongst rocks; lava hills; sand dunes; sandy plains; cobbly-clayey, gravelly and sandy flats; basins; sandy and loamy valley floors; roadbeds; along rocky, rocky-gravelly, rocky-gravelly-silty, gravelly, gravelly-loamy and sandy roadsides; within arroyos; rocky ravines; seeps; along springs; along streams; along creeks; along rocky-sandy and gravelly-sandy creekbeds; along rivers; riverbeds; along and in bouldery, rocky, gravelly, gravelly-sandy and sandy washes; along sandy drainages; playas; depressions; sandy and silty-loamy banks of creekbeds, washes and lakes; edges of washes; sandy margins of washes; shores of lakes; gravel bars; sandy beaches; rocky and sandy benches; shelves; sandy bottomlands; floodplains; gravelly-sandy riparian areas, and disturbed areas growing in dry desert pavement; bouldery, bouldery-rocky, bouldery-sandy, rocky, rocky-gravelly, rocky-sandy, shaley, shaley-gravelly, stony-cobbly-sandy, cindery, gravelly, gravelly-sandy and sandy ground; gravelly loam, silty loam and loam ground; cobbly clay ground, and rocky-gravelly silty and gravelly silty ground, occurring from sea level to 8,000 feet in elevation in the woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. This plant was reported to have been utilized by native peoples of North America; it was noted that it was used as a drug or medication. The Desert Globemallow is browsed by Bighorn Sheep (*Ovis canadensis*). *Sphaeralcea ambigua* is native to southwest-central and southern North America. *5, 6, 18, 28 (color photograph), 43 (030710), 46 (Page 543), 48 (genus), 63 (030710 - color presentation), 68 (genus), 77 (color photograph #85), **85** (030710 - color presentation), 86 (color photograph), 115 (color presentation), 127*

***Sphaeralcea ambigua* A. Gray subsp. *rosacea* (P.A. Munz & I.M. Johnston) T.H. Kearney: Rose Globemallow**

SYNONYMY: *Sphaeralcea ambigua* A. Gray var. *rosacea* (P.A. Munz & I.M. Johnston) T.H. Kearney. COMMON NAME: Rose Globemallow. DESCRIPTION: Terrestrial perennial forb/herb or subshrub (20 inches to 5 feet in height, one plant was reported as being 39 inches in height with a crown 78 inches in width); the flowers are lavender, lavender-pink, mauve, pink, pinkish-lavender or violet-pink; flowering generally takes place between mid-February and mid-May (additional records: one for late June, one for late August, one for late October and one for early November, it has also been reported that flowering may take place throughout the year). HABITAT: Within the range of this species it has been reported from mountains; clayey canyons; foothills; rocky hills; rocky hillsides; bedrock, bouldery and rocky slopes, bouldery alluvial slopes; bajadas; rocky and sandy flats, along roadsides; rocky arroyos; along and in sandy washes, and edges of arroyos growing in dry bouldery, rocky and sandy ground and clay ground, occurring from 700 to 5,900 feet in elevation in the woodland, grassland and desertscrub ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. The species, *Sphaeralcea ambigua*, was reported to have been utilized by native peoples of North America; it was noted that it was used as a drug or medication. *Sphaeralcea ambigua* subsp. *rosacea* is native to southwest-central and southern North America. *5, 6, 18 (species), 28 (species, color photograph of the species), 43 (030710), 46 (Page 543), 48 (genus), 63 (030710), 68 (genus), **85** (030710), 86 (species, color photograph of the species), 115 (color presentation of the species), 127 (species)*

Sphaeralcea ambigua var. *rosacea* (see *Sphaeralcea ambigua* subsp. *rosacea*)

***Sphaeralcea coulteri* (S. Watson) A. Gray: Coulter's Globemallow**

COMMON NAMES: Annual Globemallow, Coulter Globe Mallow, Coulter Globemallow, Coulter's Globe-mallow, Coulter's Globemallow, Hadamdak (Tohono O'odham), Sevoa'ara (Yaqui),

Xcóa (Seri). DESCRIPTION: Terrestrial annual forb/herb or subshrub (6 inches to 6 feet in height); the leaves are grayish; the flowers may be apricot, light blue, coral-apricot, orange, deep orange, pinkish, red-orange, reddish-apricot, salmon, salmon-orange, white or yellow-orange; flowering generally takes place between late December and late April (additional records: one for mid-May, one for late May, one for early June, two for late August, one for mid-September, one for early November, two for late November and one for early December). HABITAT: Within the range of this species it has been reported from bouldery mountains; flanks of mountains; mesas; sandy canyons; rocky sides of buttes; clayey ridges; ridgetops; rocky hills; rocky hillsides; rocky and rocky-sandy slopes; bajadas; rocky outcrops; amongst boulders and rocks; lava and sandy inside rims of craters; sand dunes; sand hummocks; sandy plains; gravelly and sandy flats; valley floors; coastal plains; beach heads; sandy tidal flats; rocky, gravelly, sandy and sandy-loamy roadsides; sandy arroyos; along rivers; gravelly-sandy riverbeds; along and in rocky, rocky-sandy, gravelly-sandy and sandy washes; clayey playas; depressions; silty swales; sandy and silty banks of rivers and washes; sandy-clayey edges of washes and playas; gravelly beaches; bottomlands; sandy floodplains; mesquite bosques; along canals; ditches; riparian areas; waste places, and disturbed areas growing in damp and dry desert pavement; bouldery, rocky, rocky-sandy, gravelly, gravelly-sandy and sandy ground; gravelly-sandy loam, sandy loam and loam ground; sandy clay and clay ground, and silty ground, occurring from sea level to 3,300 feet in elevation in the scrub, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. *Sphaeralcea coulteri* is native to southwest-central and southern North America. *5, 6, 16, 18 (genus), 43 (030710), 46 (Page 542), 48 (genus), 63 (030710 - color presentation), 68 (genus), 77, **85** (030710 - also recorded as *Sphaeralcea coulteri* var. *coulteri* S. Wats., color presentation including habitat), 86 (color photograph)*

Sphaeralcea coulteri var. *coulteri* (see footnote 85 under *Sphaeralcea coulteri*)

***Sphaeralcea emoryi* J. Torrey ex A. Gray: Emory's Globemallow**

SYNONYMY: *Sphaeralcea emoryi* J. Torrey ex A. Gray subsp. *arida* T.H. Kearney, *Sphaeralcea emoryi* J. Torrey ex A. Gray subsp. *emoryi*, *Sphaeralcea emoryi* J. Torrey ex A. Gray subsp. *variabilis* T.H. Kearney *Sphaeralcea emoryi* J. Torrey ex A. Gray var. *arida* (J.N. Rose) T.H. Kearney, *Sphaeralcea emoryi* J. Torrey ex A. Gray var. *californica* (S.B. Parish) L.H. Shinners, *Sphaeralcea emoryi* J. Torrey ex A. Gray var. *emoryi*, *Sphaeralcea emoryi* J. Torrey ex A. Gray var. *variabilis* (T.D. Cockerell) T.H. Kearney. COMMON NAMES: Emory Globe Mallow, Emory Globemallow, Emory's Desertmallow, Emory's Globemallow, Globe Mallow, Hadam Tadkam (Pima), Mal de Ojo, Riptia (Yaqui). DESCRIPTION: Terrestrial perennial forb/herb or subshrub (ascending stems 2¼ to 98 inches in height, one plant was reported to be 2 feet in height and 3 feet in width); the stems may be gray-green, green, greenish or deep red; the leaves gray-green, greenish or dark green; the flowers may be apricot, brick-orange, burnt-orange, grenadine, grenadine-red, lavender; orange, orange-pink, orange-red, deep orange-pink, peach, peach-red, pink, pink-orange, pinkish-white, purple, red, red-orange, reddish, reddish-orange, rose, rose-pink, rose-purple, salmon, salmon-orange, deep salmon, scarlet or white; flowering may take place throughout the year between early January and late December. HABITAT: Within the range of this species it has been reported from mountains; mesas; rocky and sandy canyons; rocky canyon bottoms; meadows; ridges; ridgetops; meadows; foothills; rocky hills; rocky-gravelly hill tops; rocky hillsides; rocky, gravelly-sandy, gravelly-clayey-loamy and sandy slopes; rocky alluvial fans; sandy bajadas; amongst rocks; sandy lava flows; sand dunes; sandy plains; sandy, clayey and silty flats; clayey basins; gravelly valley floors; valley bottoms; coastal hills; along railroad right-of-ways; along rocky, gravelly-loamy, sandy and clayey roadsides; arroyos; ravines; rocky bottoms of ravines; springs; along streams; sandy-clayey-loamy riverbeds; along and in gravelly, gravelly-sandy, gravelly-sandy-silty and sandy washes; gravelly-sandy-silty poolbeds; sandy-silty and silty lakebeds; silty playas; silty depressions; playas; sandy banks of arroyos, ravines, streams and rivers; edges of ponds; mudflats; gravelly and sandy terraces; sandy bottomlands; floodplains; gravelly-sandy-silty impoundments; canal banks; ditches; ditch banks; riparian areas, and disturbed areas growing in wet, damp and dry rocky, rocky-gravelly, gravelly,

gravelly-sandy and sandy ground; gravelly loam, gravelly-clayey loam, sandy-clayey loam and sandy loam ground; clay ground, and gravelly-sandy silty, sandy silty and silty ground, occurring from below sea level to 8,200 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. This plant was reported to have been utilized by native peoples of North America; it was noted as having been used as a dug or medication. *Sphaeralcea emoryi* is native to southwest-central and southern North America. *5, 6, 15, 16 (recorded as *Sphaeralcea emoryi* Torr. var. *californica* (Parish) Shinners), 18 (genus), 43 (030810), 46 (Pages 542-543), 48 (genus), 58, 63 (030810), 68, 77 (recorded as *Sphaeralcea emoryi* Torr. var. *californica* (Parish) Shinners), **85** (030810 - color presentation), 101 (note), 115 (color presentation), 127*

Sphaeralcea emoryi subsp. *arida* (see *Sphaeralcea emoryi*)

Sphaeralcea emoryi subsp. *californica* (see *Sphaeralcea emoryi*)

Sphaeralcea emoryi subsp. *emoryi* (see *Sphaeralcea emoryi*)

Sphaeralcea emoryi subsp. *variabilis* (see *Sphaeralcea emoryi*)

Sphaeralcea emoryi var. *arida* (see *Sphaeralcea emoryi*)

Sphaeralcea emoryi var. *californica* (see *Sphaeralcea emoryi*)

Sphaeralcea emoryi var. *emoryi* (see *Sphaeralcea emoryi*)

Sphaeralcea emoryi var. *variabilis* (see *Sphaeralcea emoryi*)

***Sphaeralcea laxa* E.O. Wooton & P.C. Standley: Caliche Globemallow**

COMMON NAMES: Caliche Globe Mallow, Caliche Globemallow, Globemallow, Mal de Ojo. DESCRIPTION: Terrestrial perennial forb/herb or subshrub (12 to 28 inches in height); the leaves are green, gray or gray-green; the flowers may be bluish-pink, grenadine, orange, orange-pink, peach-orange, pink-orange, red, red-orange or deep salmon; the anthers are dark purple; flowering generally takes place between early February and late November (additional record: one for mid-December). HABITAT: Within the range of this species it has been reported from rocky mountains; rocky-gravelly mesas; canyons; sandy canyon bottoms; talus slopes; rocky-sandy ridges; rocky-gravelly ridgelines; foothills; hills; rocky-gravelly hilltops; rocky, gravelly-sandy-loamy and sandy hillsides; bases of hills; rocky, gravelly and silty-clayey slopes; alluvial fans; gravelly bajadas; rocky outcrops; amongst boulders, rocks and gravels; rocky-sandy rims of craters; sandy and sandy-loamy plains; gravelly and sandy flats; basins; valley floors; along railroad right-of-ways; roadsides; sandy arroyos; clayey bottoms of arroyos; draws; springs; riverbeds; along gravelly and sandy washes; along sandy-silty banks of rivers; along gravelly edges of streambeds and washes; margins of rivers and washes; gravel bars; bottomlands; floodplains; sandy lowlands; mesquite bosques; riparian areas, and disturbed areas growing in dry bouldery, rocky, rocky-gravelly, rocky-sandy, gravelly, pebbly and sandy ground; gravelly-sandy loam and sandy loam ground, and silty clay ground, occurring from 1,200 to 7,600 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formation. NOTES: This plant may be an attractive component of a restored native habitat. *Sphaeralcea laxa* is native to southwest-central and southern North America. *5, 6, 15, 16, 18 (genus), 43 (030810), 46 (Page 543), 48 (genus), 63 (030810 - color presentation), 68, 77 (color photograph #40), **85** (030810 - color presentation), 115 (color presentation)*

Moraceae: The Mulberry Family

***Morus microphylla* S.B. Buckley: Texas Mulberry**

COMMON NAMES: Apuri (Tarahumara?), Dwarf Mulberry, Littleleaf Mulberry, Mexican Mulberry, Mountain Mulberry, Small-leaved Mulberry, Texas Mulberry, Western Mulberry. DESCRIPTION: Terrestrial perennial deciduous shrub or tree (6½ to 25 feet (rarely to 50 feet) in height, one shrub was observed and recorded as being 6½ feet in height and 10 feet in width); the bark is pale gray; the twigs are brown or greenish; the leaves are green, dark green or yellow-green; the flowers (in ¾ inch long green or yellowish catkins) are green, the green to reddish staminate flowers and dark green pistillate flowers are borne on different plants (dioecious); flowering generally takes place between late March and early June (additional records: one for early August and three for late August); the mature fruit (½ inch in length) is black, purple or red. HABITAT: Within the range of this species it has been reported from mountains; rocky mountainsides; canyon rims; rock cliffs; bouldery and rocky canyons; along rocky and sandy canyon bottoms; bases of cliffs; scree slopes; rocky talus slopes; crevices in rocks; rocky-sandy bluffs; bouldery ledges; ridges; foothills; rocky hills; rocky hillsides; along bases of hills; bouldery-gravelly, rocky, rocky-gravelly, gravelly, gravelly-sandy and sandy-loamy slopes; bases of slopes; bajadas; rocky outcrops; amongst boulders; bases of boulders; bases of rock slides; sandy lava flows; lava beds; banks; stream valleys; along rocky-gravelly-sandy and gravelly roadsides; along arroyos; within draws; bouldery and rocky ravines (barrancas); seeps; springs; along streams; streambeds; along and in creeks; along gravelly-sandy and sandy creekbeds; along and in sandy washes; rocky drainages; sinks; (rocky) banks of seeps, streams, creeks and washes; along (cobbly) edges of streams and creeks; margins of creeks; silty-loamy terraces; floodplains; mesquite bosques, and bouldery, rocky and gravelly-sandy riparian areas growing in shallow water and wet, moist, damp and dry bouldery, bouldery-rocky-sandy, bouldery-gravelly, rocky, rocky-gravelly, rocky-gravelly-sandy, rocky-sandy, cobbly, gravelly, gravelly-sandy and sandy ground and sandy loam, clayey loam and silty loam ground, occurring from 600 to 7,300 feet in elevation in the woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. This plant was reported to have been utilized by native peoples of North America and could be investigated to determine its value as a home garden or commercial food and/or fiber crop; it was also noted that the wood was used in the making of bows. The fruits are eaten birds and other wildlife. *Morus microphylla* is native to southwest-central and southern North America. *5, 6, 15, 18 (genus), 28 (color photograph), 43 (082210), 46 (Page 221), 52 (color photograph), 53, 58, 63 (082210), **77**, **85** (082210 - color presentation), 127*

Nyctaginaceae: The Four-o'clock Family

***Allionia incarnata* C. Linnaeus: Trailing Windmills**

COMMON NAMES: Allionia, Guapile, Herba de la Hormiga, Pink Three-flower, Pink Windmills, Trailing Allionia, Trailing Four O'Clock, Trailing Four-o'clock, Trailing Windmills, Umbrella Wort, Windmills. DESCRIPTION: Terrestrial annual or perennial forb/herb (prostrate with trailing stems 4 to 14 inches in height and 4 inches to 10 feet in length, one plant was described as being 4 inches in height and 12 by 20 inches in width); the stems may be reddish; the sticky foliage has been described as being gray-green or green above and silvery beneath; the flowers may be blue, fuchsia; lavender, lavender-pink, lavender-rose, magenta, magenta-pink, magenta-rose, pink, pink-lavender, pink-purple, pink-violet, purple, purple-blue, purplish-pink, red-violet, reddish-purple, rose, rose-pink, rose-purple, violet, violet-magenta, violet-pink or white; flowering generally takes place between mid-January and mid-December. HABITAT: Within the range of this species it has been reported from mountains; rocky mountainsides; rocky and rocky-sandy mesas; rims of canyons; rocky and shaley canyons; along gravelly canyon bottoms; buttes; knolls; shaley ridges; rocky ridgetops; sandy foothills; rocky, rocky-sandy and gravelly hills; rocky-gravelly hilltops; rocky and gravelly hillsides; along bedrock, rocky, rocky-gravelly, rocky-sandy, shaley, gravelly, gravelly-sandy and sandy-silty slopes; rocky alluvial fans; rocky and gravelly-sandy bajadas; amongst boulders and rocks; lava hills; sandy lava flows; sand hills; sand dunes;

sand hummocks; debris fans; llanos; sandy and clayey-loamy plains; rocky-sandy, gravelly, gravelly-sandy and sandy flats; silty basin floors; gravelly-sandy valley floors; sandy roadbeds; along rocky, rocky-gravelly-sandy, rocky-gravelly-loamy, gravelly, gravelly-sandy-loamy, sandy and sandy-loamy roadsides; rocky, rocky-gravelly-sandy and sandy arroyos; rocky bottoms of arroyos; within draws; within rocky ravines; streambeds; along and in gravelly-sandy creekbeds; along rivers; along and in riverbeds; along and in bouldery-sandy, rocky, rocky-sandy, cobbly-gravelly-sandy, cobbly-pebbly, gravelly and sandy washes; silty lakebeds; marshy areas; sandy-silty depressions; along (clayey) banks of arroyos, rivers and washes; edges of rivers and washes; (rocky) margins of arroyos; sandy benches; shelves; gravelly terraces; sandy bottomlands; sandy floodplains; lowlands; sandy mesquite bosques; edges of levees; along canals; canal banks; gravelly-sandy and sandy riparian areas; waste places, and disturbed areas growing in dry desert pavement; bouldery, bouldery-sandy, rocky, rocky-gravelly, rocky-gravelly-sandy, rocky-sandy, shaley, cobbly-gravelly-sandy, cobbly-pebbly, cindery; gravelly, gravelly-sandy and sandy ground; rocky-gravelly loam, gravelly loam, gravelly-sandy loam, sandy loam and clay loam ground; rocky clay and clay ground, and gravelly-sandy silty, sandy silty and silty ground, occurring from sea level to 8,300 feet in elevation in the woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant was reported to have been utilized by native peoples of North America; it was noted as having been used as a drug or medication. *Allionia incarnata* is native to southwest-central and southern North America; Central America; South America, and coastal islands in the Caribbean Sea. *5, 6, 15, 16, 28 (color photograph), 43 (031010), 46 (Page 274), 58, 63 (031010 - color presentation), 68, **77** (color photographs #41 and #86), 85 (031010 - color presentation), 86 (color photograph), 115 (color presentation), 127, **HR***

Boerhavia erecta var. *intermediia* (see *Boerhavia intermedia*)

***Boerhavia intermedia* M.E. Jones: Fivewing Spiderling**

SYNONYMY: *Boerhavia erecta* C. Linnaeus var. *intermedia* (M.E. Jones) T.H. Kearney & R.H. Peebles. COMMON NAMES: Five-wing Spiderling, Fivewing Spiderling, Five-winged Ringstem, Hamíp Caacöl (Seri), Jone's Boerhavia, Mochi, Spiderling, Spreading Spiderling. DESCRIPTION: Terrestrial annual forb/herb (ascending and spreading stems 6 inches to 3 feet in length); the leaves are gray-green with purple edges; the flowers are cream, light lavender, light pink, pale pink-lavender, pink, pink-lavender, pink-white, pinkish, purple, purple-pink, reddish, rose-violet, white or white tinged with lavender and/or pink; flowering generally takes place between early July and mid-November (additional records: one for late April, one for early June and one for mid-June). HABITAT: Within the range of this species it has been reported from rocky mountains; mesas; rocky canyons; gravelly canyon bottoms; sandy pockets in lava; ridges; foothills; rocky hills; rocky and gravelly hillsides; rocky, rocky-gravelly, gravelly, gravelly-loamy, sandy and silty slopes; alluvial fans; gravelly bajadas; rock outcrops; plains; silty flats; valley floors; along gravelly, gravelly-sandy-loamy and sandy-silty roadsides; in sandy arroyos; bottoms of arroyos; ravines; along streams; along streambeds; along creeks; creekbeds; along and in gravelly, gravelly-sandy-silty and sandy washes; along drainages; edges of pools; sandy-silty depressions; loamy bottomlands; sandy floodplains; ditches; sandy riparian areas, and disturbed areas growing in dry bouldery-sandy, rocky, rocky-gravelly, shaley, gravelly and sandy ground; gravelly loam, gravelly-sandy loam and loam ground, and gravelly-sandy silty, sandy silty and silty ground, occurring from sea level to 6,000 feet in elevation in the woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTE: *Boerhavia intermedia* is native to southwest-central and southern North America. *5, 6, 15, 16, 43 (031110), 46 (Note alternate spelling: *Boerhaavia*, Page 276), 58, 63 (031110), **85** (031110 - color presentation of dried material)*

***Boerhavia megaptera* P.C. Standley: Tucson Mountain Spiderling**

COMMON NAMES: Annual Spiderling, Spiderling, Tucson Mountain Spiderling, Winged Spiderling. DESCRIPTION: Terrestrial annual forb/herb (ascending stems 1 to 2 feet in height); the flowers are lavender, pale pink or pink; based on few flowering records, flowering generally takes place

between early August and late September (additional record: one for early November). HABITAT: Within the range of this species it has been reported from mountains; canyons; canyon bottoms; rocky talus slopes; bases of cliffs; rocky-gravelly and gravelly hills; rocky slopes; amongst shrubs or trees; roadsides, and along washes growing in dry rocky, rocky-gravelly and gravelly ground, occurring from 2,200 to 4,700 feet in elevation in the grassland and desertscrub ecological formations. NOTE: *Boerhavia megaptera* is native to southwest-central and southern North America. *5, 6, 8, 16, 43 (031110), 46 (Note alternate spelling: *Boerhaavia*, Page 277), 63 (031110), 77, **85** (031110 - color presentation of dried material)*

***Boerhavia scandens* C. Linnaeus: Climbing Wartclub**

SYNONYMY: *Commicarpus scandens* (C. Linnaeus) P.C. Standley. COMMON NAMES: Bush Spiderling, Climbing Wartclub, Miona, Pega-polla. DESCRIPTION: Terrestrial perennial forb/herb or vine (1 to 8 feet in height); the small flowers are cream, cream-white, pale green, green, greenish, greenish-white, greenish-yellow, white, whitish-green or yellow-pink; flowering generally takes place between mid-April and mid-November (additional record: one for early January, two for mid-March, one for mid-December and one for late December). HABITAT: Within the range of this species it has been reported from mountains; mesas; bouldery and rocky canyons; canyon walls; canyon bottoms; rocky talus; bases of cliffs; buttes; rocky ledges; foothills; rocky hills; rocky hilltops; rocky hillsides; bouldery-gravelly, rocky and gravelly slopes; gravelly alluvial fans; bajadas; rocky outcrops; amongst boulders; sand dunes; sandy flats; basins; valley floors; beach dunes; coastal plains; amongst sea-worn boulders; along gravelly-sandy and sandy roadsides; in arroyos; rocky bottoms of arroyos; draws; along streambeds; along creeks; along and in gravelly washes; within rocky drainages; within drainage ways; edges of washes; along margins of washes; sandy beaches; benches; sandy floodplains; mesquite bosques; fencerows; rocky riparian areas, and disturbed areas growing in damp and dry bouldery, bouldery-gravelly, rocky, gravelly, gravelly-sandy and sandy ground and gravelly loam ground, occurring from sea level to 5,000 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: Often reported as growing up through and supported by shrubs. *Boerhavia scandens* is native to southwest-central and southern North America; Central America; South America, and coastal islands in the Caribbean Sea. *5, 6, 15, 16, 43 (031110), 46 (recorded as *Commicarpus scandens* (L.) Standl., Page 277), 58, 63 (031110 - color presentation), 77 (recorded as *Commicarpus scandens* (L.) Standl., color photograph #43 labeled *Commicarpus scandens*), **85** (031210 - color presentation), 115 (color presentation)*

Commicarpus scandens (see *Boerhavia scandens*)

Mirabilis bigelovii (see *Mirabilis laevis* var. *villosa*)

Mirabilis bigelovii var. *bigelovii* (see *Mirabilis laevis* var. *villosa*)

***Mirabilis coccinea* (J. Torrey) G. Bentham & J.D. Hooker: Scarlet Four O'Clock**

SYNONYMY: *Oxybaphus coccineus* J. Torrey. COMMON NAMES: Red Four O'Clock, Scarlet Four O'Clock, Scarlet Four-o'clock. DESCRIPTION: Terrestrial perennial forb/herb (ascending to erect stems 6 inches to 3½ feet in height); the leaves are gray-green, grayish-green or dark grayish-green; the flowers may be carmine-red, cerise-pink, coral-red, crimson, fuchsia, deep lavender-pink; magenta, magenta-purple, orange-red, pink, dark pink, pink-cerise, pink-purple, purple-pink, purplish, red, deep red, red-magenta, red-purple, red-violet, rose, rose-pink, rose-red-pink, dark rose-purple, salmon or scarlet; flowering generally takes place between late April and mid-October (additional records: one for early April, flowering ending as late as November has been reported). HABITAT: Within the range of this species it has been reported from mountains; cobbly mountainsides; mesas; cliffs; rocky bases of cliffs; along canyon walls; canyon bottoms; talus; pockets of soil; clearings in forests; foothills; hills; rocky hillsides; rocky, rocky-sandy-clayey-loamy, gravelly, gravelly-sandy-loamy and gravelly-clayey slopes;

amongst boulders and rocks; bases of rocks; rocky and rocky-sandy-clayey flats; basins; along rocky roadsides; springs; along streams; along and in bouldery and rocky streambeds; along bouldery creeks; sandy-silty creekbeds; along and in rocky and sandy washes; banks of draws and washes; (sandy) edges of rivers; rocky benches; sandy terraces; ditches, and riparian areas growing in dry bouldery, rocky, rocky-gravelly, cobbly, gravelly and sandy ground; gravelly-sandy loam ground; rocky-sandy clay and gravelly clay ground, and sandy silty ground, occurring from 2,800 to 8,700 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. This plant was reported to have been utilized by native peoples of North America; it was noted as having been used as a drug or medication. The brilliant carmine-red flowers reportedly open in the late afternoon and close the following morning. *Mirabilis coccinea* is native to southwest-central and southern North America. *5, 6, 15, 18 (genus), 28 (recorded as *Oxybaphus coccineus*, color photograph), 43 (082310 - *Mirabilis coccinea* Benth. & Hook. f.), 46 (recorded as *Oxybaphus coccineus* Torr., Page 274), 63 (082210 - color presentation), **77** (color photograph #45), **85** (082310 - color presentation), 86 (color photograph), 127*

***Mirabilis laevis* (G. Bentham) M.C. Curran var. *villosa* (A. Kellogg) R.W. Spellenberg: Wishbone-bush**

SYNONYMY: *Mirabilis bigelovii* A. Gray, *Mirabilis bigelovii* A. Gray var. *bigelovii* A. Gray. COMMON NAMES: Bigelow Four O'clock, Desert Wishbone Bush, Desert, Wishbone Bush, Wishbone-bush, Wishbonebush. DESCRIPTION: Terrestrial perennial forb/herb or subshrub (clumping or sprawling decumbent to erect stems 6 to 32 inches in height); the kidney-shaped leaves are dark green, the flowers are cream-white, lavender, magenta, pale pink, pink, white or whitish-cream; flowering generally takes place between late January and mid-May (additional records: one for early June, one for late June, one for mid-August, one for late August, one for early September, one for mid-September, one for late September, one for early October, two for mid-October, seven for late October, two for mid-November, three for late November and two for early December; flowering has been reported as occurring throughout the year with the heaviest show of flowers in the spring). HABITAT: Within the range of this species it has been reported from mountains; rocky mountainsides; mesas; cliffs; along rocky canyons; canyon bottoms; scree; bases of cliffs; crevices in rocks; buttes; rocky ridges; rocky ridgetops; meadows; rocky hills; hilltops; bouldery-rocky, rocky and gravelly hillsides; rocky slopes; gravelly bases of slopes; bajadas; bouldery outcrops; amongst boulders and rocks; plains; flats; gravelly-sandy valley floors; along roadsides; along arroyos; draws; springs; rocky-sandy streambeds; along and in gravelly-sandy and sandy washes; drainages; rocky drainage ways; shores of lakes; riparian areas and disturbed areas growing in dry bouldery, bouldery-rocky, rocky, rocky-sandy, gravelly, gravelly-sandy and sandy soils and rocky loam and gravelly loam soils, occurring from below sea level to 7,300 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: The herbage is reportedly very sticky. *Mirabilis laevis* var. *villosa* is native to southwest-central and southern North America. *5, 6, 18 (genus), 28 (recorded as *Mirabilis bigelovii*, color photograph), 43 (071010), 46 (recorded as *Mirabilis bigelovii* Gray, Page 272), 63 (071010 - color presentation), 77 recorded as *Mirabilis bigelovii*, (color photograph #44), **85** (071010 - color presentation, unable to access species information), 115 (color presentation of the species)*

***Mirabilis multiflora* (J. Torrey) A. Gray: Colorado Four O'Clock**

COMMON NAMES: Colorado Four O'Clock, Colorado Four-o'clock, Desert Four O'Clock, Manyflowered Four O'Clock, Maravilla, Showy Four O'Clock, Wild Four O'Clock. DESCRIPTION: Terrestrial perennial forb/herb or subshrub (sprawling rounded clumps 6 inches to 5 feet in height, one plant was observed and described as being 12 inches in height and 24 to 30 inches in width, one plant was observed and described as being 18 inches in height and 5 feet in diameter); the heart-shaped leaves are dark green; the flowers (to 1 inch in diameter) are blue-purple, lavender, deep lavender, magenta-purple, deep magenta-purple, maroon-pink, maroon-purple, deep pink, pink-lavender, pink-purple, pink-rose, pinkish-magenta, purple, purple-magenta, purple-pink, purplish-pink, purplish-red, red-purple, red-violet,

reddish-purple, rose, rose-pink, rose-purple, rose-red, rose-violet or violet; the anthers are yellow; flowering generally takes place between mid-April and late October. HABITAT: Within the range of this species it has been reported from mountains; mountaintops; bases of mountains; rocky and sandy mesas; rocky plateaus; rocky and sandy canyon rims; bases of cliffs; rocky canyons; along canyon walls; sandy canyonsides; along bouldery, rocky and sandy canyon bottoms; talus slopes; rocky and sandy bluffs; buttes; rocky hogbacks; ledges; bases of ledges; shaley, gravelly, gravelly-sandy and sandy ridges; ridgetops; openings in woodlands; sandy meadows; foothills; rocky, rocky-sandy, sandy and sandy-loamy hills; along rocky and rocky-gravelly hillsides; bouldery, rocky, rocky-gravelly, rocky-loamy, rocky-clayey, rocky-clayey-loamy, shaley, cindery, gravelly, gravelly-sandy, gravelly-loamy, gravelly-clayey-loamy, gravelly-silty, sandy, sandy-loamy, sandy-clayey and clayey-loamy slopes; gravelly-sandy pediments; rocky outcrops; amongst boulders and rocks; alcoves; sandy lava flows; sandhills; gravelly banks; prairies; clayey plains; gravelly and sandy flats; clayey-loamy valley floors; along rocky-loamy, gravelly, gravelly-sandy, sandy, sandy-clayey-loamy and silty-clayey roadsides; within arroyos; within sandy draws; within gulches; springs; sandy streambeds; sandy-loamy riverbeds; along and in bouldery, shaley, gravelly-sandysandy and sandy-clayey washes; within drainages; sinks; swales; along (rocky) banks of arroyos, gulches and rivers; along edges of washes; gravelly and gravelly-sandy terraces; sandy-loamy bottomlands; ditches; rocky riparian areas, and disturbed areas growing in damp and dry bouldery, rocky, rocky-gravelly, rocky-sandy, shaley, shaley-gravelly, cobbly-sandy, cindery, gravelly, gravelly-sandy and sandy ground; rocky loam, rocky-clayey loam, gravelly loam, gravelly-clayey loam, sandy loam, clayey loam and loam ground; rocky clay, gravelly clay, sandy clay, silty clay and clay ground, and gravelly-silty ground, occurring from 900 to 9,000 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. This plant was reported to have been utilized by native peoples of North America and could be investigated to determine its value as a home garden or commercial beverage crop; it was also noted as having been used as a tool and as a drug or medication. The flowers open in the late afternoon and close the following morning. *Mirabilis multiflora* is native to southwest-central and southern North America. *5, 6, 18 (genus), 28 (color photograph), 43 (082310 - *Mirabilis multiflora* A. Gray), 46 (Page 272), 48, 63 (082310 - color presentation), **77**, **85** (082310 -), 86 (color photograph), 127*

Oxybaphus coccineus (see *Mirabilis coccinea*)

Oleaceae: The Olive Family

Forestiera phillyreoides (see *Forestiera shrevei*)

***Forestiera shrevei* P.C. Standley: Desert Olive**

SYNONYMY: *Forestera phillyreoides* (G. Bentham) J. Torrey. COMMON NAMES: Desert Olive, Desert-olive, Desert-olive Forestiera, Forestiera, Palo de Tucublate, Shreve Desert Olive, Sonoran Desert Olive, Tanglebrush, Tanglebush, Wild Olive, Wild-olive; Twinberry. DESCRIPTION: Terrestrial perennial deciduous to nearly evergreen shrub or tree (40 inches to 25 feet in height, one plant was reported as being 12 feet in height with a crown 8¼ feet in width); the trunk bark is blackish or gray; the younger branches and stems are gray or gray-brown; the leaves are green; female (greenish or white without petals) and male flower parts are born on separate plants; the anthers are purplish; flowering generally takes place between late December and early March (additional records: one for mid-April and one for early November); the mature egg-shaped fruits are bluish, brown or purplish-black. HABITAT: Within the range of this species it has been reported from mountains; cliffs; clefts in cliffs; against rock walls; bouldery and rocky canyons; rocky canyon walls; bouldery and rocky canyon bottoms; bases of cliffs; ridges; ridgetops; hillsides; bedrock and rocky slopes; bajadas; bedrock and rock outcrops; amongst boulders; arroyos; seeps; along washes; edges of washes, and riparian areas growing in dry bouldery and

rocky ground, occurring from 1,300 to 4,900 feet in elevation in the woodland, scrub, grassland and desertscrub ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. *Forestiera shrevei* is native to southwest-central and southern North America. *5, 6, 13, 16, 28 (color photograph), 30, 43 (031210 - *Forestera phillyreoides* Torr.), 46 (recorded as *Forestera phillyreoides* (Benth.) Torr., Page 643), 52 (recorded as *Forestera phillyreoides*), 53 (recored as *Forestera phillyreoides* (Benth.) Torr.), 58, 63 (031210), 77, **85** (031210 - color presentation of dried material)*

Fraxinus pennsylvanica var. *velutina* (see *Fraxinus velutina*)

***Fraxinus velutina* J. Torrey: Velvet Ash**

SYNONYMY: *Fraxinus pennsylvanica* H. Marshall var. *velutina* (J. Torrey) G.S. Miller, *Fraxinus velutina* J. Torrey var. *coriacea* (S. Watson) A. Rehder, *Fraxinus velutina* J. Torrey var. *glabra* A. Rehder, *Fraxinus velutina* J. Torrey var. *toumeyi* (N.L. Britton) A. Rehder. COMMON NAMES: Arizona Ash, Arizona-esche (German), Desert Ash, Fresno (Hispanic), Smooth Ash, Toumey Ash, Velvet Ash. DESCRIPTION: Terrestrial perennial deciduous tree (40 inches to 65 feet in height with a mature crown of up to 30 to 40 feet in width, one plant was reported to be 40 inches in height with a crown about 40 inches in width, one plant was reported to be 8 feet in height with a crown 8 feet in width, one plant was reported to be 26 feet in height with a crown 26 feet in width); the bark is gray; the leaves are green or yellow-green turning yellow in the fall; female (greenish) and male (yellow anthers) flower parts are born on separate trees; flowering generally takes place between late February and early June (additional records: one for early July, two for mid-July, one for early August, one for mid-August, two for early October and two for early November); the fruits (¾ to 1¼ inch in length) are winged. HABITAT: Within the range of this species it has been reported from reported from mountains; rocky mountainsides; rocky, sandy and loamy canyons; rocky, gravelly and sandy canyon bottoms; chasms; gorges; rocky ledges; ridges; gravelly-loamy meadows; clayey-loamy foothills; rocky hills; along hillsides; rocky and gravelly-sandy slopes; amongst rocks; flats; basins; valley floors; gravelly-loamy roadsides; within arroyos; along arroyo bottoms; draws; rocky gulches; bouldery ravines; bottoms of ravines; seeps; around and in springs; sandy soils along streams; along and in gravelly-sandy and sandy-loamy streambeds; along creeks; along and in rocky and gravelly-sandy creekbeds; along rivers; along bouldery-cobbly-sandy riverbeds; along and in gravelly and sandy washes; along and in drainage ways; watercourses; around pools; along bouldery, rocky, gravelly-loamy and sandy banks of streams, creeks, rivers and drainages; edges of streams, creeks, creekbeds, rivers, washes and drainage ways; shores of rivers; sandy benches; terraces; sandy bottom lands; sandy flood plains; edges of reservoirs; bouldery-cobbly-sandy, gravelly-sandy and sandy riparian areas, and disturbed areas often reported as growing in moist and damp bouldery, bouldery-cobbly-sandy, rocky, rocky-gravelly, rocky-sandy, gravelly, gravelly-sandy and sandy ground; rocky loam, gravelly loam, sandy loam, clayey loam and loam ground, and clay and silty clay ground, occurring from 400 to 9,500 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. This plant was reported to have been utilized by native peoples of North America; it was noted as having been used in the making of tools and bows. Use as a specimen plant in a large area and as a re-vegetation plant for the areas immediately adjacent to the main channel of streams, creeks and rivers, requires regular watering. Birds and other wildlife feed on the seeds. *Fraxinus velutina* is native to southwest-central and southern North America. *5, 6, 13, 15, 18, 26 (color photograph), 28 (recorded as *Fraxinus pennsylvanica* ssp. *velutina*, color photograph), 30, 43 (072609), 46 (recorded as *Fraxinus velutina* Torr. var. *coriacea* (Wats.) A. Rehder, Page 642; *Fraxinus velutina* Torr. var. *glabra* Rehder, Page 642, and *Fraxinus velutina* Torr. var. *toumeyi* (Britton) Rehder, Page 642), 48, 52 (color photograph), 53, 58, 63 (031210 - color presentation), 85 (031210 - color presentation), 115 (color presentation), 127, **HR***

Fraxinus velutina var. *coriacea* (see *Fraxinus velutina*)

Fraxinus velutina var. *glabra* (see *Fraxinus velutina*)

Fraxinus velutina var. *toumeyi* (see *Fraxinus velutina*)

Onagraceae: The Evening-primrose Family

***Camissonia californica* (T. Nuttall ex J. Torrey & A. Gray) P.H. Raven: California Suncup**

SYNONYMY: *Eulobus californicus* T. Nuttall ex J. Torrey & A. Gray, *Oenothera leptocarpa* E.L. Greene. COMMON NAMES: California Evening Primrose, California Eveningprimrose, California Primrose, California Suncup, Mustard Camissonia, Mustard Evening Primrose, Mustard Evening-primrose, Sun-drops. DESCRIPTION: Terrestrial annual or perennial forb/herb (2 to 69 inches in height); the foliage is gray-green; the flowers are golden-yellow, orange-yellow, pink-yellow, reddish-orange, rust-orange, yellow or yellow-orange ageing to orange, pink or reddish; flowering generally takes place between late January and mid-July. HABITAT: Within the range of this species it has been reported from mountains; rocky mountainsides; stony mountain passes; rocky mesas; plateaus; rocky cliffs; rocky chutes; rocky-silty canyons; along canyon walls; rocky, rocky-sandy, gravelly, gravelly-sandy, sandy and sandy-loamy canyon bottoms; talus slopes; bouldery, rocky, rocky-sandy, shaley, stony, gravelly-sandy, sandy, clayey-loamy and loamy ridges; silty ridgetops; foothills; bouldery, rocky and sandy hills; rocky hillsides; along bouldery, bouldery-gravelly, bouldery-gravelly-sandy, rocky, rocky-sandy, rocky-loamy-clayey, gravelly, gravelly-sandy, sandy, loamy-clayey, clayey and silty slopes; bouldery-stony-gravelly-sandy and rocky alluvial fans; bajadas; bouldery and rocky outcrops; amongst boulders and rocks; sandy lava flows; sand dunes; gravelly and gravelly-sandy plains; gravelly-sandy and sandy flats; valley floors; coastal shorelines; along rocky-sandy-clayey, gravelly and sandy roadsides; arroyos; along bottoms of arroyos; sandy draws; around seeping streams; along streams; gravelly-sandy streambeds; in gravel and sand along creeks; along and in gravelly-sandy creekbeds; in sand along rivers; along and in rocky, rocky-gravelly, rocky-sandy, gravelly, gravelly-sandy and sandy washes; drainages; waterholes; gravelly and sandy banks of arroyos, creeks, rivers and washes; edges of rivers and washes; margins of washes; sand bars; rocky-sandy benches; sandy terraces; sandy floodplains; gravelly-sandy stock tanks; within ditches; gravelly-sandy riparian areas, and disturbed areas growing in dry bouldery, bouldery-rocky-gravelly, bouldery-stony-gravelly-sandy, bouldery-gravelly, bouldery-gravelly-sandy, rocky, rocky-gravelly, rocky-sandy, shaley, stony, gravelly, gravelly-sandy and sandy ground; sandy loam, clayey loam and loam ground; rocky-sandy clay, rocky-loamy clay, loamy clay and clay ground, and rocky-silty and silty ground, occurring from 100 to 4,600 feet in elevation in the woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTE: *Camissonia californica* is native to southwest-central and southern North America. *5, 6, 15, 16, 28 (color photograph), 43 (031310), 46 (*Oenothera leptocarpa* Greene, Page 599), 48 (genus, *Oenothera* spp.), 58, 63 (031310 - color presentation), 77 (color photograph #46), **85** (031310 - color presentation of dried material), 115 (color presentation)*

***Camissonia chamaenerioides* (A. Gray) P.H. Raven: Longcapsule Suncup**

SYNONYMY: *Oenothera chamaenerioides* A. Gray. COMMON NAMES: Desert Evening Primrose, Longcapsule Suncup, Long-capsuled Primrose, Long-fruit Suncup, Willow-herb Primrose. DESCRIPTION: Terrestrial annual forb/herb (4 to 16 inches in height); the stems are pink or red; the leaves are green (with red spots or tipped with red), purple, red or reddish; the tiny flowers are cream, pink, purple, white, white-cream, white-pink, whitish-yellow or yellow; flowering generally takes place between early February and early June (additional record: one for late December). HABITAT: Within the range of this species it has been reported from mountains; rocky mountainsides; rocky mesas; rock walls; rocky canyons; rocky canyon bottoms; gorges; rocky and shaley talus slopes; bases of cliffs; crevices in boulders and rocks; knolls; rocky ledges; gravelly ridges; rocky ridgetops; gravelly-clayey-loamy foothills; gravelly hills; rocky hillsides; rocky, rocky-stony, gravelly and sandy slopes; bouldery-rocky-cobbly alluvial fans; bajadas; rocky and rocky-shaley outcrops; bases of boulders; along lava slides; breaks; gravelly and sandy flats; basins; along gravelly and sandy roadsides; rocky arroyos; rocky draws;

gulches; springs; along streams; in gravel and sand along creeks; along rivers; riverbeds; along and in bouldery, rocky, rocky-sandy, gravelly, gravelly-sandy and sandy washes; drainages; silty depressions; cobbly and sandy banks of streams and washes; cobbly edges of washes; margins of washes; gravelly benches; shelves; sandy floodplains; gravelly-sandy and silty-loamy riparian areas, and disturbed areas growing in dry desert pavement; bouldery, bouldery-rocky-cobbly, rocky, rocky-shaley, rocky-stony, rocky-sandy, shaley, cobbly, gravelly, gravelly-sandy, gravelly-sandy-silty and sandy ground; gravelly-clayey loam and silty loam ground, and gravelly-sandy silty and silty ground, occurring from sea level to 6,300 feet in elevation in the woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. *Camissonia chamaenerioides* is native to southwest-central and southern North America. *5, 6, 15, 16, 43 (031310), 46 (recorded as *Oenothera chamaenerioides* Gray, Page 600), 48 (genus, *Oenothera* spp.), 63 (031310), 77, **85** (031310 - color presentation of dried material)*

Eulobus californicus (see *Camissonia californica*)

***Gaura mollis* T.P. James: Velvetweed**

SYNONYMY: *Gaura parviflora* D. Douglas ex J.G. Lehmann, *Gaura parviflora* D. Douglas ex J.G. Lehmann var. *lachnocarpa* C.A. Weatherby, *Gaura parviflora* D. Douglas ex J.G. Lehmann var. *typica* P.A. Munz. COMMON NAMES: Butterfly Weed, Downy Gaura, Lizard Tail, Lizard-tail, Lizard's Tail, Lizardtail, Lizardtail Gaura, Small-flowered Gaura, Smallflower Gaura, Tall Gaura, Velvet Leaf Gaura, Velvet-leaf Gaura, Velvet Leaved Gaura, Velvetweed, Velvety Gaura, Willow Gaura, Willow-weed. DESCRIPTION: Terrestrial annual forb/herb (14 inches to 10 feet in height); the leaves are dark green; the tiny flowers are cream, creamy-white, lavender, maroon, pink, purple, dark red, reddish or whitish-pink; flowering generally takes place between mid-March and early November (additional records: one for early January and one for late January). HABITAT: Within the range of this species it has been reported from mountains; mountaintops; sandy canyons; rocky canyon walls; canyon bottoms; meadows; foothills; sand hills; hillsides; slopes; prairies; plains; alkali flats; basins; valley floors; valley bottoms; along railroad right-of-ways; along rocky, gravelly, gravelly-sandy and gravelly-loamy roadsides; sandy arroyos; sandy bottoms of arroyos; gulches; springs; along streams; along creeks; creekbeds; along rivers; riverbeds; along and in sandy washes; within rocky drainages; along lakes; silty playas; cienegas; marshes; swampy areas; swales; along banks of rivers; along margins of rivers and washes; sandy shores of rivers and lakes; benches; gravelly, sandy and loamy terraces; sandy bottomlands; lowlands; clayey floodplains; mesquite bosques; along fence rows; along canals; along canal banks; along ditches; clayey-loamy ditch banks; clayey riparian areas; waste places, and disturbed areas growing in wet, moist, damp and dry rocky, gravelly, gravelly-sandy and sandy ground; gravelly loam, gravelly-clayey loam, clayey loam and loam ground; clay ground, and sandy-silty and silty ground, occurring from sea level to 7,800 feet in elevation in the forest, woodland, grassland, desertscrub and wetland ecological formations. NOTES: This plant was reported to have been utilized by native peoples of North America and could be investigated to determine its value as a home garden or commercial food crop; it was also noted as having been used as a dug or medication and for protection (during the Fire Dance at the Mountain Chant). *Gaura mollis* is native to south-central and southern North America. *5, 6, 15 (recorded as *Gaura parviflora* Doug.), 28 (recorded as *Gaura parviflora*, color photograph), 43 (031410), 46 (recorded as *Gaura parviflora* Doug., Page 603), 58 (recorded as *Gaura parviflora* Doug.), 63 (031410 - color presentation), 68 (recorded as *Gaura parviflora* Doug.), 77 (recorded as *Gaura parviflora* Doug.), **85** (031410 - color presentation), 101 (recorded as *Gaura parviflora* Doug. ex Lehm., color photograph), 106 (031410), 115 (color presentation), 124, 127*

Gaura parviflora (see *Gaura mollis*)

Gaura parviflora var. *lachnocarpa* (see *Gaura mollis*)

Gaura parviflora var. *typica* (see *Gaura mollis*)

Oenothera chamaenerioides (see *Camissonia chamaenerioides*)

Oenothera leptocarpa (see *Camissonia californica*)

Orobanchaceae: The Broom-rape Family

***Orobanche cooperi* (A. Gray) A.A. Heller: Desert Broomrape**

COMMON NAMES: Broom Rape, Broom-rape, Broomrape, Burro Weed Strangler, Cancer-root, Cooper's Broomrape, Desert Broom-rape, Desert Broomrape, Flor de Tierra, Louisiana Broomrape. DESCRIPTION: Terrestrial annual forb/herb (root parasite 4 to 16 inches in height); the leaves (reduced to scales) are purplish-brown; the flowers may be creamy-white, purple, purplish, purplish-violet, white or pale yellow-brown tinged with purple; flowering generally takes place between late January and late June (additional records: one for early August, one for mid-August, one for late August, one for early September, two for mid-October and three for mid-December). HABITAT: Within the range of this species it has been reported from mountains; rocky and sandy-clayey mesas; plateaus; rocky and sandy canyons; rocky canyon bottoms; rocky bases of cliffs; ridges; foothills; sandy hills; rocky hillsides; rocky, gravelly, gravelly-loamy and sandy slopes; gravelly and gravelly-silty bajadas; amongst rocks and gravels; sand hills; sand dunes; gravelly and sandy flats; sandy and silty valley floors; along roadsides; within arroyos; bottoms of arroyos; sandy riverbeds; along and in rocky, rocky-sandy and sandy washes; drainages; banks of creeks and rivers; edges of washes and lakes; benches; mesquite bosques; rocky-sandy shores of reservoirs; sandy banks of canals; sandy riparian areas, and disturbed areas growing in dry rocky, rocky-sandy, gravelly and sandy ground; gravelly loam and loam ground; sandy clay ground; gravelly silty and silty ground, and humusy ground, occurring from 200 to 8,800 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. This plant was reported to have been utilized by native peoples of North America and could be investigated to determine its value as a home garden or commercial food crop. The Desert Broomrape has been reported as being parasitic on the roots of *Acacia greggii*, *Ambrosia ambrosioides*, *Ambrosia deltoidea*, *Ambrosia dumosa*, *Artemisia dracunculus*, *Echinocactus* sp., *Encelia farinosa*, *Hymenoclea monogyra*, *Hymenoclea salsola*, *Opuntia* sp., Sage Brush, Tobacco, *Townsendia wilcoxii*, *Viguiera* sp. *Orobanche cooperi* is native to southwest-central and southern North America. *5, 6, 15, 16, 28 (color photograph), 43 (031510), 46 (*Orobanche ludoviciana* Nutt., Page 797; *Orobanche ludoviciana* Nutt. var. *cooperi* (Gray) G. Beck, Page 797, and *Orobanche ludoviciana* Nutt. var. *latiloba* Munz, Page 797), 63 (031510 - color presentation), 77, **85** (031510 - color presentation), 115 (color presentation), 127*

Papaveraceae: The Poppy Family

***Eschscholzia californica* L.K. von Chamisso subsp. *mexicana* (E.L. Greene) J.C. Clark: California Poppy**

SYNONYMY: *Eschscholzia mexicana* E.L. Greene. COMMON NAMES: Amapola, Amorilla, Amopola del Campo (Hispanic - Poppy of the Countryside), California Poppy, California-poppy, Desert Gold Poppy, Gold Poppy, Mexican Gold, Mexican Gold Poppy, Mexican Gold-poppy, Mexican-gold, Mexican Poppy, Poppy. DESCRIPTION: Terrestrial annual or perennial forb/herb (1 inch to 2 feet in height); the flowers (fasciated and double flowers were reported) may be cream, creamy-white, golden-orange, golden-yellow, lemon-yellow, orange, orange-yellow, pink & white, pumpkin-gold, white, white-pink, yellow or yellow-orange; flowering generally takes place between early January and early July (additional record: one for mid-September). HABITAT: Within the range of this species it has been

reported from rocky mountains; rocky mountainsides; sandy-clayey-loamy mesas; cliffs; rocky-gravelly and rocky-sandy canyons; sandy loamy canyon bottoms; chasms; talus slopes; bases of cliffs; buttes; sandy ridges; ridgetops; foothills; rocky and gravelly-loamy hills; bouldery and rocky hillsides; along rocky, along rocky, rocky-clayey, gravelly, gravelly-sandy and sandy slopes; rocky-sandy alluvial fans; gravelly bajadas; rocky outcrops; amongst rocks and gravels; gravelly and sandy plains; rocky-clayey, gravelly and sandy flats; valley floors; valley bottoms; along railroad right-of-ways; along rocky, rocky-gravelly, rocky-sandy and gravelly roadsides; arroyos; along bottoms of draws; along streams; rocky-sandy creekbeds; along rivers; along and in rocky, gravelly, gravelly-sandy and sandy washes; along gravelly drainages; gravelly-sandy, sandy, clayey and silty banks of streams, rivers and washes; gravelly terraces; clayey bottomlands; mesquite bosques; gravelly, gravelly-sandy and sandy riparian areas, and disturbed areas growing in wet and dry bouldery, rocky, rocky-gravelly, rocky-sandy, cindery, gravelly, gravelly-sandy and sandy ground; gravelly loam, gravelly-sandy loam, gravelly-clayey loam, sandy loam and sandy-clayey loam ground, and gravelly-sandy silty and silty ground, occurring from 600 to 6,000 feet in elevation in the woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. The species, *Eschscholzia californica*, was reported to have been utilized by native peoples of North America and could be investigated to determine its value as a home garden or commercial food crop; it was also noted as having been used as a drug or medication. This plant is food for quail, Mule Deer (*Odocoileus hemionus crooki*) and White-tailed Deer (*Odocoileus virginianus couesi*). *Eschscholzia californica* subsp. *mexicana* is native to southwest-central and southern North America. *5, 6, 15, 16, 18, 28 (recorded as *Eschscholzia mexicana*, color photograph), 43 (031610), 46 (recorded as *Eschscholzia mexicana* Greene, Page 323), 48, 58, 63 (031610 - color presentation), 77 (recorded as *Eschscholzia mexicana*, color photograph #47), **85** (031610 - color presentation), 86 (recorded as *Eschscholzia mexicana*, color photograph), 115 (color presentation), 127 (species)*

Eschscholzia mexicana (see *Eschscholzia californica* subsp. *mexicana*)

Plantaginaceae: The Plantain Family

***Plantago* C. Linnaeus: Plantain**

COMMON NAMES: Indian-wheat, Plantain. *43 (052010), 46 (Pages 802-805and Supplement Page 1070), 63 (032907), **HR***

Plantago fastigiata (see *Plantago ovata*)

Plantago insularis (see *Plantago ovata*)

Plantago insularis var. *fastigiata* (see *Plantago ovata*)

***Plantago ovata* P. Forsskål: Desert Indianwheat**

SYNONYMY: *Plantago fastigiata* E.L. Morris, *Plantago insularis* A. Eastwood, *Plantago insularis* A. Eastwood var. *fastigiata* (E.L. Morris) W.L. Jepson. COMMON NAMES: Ataxén (Seri, also shown as being spelled Hataxén for *Plantago ovata* var. *fastigiata* (Morris) Meyers & Liston), Blond Psyllium, Blonde Espaghula, Desert Indian Wheat, Desert Indian-wheat, Desert Indianwheat, Fleaseed, Fleawort, Hataxén (Seri, also shown as being spelled Ataxén for *Plantago ovata* var. *fastigiata* (Morris) Meyers & Liston), Indian Plantago, Indian Plantain, Indian Wheat, Indian-wheat, Indianwheat, Ispaghul, Ispaghula, Muumshum (Gila River Pima), Psyllium, Spogel Seeds, Tanchagem-ovada (Portuguese), Transagem-ovada (Portuguese), Woolly Plantain. DESCRIPTION: Terrestrial annual forb/herb (2 to 14 inches in height); the basal leaves are gray-green or grayish; the flowers are cream, pinkish, tan with reddish-brown mid-stripes, white or white-green; flowering generally takes place between mid-December

and early June (additional records: one for early July, one for mid-July, one for early August, one for early September, one for late October, one for early November and two for mid-November). HABITAT: Within the range of this species it has been reported from mountains; mountaintops; rocky and rocky-sandy mesas; bouldery and rocky canyons; rocky canyon bottoms; sandy talus slopes; buttes; ledges; ridges; rocky ridgetops; meadows; foothills; rocky, gravelly-sandy and sandy hills; bouldery and rocky hillsides; along bedrock, rocky, rocky-sandy, rocky-loamy, rocky-silty-loamy, gravelly, gravelly-sandy, gravelly-loamy and sandy slopes; rocky and sandy alluvial fans; rocky, gravelly, gravelly-sandy and sandy bajadas; rocky outcrops; amongst boulders and rocks; lava flows; lava fields; sand hills; sand dunes; ridges on sand dunes; sand hummocks; rocky embankments; gravelly-sandy-loamy and sandy plains; rocky-sandy, gravelly, gravelly-sandy-loamy, gravelly-silty-loamy, sandy and silty flats; sandy basins; gravelly and sandy valley floors; valley bottoms; sandy coastal plains; along rocky, rocky-sandy, gravelly-sandy, gravelly-sandy-loamy and sandy roadsides; gulches; seeps; along creeks; along rivers; riverbeds; along and in rocky, rocky-sandy, stony-sandy, gravelly-sandy, gravelly-sandy-silty, sandy and clayey washes; drainages; gravelly drainage ways; silty lakebeds; silty depressions; gravelly and sandy banks of streams, creeks, washes and lakes; gravelly and sandy edges of rivers, washes and lakes; margins of washes; sandy shores of lakes; gravelly mudflats; benches; gravelly, gravelly-sandy sandy terraces; floodplains; along canals; canal banks; along edges of canals; along ditch banks; gravelly-sandy riparian areas, and disturbed areas growing in wet, moist and dry desert pavement; bouldery, rocky, rocky-sandy, stony-sandy, gravelly, gravelly-sandy and sandy ground; rocky loam, rocky-silty loam, gravelly loam, gravelly-sandy loam, gravelly-clayey loam, gravelly-silty loam and sandy loam ground; gravelly-sandy clay and clay ground, and gravelly-sandy silty ground, occurring from sea level to 6,700 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: EXOTIC Invasive Plant. This plant was reported to have been utilized by native peoples of North America; it was noted as having been used for food, fodder and as a drug or medication. *Plantago ovata* plant is native to southwestern Europe; western and southern Asia, and northern Africa. *5, 6, 15, 16 (*Plantago insularis* Eastw.), 43 (072509), 46 (*Plantago insularis* Eastw., Page 805), 48 (genus), 63 (031810 - color presentation), 77 (*Plantago fastigiata* Morris), **85** (031810 - includes records for *Plantago ovata* var. *fastigiata* (Morris) Meyers & Liston, color presentation of dried material), 115 (color presentation), 127*

Plantago ovata var. *fastigiata* (see footnote 85 under *Plantago ovata*)

***Plantago patagonica* N.J. von Jacquin: Woolly Plantain**

SYNONYMY: *Plantago patagonica* N.J. von Jacquin var. *gnaphalioides* (T. Nuttall) A. Gray, *Plantago purshii* J.J. Roemer & J.A. Schultes. COMMON NAMES: Bristle Bract Plantain, Hierba del Pastor (Hispanic), Indian Wheat, Muumsh (River Pima), Pastora, Plantain, Pursh Indian Wheat, Pursh Plantain, Woolly Indianwheat, Woolly Plantain, Wooly Indianwheat, Wooly Plantain. DESCRIPTION: Terrestrial annual forb/herb (1 to 12 inches in height, plants were observed and described that were 2 to 4 inches in height and 2 inches in width, plants were observed and described that were 4 to 6 inches in height and 2 inches in width); the leaves are gray-green or green; the tiny flowers are buff with a brownish tinge toward the center, cream, cream-white, green, purple-gray, straw, white, whitish, whitish-green, yellow, yellowish-white or translucent; flowering generally takes place between mid-February and late July (additional records: one for late August and one for late October). HABITAT: Within the range of this species it has been reported from mountains; rocky mountainsides; rocky bases of mountains; rocky-clayey, gravelly, pebbly-sandy, sandy and clayey mesas; plateaus; cliffs; along canyon rims; rocky, gravelly-loamy, sandy and clayey canyons; rocky canyon walls; sandy and sandy-loamy canyon bottoms; chasms; gorges; talus slopes; bases of cliffs; crevices in rocks; buttes; gravelly knolls; rocky ledges; clayey ridges; rocky ridgetops; ridgelines; foothills; rocky and sandy hills; sandy hilltops; rocky, rocky-gravelly and gravelly-sandy hillsides; bouldery, rocky, rocky-gravelly, rocky-gravelly-loamy, rocky-sandy, rocky-clayey, shaley-sandy, stony, gravelly, gravelly-sandy, gravelly-sandy-loamy, gravelly-clayey, sandy, sandy-loamy, clayey-loamy and loamy slopes; rocky-sandy and sandy alluvial fans; gravelly and sandy bajadas; pediments; rocky outcrops; amongst boulders; sandy lava flows; sand dunes; steppes;

sandy prairies; sandy, sandy-loamy and loamy plains; gravelly, gravelly-sandy, sandy and clayey flats; clayey catch basins; stony and clayey valley floors; gravelly-sandy-clayey valley bottoms; railroad right-of-ways; along rocky, gravelly, gravelly-loamy, sandy and sandy-silty roadsides; rocky arroyos; along sandy draws; bottoms of draws; gulches; rocky ravines; seeps; around springs; around seeping streams; along streams; streambeds; along creeks; creekbeds; along rivers; riverbeds; along and in bedrock, bouldery-sandy, rocky, gravelly, gravelly-sandy and sandy washes; sandy drainages; sandy drainage ways; along watercourses; silty swales; sandy banks of rivers; edges of brooks; sandy margins of creeks and rivers; rocky-gravelly bars; beaches; along bouldery and sandy benches; gravelly and sandy terraces; loamy bottomlands; lowlands; bouldery floodplains; mesquite woodlands; along fencelines; ditches; gravelly, gravelly-sandy, sandy and sandy-silty riparian areas; waste places, and disturbed areas growing in wet and dry bouldery, bouldery-sandy, rocky, rocky-gravelly, rocky-sandy, shaley-sandy, stony, gravelly, gravelly-sandy, pebbly-sandy and sandy ground; rocky loam, rocky-gravelly loam, gravelly loam, gravelly-sandy loam, sandy loam, clayey loam and loam ground; rocky clay, gravelly clay, gravelly-sandy clay, sandy clay and clay ground, and sandy silty and silty ground, occurring from 400 to 8,800 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant was reported to have been utilized by native peoples of North America and could be investigated to determine its value as a home garden or commercial food crop; it was also noted as having been used as a drug or medication and as a ceremonial item. *Plantago patagonica* is native to central and southern North America and southern South America. *5, 6, 16, 28 (recorded as *Plantago purshii*, color photograph), 30, 43 (031810 - *Plantago patagonica* var. *gnaphalioides* (Nutt.) A. Gray), 46 (recorded as *Plantago purshii* Roem. & Schult., Page 804), 48 (genus), 58, 63 (031810 - color presentation), 77 (color photograph #89), **85** (031810 - color presentation), 101 (color photograph), 115 (color presentation), 127*

Plantago patagonica var. *gnaphalioides* (see *Plantago patagonica*)

Plantago purshii (see *Plantago patagonica*)

Polemoniaceae: The Phlox Family

***Gilia flavocincta* A. Nelson: Lesser Yellowthroat Gilia**

COMMON NAMES: Gilia, Gily-flower, Lesser Yellowthroat Gilia, Lesser Yellow-throat Gily-flower, Yellowthroat Gily-flower. DESCRIPTION: Terrestrial annual forb/herb (2 inches to 2 feet in height); the leaves are dark green; the flowers may be blue, blue-lavender, blue-yellow, bluish-purple, dark grayish-blue, lavender, lavender-pink, pink-lavender, pink-lavender-blue, pinkish-lavender, pinkish-purple, light purple, purple, violet, violet-blue or white; ; the anthers are bluish or pale blue-violet; flowering generally takes place between late January and mid-June (additional record: one for mid-September). HABITAT: Within the range of this species it has been reported from mountains; mesas; cliffs; rocky canyons; sandy canyon bottoms; bases of cliffs; along rocky ridges; ridgetops; foothills; rocky hills; rocky and gravelly hillsides; rocky, rocky-pebbly, gravelly, sandy, sandy silty and silty-loamy slopes; gravelly bajadas; bouldery and rocky outcrops; rocky and sandy flats; basins; cindery valley floors; railroad right-of-ways; along sandy roadsides; sandy arroyos; draws; bottoms of draws; gulches; gullies; ravines; sand along streams; along and in streambeds; along creeks; bouldery-rocky, cobbly and sandy creekbeds; sandy riverbeds; along and in gravelly, gravelly-sandy and sandy washes; along and in sandy drainages; banks of rivers; edges of streambeds; sandy terraces; loamy bottomlands; floodplains; bosques; sandy riparian areas, and disturbed areas growing in dry bouldery, bouldery-rocky, rocky, rocky-pebbly, rocky-sandy, cobbly, cindery, gravelly, gravelly-sandy and sandy ground; gravelly-clayey loam, sandy loam, silty loam and loam ground; rocky clay ground, and sandy silty ground, occurring from 2,000 to 7,300 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTE: *Gilia flavocincta* is native to southwest-central and southern North America. *5, 6,

18 (gen.), 43 (031810), 46 (*Gilia flavocincta* A. Nels., Supplement Page 1066, originally included as a possible synonym of *Gilia tenuiflora* Benth. (known only from coastal California), Page 691), 63 (031810 - color presentation), **85** (031910 - color presentation)*

***Gilia flavocincta* A. Nelson subsp. *australis* (A.D. Grant & V.E. Grant) A.G. Day & V.E. Grant: Lesser Yellowthroat Gilia**

SYNONYMY: *Gilia ophthalmoides* A. Brand subsp. *australis* A.D. Grant & V.E. Grant. COMMON NAMES: Gilia, Gily-flower, Lesser Yellowthroat Gilia, Yellowthroat Gily-flower. DESCRIPTION: Terrestrial annual forb/herb (6 inches to 2 feet in height); the flowers are blue, blue-lavender, bluish-purple, gray-white, dark grayish-blue, pale lavender, pink, pink-blue, pink-lavender, light purple, purple, white or white tinged with violet; the anthers are bluish or pale blue-violet; flowering generally takes place between late February and mid-June (additional record: two for late January). HABITAT: Within the range of this species it has been reported from mountains; mesas; canyons; rocky-sandy meadows; rocky and sandy hills; hilltops; rocky hillsides; rocky and rocky-loamy slopes; gravelly bajadas; rocky outcrops; sandy flats; gravelly roadsides; along gravelly draws; along streams; cobbly-sandy riverbeds; along bouldery and sandy washes; along and in gravelly-sandy drainages; channel bars; terraces; sandy floodplains; riparian areas, and disturbed areas growing in dry rocky, rocky-sandy, shaley-sandy, cobbly-sandy, gravelly, gravelly-sandy and sandy ground and rocky loam and sandy loam ground, occurring from 2,200 to 7,300 feet in elevation in the forest, woodland, grassland, desertscrub and wetland ecological formations. NOTE: *Gilia flavocincta* subsp. *australis* is native to southwest-central and southern North America. *5, 6, 18 (genus), 43 (031810 - *Gilia flavocincta* A. Nelson subsp. *australis* (V.E. Grant) A.G. Day & V.E. Grant, *Gilia ophthalmoides* Brand subsp. *australis* V.E. Grant), 46 (Supplement Page 1066), 58 (*Gilia ophthalmoides* Brand ssp. *australis* A. & V. Grant), 63 (031810), 77, **85** (031910 - color presentation of dried material)*

Gilia inconspicua var. *sinuata* (see *Gilia sinuata*)

Gilia ophthalmoides subsp. *australis* (see *Gilia flavocincta* subsp. *australis*)

***Gilia sinuata* D. Douglas ex G. Bentham: Rosy Gilia**

SYNONYMY: *Gilia inconspicua* (J.E. Smith) R. Sweet var. *sinuata* (D. Douglas *ex* G. Bentham) A. Gray. COMMON NAMES: Bare-base Gilia, Cinder Gilia, Gilia, Gily-flower, Rosy Gilia. DESCRIPTION: Terrestrial annual forb/herb (2½ to 15 inches in height, plants were observed and described as being 4 to 10 inches in height and 2 to 4 inches in width); the foliage is medium green; the flowers are pale blue-violet, blue, blue-lavender, blue-purple, blue-yellow, bluish-white, cream, lavender-pink, pink, purple, violet, white or pale yellow; the anthers are blue; flowering generally takes place between early March and early July (additional records: one for mid-February and one for mid-September). HABITAT: Within the range of this species it has been reported from mountains; mesas; sandy plateaus; cliffs; sandy canyons; sandy canyon bottoms; bluffs; rocky-gravelly-sandy sides of buttes; gravelly ridges; ridgetops; meadows; foothills; rocky, rocky-sandy-silty and gravelly hills; hilltops; rocky hillsides; rocky, gravelly, sandy and clayey slopes; gravelly and sandy alluvial fans; bajadas; lava flows; lava fields; sand dunes; sandy breaks; sandy and silty-loamy plains; gravelly, sandy and silty flats; sandy valley floors; valley bottoms; along rocky, rocky-gravelly-sandy-clayey-loamy, gravelly and gravelly-sandy roadsides; sandy arroyos; along creeks; along and in gravelly-sandy and sandy creekbeds; along rivers; along and in rocky, rocky-sandy, gravelly-sandy and sandy washes; drainages; in sandy-silty drainage ways; silty lakebeds; rocky and sandy banks of creeks, creekbeds and washes; edges of washes and dry lakes; sandy bottomlands; sandy benches; cobbly-sandy terraces; gravelly-sandy and silty riparian areas, and disturbed areas growing in dry bouldery, rocky, rocky-gravelly, rocky-gravelly-sandy, rocky-sandy, cobbly-sandy, cindery, gravelly, gravelly-sandy and sandy ground; rocky-gravelly-sandy-clayey loam, gravelly loam and silty loam ground; clay ground, and rocky-sandy silty, sandy silty and silty ground, occurring from 1,500 to 7,900 feet in elevation in the forest, woodland, scrub, grassland,

desertscrub and wetland ecological formations. NOTES: This plant was reported to have been utilized by native peoples of North America and could be investigated to determine its value as a home garden or commercial food crop. *Gilia sinuata* is native to southwest-central and southern North America. *5, 6, 15, 18 (genus), 43 (031910 - *Gilia inconspicua* var. *sinuata* (Douglas *ex* Benth.) Brand), 46 (Page 691), 63 (031910 - color presentation), **85** (031910 - color presentation of dried material), 127*

Polygonaceae: The Buckwheat Family

***Chorizanthe brevicornu* J. Torrey (var. *brevicornu* is the variety reported as occurring in Arizona): Brittle Spineflower**

COMMON NAMES: Brittle Spine Flower, Brittle Spineflower, Sagebrush Chorizanthe, Short-horn Spine-flower. DESCRIPTION: Terrestrial annual forb/herb (2 to 20 inches in height and 2 to 12 inches in width, one plant was described as being 7 inches in height and 10 inches in width); the basal rosette of leaves may be lime, maroon, reddish or yellow-green; the small inconspicuous flowers are green, greenish-white, white, yellow-green or yellowish-white; flowering generally takes place between early January and late May (additional record: one for mid-June, flowering may continue into July). HABITAT: Within the range of this species it has been reported from mountains; mesas; rocky and rocky-gravelly canyons; sandy and sandy-loamy canyon bottoms; rocky talus slopes; gravelly ridges; ridgetops; rocky foothills; rocky and rocky-sandy hills; hilltops; rocky hillsides; bedrock, bouldery, rocky, rocky-gravelly-loamy, rocky-sandy, gravelly, gravelly-sandy, gravelly-loamy and sandy slopes; rocky alluvial fans; gravelly bajadas; rock, and shaley outcrops; amongst boulders, rocks and gravels; boulderfields; lava flows; sand dunes; gravelly-loamy breaks; plains; rocky-sandy, gravelly, sandy and silty flats; basins; gravelly valley floors; along rocky-gravelly, gravelly and sandy roadsides; arroyos; springs; along creeks; creekbeds; along rivers; rocky-cobbly-sandy river beds; along and in gravelly, gravelly-sandy and sandy washes; cobbly drainages; gravelly-sandy banks of rivers and washes; edges of washes; margins of washes; benches; gravelly-sandy and sandy terraces, and riparian areas growing in dry desert pavement; bouldery, rocky, rocky-cobbly-sandy, rocky-gravelly, rocky-sandy, cobbly, gravelly, gravelly-sandy and sandy ground; rocky-gravelly loam, gravelly loam, gravelly-sandy loam, sandy loam and silty loam ground, and sandy silty and silty ground, occurring from sea level to 10,000 feet in elevation in the woodland, grassland, desertscrub and wetland ecological formations. NOTE: *Chorizanthe brevicornu* is native to southwest-central and southern North America. *5, 6, 15, 16, 43 (032210), 46 (Pages 229-230), 63 (032210 - color presentation), 77, **85** (032210 - color presentation)*

***Eriogonum abertianum* J. Torrey: Abert's Buckwheat**

SYNONYMY: *Eriogonum abertianum* J. Torrey var. *abertianum*, *Eriogonum abertianum* J. Torrey var. *cyclosepalum* (E.L. Greene) F.R. Fosberg, *Eriogonum abertianum* J. Torrey var. *villosum* F.R. Fosberg. COMMON NAMES: Abert's Buckwheat, Abert Wild Buckwheat, Abert's Wild Buckwheat, Skeleton Weed, Wild Buckwheat. DESCRIPTION: Terrestrial annual forb/herb (2 to 32 inches in height, plants were observed and described as being 8 to 10 inches in height and to 6 inches in width); the foliage may be gray, gray-green, or greenish; the flowers are cream, creamy-peach, cream & red, greenish-yellow tinged with red, pale pink, pink, pink-cream, pink-red, pinkish, pinkish-red, pinkish-white, red, reddish, reddish-pink, reddish-yellow, white, white & pink, white with green or purple stripes or with a pink or red tinge, whitish-pink, white-yellow with red tips, light yellow, pale yellow & red, yellow with red tints, yellowish or yellowish-pinkish; flowering generally takes place between mid-February and late November (additional records: three for mid-January and one for mid-December). HABITAT: Within the range of this species it has been reported from mountains; mountaintops; mesas; cliffs; rocky canyons; along gravelly, gravelly-sandy and sandy canyon bottoms; talus slopes; bases of cliffs; crevices in rocks; pockets of sandy soil in rock; buttes; ledges; ridges; ridgetops; bouldery foothills; gravelly hills; hilltops; rocky and gravelly hillsides; escarpments; rocky, rocky-sandy, stony, gravelly, sandy-loamy, sandy-clayey-loamy and clayey-loamy slopes; sandy alluvial fans; rocky-sandy and gravelly bajadas; rock

outcrops; amongst boulders and rocks; sandy lava flows; sandy-loamy plains; rocky, gravelly, sandy, sandy-clayey, sandy-clayey-loamy and clayey flats; basin bottoms; valley floors; along rocky, gravelly, gravelly-sandy-clayey-loamy, sandy and sandy-loamy roadsides; rocky arroyos; bottoms of arroyos; gulches; bouldery-rocky and rocky gullies; along streams; along streambeds; along creeks; along rivers; along and in rocky, gravelly, gravelly-sandy, sandy and clayey washes; within gravelly and sandy drainages; around lakes; marshes; banks of streams; sand bars; benches; terraces; sandy bottomlands; sandy-clayey floodplains; mesquite bosques; gravelly levees; riparian areas, and disturbed areas growing in wet, moist, damp and dry rocky desert pavement; bouldery, bouldery-rocky, rocky, rocky-sandy, shaley, stony, gravelly, gravelly-sandy and sandy ground; rocky-clayey loam, gravelly loam, gravelly-sandy loam, gravelly-sandy-clayey loam, sandy loam, sandy-clayey loam, clayey loam and loam ground; rocky clay, gravelly-sandy clay, sandy clay and clay ground, and gravelly silty and gravelly-sandy silty ground, occurring from 1,300 to 8,300 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat, the flowers are reported to be attractive. The flowers, leaves, seeds and stems are used for food by White-tailed Deer (*Odocoileus virginianus couesi*) and quail, White-tailed Deer and Desert Bighorn Sheep (*Ovis canadensis* subsp. *mexicana*) feed on the seeds. *Eriogonum abertianum* is native to southwest-central and southern North America. *5, 6, 15, 16, 18 (genus), 43 (032210), 46 (Page 237), 48 (gen.), 58, 63 (032210 - color presentation), 77 (color photograph #50), **85** (032210 - color presentation)*

Eriogonum abertianum var. *abertianum* (see *Eriogonum abertianum*)

Eriogonum abertianum var. *cyclosepalum* (see *Eriogonum abertianum*)

Eriogonum abertianum var. *villosum* (see *Eriogonum abertianum*)

Eriogonum clutei (see *Eriogonum deflexum* var. *deflexum*)

***Eriogonum deflexum* J. Torrey (var. *deflexum* is the variety reported as occurring in Arizona): Flatcrown Buckwheat**

SYNONYMY: (for *E.d.* var. *deflexum*: *Eriogonum clutei* P.A. Rydberg, *Eriogonum deflexum* J. Torrey var. *turbinatum* (J.K. Small) J.L. Reveal). COMMON NAMES: Flatcrown Buckwheat, Flatcrowned Wild Buckwheat, Flat-topped Buckwheat, Skeleton Weed, Skeleton-weed, Skeletonweed, Skeleton Weed Eriogonum. DESCRIPTION: Terrestrial annual forb/herb (2 inches to 2 feet in height); the stems are blue-gray, gray-green, green or purple-red; the basal rosette of leaves is blue-gray, gray-green or green; the small flowers are cream, cream-pink, pink, pink-white, pinkish, pinkish-purple-lavender-white, white or whitish-pink; flowering generally takes place between mid-January and late December; the fruits may be bright pink. HABITAT: Within the range of this species it has been reported from mountains; mesas; plateaus; cliffs; rocky canyons; rocky, gravelly and sandy canyon bottoms; gorges; bouldery scree; talus slopes; rocky sides of buttes; ridgelines; rocky foothills; rocky and rocky-gravelly hills; rocky, gravelly and clayey hillsides; rocky, stony-cobbly-sandy, cindery, gravelly, sandy, sandy-clayey and clayey slopes; alluvial fans; bajadas; rocky outcrops; cobbly, cobbly-sandy and sandy debris fans; pebbly and sandy plains; rocky, gravelly and sandy flats; basins; valley floors; valley bottoms; roadbeds; along gravelly and sandy roadsides; within gravelly and sandy arroyos; sandy bottoms of arroyos; gulches; gravelly ravines; springs; along streams; streambeds; along creeks; creekbeds; gravelly and sandy riverbeds; along and in cobbly, gravelly, gravelly-sandy, sandy, sandy-clayey and clayey washes; drainages; drainage ways; sandy banks of rivers; gravelly edges of marshes; sand bars; terraces; sandy bottomlands; floodplains; along ditches; along canal banks; gravelly-sandy and sandy riparian areas; waste places, and disturbed areas growing in dry desert pavement; bouldery, rocky, rocky-gravelly, rocky-sandy, shaley, stony-cobbly-sandy, cobbly, cindery, gravelly, gravelly-sandy, pebbly and sandy ground; rocky loam and gravelly loam ground, and sandy clay and clay ground, occurring from sea level to 7,200 feet in elevation in the woodland, scrub, grassland, desertscrub and wetland ecological

formations. NOTES: This plant may be an attractive component of a restored native habitat. *Eriogonum deflexum* is native to southwest-central and southern North America. *5, 6, 16, 18 (genus), 43 (032310), 46 (Page 239), 48 (genus), 63 (032310 - color presentation of seed), 68, 77, **85** (032310 - color presentation)*

Eriogonum deflexum var. *turbinatum* (see *Eriogonum deflexum* var. *deflexum*)

Eriogonum densum (see footnote 46 under *Eriogonum palmerianum*)

***Eriogonum inflatum* J. Torrey & J.C. Frémont: Desert Trumpet**

COMMON NAMES: Bladder Stem, Bladderstem, Bottle-stopper, Cigarette Plant, Desert Trumpet, Indian Pipe-weed, Indian Pipeweed, Indianpipe Weed, Native American Pipeweed. DESCRIPTION: Terrestrial annual or perennial forb/herb (stems 8 inches to 5 feet in height); this plant has a basal rosette of gray-green, green or red leaves; the flowering stems and branches are grayish, gray-green, green, purple-red or yellowish-green; the flowers are greenish-yellow, orange-yellow, pink or yellow; flowering generally takes place between early March and late November (additional records: one for mid-January, one for early February and one for mid-February, flowering has also been reported as occurring year round). HABITAT: Within the range of this species it has been reported from mountains; rocky-clayey mesas; plateaus; rocky canyons; talus slopes; rocky buttes; rocky ledges; rocky ridges; ridgelines; crater walls; foothills; rocky hills; gravelly crests of hills; rocky and gravelly hillsides; bouldery, rocky, gravelly and sandy slopes; gravelly and gravelly-sandy bajadas; gypsum outcrops; rocky coves; sand dunes; plains; flats; rocky valley floors; along gravelly roadsides; along rocky and gravelly arroyos; along rivers; along and in bouldery, rocky, rocky-sandy, gravelly, gravelly-sandy and sandy washes; rocky banks of rivers; gravelly terraces; sandy bottomlands; floodplains; riparian areas, and disturbed areas growing in dry desert pavement; bouldery, rocky, rocky-sandy, shaley, gravelly, gravelly-sandy and sandy ground, and rocky clay ground, occurring from sea level to 6,600 feet in elevation in the woodland, grassland, desertscrub and wetland ecological formations. NOTES: This plant was reported to have been utilized by native peoples of North America and could be investigated to determine its value as a home garden or commercial food crop; it was also noted as having been used as tools (used as pipes and drinking tubes) and as a drug or medication. The Desert Trumpet is a food plant for the larva and adult forms of the Desert Metalmark Butterfly (*Apodemia palmerii* subsp. *deserti*). *Eriogonum inflatum* is native to southwest-central and southern North America. *5, 6, 18 (genus), 28 (color photograph), 43 (070810 - *Eriogonum inflatum* Torr.), 46 (Pages 237-238), 48 (genus), 63 (070810 - color presentation), 77 (plants observed had yellow flowers and stems that were not inflated), **85** (070810 - color presentation, unable to access species information), 86 (color photograph), 106 (070810 - *Apodemia palmerii*), 127*

***Eriogonum maculatum* A.A. Heller: Spotted Buckwheat**

COMMON NAMES: Anglestem Buckwheat, Angle-stemmed Buckwheat, Skeleton Weed, Spotted Buckwheat, Spotted Wild Buckwheat. DESCRIPTION: Terrestrial annual forb/herb (4 to 12 inches in height); the foliage is greenish or reddish; the flowers are cream, pink, red, rose-pink, rose-red, white, white-pink, white-purple, white-red, yellow, yellow-green, white & pink, white & dark pink or yellowish-white; flowering generally takes place between mid-March and early July (additional records: one for late July, two for mid-August, one for early September, one for late September, two for early October, one for mid-October, one for early November and one for late November). HABITAT: Within the range of this species it has been reported from mountains; mesas; rocky canyons; canyon sides; sandy canyon bottoms; talus slopes; sandy bases of cliffs; bluffs; ledges; gravelly ridges; ridgetops; gravelly foothills; bouldery, rocky, gravelly and gravelly-clayey hills; hilltops; rocky and gravelly hillsides; bedrock, bouldery, rocky, rocky-sandy, gravelly, sandy, clayey and silty slopes; alluvial fans; gravelly bajadas; boulder fields; rocky outcrops; amongst boulders; sandy lava flows; sand dunes; plains; gravelly, gravelly-sandy, sandy and clayey flats; sandy basins; sandy valley floors; sandy valley bottoms; along gravelly and sandy roadsides; springs; along creeks; along rivers; along and in gravelly-sandy riverbeds;

along and in rocky, rocky-sandy, gravelly, gravelly-sandy and sandy washes; sandy depressions; sandy banks of rivers; edges of dry lakes; sandy benches; floodplains; shores of reservoirs; sandy riparian areas, and disturbed areas growing in dry bouldery, rocky, rocky-sandy, gravelly, gravelly-sandy and sandy ground; gravelly clay and clay ground, and bouldery silty and silty ground, occurring from 300 to 8,200 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTE: *Eriogonum maculatum* is native to southwest-central and southern North America. *5, 6, 16, 18 (genus), 43 (032310), 46 (Pages 236-237), 48 (genus), 63 (032310 - color presentation), 77, **85** (032310 - color presentation of dried material)*

***Eriogonum palmerianum* J.L. Reveal: Palmer's Buckwheat**

COMMON NAMES: Palmer Buckwheat, Palmer's Buckwheat, Palmer's Wild Buckwheat, Skeleton Weed. DESCRIPTION: Terrestrial annual forb/herb (spreading and erect stems 2 to 20 inches in height); the stems are gray-green, grayish or tawny; the leaves are gray-green or greenish; the flowers may be cream-white, dull greenish-yellow, pink, pink-white, pinkish-white, pale white with a red-brown mid-stripe, white, dull white, whitish with a red mid-vein, or pale yellowish becoming pink to red: flowering generally takes place between mid-April and late November (flowering beginning as early as March has been reported). HABITAT: Within the range of this species it has been reported from rocky mountains; mountaintops; mesas; plateaus; bouldery and gravelly canyons; gravelly and sandy canyon bottoms; talus slopes; sandy-loamy bases of cliffs; bluffs; buttes; rocky ridges; rocky ridgetops; cindery cinder cones; foothills; hills; rocky hillsides; rocky, rocky-clayey-loamy, shaley, stony-gravelly-sandy, gravelly, sandy and clayey slopes; gravelly-sandy bajadas; rocky outcrops; amongst boulders and rocks; berms; gravelly and sandy flats; basins; valley floors; roadbeds; along gravelly, gravelly-loamy and sandy roadsides; along rocky arroyos; draws; within bouldery-rocky gullies; along creeks; rocky creekbeds; along rivers; riverbeds; along and in rocky, gravelly, gravelly-sandy and sandy washes; within drainages; along boulder-gravelly-sandy and sandy banks of rivers, washes and drainages; edges of drainages; margins of washes; sand bars; sandy benches; gravelly and sandy terraces; bottomlands; sandy-loamy floodplains; ditches; gravelly and sandy riparian areas, and disturbed areas growing in dry bouldery-gravelly-sandy, rocky, shaley, stony-gravelly-sandy, cindery, gravelly, gravelly-sandy and sandy ground; rocky loam, rocky-clayey loam, gravelly loam, sandy loam and loam ground, and clay ground, occurring from 900 to 8,900 feet in elevation in the woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTE: *Eriogonum palmerianum* is native to southwest-central North America. *5, 6, 15, 18 (genus), 43 (052410), 46 (incorrectly included as *Eriogonum densum* Greene, Page 236), 48 (genus), 63 (052410), 77, **85** (052410 - color presentation of dried material)*

***Eriogonum thurberi* J. Torrey: Thurber's Buckwheat**

COMMON NAMES: Skeleton Weed, Thurber Buckwheat, Thurber Eriogonum, Thurber Wild Buckwheat, Thurber's Buckwheat, Thurber's Wild Buckwheat. DESCRIPTION: Terrestrial annual forb/herb (2 to 16 inches in height); the foliage is greenish, grayish or reddish; the flowers are pink, pink-red, pink-rosy, reddish, white, white-pink or whitish-greenish-reddish; flowering generally takes place between late March and early July (additional records: one for early March, two for late July, one for early August, one for late August and one for mid-November). HABITAT: Within the range of this species it has been reported from mountains; rocky mountainsides; sandy mesas; canyons; sandy canyon bottoms; foothills; hills; hillsides; rocky, gravelly and sandy slopes; bouldery-stony-gravelly-sandy, rocky-sandy and gravelly-sandy alluvial fans; bajadas; sand dunes; gravelly-sandy plains; gravelly and sandy flats; sandy valley floors; along gravelly roadsides; along streams; along rivers; sandy riverbeds; along and in sandy washes; in drainages; banks of washes; sand bars; sandy benches; sandy riparian areas; recently burned areas in chaparral, and disturbed areas growing in dry bouldery, bouldery-stony-gravelly-sandy, rocky, rocky-sandy, gravelly, gravelly-sandy and sandy ground and sandy loam ground, occurring from 300 to 4,100 feet in elevation in the woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTE: The Thurber Buckwheat is a larval host plant of the Acmon Blue Butterfly, *Icaricia acmon*. *Eriogonum thurberi* is native to southwest-central and southern North America. *5, 6, 15, 16, 18

(genus), 43 (032310), 46 (Page 239), 48 (genus), 58, 63 (032310), 77, **85** (032310 - color presentation of dried material)*

***Eriogonum wrightii* J. Torrey ex G. Bentham: Bastardsage**

COMMON NAMES: Bastardsage, Short-stem Bastard-sage (*E.w.* var. *subscaposum*), Wright Buckwheat, Wright Buckwheat Brush, Wright's Bastard-sage (*E.w.* var. *wrightii*). DESCRIPTION: Terrestrial perennial forb/herb, subshrub or shrub (prostrate to erect stems 4 inches to 3 feet in height/length, plants 12 inches in height and 16 inches in width were observed and described); the leaves are gray-green, grayish, greenish, reddish or white; the flowers may be cream-white, pale lavender, pale lavender-pinkish, orange, pink, pink & white, pinkish, rose, white, white-orange, white & pink or whitish-pink; flowering generally takes place between early June and mid-January (additional records: one for mid-February, one for late March, two for early April and two for mid-April). HABITAT: Within the range of this species it has been reported from mountains; mountaintops; mountainsides; sandy mesas; plateaus; rocky crags; rocky cliffs; rocky rims of canyons; rocky canyons; along rocky canyon bottoms; rocky talus, bases of cliffs; crevices in boulders and rocks; buttes; rocky knolls; ledges; along rocky ridges; bouldery ridgetops; sandy meadows; foothills; rocky, stony and sandy hills; rocky and clayey hillsides; rocky, gravelly, gravelly-sandy, gravelly-loamy, gravelly-clayey, sandy, sandy-loamy, loamy, clayey and clayey-loamy slopes; alluvial fans; bajadas; boulder and rock outcrops; amongst boulders and rocks; sandy lava flows; rocky banks; sandy prairies; rocky, sandy and clayey flats; valley floors; embankments; rocky, gravelly, gravelly-loamy and sandy-loamy roadsides; sandy arroyos; bottoms of arroyos; gullies; within ravines; streambeds; along sandy creekbeds; along and in rocky washes; gravelly and pebbly drainage ways; terraces; recently burned areas of Joshua Tree woodland, and disturbed areas growing in damp and dry bouldery, bouldery-rocky, rocky, shaley, stony, cobbly-sandy, gravelly, gravelly-sandy, pebbly and sandy ground; gravelly loam, gravelly-sandy loam, sandy loam, sandy-clayey loam, clayey loam and loam ground, and gravelly clay, sandy clay and clay ground, occurring from sea level to 9,200 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. This plant was reported to have been utilized by native peoples of North America and could be investigated to determine its value as a home garden or commercial food or beverage crop; it was also noted as having been used as a drug or medication. *Eriogonum wrightii* is native to southwest-central and southern North America. *5, 6, 13, 18 (genus), 43 (081810), 46 (Page 241, about the species: "... according to Nichol, the most important deer-browse plant in the state."), 48 (genus), 63 (081810 - color presentation110107), **85** (081910 - color presentation), 127*

Portulacaceae: The Purselane Family

***Calandrinia ciliata* (H.R. López & J.A. Pavón) A.P. de Candolle: Fringed Redmaids**

SYNONYMY: *Calandrinia ciliata* (H.R. López & J.A. Pavón) A.P. de Candolle var. *menziesii* (W.J. Hooker) J.F. Macbride. COMMON NAMES: Desert Rock Purslane, Desert Rockpurslane, Fringed Redmaids, Red Maids, Red-maids, Redmaids, Rock Purslane. DESCRIPTION: Terrestrial annual forb/herb (prostrate to ascending and spreading stems 1 to 18 inches in length); the leaves are green; the flowers (to ½ inch in width) may be blue-purple, magenta, magenta-pink, magenta-purple, pink, deep pink, pink-magenta, pink-maroon, pink-purple, pink-red, purple, purplish-pink, red, deep red, deep red-purple, red-pink, reddish-pink, reddish-purple, reddish-violet, rose, rose-red, violet, white or white-purple; flowering generally takes place between mid-January and late May. HABITAT: Within the range of this species it has been reported from mountains; rocky mountainsides; sandy mesas; plateaus; along rocky canyons; chasms; rocky and sandy-loamy canyon bottoms; crevices in rocks; bouldery knobs; ridges; rocky-sandy and sandy meadows; sandy and clayey foothills; bouldery and rocky hills; hilltops; rocky and clayey hillsides; bouldery, bouldery-rocky-clayey, bouldery-gravelly, rocky, rocky-clayey, stony, gravelly, gravelly-loamy, gravelly-clayey, sandy, clayey and clayey-loamy slopes; bajadas; amongst

rocks; sandy alluvial fans; sand dunes; sandy plains; gravelly, sandy and clayey flats; basins; hollows; valley floors; loamy valley bottoms; along clayey-loamy roadsides; bedrock and sandy arroyos; along sandy bottoms of arroyos; along draws; gulches; gullies; seeps; around seeping streams; in sand along streams; streambeds; along creeks; bouldery-rocky, rocky-sandy and sandy creekbeds; sandy riverbeds; along and in rocky, gravelly, gravelly-sandy and sandy washes; drainages; around clayey pools; silty-clayey poolbeds; loamy-clayey depressions; (rocky) banks of streams, creeks and rivers; along (clayey) edges of streams; margins of vernal marshes and pools; terraces; sandy bottomlands; sandy-silty floodplains; sandy riparian areas, and disturbed areas growing in shallow water and wet, moist, damp and dry bouldery, bouldery-rocky, bouldery-gravelly, rocky, rocky-sandy, stony, gravelly and sandy ground; gravelly loam, sandy loam, clayey loam and loam ground; bouldery clay, bouldery-rocky clay, rocky clay, gravelly clay and clay ground, and sandy-silty ground, occurring from sea level to 6,300 feet in elevation in the woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant was reported to have been utilized by native peoples of North America and could be investigated to determine its value as a home garden or commercial food crop. *Calandrinia ciliata* is native to west-central and southern North America, Central America and northwestern South America. *5, 6, 15, 28 (color photograph), 43 (072609), 46 (Page 288), 58, 63 (032510 - color presentation), 77, **85** (032510 - color presentation), 86 (color photograph), 101 (color photograph), 115 (color presentation), 127*

Calandrinia ciliata var. *menziesii* (see *Calandrinia ciliata*)

Calyptridium monandrum (see *Cistanthe monandra*)

***Cistanthe monandra* (T. Nuttall) M.A. Hershkovitz: Common Pussypaws**

SYNONYMY: *Calyptridium monandrum* T. Nuttall. COMMON NAMES: Common Pussypaws, Sand Cress, Sand-cress, Sandcress. DESCRIPTION: Terrestrial annual forb/herb (½ to 7 inches in height/length); the foliage is red or yellow-green; the small flowers are cream, greenish, pink, pink-reddish, reddish, white or white-pink; flowering generally takes place between early March and early July. HABITAT: Within the range of this species it has been reported from mountains; sandy mesas; plateaus; sandy canyons; rocky canyon bottoms; sandy ridges; bedrock and rocky ridgetops; foothills; bouldery, bouldery-sandy, rocky, gravelly and sandy hills; rocky and rocky-cobbly-sandy hillsides; bouldery, bouldery-sandy, rocky, rocky-sandy, stony-sandy, gravelly, gravelly-sandy, gravelly-loamy, sandy and sandy-loamy slopes; rocky-sandy, gravelly, gravelly-sandy and sandy alluvial fans; sandy bajadas; rocky and shaley outcrops; amongst rocks; sand dunes; rocky-sandy debris fans; gravelly-sandy and sandy plains; rocky, gravelly, gravelly-sandy, gravelly-silty and sandy flats; rocky-sandy and sandy valley floors; coastal dunes; along gravelly, gravelly-sandy and sandy roadsides; along bottoms of arroyos; sandy bottoms of gullies; along streams; gravelly-clayey-loamy streambeds; along and in sandy creeks; along and in rocky, rocky-sandy and sandy washes; drainages; along (rocky-sandy and sandy) banks of arroyos and washes; (sandy) edges of marshes; margins of streams; sandy benches; sandy terraces; sandy bottomlands; mesquite bosques; gravelly-sandy riparian areas; recently burned areas in forests and chaparral, and disturbed areas growing in dry desert pavement; bouldery, bouldery-sandy, rocky, rocky-cobbly-sandy, rocky-sandy, shaley, stony-sandy, gravelly, gravelly-sandy and sandy ground; gravelly loam, gravelly-clayey loam and sandy loam ground; clay ground, and gravelly silty ground, occurring from sea level to 6,900 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant was reported to have been utilized by native peoples of North America and could be investigated to determine its value as a home garden or commercial food crop. *Cistanthe monandra* is native to southwest-central and southern North America. *5, 6, 15 (*Calyptridium monandrum* Nutt.), 16 (*Calyptridium monandrum* Nutt.), 43 (032510), 46 (*Calyptridium monandrum* Nutt., Page 289), 58 (*Calyptridium monandrum* Nutt.), 63 (032510), **77** (*Calyptridium monandrum* Nutt.), **85** (032510 - color presentation of dried material), 127*

***Portulaca oleracea* C. Linnaeus: Little Hogweed**

SYNONYMY: *Portulaca retusa* G. Engelmann. COMMON NAMES: Akulikuli-kula, Beldroega (Portuguese), Chamó (Tarahumara), Chamokó (Hispanic), Common Purslane, Duckweed, Garden Purslane, Ghol (India), Ku'umpuri (Pima Baj o), Little Hog-weed, Little Hogweed, Ma Chi Xian (transcribed Chinese), Pourpier (French), Portulak (German), Purslane, Pursley, Pusley, Roughseed Purslane, Sa´luchi (Tarahumara), Suberi-hiyu (transcribed Japanese), Verdolaga (Spanish), Verdolagas (Hispanic), Verdolaguilla (Hispanic), Western Pulsey, Wild Portulaca, Xakua Tsirakua (Purépecha), Yiwa Xiquitú (Hispanic). DESCRIPTION: Terrestrial annual forb/herb (prostrate to somewhat ascending and spreading stems to 1 inch in height and 2 inches to 2 feet in length); the stems are pink-red; the leaves are gray-green; the small flowers (¼ inch in width) are orange-yellow, yellow or yellow-orange; flowering generally takes place between late April and mid-November (additional records: one for mid-January, one for early March, one for mid-March, one for late March, one for early December and two for mid-December). HABITAT: Within the range of this species it has been reported from sandy mountains; sandy and clayey mesas; plateaus; rocky, rocky-sandy and sandy canyons; gravelly-sandy canyon bottoms; chasms; rocky gorges; bases of cliffs; rocky buttes; knolls; rocky ledges; clayey-loamy and silty ridges; ridgelines; clearings in forests; meadows; foothills; rocky hills; rocky and clayey hillsides; rocky, cindery, gravelly, gravelly-loamy, gravelly-silty-loamy, sandy and clayey slopes; bajadas; rocky outcrops; amongst boulders; along rocks; sand dunes; plains; cindery and clayey flats; basins; sandy hollows; sandy valley floors; coasts; along cindery railroad right-of-ways; sandy roadbeds; along rocky, gravelly, gravelly-loamy, gravelly-sandy, sandy and loamy-clayey roadsides; within arroyos; gravelly and sandy bottoms of arroyos; draws; clayey bottoms of draws; rocky gullies; within ravines; sandy seeps; springs; along and in sandy streams; along and in gravelly streambeds; sandy creekbeds; along and in rivers; along and in bouldery-cobbly-sandy, rocky-cobbly-sandy and sandy riverbeds; in gravelly, sandy, loamy and clayey washes; along drainages; in sandy drainage ways; clayey lakebeds; sand y-loamy playas; freshwater marshes; clayey depressions; (muddy and sandy) banks of arroyos, rivers; riverbeds and pools; (sandy and clayey) edges of streams, rivers, ponds, lagoons, playas and marshes; along (muddy and sandy) margins of washes and ponds; (sandy) shores of creeks and lakes; sand bars; sandy beaches; cobbly-sandy, gravelly, sandy and sandy-loamy terraces; sandy bottomlands; sandy floodplains; margins of stock tanks; along canals; ditches; gravelly banks of ditches; bouldery-cobbly-sandy, rocky and sandy riparian areas; waste places, and disturbed areas growing in muddy and moist and dry bouldery, bouldery-cobbly-sandy, rocky, rocky-cobbly-sandy, rocky-sandy, cobbly-sandy, cindery, gravelly, gravelly-sandy and sandy ground; gravelly loam, gravelly-silty loam, sandy loam, clayey loam and loam ground; loamy clay and clay ground, and silty ground, occurring from sea level to 9,300 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: EXOTIC Invasive Plant. This plant was reported to have been utilized by native peoples of North America and could be investigated to determine its value as a home garden or commercial food crop; it was also noted as having been used as forage for sheep and as a drug or medication. *Portulaca oleracea* has been reported to have been introduced from Europe; however, its native range is unknown. *5, 6, 18, 28 (color photograph), 30, 43 (032710), 46 (recorded as *Portulaca oleracea* L., Page 291 and *Portulaca retusa* Engelm., Page 291), 63 (032710 - color presentation), 68, 77, 80 (*Portulaca oleracea* and others are listed as a Rarely Poisonous and Suspected Poisonous Range Plants. "These fleshy forbs accumulate toxic levels of oxalates and may cause sickness and death in livestock."), **85** (032710 - color presentation), 86 (color photograph), 101 (color photograph), 115 (color presentation), 127*

Portulaca retusa (see *Portulaca oleracea*)

Primulaceae: The Primrose Family

***Androsace occidentalis* F.T. Pursh: Western Rockjasmine**

SYNONYMY: *Androsace occidentalis* F.T. Pursh var. *arizonica* (A. Gray) H. St. John. COMMON NAMES: Rock Jasmine, Rock-jasmine, Western Fairy Candelabra, Western Androsace,

Western Rock Jasmine, Western Rock-jasmine, Western Rockjasmine. DESCRIPTION: Terrestrial annual forb/herb (1 to 5 inches in height); the basal rosette leaves may be reddish; the minute flowers (1/8 inch in diameter) may be pink, purple, red, white or white with a pink or red tinge; flowering generally takes place between early February and mid-May. HABITAT: Within the range of this species it has been reported from mountains; rocky mountainsides; rocky mesas; cliffs; sandy canyons; along bedrock and sandy-loamy canyon bottoms; bases of cliffs; crevices in rock; gravelly ledges; ridges; ridgetops; shaded rock niches; meadows; rocky foothills; rocky hills; rocky hillsides; rocky, rocky-gravelly-loamy, rocky-sandy, rocky-loamy, gravelly, gravelly-sandy, gravelly-loamy and sandy slopes; rocky-sandy alluvial fans; bajadas; rocky outcrops; amongst boulders and rocks; rock niches; rocky and silty flats; basins; sandy valley floors; along roadsides; within bedrock arroyos; along rocky draws; seeps; springs; around seeping streams; along rocky and sandy streams; sandy streambeds; along creeks; along and in sandy creekbeds; along rivers; riverbeds; along and in rocky, rocky-sandy, gravelly and sandy washes; drainages; depressions; (rocky and gravelly) banks of rivers and washes; channel bars in rivers; terraces; sandy bottomlands; floodplains; rocky mesquite bosques; banks of stock tanks; gravelly-sandy riparian areas, and disturbed areas growing in muddy and wet, moist, damp and dry rocky, rocky-sandy, gravelly, gravelly-sandy and sandy ground; rocky loam, rocky-gravelly loam gravelly loam and sandy loam ground; sandy clay ground, and silty ground, occurring from 1,000 to 11,500 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant was reported to have been utilized by native peoples of North America; it was noted as having been used as a drug or medication. *Androsace occidentalis* is native to central and southern North America. *5, 6, 15, 16, 43 (072809), 46 (Page 636), 58, 63 (032710 - color presentation), 77, **85** (032710 - color presentation of dried material), 127*

Androsace occidentalis var. *arizonica* (see *Androsace occidentalis*)

Ranunculaceae: The Buttercup Family

Delphinium amabile (see *Delphinium parishii* subsp. *parishii*)

Delphinium amabile subsp. *apachense* (see *Delphinium parishii* subsp. *parishii*)

***Delphinium parishii* A. Gray subsp. *parishii*: Parish's Larkspur**

SYNONYMY: *Delphinium amabile* I. Tidestrøm, *Delphinium amabile* I. Tidestrøm subsp. *apachense* (A. Eastwood) J.A. Ewan. COMMON NAMES: Desert Larkspur Ocean-blue Larkspur, Paleface Delphinium, Paleface Larkspur, Parish Desert Larkspur, Parish Larkspur, Parish's Larkspur. DESCRIPTION: Terrestrial perennial forb/herb (6½ inches to 4 feet in height); the stems may be brownish-purple; the basal rosette of leaves is dark green; the flowers may be azure-blue, light blue, blue, dark blue, blue-violet, bluish-purple, lavender, lavender-blue-violet, pinkish-violet-purple, purple, purple-blue, sky-blue or violet-blue; flowering generally takes place between mid-February and early June (additional records: one for early January, one for late June and one for late August). HABITAT: Within the range of this species it has been reported from mountains; mesas; plateaus; rocky canyons; rocky-gravelly-sandy canyon walls; sandy canyon bottoms; talus slopes; rocky knolls; ridges; along bouldery ridgetops; rocky foothills; rocky hills; rocky and gravelly hillsides; bouldery-rocky, bouldery-rocky-gravelly-sandy, rocky, rocky-sandy, rocky-clayey, gravelly-sandy and sandy slopes; gravelly-sandy bajadas; bedrock and rocky outcrops; amongst boulders and rocks; lava fields; sandy plains; sandy flats; valley floors; along roadsides; arroyos; clayey gulches; gullies; ravines; springs; around seeping streams; along streams; streambeds; along creeks; creekbeds; rivers; along and in rocky, rocky-sandy and sandy washes; drainages; high ground in marshes; (rocky, rocky-gravelly-sandy and sandy) banks of streams and washes; edges of arroyos; benches; gravelly terraces, and riparian areas growing in dry bouldery, bouldery-rocky, bouldery-rocky-gravelly-sandy, rocky, rocky-gravelly-sandy, rocky-sandy, shaley,

cindery, gravelly, gravelly-sandy and sandy ground; rocky-sandy loam, gravelly loam, gravelly-clayey loam and loam ground, and rocky clay and clay ground, occurring from 600 to 12,800 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. This is the most drought tolerant of the North American Larkspurs. *Delphinium parishii* subsp. *parishii* is native to southwest-central and southern North America. *5, 6, 15, 28 (species, color photograph), 43 (042010 - *Delphinium amabile* Tidestr. subsp. *apachense* Ewan), 46 (recorded as *Delphinium amabile* Tidestrøm, Page 309 and *Delphinium amabile* Tidestrøm subsp. *apachense* (Eastw.) Ewan, Page 309), 48 (genus), 63 (042010 - color presentation), 80 (Four species of Larkspur are listed as Major Poisonous Range Plants; however, "All species of Larkspur in Arizona should be considered potentially dangerous. ... The most toxic period of growth is when the plant is young and prior to flowering" - May and June for Low Larkspur (*Delphinium nelsoni*, *Delphinium scaposum* and *Delphinium virescens*) and May through July for Tall Larkspur (*Delphinium scopulorum*). "Plants remain dangerous throughout their life. Cattle are the principle livestock poisoned by larkspur. Sheep apparently graze larkspur without harm. ... Since cattle will graze on larkspur even though other forage is available, management to keep them away from heavily infested areas during this period is the best control technique." See text for additional information.), **85** (042110)*

***Delphinium scaposum* E.L. Greene: Tall Mountain Larkspur**

COMMON NAMES: Bare-stem Larkspur, Barestem Larkspur, Desert Larkspur, Espuelita, Larkspur, Low Larkspur, Naked Delphinium, Tall Mountain Larkspur, Tcoro'si (Hopi), Wild Delphinium. DESCRIPTION: Terrestrial perennial forb/herb (6 inches to 4 feet in height); the leafless stems may be reddish; the basal leaves are gray-green, dark green or yellow-green; the flowers (to 1 inch in width) may be blue, blue & cream-white, blue-purple, blue-purple-white, blue-violet, blue-white, dark blue, lavender-blue-purple, purple, dark purple-blue, dark purple-blue & white, purple-blue, royal blue-white, deep royal blue, violet, violet-blue or white; flowering generally takes place between early March and early July (additional record: one for early January). HABITAT: Within the range of this species it has been reported from mountains; bouldery, gravelly and sandy mesas; plateaus; along rocky rims of canyons and gorges; rocky, rocky-sandy and sandy canyons; sandy canyon bottoms; gorges; talus slopes; bases of cliffs; bluffs; buttes; knolls; rocky ledges; ridges; clearings in forests; meadows; rocky foothills; rocky and sandy hills; rocky and sandy-loamy hillsides; bouldery-rocky-gravelly, rocky, gravelly, gravelly-loamy, gravelly-sandy-loamy, gravelly-clayey-loamy, loamy and clayey slopes; bajadas; bouldery outcrops; sand dunes; gravelly and clayey flats, basins; valley floors; along rocky, gravelly-sandy and sandy roadsides; arroyos; gravelly gullies; along seeping washes; along streams; streambeds; along rivers; along washes; drainages; along water courses; gravelly-silty-clayey and gravelly-clayey depressions; (rocky) banks of washes; (rocky) edges of washes; shores of lakes; sandy beaches; benches; gravelly-sandy terraces; sandy bottomlands, and riparian areas growing in dry bouldery, bouldery-rocky-gravelly, rocky, rocky-sandy, cindery, gravelly, gravelly-sandy and sandy ground; gravelly loam, gravelly-sandy loam, gravelly-clayey loam, sandy loam and loam ground, and rocky clay, gravelly clay, gravelly-silty clay and clay ground, occurring from 1,900 to 8,900 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. This plant was reported to have been utilized by native peoples of North America and could be investigated to determine its value as a home garden or commercial dye crop; it was also noted as having been used in ceremonies; as a toy or in games, and as a drug or medication. The Tall Mountain Larkspur is reportedly visited by butterflies. *Delphinium scaposum* is native to southwest-central and southern North America. *5, 6, 15, 16, 18 (genus), 28 (color photograph), 43 (042110), 46 (Pages 308-309), 48 (genus), 58, 63 (042110 - color presentation including habitat), 68, 77 (color photograph #91), 80 (This species is listed as a Major Poisonous Range Plant; however, "All species of Larkspur in Arizona should be considered potentially dangerous. ... The most toxic period of growth is when the plant is young and prior to flowering" - May and June for Low Larkspur (*Delphinium nelsoni*, *Delphinium scaposum* and *Delphinium virescens*) and May through July for Tall Larkspur

(*Delphinium scopulorum*). "Plants remain dangerous throughout their life. Cattle are the principle livestock poisoned by larkspur. Sheep apparently graze larkspur without harm. ... Since cattle will graze on larkspur even though other forage is available, management to keep them away from heavily infested areas during this period is the best control technique." See text for additional information.), **85** (042210 - color presentation), 115 (color presentation), 127*

Rhamnaceae: The Buckthorn Family

Condalia lycioides var. *canescens* (see *Ziziphus obtusifolia* var. *canescens*)

Condalia spathulata (see footnote 46 under *Condalia warnockii* var. *kearneyana*)

***Condalia warnockii* M.C. Johnston var. *kearneyana* M.C. Johnston: Kearney's Snakewood**

COMMON NAMES: Crucillo, Guichutilla, Kearney Condalia, Kearney Snakewood, Kearney's Snakewood, Mexican Buckthorn, Mexican Crucillo, Squaw-bush, Squawbush. DESCRIPTION: Terrestrial perennial deciduous (considered evergreen except during periods of severe drought) shrub (20 inches to 13 feet in height, one plant was reported to be 6½ feet in height with a crown 10 feet in width, one plant was reported to be 10 feet in height with a crown 10 feet width); the minute flowers are yellowish; flowering generally takes place between February and November (flowering records: one for mid-February, one for mid-August, one for late August and one for mid-September; however, flowering taking place throughout the year has also been reported); the fruits are black, dark purple or reddish black. HABITAT: Within the range of this species it has been reported from mountains; gravelly and sandy mesas; cliff faces; canyons; canyon bottoms; rocky ledges; ridges; edges of meadows; foothills; hills; rocky, gravelly and sandy slopes; rocky and gravelly bajadas; amongst boulders; gravelly and sandy flats; basins; valley floors; rocky arroyos; gulches; rocky washes; along and in drainages; banks of creeks; (gravelly) edges of washes and drainages; terraces; floodplains, and around gravelly-sandy stock tanks growing in dry bouldery, rocky, gravelly, gravelly-sandy and sandy ground, occurring from 1,600 to 5,600 feet in elevation in the grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. *Condalia warnockii* var. *kearneyana* is native to southwest-central and southern North America. *5, 6, 13, 15, 16, 28 (color photograph), 43 (042210), 46 (recorded as *Condalia spathulata* A. Gray, Page 530), 58, 63 (042210), 77, 85 (042210 - color presentation), 91, **HR***

***Ziziphus obtusifolia* (W.J. Hooker ex J. Torrey & A. Gray) A. Gray var. *canescens* (A. Gray) M.C. Johnston: Lotebush**

SYNONYMY: *Condalia lycioides* (A. Gray) A. Weberbauer var. *canescens* (A. Gray) W. Trelease. COMMON NAMES: Abrojo, Bachata, Barbachatas, Buchthorn, Clepe, Garrapata, Garumbullo, Gray-leafed Abrojo, Gray-leaved Abrojo, Gray-thorn, Greythorn, Gumdrop Tree, Lotebush, Oschuvapat (Pima), Palo Blanco, Southwestern Condalia, White Crucillo. DESCRIPTION: Terrestrial perennial drought deciduous shrub or tree (3 to 13 feet in height, one plant was reported to be 40 inches in height with a crown 18 inches in width, one was reported to be plant 7 feet in height with a crown 7 feet in width, one plant was reported to be 10 feet in height with a crown 10 feet in width, one plant was reported to be 13 feet in height with a crown 13 feet in width); the stems are bluish, gray, gray-green, green or whitish with the twigs ending in stout thorns; the leaves are gray-green, green or yellow-green, the inconspicuous flowers are cream, green, greenish-white, yellow, yellow-green or whitish-green; flowering generally takes place between mid-May and late November (additional records: one for late January, one for mid-March, one for late March, one for mid-April and one for late April); the ripe fruits are black, blue-purple, dark blue or purple. HABITAT: Within range of this species it has been reported from mountains; mesas; rocky canyons; along canyon bottoms; scree; talus slopes; bases of cliffs; crevices in rocks; buttes; ridges; ridgelines; foothills; rocky hills; hilltops; rocky hillsides; rocky and gravelly slopes;

rocky alluvial fans; gravelly bajadas; amongst boulders, rocks and gravels; sandy-silty plains; rocky and gravelly flats; basins; rocky valley floors; gravelly and gravelly-loamy roadsides; arroyos; bottoms of arroyos; gulches; ravines; bouldery bottoms of ravines; seeps; in clay around springs; rivulets; along streams; along rocky streambeds; along creeks; along gravelly-sandy creekbeds; along gravelly and gravelly-sandy rivers; riverbeds; along and in rocky and sandy washes; drainages; marshes; along (rocky) banks of streams, creeks, rivers and washes; (gravelly-sandy) edges of arroyos and creeks; beaches; sandy benches; terraces; bottomlands; floodplains; mesquite bosques; along fencerows; along canals; gravelly-sandy riparian areas, and disturbed areas growing in dry desert pavement; bouldery, bouldery-sandy, rocky, rocky-gravelly, rocky-gravelly-sandy, gravelly, gravelly-sandy and sandy ground; cobbly-gravelly loam, gravelly loam and gravelly-clayey loam ground; sandy clay and clay ground, and sandy silty ground, occurring from sea level to 5,500 feet in elevation in the woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. This plant was reported to have been utilized by native peoples of North America and could be investigated to determine its value as a home garden or commercial food, fodder and/or beverage (*Ziziphus obtusifolia*) crop; it was also noted as having been used as a tool, as a drug or medication and as a commodity used in personal hygiene. The flowers are visited by orange-winged Spider Wasps. Gray Foxes (*Urocyon cinereoargenteus*), Raccoons (*Procyon lotor*), Ringtails (*Bassariscus astutus*), Gambel's Quail (*Callipepla gambelii*), Scaled Quail (*Callipepla squamata*), Mockingbirds (*Mimus polyglottos*), Northern Orioles (*Icterus bullockii*), Phainopeplas (*Phainopepla nitens*), Band-tailed Pigeons (*Columba fasciata*), White-necked Ravens (*Corvus cryptoleucus*), Curved-billed Thrashers (*Toxostoma curvirostre*), Golden-fronted Woodpeckers (*Melanerpes aurifrons*), White-winged Doves (*Zenaida asiatica*) and other birds feed on the fruit. The plants numerous spines provide an impenetrable refuge for birds and many species of birds make use of the Lotebush as a preferred nesting site. *Ziziphus obtusifolia* var. *canescens* is native to southwest-central and southern North America. *5, 6, 13 (color photograph), 15, 16, 28 (species, color photograph of species), 43 (042210), 46 (recorded as *Condalia lycioides* (Gray) Weberb. var. *canescens* (Gray) Trel., Page 530), 58, 63 (042210), 77, 85 (042310 - color presentation of dried material), 91, 127, **WTK** (July 4, 2005)*

Rosaceae: The Rose Family

***Vauquelinia californica* (J. Torrey) C.S. Sargent: Arizona Rosewood**

COMMON NAMES: Arizona Rosewood, California Rosewood, Torrey Vauquelinia. DESCRIPTION: Terrestrial perennial evergreen shrub or tree (5 to 30 feet in height, one plant was observed and recorded to be 18 feet in height and 16½ feet in width); the bark is gray, grayish or reddish-brown; branches are silver-gray; the twigs are reddish-brown; the long narrow leaves are bright green or yellow-green above and aluminum-colored or white below; the small flowers (3/8 inch in diameter) are white and born in clusters (2 to 3 inches in diameter); flowering generally takes place between mid-May and mid-October (additional records: one for late January, one for late February, one for mid-March, one for late March, two for late April, one for early November and one for mid-December). HABITAT: Within the range of this species it has been reported from mountains; mountaintops; cliffs; rocky canyons; canyon bottoms; crevices in rocks; buttes; ridges; ridgetops; hills; hillsides; bouldery and rocky and clayey slopes; amongst bouldery and rocks; basins; along roadsides; within creekbeds; along washes; along rocky drainages; banks of streams, and rocky riparian areas growing in dry bouldery and rocky ground and clay ground, occurring from 500 to 5,300 feet in elevation in the woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. *Vauquelinia californica* is native to southwest-central and southern North America. *5, 6, 13, 15, 18, 26 (color photograph), 28 (color photograph), 43 (082310), 46 (Page 375), 48, 52 (color photograph), 53, 63 (082310 - color presentation), 77, 85 (082408 - color presentation including habitat), 91, 115 (color presentation)*

Rubiaceae: The Madder Family

***Galium aparine* C. Linnaeus: Stickywilly**

COMMON NAMES: Amor-de-hortelã (Portuguese), Bedstraw, Catchweed Bedstraw, Cleavers, Cleaverwort, Common Bedstraw, Erva-pegavosa (Portuguese), Goose-grass, Goosegrass, Goosegrass Bedstraw, Pega-pega (Portuguese), Reclining Bedstraw, Scarthgrass, Sticky-willy, Stickywilly, White Hedge. DESCRIPTION: Terrestrial annual forb/herb or vine (sprawling stems 1 to 80 inches in length); the flowers are cream, greenish, white, light yellow or yellow; flowering generally takes place between early February and early September (additional records: one for mid-November and one for late November). HABITAT: Within the range of this species it has been reported from mountains; clayey mountaintops; mesas; plateaus; along cliffs; rocky, rocky-silty and stony canyons; rocky and cobbly canyon bottoms; chasms; talus slopes; bases of cliffs; crevices in rocks; bluffs; rocky ledges; along ridges; sandy-clayey clearings in forests; gravelly-loamy and sandy meadows; sandy-loamy foothills; rocky hills; hilltops; rocky and clayey hillsides; along rocky, rocky-gravelly, rocky-loamy-clayey, cobbly-loamy, sandy, sandy-loamy, loamy, clayey and humusy slopes; rocky-sandy-loamy alluvial fans; rocky outcrops; amongst boulders and rocks; bases of boulders; alcoves; scrabbled areas; steppes; sandy prairies; flats; basins; valley floors; along roadsides; arroyos; sandy draws; gulches; ravines; seeps; springs; along and in streams; gravelly streambeds; along gravelly and sandy creeks; along and in rocky and gravelly-sandy creekbeds; along and in cobbly and gravelly washes; drainages; within rocky and cobbly drainage ways; along (rocky, rocky-gravelly and sandy) banks of ravines, streams, creeks and washes; edges of seeps; beaches; sandy benches; floodplains; along fencerows; ditches; gravelly-sandy riparian areas, and disturbed areas growing in moist, damp and dry bouldery, rocky, rocky-gravelly, stony, cobbly, gravelly, gravelly-sandy and sandy ground; rocky-sandy loam, cobbly loam, gravelly loam, sandy loam and loam ground; rocky-loamy clay, rocky clay, sandy clay and clay ground; rocky-sandy silty and rocky silty ground, and humusy ground often reported as growing in shaded areas, occurring from sea level to 9,700 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: EXOTIC Invasive Plant. This plant was reported to have been utilized by native peoples of North America as a drug or medication and for use in personal hygiene. The origin of *Galium aparine* is unknown, but it is believed to be native to Europe. *5, 6, 15, 18 (genus), 28 (color photograph), 43 (042310), 46 (Page 811), 58, 65 (042310 - color presentation), 77, **85** (042310 - color presentation of dried material), 101 (color photograph), 115 (color presentation), 127*

***Galium proliferum* A. Gray: Limestone Bedstraw**

COMMON NAMES: Bedstraw, Desert Bedstraw, Great Basin Bedstraw, Limestone Bedstraw, Slender Bedstraw, Spreading Bedstraw. DESCRIPTION: Terrestrial annual forb/herb (4 to 12 inches in height); the herbage is dark green; the minute flowers are white or pale yellow; flowering generally takes place between early February and mid-May (additional records: two for mid-January and one for early December). HABITAT: Within the range of this species it has been reported from mountains; mountainsides; mesas; rocky canyons; rocky and sandy canyon bottoms; along crevices in rocks; rocky-gravelly-sandy ledges; rocky and shaley-clayey ridges; rocky ridgetops; foothills; rocky hills; rocky hillsides; along and on bedrock, bouldery, bouldery-cobbly-sandy, rocky, rocky-clayey and gravelly slopes; rocky bajadas; rocky outcrops; amongst boulders and rocks; rocky and sandy flats; basins; rocky roadsides; rocky arroyos; gravelly and gravelly-sandy bottoms of arroyos; gravelly draws; along streams; along streambeds; creeks; creekbeds; along rivers; along gravelly riverbeds; along and in bedrock, rocky-sandy and sandy washes; along and in rocky drainages; (rocky) banks of rivers; edges of washes; (gravelly-sandy and sandy) margins of arroyos and watercourses; floodplains; along rocky fencelines; riparian areas, and disturbed areas growing in wet, moist and dry bouldery, bouldery-cobbly-sandy, rocky, rocky-gravelly-sandy, rocky-sandy, gravelly, gravelly-sandy and sandy ground; clayey loam ground, and rocky clay and shaley clay ground, occurring from 700 to 6,600 feet in elevation in the woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTE: *Galium proliferum* is native to

southwest-central and southern North America. *5, 6, 15, 16, 18 (genus), 43 (042310), 46 (Page 812), 58, 63 (042310), 77, 85 (042310 - color presentation of dried material)*

***Galium stellatum* A. Kellogg (subsp. *eremicum* (M.L. Hilend & J.T. Howell) F. Ehrendorfer is the subspecies reported as occurring in Arizona): Starry Bedstraw**

SYNONYMY: (for *G.s*. subsp. *eremicum*: *Galium stellatum* A. Kellogg var. *eremicum* M.L. Hilend & J.T. Howell). COMMON NAMES: Bedstraw, Desert Bedstraw, Shrubby Bedstraw, Starry Bedstraw. DESCRIPTION: Terrestrial perennial forb/herb or subshrub (6 to 40 inches in height, one plant was reported to be 20 inches in height with a crown 14 inches in width); the bark is gray; the stems are reddish; the leaves are dark green; the flowers are cream, gray-yellow, greenish, greenish-yellow, white, yellow-green, yellowish or yellowish-cream; flowering generally takes place between mid-February and mid-June (additional records: one for early July, one for mid-August, one for early September, two for mid-September, one for late October and one for late November). HABITAT: Within the range of this species it has been reported from rocky mountains; rocky mountainsides; mesas; rocky cliffs; rock walls; rocky canyons; rocky canyon walls; bouldery-gravelly-sandy and sandy canyon bottoms; chasms; gorges; bases of cliffs; talus slopes; crevices in boulders and rocks; pockets of soil; bluffs; tops of bluffs; buttes; ledges; rocky and shaley ridges; gravelly-clayey ridgetops; rocky and shaley foothills; rocky and gravelly hills; rocky, rocky-shaley, rocky-gravelly and gravelly hillsides; bouldery, bouldery-rocky, rocky, rocky-gravelly-loamy, cindery and gravelly-loamy slopes; gravelly-sandy bajadas; bouldery and rocky outcrops; amongst boulders and rocks; bases of rocks; rocky alcoves; bouldery-sandy grottos; lava flows; valley floors; along roadsides; along arroyos; rocky gulches; gravelly ravines; seeps; springs; along streams; rivers; along and in bouldery, bouldery-rocky-sandy, rocky and sandy washes; bouldery-cobbly drainages; drainage ways; (sandy) banks of creeks and rivers; margins of drainages; shores of rivers; bouldery-sand bars; rocky beaches; debris fans; sandy terraces, and riparian areas growing in dry bouldery, bouldery-rocky, bouldery-rocky-sandy, bouldery-cobbly, bouldery-gravelly-sandy, bouldery-sandy, rocky, rocky-shaley, rocky-gravelly, rocky-sandy, shaley, cindery, gravelly and sandy ground and rocky-gravelly loam and gravelly loam ground, occurring from 1,100 to 4,500 feet in elevation in the woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTE: *Galium stellatum* is native to southwest-central and southern North America. *5, 6, 16, 18 (genus), 28 (color photograph), 43 (042310 - *Galium stellatum* Kellogg, *Galium stellatum* subsp. *eremicum* (Hilend & J.T. Howell) Ehrend., *Galium stellatum* var. *eremicum* Hilend & J.T. Howell), 46 (Page 811), 63 (042310), **85** (042310 - color presentation)*

Galium stellatum var. *eremicum* (see *Galium stellatum* subsp. *eremicum*)

Rutaceae: The Rue Family

***Thamnosma texana* (A. Gray) J. Torrey: Rue of the Mountains**

COMMON NAMES: Cordoncillo, Desert Rue, Dutchman's Britches, Ruda del Monte, Rue of the Mountains, Texas Desertrue. DESCRIPTION: Terrestrial perennial forb/herb or subshrub (6 to 32 inches in height); the herbage is blue-green, gray-green, grayish-green or green; the flowers are brownish-purple, dark lavender, magenta, pink, purple, purple & white, dull red-maroon, red-purple, reddish, rose-red, white & pink, whitish or yellowish; flowering generally takes place between early February and mid-May (additional records: one for early August, one for mid-August, one for late August, one for mid-September, one for late September, four for late October, one for early December and one for mid-December); the mature fruits are green tinged with purple or red. HABITAT: Within the range of this species it has been reported from mountains; bedrock-gravelly-clayey-loamy mountainsides; mesas; along rocky canyons; crevices in rocks; bluffs; ridges; rocky ridgetops; foothills; rocky hills; hilltops; rocky and rocky-gravelly-loamy hillsides; bedrock, rocky, rocky-gravelly-loamy and gravelly slopes; alluvial fans; gravelly bajadas; rocky outcrops; outwash fans; gravelly flats; valley floors; along roadsides; rocky

arroyos; sandy bottoms of arroyos; around springs; along rivers; along rocky washes; along drainages; (rocky) edges of washes; benches; floodplains; riparian areas, and disturbed areas growing in dry desert pavement; rocky, rocky-gravelly, gravelly and sandy ground and rocky-gravelly loam and gravelly-clayey loam ground, occurring from 2,000 to 5,800 feet in elevation in the woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. Desert Rue is reportedly aromatic with the herbage being pleasantly fragrant. *Thamnosma texana* is native to southwest-central and southern North America. *5, 6, 15, 16, 43 (042410 - *Thamnosma texana* Torr.), 46 (Page 494), 63 (042410 - color presentation), 77, **85** (042410 - color presentation of dried material)*

Salicaceae: The Willow Family

Populus arizonica (see *Populus fremontii* subsp. *fremontii* and/or *Populus fremontii* subsp. *mesetae*)

***Populus fremontii* S. Watson subsp. *mesetae* J.E. Eckenwalder: Frémont Cottonwood**

SYNONYMY: *Populus arizonica* C.S. Sargent, *Populus fremontii* S. Watson var. *mesetae* (J.E. Eckenwalder) E.L. Little, *Populus mexicana* auct. non A. Wesmael. COMMON NAMES: Alamo (Spanish), Alamo Cottonwood, Arizona Cottonwood, Cottonwood, Frémont Cottonwood, Frémont Poplar, Frémont's Cottonwood, Meseta Cottonwood, Rio Grande Cottonwood, Western Cottonwood. DESCRIPTION: Terrestrial perennial deciduous tree (10 to 112 feet in height with a rounded crown); the older bark is brownish, gray, gray-brown, grayish-white, pale tan or whitish; the branches are gray-brown to reddish-brown; the twigs are yellow before turning a bone-white, pale gray, tan or tannish-white; the leaves are a shiny bright green or yellow-green turning golden-yellow or lemon-yellow in autumn; the flowers (catkins with the male (1 to 3¼ inches in length) and female (2 to 5 inches in length) on separate trees) may be greenish-yellow, reddish or yellowish-green; flowering generally takes place between early February and early May; the cottony seeds are fuzzy and white. HABITAT: Within the range of this species it has been reported from canyons; canyon bottoms; foothills; valley floors; springs; along streams; streambeds; along creeks; along rivers; along sandy washes; drainages; waterholes; oases; cienegas; along banks of streams, creeks and rivers; (sandy-clayey) margins of rivers; gravel and sand bars; terraces; bottomlands; sandy floodplains; mesquite bosques; along ditches; riparian areas, and disturbed areas growing in areas where subsurface water is available in rocky, gravelly and sandy ground; sandy-clayey loam ground; clay ground, and sandy silty ground, occurring from sea level to 9,500 feet in elevation in the woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. The species, *Populus fremontii*, was reported to have been utilized by native peoples of North America and could be investigated to determine its value as a home garden or commercial food and/or fiber crop; it was also noted as having been used as an indicator of planting seasons and as tools; musical instruments, fuel and as a drug or medication. The Frémont Cottonwood may have a life span of more than 130 year of age. It reaches reproductive maturity in 5 to 10 years. Consider planting male trees if the "cotton" produced by female trees is objectionable. The Cottonwood Tree is very useful in slowing soil and stream bank erosion and in re-vegetating damaged riparian areas. The cottonwood provides food for Beavers, Elk, Deer, and squirrels, and the Golden Eagle (*Aquila chrysaetos*), Swainson's Hawk (*Buteo swainsoni*), Red-tailed Hawk (*Buteo jamaicensis*), Bell's Vireo (*Vireo bellii*) build nests in the crown. Cottonwood bark is a principle food of the American Beaver (*Castor canadensis*), and the stems of poplars are used in the construction of their dams. The trees are sometimes parasitized by the Yellow (or Colorado Desert) Mistletoe (*Phoradendron macrophyllum* subsp. *macrophyllum*). Native stands of Cottonwood Trees have been decimated due to the altering of natural water flows, the clearing and development of the flood plains, stream channelization and the loss of suitable recruitment sites. *Populus fremontii* S. Watson subsp. *mesetae* is native to southwest-central and southern North America. *5, 6, 13 (species), 18 (species), 26 (species, color photograph of the species), 28 (species, color photograph of the species), 43

(042410), 46 (species, Pages 208-209), 48 (species), 52 (species, color photograph of the species), 53 (species), 58 (species), 63 (042410), 77 (species), **85** (042410 -), 115 (color presentation of the species), 127 (species)*

Populus fremontii var. *mesetae* (see *Populus fremontii* subsp. *mesetae*)

Populus mexicana (see *Populus fremontii* subsp. *mesetae*)

***Salix gooddingii* C.R. Ball: Goodding's Willow**

SYNONYMY: *Salix gooddingii* C.R. Ball var. *variabilis* C.R. Ball, *Salix nigra* H. Marshall var. *vallicola* W.R. Dudley. COMMON NAMES: Black Willow, Dudley Willow, Goodding Black Willow, Goodding Willow, Goodding's Black Willow, Goodding's Willow, Valley Willow, Western Black Willow. DESCRIPTION: Terrestrial perennial deciduous tree (4 to 60 feet in height with a broad rounded crown); the older bark is gray and deeply furrowed; the twigs are brown, pale gray, gray-tan, yellow or yellow-brown; the leaves (2 to 4 inches in length) are green or yellowish-green; the flowers (male catkins (1½ to 3 inches in length) and female catkins (1 to 2½ inches in length) are on separate trees) are cream, green, yellow or yellow-green; flowering generally takes place between mid-December and late June (additional records: one for mid-July and one for early mid-August); the seeds are cottony. HABITAT: Within the range of this species it has been reported from mountains; rocky mesas; plateaus; along rocky canyons; along bedrock, bouldery-gravelly-sandy, rocky and silty canyon bottoms; meadows; foothills; rocky hillsides; rocky, rocky-sandy, sandy, clayey-loamy and silty slopes; amongst boulders and rocks; bouldery niches; gravelly, sandy, clayey and silty flats; basins; valley floors; along bouldery-sandy valley bottoms; along railroad right-of-ways; roadsides; along and in arroyos; rocky bottoms of arroyos; along and in rocky draws; gullies; gravelly-clayey-loamy ravines; in sand and silt about seeps; in gravel and sand around springs; in sand along and in streams; sandy streambeds; in sand along creeks; along and in bouldery-sandy-silty, rocky, cobbly-gravelly-silty, sandy and silty creekbeds; in gravel and sand along rivers; along and in bouldery, sandy and silty riverbeds; along and in gravelly-sandy washes; along sandy drainages; along and in rocky, gravelly and silty-clayey drainage ways; along rocky-sandy-clayey-loamy watercourses; around and in pools; boggy areas; cienegas; freshwater marshes; depressions; along (bouldery-stony-gravelly-sandy, bouldery-gravelly-sandy, gravelly-clayey, sandy and loamy) banks of streams, creeks, rivers and washes; along (muddy, sandy and sandy-clayey) edges of gullies, seeps, streams, creeks, ponds, playas, freshwater marshes and sloughs; (muddy, rocky and sandy) margins of rivers, ponds, pools, lakes, lakebeds and marshes including saltwater marshes; along shores of rivers and lakes; mudflats; gravel and sand bars; sandy beaches; silty benches; sandy terraces; bottomlands; along boulder-stony-gravelly-sandy-silty, bouldery-gravelly-sandy-loamy, rocky, cobbly-gravelly, gravelly, gravelly-sandy, gravelly-silty, sandy and silty floodplains; willow thickets; along fencelines; along dikes; rocky edges and beds of stock tanks; banks of reservoirs; along canals; canal banks; along and in cindery and sandy ditches; along ditch banks; rocky, gravelly, gravelly-sandy, gravelly-sandy-silty, sandy, sandy-clayey and silty riparian areas, and disturbed areas growing in shallow water; muddy, and wet or moist bouldery, bouldery-stony-gravelly-sandy, bouldery-gravelly-sandy, bouldery-sandy, rocky, rocky-sandy, cobbly-gravelly, cindery, gravelly, gravelly-sandy and sandy ground; bouldery-gravelly-sandy loam, rocky-sandy-clayey loam, gravelly-sandy loam, gravelly-clayey loam, sandy loam, clayey loam and loam ground; gravelly clay, sandy clay, silty clay and clay ground, and bouldery-stony-gravelly-sandy silty, cobbly-gravelly-silty, gravelly silty, gravelly-sandy silty and silty ground, occurring from sea level to 7,000 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat and useful in the re-vegetating of disturbed riparian areas. This plant was reported to have been utilized by native peoples of North America and could be investigated to determine its value as a home garden or commercial food, beverage and/or fiber crop; it was also noted as having been used as a tool and as a drug or medication. This plant is important in stream bank protection and in controlling erosion and provides valuable shade for fish and other wildlife. The Goodding Willow provides cover and browse for wildlife,

and the bark is eaten by beavers. This plant is a preferred food plant of the American Beaver (*Castor canadensis*) and is used in the building of their lodges and dens. *Salix gooddingii* is native to southwest-central and southern North America. *5, 6, 13 (recorded as *Salix nigra* Marsh. var. *vallicola* Dudley), 15, 18 (genus), 28 (color photograph), 43 (042610), 46, 48 (genus), 52 ("Goodding Willow" listed as a common name under *Salix nigra* Marsh), 53, 58, 63 (042610 - color presentation), 77, 85 (042610 - color presentation), 115 (color presentation), 127, **HR***

Salix gooddingii var. *variabilis* (see *Salix gooddingii*)

Salix nigra var. *vallicola* (see *Salix gooddingii*)

Scrophulariaceae: The Figwort Family

Antirrhinum nuttallianum (see *Sairocarpus nuttallianus*)

***Castilleja exserta* (A.A. Heller) T.I. Chuang & L.R. Heckard (subsp. *exserta* is the subspecies reported as occurring in Arizona): Exserted Indian Paintbrush**

SYNONYMY: (for *C.e.* subsp. *exserta*: *Orthocarpus purpurascens* G. Bentham, *Orthocarpus purpurascens* G. Bentham var. *palmeri* A. Gray). COMMON NAMES: Common Owl's Clover, Escobita (Spainish "Little Broom"), Escobita Owlclover, Exserted Indian Paintbrush, Mohave Owl Clover, Owl Clover, Owl's Clover, Purple Owl Clover. DESCRIPTION: Terrestrial annual forb/herb (4 to 16 inches in height); the stems may be green, maroon or purple; the leaves are green-gray, greenish, purple-green or purplish; the flowers (1 to 1¼ inches in length in broom-like spikes of bracts to 1 inch in length) may be lavender, lavender-rose, magenta, magenta-pink, magenta-pink-lavender, magenta-rose, pink, pink-lavender, pink-magenta, pink-purple, pink-white, pinkish-violet, purple, purple-lavender, purple-lavender-pink, purple-pink, purple-white, purple-white-yellow, purple-yellow, red, reddish-purple, rose, rose-lavender, rose-lavender-white, rose-pink, violet, white, white-purple-magenta, white-yellow, yellow or yellow-maroon; flowering generally takes place between late January and early July (additional record: one for mid-September). HABITAT: Within the range of this species it has been reported from mountains; rocky mesas; plateaus; along rocky cliffs; canyons; sandy-loamy canyon bottoms; bedrock and gravelly knolls; rocky and shaley ridges; rocky ridgetops; rocky-sandy and loamy-clayey meadows; foothills; bouldery, rocky and gravelly-loamy hills; rocky hilltops, rocky hillsides; rocky, rocky-sandy, rocky-clayey, gravelly, sandy-loamy, clayey-loamy, clayey and silty-clayey-loamy slopes; rocky-sandy alluvial fans; gravelly and sandy bajadas; bouldery and rocky outcrops; gravelly and sandy plains; gravelly, gravelly-sandy, gravelly-loamy, sandy, sandy-loamy, sandy-silty and clayey flats; basins; valley floors; coastal plains; along railroad right-of-ways; along sandy roadsides; along gravelly arroyos; gulches; gullies; ravines; around springs; around seeping streams; creeks; along gravelly-sandy creekbeds; along rivers; sandy riverbeds; along and in gravelly and sandy washes; drainages; (rocky-gravelly) banks of streams and rivers; (sandy) edges of rivers, riverbeds, washes, pools and lakes; shores of lakes; benches; gravelly and sandy terraces; sandy bottomlands; edges of stock tanks; edges of canals, and gravelly-sandy and sandy riparian areas growing in dry rocky, rocky-gravelly, rocky-sandy, gravelly, gravelly-sandy and sandy ground; gravelly loam, gravelly-clayey loam, sandy loam, clayey loam, silty-clayey loam and silty loam ground; rocky clay, loamy clay and clay ground, and sandy silty ground, occurring from sea level to 8,600 feet in elevation in the woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. *Castilleja exserta* is native to southwest-central and southern North America. *5, 6, 28 (recorded as *Orthocarpus purpurascens*, color photograph), 43 (042710), 46 (recorded as *Orthocarpus purpurascens* Benth., Page 792 and *Orthocarpus purpurascens* Benth. var. *palmeri* Gray, Page 792), 48 (genus), 63 (042710 - color presentation), 80 (Species of the genus *Castilleja* are considered to be Rarely Poisonous and Suspected Poisonous Range Plants. "Various species of this genus are secondary or

facultative selenium absorbers.”), **85** (042710 - color presentation including habitat), 86 (recorded as *Orthocarpus purpurascens*, color photograph), 115 (color presentation)*

***Castilleja exserta* (A.A. Heller) T.I. Chuang & L.R. Heckard subsp. *exserta*: Exserted Indian Paintbrush**

SYNONYMY: *Orthocarpus purpurascens* G. Bentham, *Orthocarpus purpurascens* G. Bentham var. *palmeri* A. Gray. COMMON NAMES: Common Owl’s Clover, Escobita (Spainish “Little Broom”), Escobita Owlclover, Exserted Indian Paintbrush, Mohave Owl Clover, Owl Clover, Owl’s Clover, Purple Owl Clover, Texas Cloves. DESCRIPTION: Terrestrial annual forb/herb (4 to 16 inches in height); the stems may be green or purple; the leaves are greenish, gray-green or purplish; the flowers (1 to 1¼ inches in length in broom-like spikes of bracts to 1 inch in length) may be lavender, lavender-rose, magenta, magenta-pink, magenta-pink-lavender, magenta-rose, pink, pink-magenta, pink-purple, purple, purple-lavender-pink, purple-yellow, red, red-purple, rose, rose-lavender, rose-pink, rose-white, rose-yellow, violet, white or yellow-maroon; flowering generally takes place between late January and mid-May (additional records: one for early June and one for mid-September). HABITAT: Within the range of this species it has been reported from mountains; rocky mesas; plateaus; along rocky cliffs; canyons; sandy-loamy canyon bottoms; bedrock and gravelly knolls; rocky and shaley ridges; rocky-sandy and loamy-clayey meadows; foothills; rocky and gravelly-loamy hills; rocky hillsides; rocky, rocky-gravelly, rocky-sandy, rocky-clayey, gravelly, sandy-loamy, clayey and silty-clayey-loamy slopes; gravelly bajadas; gravelly and sandy plains; gravelly, gravelly-sandy, gravelly-loamy, sandy, sandy-loamy and sandy-silty flats; basins; valley floors; along sandy roadsides; along arroyos; gulches; gullies; ravines; around springs; around seeping streams; creeks; along gravelly-sandy creekbeds; along rivers; sandy riverbeds; along and in rocky, gravelly and sandy washes; (rocky-gravelly) banks of streams and rivers; (sandy) edges of rivers, riverbeds and washes; shores of lakes; benches; gravelly terraces; sandy bottomlands; floodplains; edges of stock tanks; edges of canals, and gravelly-sandy and sandy riparian areas growing in dry rocky, rocky-gravelly, rocky-sandy, shaley, gravelly, gravelly-sandy and sandy ground; gravelly loam, gravelly-clayey loam, sandy loam, sandy-clayey loam and silty-clayey loam ground; rocky clay, loamy clay and clay ground, and sandy silty ground, occurring from sea level to 8,600 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. *Castilleja exserta* subsp. *exserta* is native to southwest-central and southern North America. *5, 6, 15 (recorded as *Orthocarpus purpurascens* Benth.), 16 (recorded as *Orthocarpus purpurascens* Benth.), 28 (recorded as *Orthocarpus purpurascens*, color photograph), 43 (042710), 46 (recorded as *Orthocarpus purpurascens* Benth., Page 792 and *Orthocarpus purpurascens* Benth. var. *palmeri* Gray, Page 792), 48 (genus), 58 (recorded as *Orthocarpus purpurascens* Benth.), 63 (042710 - color presentation), 77 (recorded as *Orthocarpus purpurascens*, color photograph #94), 80 (Species of the genus *Castilleja* are considered to be Rarely Poisonous and Suspected Poisonous Range Plants. “Various species of this genus are secondary or facultative selenium absorbers.”), **85** (042710 - color presentation of dried material), 86 (recorded as *Orthocarpus purpurascens*, color photograph), 115 (color presentation of the species)*

***Mimulus guttatus* A.P. de Candolle: Seep Monkeyflower**

COMMON NAMES: Berro (Portuguese), Common Monkey Flower, Common Monkey-flower, Monkey Flower, Monkey-flower, Monkeyflower, Parish’s Monkeyflower, Seep Monkeyflower, Seep-spring Monkey Flower, Spotted Monkey Flower, Yellow Monkey Flower, Yellow Monkey-flower. DESCRIPTION: Terrestrial (or semi-aquatic) annual or perennial forb/herb (2 inches to 5 feet in height); the leaves are dark green; the flowers are bright orange-yellow, pale yellow, yellow or yellow with brown-red, golden, maroon, orange, orange-brown, orange-red, red, red-brown, reddish, reddish-brown or reddish-orange spots; flowering generally takes place between mid-February and early October (additional records: one for early January, one for mid-January, one for late January, one for late October, one for early November, one for mid-November and one for early December). HABITAT: Within the range of this species it has been reported from bouldery mountains; mountaintops; gravelly-loamy

mountainsides; sandy and sandy-clayey mesas; rocky plateaus; rocky canyons; along bedrock, rocky, rocky-sandy, sandy and loamy-clayey canyon bottoms; rocky cliffs; rock walls; rocky bases of cliffs; rocky talus slopes; crevices in rocks; bluffs; rocky ledges; rocky clearings in woodlands; gravelly-loamy and sandy-loamy meadows; rocky foothills; bouldery and rocky hills; hilltops; bouldery, rocky, rocky-loamy-clayey, rocky-clayey and clayey hillsides; bouldery, bouldery-rocky, rocky, rocky-gravelly, rocky-gravelly-sandy, gravelly-loamy, sandy, sandy-loamy and peaty-sandy slopes; alluvial fans; bajadas; bedrock and rocky outcrops; along and amongst boulders and rocks; alcoves; prairies; sandy flats; rocky-gravelly-loamy basins; sandy valley floors; valley bottoms; along coastal beaches; coastal bluffs; coastal terraces; rocky, gravelly and sandy roadsides; along and in bedrock and sandy-loamy arroyos; rocky bottoms of arroyos; muddy draws; gullies; gulches; ravines; bottoms of ravines; around and in gravelly-sandy-clayey-loamy and sandy seeps; around and in mucky, rocky-sandy, sandy-silty and loamy springs; around seeping streams; along and in bouldery, rocky, gravelly, sandy and silty streams; rocky, rocky-sandy, gravelly and sandy streambeds; along brooks; along and in sandy and loamy creeks; along and in bouldery, rocky-sandy, cobbly, gravelly-sandy and sandy creekbeds; along and in rivers; along and in sandy riverbeds; along and in bedrock, rocky-sandy, cobbly-gravelly, gravelly and sandy washes; within bouldery, cobbly-loamy and loamy drainages; within drainage ways; along watercourses; at waterfalls; oases; around and in pools; ponds; along lakes; boggy areas; cienegas; freshwater marshes; rocky-sandy marshy areas; gravelly-clayey-loamy swampy areas; bedrock depressions; along (rocky, gravelly-sandy-clayey-loamy, sandy, sandy-clayey and loamy) banks of arroyos, rivulets, streams, creeks, creekbeds, rivers and lakes; along and in (muddy, rocky-sandy, gravelly, sandy and sandy-silty) edges of rivulets, streams, creeks, rivers, washes, pools, lakes and bogs; (gravelly and sandy) margins of streams and creeks; along (sandy) shores of rivers and lakes; gravel, gravelly-sand and sand bars; cobbly-sandy benches; coves; shelves; sandy and silty-loamy terraces; loamy bottomlands; gravelly-sandy and sandy floodplains; dams; edges of stock tanks; canals; edges of canals; along and in ditches; ditch banks; rocky-sandy, gravelly, gravelly-sandy, gravelly-sandy-loamy and sandy riparian areas, and disturbed areas growing in shallow water; mucky; muddy, and wet, moist, damp and dry bouldery, bouldery-rocky, rocky, rocky-gravelly, rocky-gravelly-sandy, rocky-sandy, cobbly, cobbly-gravelly, cobbly-sandy, gravelly, gravelly-sandy, sandy and peaty-sandy ground; rocky-gravelly loam, cobbly loam, gravelly loam, gravelly-sandy loam, gravelly-sandy-clayey loam, gravelly-clayey loam, sandy loam, silty loam, silty-clayey loam and loam ground; rocky-loamy clay, rocky clay, sandy clay and loamy clay ground, and sandy silty and silty ground, occurring from sea level to 12,500 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. This plant was reported to have been utilized by native peoples of North America and could be investigated to determine its value as a home garden or commercial food crop; it was also noted as having been used as a drug or medication. *Mimulus guttatus* is native to northwestern, northern, west-central and southern North America. *5, 6, 15, 28 (color photograph), 43 (042810), 46 (Page 781), 48 (genus), 58, 63 (042810 - color presentation), 77 (color photograph #52), **85** (042810 - color presentation), 86 (color photograph), 115 (color presentation), 127*

Orthocarpus purpurascens (see *Castilleja exserta* var. *exserta*)

Orthocarpus purpurascens var. *palmeri* (see *Castilleja exserta* var. *exserta*)

***Penstemon parryi* (A. Gray) A. Gray: Parry's Beardtongue**

COMMON NAMES: Desert Penstemon, Parry Beardtongue, Parry's Beardtongue, Parry Penstemon, Parry's Penstemon, Pichelitos, Varita de San Jose, Wind's Flower. DESCRIPTION: Terrestrial perennial forb/herb (2 to 5 feet in height and 1 to 3 feet in width); the flowers may be lavender, magenta, pink, pinkish-lavender, pinkish-purple, purple, purple-magenta, pink, red, rose-magenta, rose-pink or scarlet; flowering generally takes place between mid-February and late June (additional records: one for mid-July, one for late July and one for early August). HABITAT: Within the range of this species it has been reported from mountains; rocky mountainsides; rocky canyons; rocky canyon bottoms; bases

of cliffs; rocky ridgetops; meadows; foothills; rocky hills; rocky, rocky-gravelly and gravelly hillsides; alpine fell fields; rocky slopes; bajadas; rocky outcrops; amongst rocks; plains; gravelly flats; basins; railroad right-of-ways; along gravelly, gravelly-sandy, sandy and clayey roadsides; rocky and sandy arroyos; gullies; seeps; around streams; streambeds; sandy creekbeds; along and in rocky and sandy washes; within drainages; along banks of rivers and washes; margins of rivers; benches; floodplains; riparian areas, and disturbed areas growing in dry rocky, rocky-gravelly, gravelly, gravelly-sandy and sandy ground; gravelly-sandy loam and clayey loam ground, and clay ground, occurring from 900 to 11,500 feet in elevation in the tundra, forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. The Broad-billed Hummingbird (*Cynanthus latirostris*) and Costa's Hummingbird (*Calypte costae*) have been observed visiting the flowers. *Penstemon parryi* is native to southwest-central and southern North America. *5, 6, 10, 15, 16, 18, 28 (color photograph), 43 (072909), 46 (Page 773), 48 (genus), 58, 63 (042810 - color presentation), 77 (color photograph #95), 80 (Species of the genus *Penstemon* are considered to be Rarely Poisonous and Suspected Poisonous Range Plants. "Species of Penstemon are facultative or secondary selenium absorbers."), **85** (042810 - color presentation), 86 (color photograph), 115 (color presentation)*

***Sairocarpus nuttallianus* (G. Bentham ex A.L. de Candolle) D.A. Sutton: Violet Snapdragon**

SYNONYMY: *Antirrhinum nuttallianum* G. Bentham ex A.L. de Candolle. COMMON NAMES: Nuttall Snapdragon, Violet Snapdragon, Violet Toad's-mouth. DESCRIPTION: Terrestrial annual or biennial forb/herb (erect stems 12 to 40 inches in height); the foliage is dark green, the lower leaves may be reddish; the flowers (3/8 inch in length and width) may be blue, blue-violet, blue & white, dark blue, dark blue (with a golden center), bluish, dark indigo-blue, lavender, light purple, purple, purple (with a white center), purple-lavender, dark purple-blue, purplish, purplish-blue, violet, violet & blue-purple, violet (with cream-colored markings) or dark violet; flowering generally takes place between mid-February and late June (additional records: two for late July, one for early August, two for mid-September, one for mid-October and one for mid-November). HABITAT: Within the range of this species it has been reported from mountains; rocky and sandy mesas; rocky cliffs; rocky and stony canyons; along sandy and silty canyon bottoms; talus slopes; bases of cliffs; sandy crevices in boulders and rocks; sandy pockets of soil; bluffs; ledges; ridges; rocky ridgetops; bouldery-rocky and rocky hills; bouldery-rocky, rocky and loamy hillsides; bouldery, bouldery-sandy, rocky and rocky-clayey slopes; pediments; around rocky outcrops; amongst boulders and rocks; bases of boulders; sand dunes; bouldery-rocky; flats; ocean bluffs; bases of ocean bluffs; coastal slopes; coastal flats; sandy roadsides; along stony arroyos; within rocky gullies; ravines; streambeds; along creeks; along cobbly and sandy creekbeds; within rocky and sandy washes; sandy drainages; (sandy) banks of arroyos and rivers; along (sandy) edges of streambeds and washes; margins of lakes; gravelly-sandy riparian areas; recently burned areas of chaparral and coastal sage scrub, and disturbed areas growing in wet, moist, damp and dry bouldery, bouldery-rocky, bouldery-gravelly, bouldery-sandy, rocky, rocky-sandy, stony, cobbly, gravelly-sandy and sandy ground; sandy loam and loam ground; loamy clay and rocky-clay and clay ground, and silty ground often found in shaded areas, occurring from sea level to 4,600 feet in elevation in the woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. *Sairocarpus nuttallianus* is native to southwest-central and southern North America. *5, 6, 15, 28 (recorded as *Antirrhinum nuttallianum*, color photograph), 43 (072510 - *Sairocarpus nuttallianus* (A.DC.) D.A. Sutton), 46 (recorded as *Antirrhinum nuttallianum* Benth., Page 766), 63 (072510 - color presentation), 77, **85** (072510 - color presentation)*

Simmondsiaceae: The Jojoba Family

Simmondsia californica (see *Simmondsia chinensis*)

***Simmondsia chinensis* (J.H. Link) C.K. Schneider: Jojoba**

SYNONYMY: *Simmondsia californica* T. Nuttall. COMMON NAMES: California Coffee Berry, California Jojoba (Hispanic), Coffee Berry, Coffeeberry, Coffee Bush, Coffee-bush, Deernut, Goat Nut, Goat-nut, Goatnut, Gray Box Bush, Ioligam (Tohono O'odham), Jojoba, Pignut, Pnaokt (Seri), Quinine Plant, Quinine-plant, Sheepnut, Wild Hazel, Wild-hazel. DESCRIPTION: Terrestrial perennial evergreen shrub (8 inches to 13 feet in height, one plant was reported to be 2 feet in height and 6½ feet in width, plants were reported to be 4 feet in height and 6 feet in width, plants were reported that were 5¼ feet in height and 5 feet in width); the stems are greenish-tan aging to reddish-brown and gray; the leaves are blue-gray, gray-green or green; the flowers (male and female flowers are borne on separate plants) are green, greenish-yellow, greenish-white, yellow or yellow-green; flowering may vary considerably from year to year but generally takes place between late December and mid-August (additional records: one for early August, one for mid-August, ten for late September, one for early October, three for mid-October, four for late October, two for early November, four for mid-November, two for late November and two for early December, peak blooms occur February through April); the ripe fruits are tan. HABITAT: Within the range of this species it has been reported from mountains; mountainsides; rocky mesas; plateaus; cliffs; rocky cliff faces; bouldery and rocky canyons; along rocky and gravelly canyon bottoms; bouldery and rocky ridges; rocky ridgetops; rocky foothills; rocky hills; hilltops; rocky, rocky-clayey and gravelly hillsides; bouldery, rocky, gravelly, sandy, sandy-loamy and clayey slopes; alluvial fans; bajadas; piedmonts; rocky outcrops; amongst boulders and rocks; rocky coves; dunes; sandy flats; basins; valley floors; coastal terraces; coastal beach dunes; coastal beaches; along rocky, rocky-sandy, gravelly-sandy and clayey roadsides; along rocky arroyos; along rocky bottoms of arroyos; draws; along sandy gullies; rocky ravines; seeps; around springs; around seeping streams; runnels; along streams; along and in streambeds; along creeks; creekbeds; along and in rocky, rocky-sandy, gravelly-sandy and sandy washes; rocky-clayey drainages; along and in drainage ways; gravelly, gravelly-sandy and sandy banks of creeks and washes; along edges of arroyos and washes; rocky margins of arroyos; rocky and gravelly terraces; loamy bottomlands; floodplains; mesquite bosques; riparian areas, and disturbed areas growing in dry desert pavement; bouldery, rocky, rocky-sandy, gravelly, gravelly-sandy and sandy ground; sandy loam and loam ground, and rocky clay and clay ground, occurring from sea level to 5,400 feet in elevation in the woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. This plant was reported to have been utilized by native peoples of North America and could be investigated to determine its value as a home garden or commercial food and/or beverage crop; it was also noted as having been used as a drug or medication. This plant may live to be from 100 to over 200 years of age. Jojoba is an important browse plant for wildlife and is browsed by Mule Deer (*Odocoileus hemionus*), Desert Bighorn Sheep (*Ovis canadensis* subsp. *mexicana*) and Jackrabbits (*Lepus* sp.), and Collard Peccary (*Peccari tajacu* subsp. *sonoriensis*), Desert Mule Deer, ground squirrels, desert chipmunks, pack rats, gophers; mice (including the Bailey's Pocket Mouse (*Chaetodipus baileyi* subsp. *baileyi*), rabbits and other mammals and birds feed on the seeds. The Jojoba (*Simmondsia chinensis*) may also be included as a member of the Box Family (Buxaceae). *Simmondsia chinensis* is native to southwest-central and southern North America. *5, 6, 16, 18, 26 (color photograph), 28 (color photograph), 43 (042910 - *Simmondsia chinensis* C.K. Schneid.), 46 (included as a member of the Box Family (Buxaceae), Page 521), 48, 58, 63 (042910 - color presentation), 77, **85** (042910 - color presentation), 115 (color presentation), 127, 134*

Solanaceae: The Potato Family

***Calibrachoa parviflora* (A.H. Laurent de Jussieu) W.G. D'Arcy: Seaside Petunia**

SYNONYMY: *Petunia parviflora* A.H. Laurent de Jussieu. COMMON NAMES: Seaside Petunia, Seaside-petunia, Small Flower Petunia, Wild Petunia. DESCRIPTION: Terrestrial (or semi-aquatic) annual forb/herb (prostrate and spreading stems 3 inches to 2 feet in length); the leaves are light green tinged with red or yellow-green; the tiny flowers may be blue, blue-yellow, bluish-purple, lavender,

deep lavender, lavender-pink, magenta, pink, pink-lavender, pink-purple, purple, reddish-purple, rose, violet or white; flowering generally takes place between early February and early November (additional records: one for early December and two for late December). HABITAT: Within the range of this species it has been reported from mountains; rocky canyons; gravelly and sandy canyon bottoms; sandy bases of cliffs; meadows; foothills; rocky hillsides; rocky and silty-loamy slopes; rocky outcrops; sandy flats; basins; valley floors; valley bottoms; coastal plains; along rocky roadsides; stony arroyos; sandy gulches; sandy seeps; springs; along and in bouldery, muddy and sandy streams; bouldery-cobbly-sandy, gravelly-sandy and sandy streambeds; along sandy creeks; along and in gravelly and sandy rivers; bouldery-cobbly-sandy, rocky-cobbly-sandy, sandy and silty-clayey riverbeds; along and in bouldery, bouldery-sandy, rocky, gravelly and sandy washes; poolbeds; lakes; clayey lakebeds; cienegas; swales; sandy banks of creeks and rivers; bouldery-sandy and sandy edges of streams, rivers, riverbeds, pools, ponds and swamps; sandy margins of streambeds, pools and ponds; (muddy and rocky-sandy) shores of ponds and lakes; mudflats; sand bars; benches; sandy terraces; bottomlands; cobbly and sandy floodplains; mesquite bosques; stock tanks; reservoir beds; canals; within ditches; sandy bottoms of ditches; along ditches banks; bouldery-cobbly-sandy, rocky, gravelly, gravelly-sandy and sandy riparian areas, and disturbed areas growing in muddy and wet, moist and damp bouldery-cobbly-sandy, bouldery-sandy, rocky, rocky-cobbly-sandy, rocky-sandy, stony, cobbly, gravelly, gravelly-sandy and sandy ground; gravelly-clayey loam, silty loam and loam ground, and silty clay and clay ground, occurring from sea level to 5,000 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTE: *Calibrachoa parviflora* is native to southwest-central and southern North America and eastern and southern South America. *5, 6, 18 (genus), 43 (042910 - *Calibrachoa parviflora* (Jussieu) D'Arcy), 46 (recorded as *Petunia parviflora* Juss., Page 761), 58 (recorded as *Petunia parviflora* Juss.), 63 (042910 - color presentation of seeds), 77 (recorded as *Petunia parviflora* Juss.), **85** (042910 - color presentation of dried material), 115 (color presentation)*

***Lycium* C. Linnaeus: Desert-thorn**

COMMON NAMES: Desert-thorn, Lycium, Thornbush, Wolfberry. *43 (052010), 46 (Pages 749-752), 63 (040207), **HR***

***Lycium andersonii* A. Gray var. *wrightii* A. Gray: Water Jacket**

COMMON NAMES: Water Jacket, Wright Desert Thorn, Wright Lycium. DESCRIPTION: Terrestrial perennial drought-deciduous shrub (1 to 10 feet in height); the thorn-tipped older branches are grayish; the newer growth is brownish; the spatula-shaped leaves are dark green; the flowers (to ½ inch in length) may be light blue, blue, blue-lavender, pale bluish-cream, cream, cream-white, pale lavender, lavender, pink, light purple, purple, dark purple, pale violet, white, whitish or whitish with a pink tinge; flowering generally takes place between late September and late May (additional records: two for late June, one for late July and one for late August); the juicy fruits (to 3/8 inch in length) are orange, orange-red, red, bright red, reddish-orange or salmon. HABITAT: Within the range of this species it has been reported from mountains; shaley mountainsides; mesas; canyon bottoms; foothills; rocky slopes; flats; roadsides; creekbeds; riverbeds; along washes; bottomlands; mesquite bosques; riparian areas, and waste places growing in dry rocky and shaley ground, occurring from sea level to 2,700 feet in elevation in the grassland, desertscrub and riparian ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. The species, *Lycium andersonii*, was reported to have been utilized by native peoples of North America and could be investigated to determine its value as a home garden or commercial food and/or beverage crop. The Black-chinned Hummingbird (*Archilochus alexandri*) and Broad-billed Hummingbird (*Cynanthus latirostris*) have been observed visiting the flowers, and birds and mammals feed on the berries. The Anderson Lycium provides resting and feeding cover for small wildlife including the Masked Bobwhite Quail (*Colinus virginianus* subsp. *ridgwayi*). *Lycium andersonii* var. *wrightii* is native to southwest-central and southern North America. *5, 6, 10, 13, 18 (species), 28 (species, color photograph of species), 43 (043010), 46 (Pages 751-752), 63 (043010), **85** (043010 - color presentation of dried material), 127 (species)*

***Lycium berlandieri* M.F. Dunal: Berlandier's Wolfberry**

COMMON NAMES: Berlandier Lycium, Berlandier Wolfberry, Berlandier's Wolfberry, Boxthorn, Huichutilla, Terrac Wolfberry, Wolfberry. DESCRIPTION: Terrestrial perennial drought-deciduous shrub (20 inches to 10 feet in height, one plant was reported to be 3 feet in height with a crown 3 feet in width); the bark on the stems and branches may be almost black, brown, dark brown, gray, gray-brown, purple-brown, dark red or reddish; the leaves are dark green; the bell-shaped flowers may be bluish, cream, cream-white, cream-yellow, pale green, lavender, purple, tan, white, whitish or pale yellow; flowering generally takes place between early February and early September (additional records: one for early January, two for late September, three for early October, one for mid-October, two for late November, one for early December and one for late December); the mature fruits are orange, red or red-orange. HABITAT: Within the range of this species it has been reported from mountains; rocky canyons; bouldery and rocky canyon bottoms; bases of cliffs; rocky talus slopes; crevices; buttes; ledges; rocky ridgetops; rocky foothills; rocky, gravelly, gravelly-sandy and sandy hills; rocky hillsides; bedrock and rocky slopes; rocky, gravelly, gravelly-sandy and sandy bajadas; bouldery and rocky outcrops; amongst boulders and rocks; boulderfields; prairies; plains; gravelly and gravelly-sandy flats; rocky-gravelly basins; valley floors; along gravelly-sandy-clayey-loamy roadsides; along rocky arroyos; ravines; around streams; along and in sandy washes; playas; clayey-loamy terraces; mesquite bosques; ditches, and riparian areas growing in dry desert pavement; bouldery, rocky, rocky-gravelly, gravelly, gravelly-sandy and sandy ground; gravelly-sandy-clayey loam, sandy loam and clayey loam ground, and loamy clay ground, occurring from 100 to 5,700 feet in elevation in the woodland, scrub, grassland and desertscrub ecological formations. NOTES: This spiny shrub may be an attractive component of a restored native habitat. The Berlandier Lycium may live to be more than 90 years of age. The Costa's Hummingbird (*Calypte costae*) has been observed visiting the flowers and Gambel's Quail (*Callipepla gambelii* subsp. *gambelii*) uses the plant for cover, feeding and roosting. *Lycium berlandieri* is native to southwest-central and southern North America. *5, 6, 10, 13, 16, 18 (genus), 28 (species, color photograph of species), 43 (043010), 46 (Page 752), 63 (043010), **85** (043010 - color presentation), 115 (color presentation)*

***Lycium berlandieri* M.F. Dunal var. *longistylum* C.L. Hitchcock: Berlandier's Wolfberry**

COMMON NAMES: Bachata, Berlandier Lycium, Berlandier Wolfberry, Berlandier's Wolfberry, Boxthorn, Huichutilla, Salicieso, Wolfberry. DESCRIPTION: Terrestrial perennial drought-deciduous shrub (20 inches to 10 feet in height); the stems are almost black; the flowers are white or pale yellow; flowering generally takes place between early February and early September (additional record: one for early January, one for late September, one for late November and one for early December); the mature fruits are red. HABITAT: Within the range of this species it has been reported from mountains; canyons; rocky foothills; hills; rocky hillsides; rocky slopes; plains; valley floors; along roadsides; around streams; washes; mesquite bosques, and riparian areas growing in dry rocky and sandy ground, occurring from 900 to 3,200 feet in elevation in the grassland and desertscrub ecological formations. NOTES: This spiny shrub may be an attractive component of a restored native habitat. The Berlandier Lycium may live to be more than 90 years of age. The Costa's Hummingbird (*Calypte costae*) has been observed visiting the flowers and Gambel's Quail (*Callipepla gambelii* subsp. *gambelii*) uses the plant for cover, feeding and roosting. *Lycium berlandieri* var. *longistylum* is native to southwest-central and southern North America. *5, 6, 10, 13 (species), 18 (genus), 28 (color photograph of the species), 43 (043010 - *Lycium berlandieri* var. *longistylum* C.L. Hitchc.), 46 (Page 752), 63 (043010), 77 (color photograph of the species #97 labeled *Lycium berlandieri*), **85** (043010 - color presentation of dried material), 115 (color presentation of the species)*

***Lycium exsertum* A. Gray: Arizona Desert-thorn**

COMMON NAMES: Arizona Desert-thorn, Boxthorn, Desert Thorn, Littleleaf Wolfberry, Wolfberry, Wolfberry. DESCRIPTION: Terrestrial perennial drought-deciduous shrub (20 inches to 10 feet in height, one plant was described as being 5 feet in height with a crown 6½ feet in width); the branches are

brownish-gray, gray or gray-brown; the leaves are green; the pendular flowers may be blue-cream, bluish, cream-lavender, greenish, pale lavender, lavender, lavender-white, mauve, pink, pale purple, purple, blushed violet, white, white-pink, white-purple; whitish or whitish-lavender; flowering generally takes place between mid-January and early May (additional records: one for late July, two for mid-October, one for early November, one for late November, one for mid-December and one for late December); the mature fruits are orange-red, reddish or red-orange. HABITAT: Within the range of this species it has been reported from mountains; mountainsides; rocky canyons; rocky canyon bottoms; talus slopes; bases of cliffs; buttes; ridges; rocky ridgetops; foothills; rocky hills; hilltops; rocky and gravelly hillsides; bouldery, rocky and gravelly-loamy slopes; rocky bajadas; bouldery and rocky outcrops; amongst boulders; plains; sandy flats; basins; along roadsides; along and in arroyos; seeps; shaley springs; along and in creekbeds; along and in sandy and silty washes; gravelly drainages; drainage ways; along ponds; swales; (sandy) banks of rivers; edges of streambeds, washes, drainage ways and lakes; benches; gravelly terraces; loamy bottomlands; floodplains, and riparian areas growing in dry bouldery, rocky, shaley, gravelly and sandy ground; gravelly loam and loam ground, and silty ground, occurring from 1,000 to 4,600 feet in elevation in the scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. Bombyliid Flies have been observed visiting the flowers. The Arizona Desert-thorn is a host plant of the Texas Root Rot Fungus, *Phymatotrichum omnivorum*. *Lycium exsertum* is native to southwest-central and southern North America. *5, 6, 13, 15, 16, 18 (genus), 43 (043010), 46 (Page 751), 58, 63 (043010), 77, **85** (043010 - color presentation)*

***Lycium fremontii* A. Gray: Frémont's Desert-thor**n

COMMON NAMES: Boxthorn, Desert-thorn, Frémont Desert-thorn, Frémont's Desert-thorn, Frémont Lycium, Frémont Thornbush, Frémont Wolfberry, Frémont's Wolfberry, Kwavul (Pima); Wolfberry. DESCRIPTION: Terrestrial perennial drought-deciduous shrub (20 inches to 13 feet in height, one plant was described as being 20 inches in height with a crown 40 inches in width, one plant was described as being 5 feet in height with a crown 5 feet in width, one plant was described as being 7 feet in height with a crown 13 feet in width); the stems are dark gray; the leaves are grayish-green or light green; the small flowers may be brown-yellow-purple, lavender, dark lavender, pink, light purple, purple, purple-white, rose or whitish-purple; flowering generally takes place between early January and early May and between late September and mid-December; the mature fruits may be brownish, orange, orange-red, red, red-orange, or red-orange-brown. HABITAT: Within the range of this species it has been reported from mountains; mesas; shaded walls of cliffs; rocky canyons; rocky canyon bottoms; bases of cliffs; talus slopes; buttes; rocky-sandy foothills; cobbly-clayey hills; hillsides; bouldery and rocky slopes; bajadas; amongst boulders; sand dunes; bajadas; sandy plains; sandy and sandy-silty plains; rocky-sandy and sandy flats; basins; gravelly-sandy valley floors; coastal dunes; coastal plains; along railroad right-of-ways; along rocky and sandy-clayey roadsides; along arroyos; rocky walls of arroyos; rocky chutes; springs; streams; rivers; riverbeds; along and in bouldery, rocky, rocky-gravelly, rocky-sandy, gravelly, gravelly-sandy and sandy washes; around pools; cienegas; depressions; along (silty) banks of arroyos, streams and rivers; (rocky-gravelly) edges of washes and lakes; margins of washes; shores of lakes; gravel bars; terraces; bottomlands; sandy floodplains; mesquite bosques; along canal banks; ditches; along ditch banks; riparian areas, and disturbed areas growing in dry bouldery, bouldery-rocky, rocky, rocky-gravelly, shaley, gravelly, gravelly-sandy and sandy ground; cobbly clay and sandy clay ground, and gravelly-sandy silty, sandy silty and silty ground, occurring from 100 to 4,300 feet in elevation in the scrub, grassland, desertscrub and wetland ecological formations. NOTES: This thorny and much-branched shrub may be an attractive component of a restored native habitat. This plant was reported to have been utilized by native peoples of North America and could be investigated to determine its value as a home garden or commercial food and/or beverage crop; it was also noted as having been used to make bows. The Frémont Lycium is a host plant of the Texas Root Rot Fungus, *Phymatotrichum omnivorum*. *Lycium fremontii* is native to southwest-central and southern North America. *5, 6, 13, 18, 28 (color photograph), 43 (043010 - *Lycium fremonti* A. Gray), 46 ("The abundant, juicy berries produced by this

and the preceding species [*Lycium exsertum*] were gathered by the desert Indians for food. Both species are hosts of the destructive root-rot fungus, *Phymatotrichium omnivorum*.", Page 751), 48, 63 (043010), 77, **85** (043010 - color presentation, also recorded as *Lycium fremontii* A. Gray var. *fremontii*), 127*

Lycium fremontii var. *fremontii* (see footnote 85 under *Lycium fremontii*)

***Nicotiana glauca* R. Graham: Tree Tobacco**

COMMON NAMES: Buena Mosa, Don Juan (Yaqui); Gigante, Rape, Mustard Tree, Shrub Tobacco, Tree Tobacco, Tronadora, Wild Tobacco, Wildetabak (Afrikaans). DESCRIPTION: Terrestrial perennial evergreen shrub or tree (1 to 26 feet in height with a crown to 10 feet in width); the bark is yellow-brown; the leaves are blue-green, bluish-green or dull green; the tubular flowers (1¼ to 2 inches in length) are pale yellow, yellow or yellow-greenish; flowering generally takes place between mid-January to late December. HABITAT: Within the range of this species it has been reported from mountains; mountainsides; plateaus; rocky canyons; along rocky canyon bottoms; rocky slopes; foothills; rocky hills; rocky hilltops; bouldery hillsides; rocky slopes; sandy and silty flats; gravelly basins; valley floors; coastal marshes; along rocky and sandy roadsides; rocky arroyos; bottoms of arroyos; springs; along streams; along and in streambeds; along and in creeks; along rivers; along and in rocky-sandy and sandy riverbeds; along and in washes; within drainages; along and in watercourses; oases; boggy areas; (gravelly-sandy and sandy) banks of creeks, rivers and washes; along (sandy and sandy-silty) edges of rivers and lakes; along margins of washes; shores of creeks and lakes; terraces; bottomlands; floodplains; fencerows; along ditches; ditch banks; riparian areas; waste places, and disturbed areas growing in dry bouldery, rocky, rocky-sandy, gravelly, gravelly-sandy and sandy ground; sandy loam ground, and sandy silty and silty ground, occurring from near sea level to 4,200 feet in elevation in the woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: EXOTIC Invasive Plant. This plant was reported to have been utilized by native peoples of North America; it was noted as having been used for food and beverage and as a drug or medication. *Nicotiana glauca* is native to western and southern South America. *5, 6, 13, 16, 18, 28 (color photograph), 43 (050210), 46 (Page 761), 63 (050210 - color presentation), 68, 77, 80 (This species is listed as a Secondary Poisonous Range Plant. "The poisonous principle is the highly toxic nicotine and other alkaloids which are poisonous to all classes of livestock and to humans. The plants are generally unpalatable to range livestock but frequent losses have been reported. ... Since wild tobaccos are generally unpalatable and grow predominantly in waste places, range improvement to reduce waste areas and to provide ample forage is the best means of preventing losses."), 85 (050210 - color presentation), 86 (color photograph), 97, 115 (color presentation), 127*

***Nicotiana obtusifolia* M. Martens & H.G. Galeotti var. *obtusifolia*: Desert Tobacco**

SYNONYMY: *Nicotiana trigonophylla* M.F. Dunal. COMMON NAMES: Coyote Tobacco, Desert Tobacco, Punche (a Punch), Tabaquillo (Little Tobacco), Tabaquillo de Coyote, Wo'i Viva (Yaqui). DESCRIPTION: Terrestrial annual, biennial or perennial forb/herb or subshrub (1 to 3½ feet in height); the leaves are gray-green or dark green; the flowers may be cream, cream & pale green, cream-green, cream-white, cream-yellow, greenish, greenish-white, greenish-yellow, deep purple, lemon-yellow, pale white, white, yellow, yellow-cream, yellow-green, yellow-white or yellowish-greenish; flowering generally takes place between late February and early November (additional records: one for mid-January, one for late November, one for mid-December and one for late December, flowering probably takes place throughout the rest of the year). HABITAT: Within the range of this species it has been reported from mountains; bouldery and rocky-gravelly mountaintops; plateaus; along rims; cliffs; rocky and gravelly-loamy canyons; canyon walls; along canyon bottoms; gorges; talus slopes; bases of cliffs; along crevices in boulders and rocks; rocky bluffs; rocky buttes; rocky ledges; bouldery ridges; bouldery ridgetops; edges of meadows; craters; cinder cones; foothills; rocky hills; hilltops; bouldery-rocky and rocky hillsides; bouldery escarpments; bouldery, bouldery-rocky, bouldery-gravelly, rocky, rocky-gravelly-sandy-clayey, cindery, gravelly-sandy, sandy-loam and sandy-clayey slopes; bajadas; rocky outcrops; amongst boulders, rocks and stones; bases of boulders and rocks; sandy lava flows; dunes; debris fans;

rocky plains; sandy flats; basins; valley floors; valley bottoms; rocky-sandy coastal shores; along railroad right-of-ways; along rocky, rocky-gravelly-sandy-clayey-loamy, gravelly, gravelly-sandy, gravelly-sandy-clayey-loamy and sandy roadsides; along sandy-loamy arroyos; arroyo walls; arroyo bottoms; in sand and loam around springs; along streams; along gravelly-sandy and sandy streambeds; rocky creeks; sandy creekbeds; bouldery-sandy and sandy riverbeds; along and in bedrock, rocky, rocky-sandy, gravelly-sandy and sandy washes; drainages; bouldery drainage ways; sandy waterholes; marshy areas; (rocky, cobbly, sandy and silty) banks of creeks, rivers and washes; edges of lakes; rocky-sandy shores of lakes; mudflats; gravelly and sandy terraces; bottomlands; floodplains; ditches; ditch banks; sandy riparian areas; waste places, and disturbed areas growing in moist, damp and dry bouldery, bouldery-rocky, bouldery-gravelly, bouldery-sandy, rocky, rocky-gravelly, rocky-sandy, cobbly, cindery, gravelly, gravelly-sandy and sandy ground; rocky-gravely-sandy-clayey loam, gravelly loam, gravelly-sandy-clayey loam, sandy loam, clayey loam and loam ground; rocky-gravelly-sandy clay and sandy clay ground, and silty ground, occurring from sea level to 6,900 feet in elevation in the woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant tends to be weedy; however, consideration could be given to using some plants in your project because the flowers are used by hummingbirds when other nectar-rich sources are not available. This plant was reported to have been utilized by native peoples of North America; it was noted as having been used for food, beverage and/as a as a drug or medication. *Nicotiana obtusifolia* var. *obtusifolia* is native to southwest-central and southern North America. *5, 6, 15 (recorded as *Nicotiana trigonophylla* Dunal), 16 (recorded as *Nicotiana trigonophylla* Dunal), 28 (recorded as *Nicotiana trigonophylla*, color photograph), 43 (050310), 46 (recorded as *Nicotiana trigonophylla* Dunal, Page 761), 58 (recorded as *Nicotiana trigonophylla* Dunal), 63 (050310 - color presentation), 68, 77 (recorded as *Nicotiana trigonophylla* Dunal), 80 (This species is listed as a Secondary Poisonous Range Plant. "The poisonous principle is the highly toxic nicotine and other alkaloids which are poisonous to all classes of livestock and to humans. The plants are generally unpalatable to range livestock but frequent losses have been reported. ... Since wild tobaccos are generally unpalatable and grow predominantly in waste places, range improvement to reduce waste areas and to provide ample forage is the best means of preventing losses."), **85** (050310 - color presentation), 86 (recorded as *Nicotiana trigonophylla*, color photograph), 115 (color presentation of the species), 127*

Nicotiana trigonophylla (see *Nicotiana obtusifolia* var. *obtusifolia*)

Petunia parviflora (see *Calibrachoa parviflora*)

***Physalis crassifolia* G. Bentham: Yellow Nightshade Groundcherry**

COMMON NAMES: Desert Ground Cherry, Thick-leafed Groundcherry, Thickleaf Groundcherry, Thick-leaved Ground Cherry, Tomate de Culebra, Tomatillo del Desierto, Yellow Nightshade Groundcherry. DESCRIPTION: Terrestrial annual or perennial forb/herb or subshrub (4 to 40 inches in height); the leaves are gray-green or dark green; the flowers are greenish-yellow, pale yellow, yellow, yellow-green, yellowish, yellowish-whitish, white or pale white-yellowish; the anthers are yellow; flowering may take place throughout the year between early January and late December. HABITAT: Within the range of this species it has been reported from rocky mountains; bouldery and rocky mountaintops; rocky mountainsides; sandy mesas; rocky cliffs; bouldery, rocky and shaley canyons; rocky canyon walls; rocky, gravelly and sandy canyon bottoms; gorges; bases of cliffs; scree; talus slopes; crevices in rocks; buttes; sandy bases of buttes; knolls; rocky-sandy-loamy flanks of knolls; rocky ridges; ridgetops; ridge crests; cinder cones; rocky foothills; rocky and sandy hills; bouldery, bouldery-rocky, bouldery-sandy, rocky and loamy hillsides; bouldery, bouldery-rocky-gravelly-sandy, bouldery-sandy, rocky, rocky-sandy, gravelly and sandy slopes; rocky alluvial fans; gravelly-sandy and sandy bajadas; rocky outcrops; amongst boulders and rocks; lava flows; sand dunes; plains; gravelly and sandy flats; valley floors; along rocky-gravelly, gravelly, gravelly-sandy, gravelly-loamy, sandy and clayey roadsides; rocky arroyos; along rocky bottoms of arroyos; along rocky draws; gullies; rocky ravines; seeps; springs; around seeping streams; along streams; in sand along creeks; along sandy creekbeds; along rivers; sandy

riverbeds; along and in bouldery-gravelly, rocky, rocky-pebbly, rocky-sandy, gravelly, gravelly-sandy and sandy washes, within bouldery and rocky drainages; within rocky and gravelly-sandy drainage ways; around poolbeds; marshes; sandy-silty and silty depressions; (bouldery and sandy) banks of creeks and lakes; edges of arroyos and pondbeds; rocky terraces; canal walls; rocky ditch banks; riparian areas, and disturbed areas growing in dry desert pavement; bouldery, bouldery-rocky, bouldery-rocky-gravelly-sandy, bouldery-gravelly, bouldery-sandy, rocky, rocky-gravelly, rocky-pebbly, rocky-sandy, shaley, cindery, gravelly, gravelly-sandy and sandy ground; rocky-sandy loam, gravelly loam and clayey loam ground; clay ground, and sandy silty and silty ground, occurring from sea level to 5,300 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTE: *Physalis crassifolia* is native to southwest-central and southern North America. *5, 6, 16, 28 (color photograph), 43 (050410), 46 (Page 755), 63 (050410 - color presentation), 77, 80 (Species of the genus *Physalis* are considered to be Rarely Poisonous and Suspected Poisonous Range Plants. "It has been suspected that animals have been poisoned by eating large quantities of the tops and unripe fruits of these forbs."), **85** (050410 - color presentation of dried material)*

***Solanum douglasii* M.F. Dunal: Greenspot Nightshade**

SYNONYMY: *Solanum nigrum* C. Linnaeus var. *douglasii* (M.F. Dunal) A. Gray. COMMON NAMES: Douglas Nightshade, Green-spot Nightshade, Greenspot Nightshade. DESCRIPTION: Terrestrial perennial forb/herb or subshrub (1 to 6½ feet in height, one plant was reported as being 32 inches in height and 5 feet in width); the flowers may be blue-violet, blue-white, cream, pale lavender, lavender, pale purple, purple, purple-white, white, white-pale lavender, white-lavender, white-purple or whitish; the anthers are yellow; flowering generally takes place between early February and early December (additional records: two for early January, two for mid-January and three for late December); the mature fruits may be black, blue-black, green or orange-brown. HABITAT: Within the range of this species it has been reported from mountains; mountaintops; mesas; plateaus; rocky and gravelly-loamy canyons; rocky canyon bottoms; chasms; bases of cliffs; talus slopes; crevices in cliffs and rocks; bluffs; wet meadows; foothills; bouldery and rocky hills; hilltops; bouldery and rocky hillsides; bouldery-gravelly, rocky, rocky-gravelly, rocky-sandy, rocky-clayey, gravelly, gravelly-sandy, gravelly-loamy, sandy-loamy, loamy and clayey slopes; rocky-sandy-loamy alluvial fans; rocky outcrops; amongst rocks; bouldery-sandy and clayey flats; basins; valley floors; coastal beaches; along rocky, rocky-gravelly, gravelly and gravelly-sandy roadsides; draws; gulches; gullies; ravines; seeps; springs; in rock along streams; along rocky streambeds; along creeks; along sandy creekbeds; silty-clayey riverbeds; within gravelly and sandy washes; drainages; within rocky drainage ways; oases; freshwater marshes; banks of creeks and rivers; (sandy) edges of washes and salt marshes; gravelly and sandy terraces; bottomlands; floodplains; margins of charcos (stock tanks); ditches; sandy riparian areas; waste places, and disturbed areas growing in wet, moist and dry bouldery, bouldery-gravelly, bouldery-sandy, rocky, rocky-gravelly, rocky-sandy, gravelly, gravelly-sandy and sandy ground; rocky-gravelly-clayey loam, rocky-sandy loam, gravelly loam, sandy loam and loam ground; rocky-clayey, silty clay and clay ground, and silty ground, occurring from sea level to 8,600 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant was reported to have been utilized by native peoples of North America and could be investigated to determine its value as a home garden or commercial food and/or dye crop; it was also noted as having been used as a drug or medication and for body art. A bee (*Ptiloglossa* sp.) was observed and reported as gathering nectar from the flowers in early September. *Solanum douglasii* is native to southwest-central and southern North America. *5, 6, 15, 18 (genus), 43 (050610 - no record for *Solanum nigrum* var. *douglasii*), 46 (Page 758), 58, 63 (050610 - color presentation), 77 (color photograph #98), **85** (050610 - color preentation), 127*

***Solanum elaeagnifolium* A.J. Cavanilles: Silverleaf Nightshade**

COMMON NAMES: Arrebenta-cavalo (Portuguese), Bull Nettle, Bull-nettle, Bullnettle, Desert Nightshade, Melãozinho-do-campo (Portuguese), Prairie-berry, Satansbos (Afrikaans), Silver Horse Nettle, Silver Horse-nettle, Silver Horsenettle, Silverleaf Bitter-apple, Silverleaf Nightshade, Silverleaf-

nettle, Tomato Weed, Trompillo (Spanish), White Horse Nettle, White Horse-nettle, White Horsenettle. DESCRIPTION: Terrestrial perennial forb/herb or subshrub (8 inches to 2 feet in height, plants were described as being 8 inches in height and 2 to 4 inches in width, plants were observed and described as being 10 to 12 inches in height and width, plants were observed and described as being 16 inches in height and 8 inches in width); the leaves are bluish-gray, gray, grayish-green, greenish-gray or silvery; the star-like flowers (¾ to 1½ inch in diameter) may be light blue, blue, blue-lavender, blue-purple, dark blue, bluish-purple, bluish-violet, lavender, lavender-purple, light purple, purple, dark purple, violet, deep violet, violet-purple or white; the anthers are yellow; flowering generally takes place between late March and early November (additional records: one for mid-February, one for early March and one for late November); the mature fruits (1/3 to 1/2 inch in diameter) are a golden, golden-brown, orange, orange-yellow or yellow berry. HABITAT: Within the range of this species it has been reported from mountains; mountaintops; sandy mesas; sandy plateaus; tablelands; rocky-sandy rims of craters; rocky canyons; canyonsides; along bouldery-sandy, rocky and sandy canyon bottoms; chasms; rocky-sandy and sandy ridges; sandy-loamy bosques; sandy meadows; rocky foothills; hills; rocky and gravelly hillsides; along rocky, rocky-gravelly, gravelly-sandy and sandy slopes; sandy-clayey-loamy bajadas; sandy lava flows; sand dunes; prairies; plains; gravelly-loamy, sandy, loamy, clayey and silty flats; basins; shaley-silty valley floors; along railroad right-of-ways; in roadways; along rocky, gravelly, gravelly-sandy, gravelly-sandy-clayey-loamy, gravelly-loamy, sandy and clayey roadsides; arroyos; clayey bottoms of arroyos; silty bottoms of draws; springs; sandy streambeds; along creeks; rocky-gravelly-sandy and sandy creekbeds; along rivers; bouldery-cobbly-sandy and rocky-sandy riverbeds; along and in rocky, gravelly, gravelly-loamy and sandy washes; along pebbly-sandy, sandy and clayey-loamy drainages; along drainage ways; cienegas; swampy areas; swales; (sandy and clayey) banks of arroyos and rivers; (clayey) edges of playas and cienegas; margins of rivers; rocky-sandy, (gravelly and sandy-loamy) shores of ponds, lakes and playas; sandy beaches; benches; sandy terraces; sandy bottomlands; sandy floodplains; mesquite bosques; along stony fencelines; around stock tanks; clayey levees; along ditches; along stony ditch banks; bouldery-cobbly-sandy and sandy riparian areas; waste places, and disturbed areas growing in moist and dry bouldery-cobbly-sandy, bouldery-sandy, rocky, rocky-gravelly, rocky-gravelly-sandy, rocky-sandy, stony, gravelly, gravelly-sandy, pebbly-sandy and sandy ground; gravelly loam, gravelly-sandy-clayey loam, gravelly-clayey loam, gravelly-silty loam, sandy loam, sandy-clayey loam, clayey loam and loam ground; sandy clay and clay ground, and rocky silty, shaley silty and silty ground, occurring from sea level to 7,200 feet in elevation in the woodland, scrub; grassland, desertscrub and wetland ecological formations. NOTES: The Silverleaf Nightshade may or may not be native to either Arizona or North America. This plant was reported to have been utilized by native peoples of North America; it was noted as having been used as a food (berries used as a rennet to curdle milk), as a drug or medication and the dried berries were worn as jewelry. The green fruits may be poisonous. *Solanum elaeagnifolium* is native to southern South America. *5, 6, 15, 16, 18 (genus), 28 (color photograph), 43 (073009), 46 (Page 758), 58, 63 (050610 - color presentation), 68, 77, 80 (This species is listed as a Secondary Poisonous Range Plant. "The toxic principle in these species is a glycoalkaloid to which the name solanine is applied. The toxicity of a given species may vary considerably. ... Poisoning by *Solanum* species does not always terminate in death. In the acute poisoning, nervous symptoms rapidly build to a maximum, and death or recovery occurs within a few hours to one or two days. Death is the result of paralysis. ... Where the plants are known to exist, animals should be watched closely for symptoms. The best control is to grub out the plants and remove them from the area. This should be done prior to seed development to prevent additional seeding."), **85** (050610 - color presentation), 86 (color photograph), 97, 101 (color photograph), 115 (color presentation), 127*

Solanum nigrum var. *douglasii* (see *Solanum douglasii*)

Sterculiaceae: The Cacao Family

***Ayenia filiformis* S. Watson: Trans-Pecos Ayenia**

COMMON NAMES: Desert Ayenia, Trans-Pecos Ayenia, TransPecos Ayenia. DESCRIPTION: Terrestrial perennial subshrub (4 inches to 4 feet in height); the leaves may be bronze, dark green or red; the tiny flowers may be brownish, maroon, purple, red, red-cream, white or white with purple tips; flowering generally takes place between late February and early November (additional records: one for mid-January, two for late January, one for late November, two for mid-December and three for late December); the fruits are bur-like round balls with red tipped spines. HABITAT: Within the range of this species it has been reported from mountains; rocky mountainsides; rocky mesas; cliffs; rocky canyons; along canyon walls; rocky canyon bottoms; talus slopes; crevices in boulders and rocks; rocky ridges; ridgetops; foothills; rocky hills, rocky hilltops; rocky hillsides; bouldery-gravelly and rocky slopes; bajadas; rocky outcrops; amongst boulders and rocks; flats; basins; along roadsides; arroyos; rocky bottoms of arroyos; gulches; seeps; springs; along streams; rocky streambeds; along and in rocky and sandy washes; within rocky and gravelly drainages; along (rocky) banks of ravines, creeks and washes; along (bouldery) edges of washes; floodplains; riparian areas, and disturbed areas growing in dry bouldery, bouldery-gravelly, rocky, gravelly and sandy ground and rocky silty ground, occurring from 100 to 5,400 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formation. NOTES: This plant is browsed by Desert Bighorn Sheep (*Ovis canadensis* subsp. *mexicana*). *Ayenia filiformis* is native to southwest-central and southern North America. *5, 6, 43 (073009), 46 (no record of species), 63 (050610), 77 (color photograph #99), **85** (050610 - color presentation)*

***Hermannia pauciflora* S. Watson: Santa Catalina Burstwort**

COMMON NAMES: Burstwort, Few-flowered Hermannia, Hierba del Soldado, Santa Catalina Burstwort, Sparseleaf Hermannia. DESCRIPTION: Terrestrial perennial forb/herb or subshrub (trailing to erect stems 8 to 16 inches in height); the small flowers are orange, orange-yellow or yellow; based on few available records, flowering generally takes place between mid-January and mid-November (flowering records: three for mid-January, one for early February, three for mid-February, one for early March, two mid-March, two for late March, three for mid-April, one for late May, one for mid-July, three for late August, two for early September, one for late October and one for mid-November. HABITAT: Within the range of this species it has been reported from mountains; rocky canyons; along canyon bottoms; rocky gorges; talus slopes; crevices in rocks; soil pockets in rocky slopes; foothills; rocky hills; rocky hillsides; bedrock and rocky slopes; rocky outcrops; amongst rocks; alluvial fans; basins; arroyos; along and in rocky washes; floodplains, and riparian areas growing in dry rocky ground, occurring from sea level to 4,300 feet in elevation in the scrub, grassland and desertscrub ecological formations. NOTE: *Hermannia pauciflora* is native to southwest-central and southern North America. *5, 6, 8, 13, 16, 43 (050710), 46 (Page 555), 63 (050710), 77, **85** (050710 - color presentation)*

Tamaricaceae: The Tamarix Family

***Tamarix chinensis* João de Loureiro: Five-stamen Tamarisk**

SYNONYMY: *Tamarix pentandra* P. Simon von Pallas. COMMON NAMES: Cheng Liu (transcribed Chinese), China Tamarisk, Chinese Saltcedar, Chinese Tamarisk, Five-stamen Tamarisk, Fivestamen Tamarisk, French Tamarisk, Pino Salado, Salt Cedar, Salt-cedar, Saltcedar, Tamarisco, Tamarisk, Tamarix. DESCRIPTION: Terrestrial perennial deciduous shrub or tree (4 to 33 feet in height); the bark is black, brown or reddish-brown; the branches are grayish-green; the twigs are green becoming purplish or reddish; the scale-like leaves are bluish-green, grayish-green or green; the flowers are cream, pale pink, pink, deep pink, pinkish-white, purplish, deep purplish-pink, red, reddish-pink, white or white-pink; flowering generally takes place between early March and mid-November. HABITAT: Within the range of this species it has been reported from mountains; rocky canyons; along rocky and sandy canyon bottoms; chasms; shaley knolls; rocky and sandy hillsides; sandy-loamy, clayey-loamy and silty slopes; sand dunes; clayey-loamy plains; gravelly-sandy, gravelly-loamy, sandy-loamy and clayey-loamy flats;

basins; hollows; valley floors; along roadsides; silty arroyos; bottoms of arroyos; within gulches; along and in gravelly-sandy ravines; seeps; shaley and sandy springs; in sand along streams; along and in streambeds; along creeks; along and in sandy creekbeds; in sand along rivers; along rocky-cobbly-sandy, gravelly-sandy and sandy riverbeds; along and in rocky, rocky-sandy, gravelly, gravelly-sandy, sandy and sandy-silty washes; along and in drainages; along watercourses; tanks; along lakes; lakebeds; cienegas; marshy areas; along (rocky, rocky-gravelly-silty and sandy) banks of gullies, streams, creeks, rivers, washes and ponds; (gravelly and sandy) edges of streams, rivers, ponds and lakes; along margins of rivers and lakes; shores of lakes; mudflats; sand bars; sandy beaches; sandy benches; terraces; bottomlands; lowlands; sandy floodplains; mesquite bosques; dams; banks of reservoirs; canals; along canal banks; along ditches; ditch banks; gravelly-sandy and sandy riparian areas, and disturbed areas growing in shallow water and wet and moist rocky, rocky-cobbly-sandy, rocky-sandy, shaley, gravelly, gravelly-sandy and sandy ground; gravelly loam, sandy loam, clayey loam and loam ground, and rocky-gravelly silty, sandy silty and silty ground, occurring from sea level to 7,500 feet in elevation in the woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: EXOTIC Invasive Plant that poses a significant threat to our native biotic communities. *Tamarix chinensis* is native to eastern Asia. *5, 6, 13, 16 (recorded as *Tamarix pentandra* Pall.), 18, 26 (note), 28 (color photograph), 43 (050710), 46 (recorded as *Tamarix pentandra* Pall., Page 557), 52 (color photograph), 63 (050710 - color presentation), 68, 85 (050810 - color presentation), 91, 109 (color photograph of a *Tamarix* sp.), **HR** (recorded as *Tamarix pentandra*)*

Tamarix pentandra (see *Tamarix chinensis*)

Ulmaceae: The Elm Family

***Celtis ehrenbergiana* (J.F. Klotzsch) F.M. Liebmann: Spiny Hackberry**

SYNONYMY: *Celtis pallida* J. Torrey, *Celtis tala* J. Gillies ex J. É. Planchon var. *pallida* (J. Torrey) J. É. Planchon. COMMON NAMES: Acebuche, Bainoro, Capul, Desert Hackberry, Garabato, Garambullo, Granjeno (Spanish), Huasteco, Kunwo (Yaqui), Palo de Aguila, Rompecapa, Shiny Hackberry, Spiny Hackberry. DESCRIPTION: Terrestrial perennial evergreen shrub or tree (3 to 20 feet in height, one plant was reported to be 7 feet in height with a crown 7 feet in width); the bark is gray; the thorny branches are whitish-gray; the leaves are dark green; the inconspicuous flowers may be green, greenish-yellow, white-green or yellow, flowering generally takes place between early March and late October (possibly flowering into November); the ripe fruits are orange, bright red, reddish-orange or yellow. HABITAT: Within the range of this species it has been reported from mountains; mesas; rocky and rocky-gravelly canyons; canyon bottoms; rocky bases of cliffs; ridges; rocky ridgetops; foothills; rocky hills; rocky hillsides; bedrock, bouldery, rocky and gravelly slopes; bajadas; rocky outcrops; amongst boulders; coves; plains; gravelly-sandy and sandy flats; rocky-gravelly basins; along roadsides; rocky arroyos; rocky bottoms of arroyos; draws; gullies; seeps; springs; along seeping streams; along streams; along and in streambeds; in sand along creeks; along rivers; bouldery-cobbly-sandy riverbeds; along and in gravelly and sandy washes; within drainages; banks of arroyos, rivers, washes and drainages; along margins of arroyos and washes; benches; gravelly terraces; gravelly-clayey floodplains; mesquite bosques; around stock tanks; riparian areas, and disturbed areas growing in dry desert pavement; bouldery, bouldery-rocky, bouldery-cobbly-sandy, rocky, rocky-gravelly, gravelly, gravelly-sandy and sandy ground, and gravelly clay ground, occurring from sea level to 5,600 feet in elevation in the scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. The small fruits are reportedly juicy and sweet. The Desert Hackberry may live to be more than 88 years of age and may be useful in controlling erosion. The Desert Hackberry is a larval food plant for the American Snout (*Libytheana carinenta*) and Empress Leilia (*Asterocampa leilia*) and is browsed by deer; it provides a nesting site for the White-wing Dove (*Zenaida asiatica*), and cover for Gambel's Quail (*Callipepla gambelii gambelii*) and other birds and mammals.

The fruits are eaten by many birds, small desert mammals, coyotes (*Canis latrans*), foxes and javelinas (*Peccari tajacu*). *Celtis ehrenbergiana* is native to south-central and southern North America; Central America and coastal islands in the Caribbean Sea, and western, eastern and southern South America. *5, 6, 13 (recorded as *Celtis tala* Gillies var. *pallida* (Torrey) Planch.), 15 (recorded as *Celtis pallida* Torr.), 16 (recorded as *Celtis pallida* Torr.), 18, 26 (recorded as *Celtis pallida*, color photograph), 28 (recorded as *Celtis pallida*, color photograph), 43 (050810), 46 (recorded as *Celtis pallida* Torr., Page 220), 48, 58 (recorded as *Celtis pallida* Torr.), 63 (050810), 77 (recorded as *Celtis pallida* Torr.), **85** (050810, also recorded as *Celtis pallida* var. *pallida* Torrey), 91 (recorded as *Celtis pallida* Torr.), 115 (color presentation), **WTK** (July 4, 2005)*

Celtis pallida (see *Celtis ehrenbergiana*)

Celtis pallida var. *pallida* (see footnote 85 under *Celtis ehrenbergiana*)

Celtis tala var. *pallida* (see *Celtis ehrenbergiana*)

Urticaceae: The Nettle Family

***Parietaria hespera* B.D. Hinton: Rillita Pellitory**

COMMON NAME: California Pellitory, Rillita Pellitory. DESCRIPTION: Terrestrial annual or perennial forb/herb (prostrate, decumbent, ascending or erect stems ¾ to 22 inches in height); the stems may be purple; the leaves are pale green or green; the inconspicuous flowers may be cream, pale green, green, greenish, white or white-green; flowering generally takes place between early February and early June (additional records: one for mid-January, two for late June, one for early July, one for mid July, one for late July and one for late August). HABITAT: Within the range of this species it has been reported from mountains; mesas; plateaus; cliffs; bouldery, rocky and stony canyons; along rocky and sandy-loamy canyon bottoms; bases of cliffs; talus slopes; crevices in rocks; buttes; ledges; loamy and clayey-loamy ridges; rocky ridgetops; foothills; bouldery and rocky hills; clayey hilltops; rocky hillsides; along bouldery, bouldery-silty, rocky, cobbly, gravelly and clayey-loamy slopes; bouldery-stony-gravelly-sandy and rocky-sandy-loamy alluvial fans; bajadas; boulder and rock outcrops; bases of boulders and rocks; sheltered areas below rocks, shrubs and trees; caves; rocky niches; sand dunes; sandy-loamy plains; flats; valley floors; roadsides; rocky arroyos; rocky draws; springs; along streams; along creeks; along rocky creekbeds; along rivers; riverbeds; along and in rocky, rocky-sandy, gravelly, gravelly-sandy, sandy and sandy-clayey washes; within bouldery-rocky drainages; cobbly-sandy drainage ways; tanks; depressions; rocky swales; (loamy) banks of arroyos; streambeds, rivers and washes; (bouldery) edges of washes, drainage ways and salt marshes; margins of rivers and washes; benches; rocky-sandy floodplains; canals; bottoms of stock tanks; sandy riparian areas, and disturbed areas growing in wet, moist, damp and dry bouldery, bouldery-rocky, bouldery-stony-gravelly-sandy, rocky, rocky-sandy, stony, cobbly, cobbly-sandy, gravelly, gravelly-sandy and sandy ground; rocky-sandy loam, sandy loam, clayey loam and loam ground; bouldery clay, rocky clay, sandy clay and clay ground, and silty ground often in shaded areas, occurring from sea level to 6,500 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: *Parietaria hespera* B.D. Hinton var. *californica* B.D. Hinton, the California Pellitory has been described as being either annual or perennial, and *Parietaria hespera* B.D. Hinton var. *hespera* has been described as a perennial. *Parietaria hespera* is native to southwest-central and southern North America. *5, 6, 15, 16, 43 (050910), 46 (no record of species), 58, 63 (050910), **85** (050910)*

Verbenaceae: The Verbena Family

***Glandularia gooddingii* (J.I. Briquet) O.T. Solbrig: Southwestern Mock Vervain**

SYNONYMY: *Verbena gooddingii* J.I. Briquet, *Verbena gooddingii* J.I. Briquet var. *nepetifolia* I. Tidestrøm. COMMON NAMES: Desert Verbena, Desert Vervain, Goodding Glandularia, Goodding Mock Vervain, Goodding Verbena, Goodding's Verbena, Goodding Vervain, Mexican Vervain, Southwestern Mock Vervain, Southwestern Verbena, Southwestern Vervain, Sweet William, Verbena, Vervain. DESCRIPTION: Terrestrial perennial forb/herb (6 inches to 2 feet in height, one plant was described as being 6 to 10 inches in height and 6 inches in width, one plant was described as being 24 inches in height and 12 inches in width); the leaves are gray-green, green or dark green; the flowers may be light blue, blue, sky blue, blue-lavender, blue-violet, bluish-purple, pale lavender, lavender, lavender-blue, lavender-purple, magenta, pink, pink-lavender, pink-purple, pink-violet, light purple, purple, purple-lavender, purplish-pink, rose-pink or white-lavender; flowering generally takes place between early February and mid-October (additional records: one for mid-November, two for late November and one for early December). HABITAT: Within the range of this species it has been reported from mountains; cobbly-gravelly mesas; plateaus; along canyons; bouldery-cobbly, rocky, gravelly and sandy canyon bottoms; rock cliffs; talus slopes; crevices in rocks; rocky ledges; rocky-sandy and sandy ridges; rocky ridgetops; meadows; cinder cones; gravelly, gravelly-sandy and sandy foothills; rocky hills; hilltops; rocky hillsides; bouldery-sandy, rocky and rocky-gravelly slopes; rocky outcrops; amongst boulders; rocky plains; sandy flats; sandy valley floors; in roadways; along rocky, cindery, gravelly, gravelly-sandy-clayey-loamy, gravelly-loamy, pebbly, sandy, sandy-loamy and loamy roadsides; within rocky and gravelly arroyos; rocky bottoms of arroyos; gravelly gulches; seeps; springs; along and in streambeds; along creeks; creekbeds; along rivers; along and in rocky, rocky-sandy, gravelly and sandy washes; drainages; around pools; playas; (sandy and silty) banks of creeks, rivers and washes; (gravelly-sandy and silty) edges of streambeds and washes; margins of washes; cobbly benches; shelves; terraces; sandy bottomlands; sandy-clayey floodplains; rocky, cobbly-gravelly, gravelly and sandy riparian areas; recently burned areas of forests, and disturbed areas growing in dry bouldery, bouldery-cobbly, bouldery-sandy, rocky, rocky-gravelly, rocky-sandy, stony, cobbly, cobbly-gravelly, cindery, gravelly, gravelly-sandy, pebbly and sandy ground; rocky-gravelly loam, gravelly loam, gravelly-sandy-clayey loam, gravelly-clayey loam, sandy loam and loam ground; bouldery clay, sandy clay and clay ground, and powdery-silty and silty ground, occurring from 700 to 7,000 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. The flowers may be fragrant. *Glandularia gooddingii* is native to southwest-central and southern North America. *5, 6, 15, 16, 28 (color photograph), 43 (073109), 46 (*Verbena gooddingii* Briq., Pages 726-727 and *Verbena gooddingii* Briq. var. *nepetifolia* Tidestrøm, Pages 726-727), 48 (genus), 63 (051410), 77 (color photograph #53, *Verbena gooddingii* Briq.), **85** (051410 - color presentation), 115 (color presentation), **HR***

Verbena gooddingii (see *Glandularia gooddingii*)

Verbena gooddingii var. *nepetifolia* (see *Glandularia gooddingii*)

***Verbena neomexicana* (A. Gray) J.K. Small: Hillside Vervain**

COMMON NAMES: Hillside Vervain, New Mexico Verbena, New Mexico Vervain, Verbena. DESCRIPTION: Terrestrial perennial forb/herb (12 to 30 inches in height); the flowers may be light blue, blue, blue-violet, lavender, purple, purple-lavender, violet, violet-blue or white; flowering generally takes place between mid-March and early November (additional record: one for late November). HABITAT: Within the range of this species it has been reported from mountains; cliffs; rocky canyons; rocky and gravelly canyon bottoms; rocky knolls; rocky ridgetops; foothills; hillsides; rocky, gravelly, gravelly-loamy and clayey-loamy slopes; rocky outcrops; amongst boulders; along tony roadsides; along arroyos; gulches; gullies; along streams; in streambeds; along creeks; rocky creekbeds; riverbeds; along and in rocky and gravelly-sandy washes; within drainages; travertine dikes; (bouldery-cobbly-sandy) banks of creeks, rivers and washes; travertine dikes; edges of charcos (stock tanks); riparian areas; waste places,

and disturbed areas growing in damp and dry bouldery, bouldery-cobbly-sandy, rocky, stony, gravelly, gravelly-sandy and sandy ground and gravelly loam and clayey loam ground, occurring from 100 to 8,700 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTE: This plant may be an attractive component of a restored native habitat. *Verbena neomexicana* is native to southwest-central and southern North America. *5, 6, 28 (color photograph), 43 (072510), 46 (Page 728), 48 (genus), 58, 63 (072510 - color presentation), **77**, **85** (072510 - color presentation of dried material)*

Viscaceae (Loranthaceae): The Christmas Mistletoe Family

***Phoradendron californicum* T. Nuttall: Mesquite Mistletoe**

SYNONYMY: *Phoradendron californicum* T. Nuttall var. *distans* W. Trelease. COMMON NAMES: American Mistletoe, Desert Mistletoe, Mesquite American Mistletoe, Mesquite Mistletoe, Toji, Western Dwarf Mistletoe. DESCRIPTION: Terrestrial perennial subshrub or shrub (8 inches to 5 feet in height, one clump was described as being 16 inches in length and 36 inches in width); the stems (16 to 40 inches in length) may be brown, green, green-reddish, dark olive-green, reddish, red-brown, yellow-green or yellowish; the fragrant flowers are greenish-yellow; flowering generally takes place between late July and early June (additional records: one record for late June and one record for early July); the fruits may be orange, orange-pink, pink, pink-red, pale red, reddish, red-orange, white, white-pink or white-reddish with the older berries turning brown-red or red. HABITAT: Partial parasite observed growing on Desert Ironwood and Velvet Mesquite, and commonly reported as growing on: *Acacia spp.* (*Acacia constricta*, Whtitethorn Acacia; *Acacia farnesiana*, Sweet Acacia, and *Acacia greggii*, Catclaw Acacia); *Condalia spp.* (*Condalia globosa*, Bitter Snakewood and *Condalia warnockii*, Kearney Snakewood); *Larrea tridentata*, Creosote Bush; *Olneya tesota*, Desert Ironwood; *Parkinsonia spp.* (*Parkinsonia aculeata*, Jerusalem Thorn; *Parkinsonia florida*, Blue Palo Verde; *Parkinsonia microphylla*, Yellow Palo Verde, and *Parkinsonia praecox*, Sonoran Palo Verde); *Prosopis spp.* (*Prosopis glandulosa*, Honey Mesquite; *Prosopis pubescens*, Screwbean Mesquite, and *Prosopis velutina*, Velvet Mesquite); *Simmondsia chinensis*, Jojoba, and *Ziziphus obtusifolia*, Lotebush, occurring from sea level to 5,100 feet in elevation in the woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: When removing the Mesquite Mistletoe from the trees and shrubs on your property consider leaving some of the plants for wildlife, Verdins nest in the stems and the Phainopepla (*Phainopepla nitens*) feeds on the berries. This plant was reported to have been utilized by native peoples of North America; it was noted as having been used as a food (berries) and as a drug or medication. *Phoradendron californicum* is native to southwest-central and southern North America. *5, 6, 13 (color photograph), 15, 16, 28 (color photograph), 43 (051710 - *Phoradendron californicum* var. *distans* Trel. in Trel.), 46 (recorded as *Phoradendron californicum* Nutt., Page 224 and *Phoradendron californicum* Nutt. var. *distans* Trelease, Page 224), 58, 63 (051410 - color presentation), 77, 80 (Species of the genus *Phoradendron* are considered to be Rarely Poisonous and Suspected Poisonous Range Plants. "Cattle may be killed by browsing these parasitic forbs, but plants are unpalatable and poisoning is rare. Also children may be poisoned by eating the berries."), 85 (051410 - color presentation), 97, 115 (color presentation), 127, **WTK** (July 4, 2005)*

Phoradendron californicum var. *distans* (see *Phoradendron californicum*)

Zygophyllaceae: The Creosote-bush Family

***Kallstroemia grandiflora* J. Torrey ex A Gray: Arizona Poppy**

COMMON NAMES: Arizona Caltrop, Arizona Poppy, Arizona-poppy, Arizona Summer Poppy, Baiborin, Caltrop, Desert Poppy, Desert-poppy, Mexican Poppy, Mexican-poppy, Orange Caltrop,

Summer Poppy, Summer-poppy. DESCRIPTION: Terrestrial annual forb/herb (spreading prostrate, decumbent and/or ascending stems 4 inches to 1 foot in height and to 4 feet in length); the stems may be reddish-orange; the leaves gray-green or green; the flowers (½ to 1¼ inches in diameter) may be apricot-orange, harvest-moon-orange, melon-orange, light orange, orange, orange with a crimson or red center, orangish-yellow, pink-orange, yellow-orange or yellowish-orange; the anthers are orange; flowering generally takes place between late June and early November (additional records: one for mid-May, one for late November and one for mid-December). HABITAT: Within the range of this species it has been reported from mountains; mesas; canyons; canyon bottoms; rocky ridgetops; foothills; sandy hills; rocky hillsides; sandy escarpments; rocky, gravelly, gravelly-loamy, sandy and silty slopes; gravelly bajadas; rocky outcrops; lava flows; llanos; plains; rocky, gravelly and gravelly-sandy flats; basins; valley floors; along sandy railroad right-of-ways; along rocky-gravelly, gravelly, gravelly-sandy, gravelly-sandy-loamy, gravelly-loamy, gravelly-clayey, sandy and loamy roadsides; sandy arroyos; streambeds; creeks; sandy creekbeds; along and in rocky, gravelly, gravelly-sandy-silty and sandy washes; drainages; along banks of rivers; benches; sandy terraces; bottomlands; floodplains; mesquite bosques; around stock tanks; ditches; sandy riparian areas, and disturbed areas growing in moist and dry rocky, rocky-gravelly, gravelly, gravelly-sandy and sandy ground; gravelly loam, gravelly-sandy loam, sandy loam and loam ground; gravelly clay and sandy clay ground, and gravelly-sandy silty and silty ground, occurring from sea level to 6,600 feet in elevation in the woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. The Arizona Poppy is a food plant of doves, quail and Whitetail Deer (*Odocoileus virginianus* subsp. *couesi*). *Kallstroemia grandiflora* is native to southwest-central and southern North America. *5, 6, 16, 28 (color photograph), 43 (073109), 46 (Page 492), 48, 58, 63 (051510 - color presentation), 68, 77, 80 (Species of the genus *Kallstroemia* are considered to be Rarely Poisonous and Suspected Poisonous Range Plants. "Animals must be forced to eat large amounts of this unpalatable, annual forb before poisoning occurs."), **85** (051510 - color presentation), 86 (color photograph), 115 (color presentation)*

***Kallstroemia parviflora* J.B. Norton: Warty Caltrop**

COMMON NAMES: Warty Caltrop. DESCRIPTION: Terrestrial prostrate and spreading annual forb/herb (sprawling and spreading prostrate and/or decumbent stems 10 to 40 inches in length); the stems may be reddish-brown; the leaves are green; the flowers (¼ to ½ inch in diameter) may be apricot, light orange, orange, orange-yellow, pink, salmon, salmon-orange, pale yellow, pale yellow-orange, yellow, yellow-orange or yellowish-white; flowering generally takes place between late June and late October. HABITAT: Within the range of this species it has been reported from mountains; mesas; canyons; canyon bottoms; talus slopes; meadows; foothills; hills; hilltops; rocky hillsides; rocky, rocky-gravelly and sandy slopes; silty bajadas; rocky and shaley outcrops; amongst rocks; lava flows; plains; gravelly flats; gravelly and sandy valley floors; along gravelly, gravelly-sandy and sandy roadsides; along clayey-loamy arroyos; along within draws; sandy bottoms of draws; within gulches; within ravines; along streams; along rivers; riverbeds; along and in cobbly, gravelly-sandy and sandy washes; along drainages; depressions; (sandy) shores of creeks; sand bars; sandy benches; gravelly-sandy terraces; bottomlands; floodplains; sandy mesquite bosques; clayey-loamy riparian areas, and disturbed areas growing in damp and dry in rocky, rocky-gravelly, shaley, cobbly, gravelly, gravelly-sandy and sandy ground; gravelly loam, sandy loam and clayey loam ground; sandy clay ground, and silty ground, occurring from 1,000 to 6,900 feet in elevation in the woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTE: *Kallstroemia parviflora* is native to south-central and southern North America. *5, 6, 15, 43 (073109), 46 (Page 492), 63 (073109), 80 (Species of the genus *Kallstroemia* are considered to be Rarely Poisonous and Suspected Poisonous Range Plants. "Animals must be forced to eat large amounts of this unpalatable, annual forb before poisoning occurs."), 77, **85** (072510 - color presentation), 86 (note under *Kallstroemia grandiflora*)*

Larrea divaricata (see *Larrea tridentata* var. *tridentata*)

Larrea divaricata subsp. *tridentata* (see *Larrea tridentata* var. *tridentata*)

***Larrea tridentata* (A.P. de Candolle) F.V. Coville var. *tridentata*: Creosote Bush**

SYNONYMY: *Larrea divaricata* auct. non A.J. Cavanilles, *Larrea divaricata* A.J. Cavanilles subsp. *tridentata* (A.P. de Candolle) R.S. Felger & C.H. Lowe. COMMON NAMES: Chaparral, Coville Creosotebush, Creosote Bush, Creosote-bush, Creosotebush, Gobernadora, Greasewood (erroneously called), Guamis, Hediondilla (Spanish - for Little Bad Smeller). DESCRIPTION: Terrestrial perennial evergreen shrub (20 inches to 13 feet in height and about the same in width); the bark is gray; the leaves are bright glossy green or yellow-green; the flowers (½ to 1 inch in diameter) are yellow or yellow-white; flowering takes place throughout the year with the peak blooming periods occurring in the spring, between March and April, and then again between November and December; the round, fuzzy fruits (¼ inch in diameter) are gray, reddish, white or rust colored. HABITAT: Within the range of this species it has been reported from mountains; rocky, gravelly and sandy mesas; plateaus; rims of canyons; sandy canyons; canyon bottoms; talus slopes; sandy pockets of soil; rocky ridges; foothills; hills; hillsides; rocky and gravelly slopes; alluvial fans; gravelly and sandy bajadas; rocky outcrops; amongst boulders and rocks; sand dunes; sandy plains; cindery-gravelly, gravelly and sandy flats; valley floors; sandy roadsides; arroyos; bottoms of arroyos; riverbeds; along and in gravelly-sandy and sandy washes; (sandy) banks of streams, creeks and rivers; edges of washes; gravelly and sandy terraces; floodplains; mesquite bosques; riparian areas, and disturbed areas growing in dry bouldery, rocky, rocky-sandy, stony, gravelly, gravelly-sandy and sandy ground; rocky-clayey loam and clayey loam ground; sandy clay ground, and rocky-sandy silty and silty ground, occurring from below sea level to 5,000 feet in elevation in the woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. This plant was reported to have been utilized by native peoples of North America; it was noted as having been used as a building material, as tools, in the making of brooms, brushes and musical instruments, as a drug or medication and in body art. Older stems of the Creosote Bush may be 40 to 90 years of age. Using Creosote Bush in the restoration of disturbed sites may increase water infiltration and storage, transplants recommended over spot-seeding and rodent protection for the transplanted seedlings is necessary. When planting a Creosote Bush consider planting a small Desert Night-blooming Cereus (*Peniocereus greggii* var. *transmontanus*) at the base of the plant. The branches will provide support and the roots will protect the tuber of the cereus from hungry Javelinas. The Creosote Bush is the characteristic plant of the southwestern deserts in North America with its distribution very closely delineating the desert regions. As the Creosote Bush ages the older central stems of the plant die off and new stems form at the outer edge of the crown. New stems are not created at the center of the plant. As the crown of the plant expands a "clonal ring", made up of genetically identical individual shrublets, develops which continues the outward expansion of the ring eventually reaching several yards in diameter. It has been estimated that some of the older rings approach from 9,400 to 11,700 years of age. The Creosote Bush provides cover for many animals; Lac Scale insects (*Tachardiella larreae*), jackrabbits, desert woodrats and other small mammals feed on this plant; stem galls are produced in response to the Creosote Gall midge (*Asphondylia* sp.), and the Desert Tortoise (*Gopherus agassizi*) often digs its shelter under the base of the plant where the roots help to stabilize the soil. *Larrea tridentata* var. *tridentata* is native to southwest-central and southern North America. *5, 6, 13 (color photograph), 16, 18, 26 (species, recorded as *Larrea tridentata*, color photograph of species), 28 (species, recorded as *Larrea tridentata*, color photograph of species), 43 (051710 - *Larrea tridentata* Coville, *Larrea divaricata* Cav. subsp. *tridentata* (Sessé & Moc. ex DC.) Felger), 46 (species, recorded as *Larrea tridentata* (DC.) Coville: "An outstanding xerophyte and a very important element of the perennial desert flora in southern and western Arizona. ... Creosote-bush has a strong characteristic odor, especially noticeable when the foliage is wet. The plant is ordinarily not touched by livestock, although it is reported that sheep, especially pregnant ewes, have been killed by partaking of it. This plant is reported to cause dermatitis in exceptional persons who are allergic to it.", Page 491), 48, 63 (051610 - color presentation), 77 (color photograph #101), 80 (This species is listed under Rarely Poisonous and Suspected Poisonous Range Plants. "Early reports accusing this common desert shrub of being poisonous have been proven

wrong.”), 85 (051610 - color presentation), 91, 101 (species, color photograph of species), 107, 115 (color presentation), 127, **WTK** (July 4, 2005)*

***Tribulus terrestris* C. Linnaeus: Puncturevine**

COMMON NAMES: Abrojos (Spanish), Abrojo de Flor Amarilla, Bemo K'yatchipba (Zuni - "grass round' refers to the rounded spiny fruits), 'Bull-head, Bullhead, Bur-nut, Burnut, Cadillo, Caltrop, Cat’s-head, Common Doubletjie, Devil’s-thorn, Devil’s-weed, Espigón (Spanish), Goathead, Goat-heads, Goat’s Head, Gokhru (India), Ground Bur-nut, Ji Li (transcribed Chinese), Mexican Sandbur, Puncture Vine, Puncture-vine, Puncturevine, Puncture Weed, Tackweed, Texas Sandbur, Toboso, Torito, Torrito, Tribule Terrestre (French), Tribulus. DESCRIPTION: Terrestrial annual forb/herb (prostrate, mat forming stems to 2 inches in height and 6 inches to 8 feet in length); the stems may be reddish; the foliage is green or dark green; the small flowers (¼ to ½ inch in diameter) may be greenish-yellow, orange or yellow; flowering generally takes place between late April and early November (additional records: one for early January (southern hemisphere), two for early February, one for mid-March, two for early April, one for early December and one for late December); the star-shaped seedpod is made up of 5 nutlets which separate ate maturity, each of the nutlets having two very sharp, stout, vicious spines. HABITAT: Within the range of this species it has been reported from mountains; mountainsides; sandy mesas; rocky canyons; talus; ridge crests; gravelly hills; rocky hillsides; rocky, sandy, sandy-loamy and clayey slopes; rocky alluvial fans; sand dunes; sand hummocks; sandy and clayey prairies; gravelly, sandy, clayey and clayey-loamy flats; cobbly-loamy and loamy hollows; clayey and silty valley floors; coastlines; island beaches; along cindery railroad right-of-ways; rocky roadways; along gravelly, gravelly-loamy, sandy and clayey roadsides; within rocky-sandy-clayey arroyos; sandy bottoms of arroyos; within ravines; springs; along creeks; creekbeds; along rivers; along rocky-cobbly-sandy and sandy riverbeds; along and in gravelly. gravelly-sandy and sandy washes; lakes; silty lakebeds; sinks; swales; banks of creeks, rivers; riverbeds and washes; margins of washes; (sandy-loamy) shores of ponds; mudflats; sand bars; sandy beaches; benches; rocky-sandy-clayey, sandy-loamy and sandy terraces; bottomlands; floodplains; lowlands; shores of reservoirs; within ditches; along gravelly and clayey-loamy ditch banks; sandy riparian areas; waste places, and disturbed areas growing in dry rocky, rocky-cobbly-sandy, cindery, gravelly, gravelly-sandy and sandy ground; cobbly loam, gravelly loam, sandy loam, clayey loam and loam ground; rocky-sandy clay, gravelly clay and clay ground, and sandy silty and silty ground, occurring from sea level to 10,000 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: EXOTIC Invasive Plant. This plant was reported to have been utilized by native peoples of North America; it was noted as having been used as ceremonial medicine. *Tribulus terrestris* is native to central, eastern and southern Europe; Asia; Africa, and Australia; however, the exact native range is obscure. *5, 6, 15, 16, 28 (color photograph), 43 (051710), 46 (Page 491), 58, 63 (051610 - color presentation), 68, 77, 80 (This species is listed as a Secondary Poisonous Range Plant. “Puncturevine has caused extensive losses of sheep in South Africa, Australia, and the United States due to photosensitization or bighead. In addition, the plant has caused nitrate poisoning in both sheep and cattle and the burs have produced lesions of the mouth and feet. Symptoms of photosensitization observed in the United States include the typical swelling of the head, blindness, dying of the skin, loss of lips and ears, and high mortality among young animals. Losses may be reduced by removing animals from infested ranges, providing shade, feed and water, and keeping the animals quiet.”), **85** (051610 - color presentation), 86 (color photograph) 101 (color photograph), 115 (color presentation), 127*

LISTING OF ANIMALS

STRICTLY ENFORCED LAWS PROTECT MANY OF ARIZONA'S NATIVE ANIMALS FROM COLLECTION AND FROM BEING DISTURBED OR KILLED

Kingdom Animalia: The Animal Kingdom
Subkingdom Metazoa: The Multicellular Animals
Section Deuterostomia: The Deuterostomes
Phylum Chordata: The Chordates
Subphylum Vertebrata: The Vertebrates

CLASS AVES: The BIRDS

Ardeidae: The Bittern, Egret and Heron Family

***Ardea herodias* C. Linnaeus: Great Blue Heron**

COMMON NAMES: Garza (Hispanic), Garza Ceniza (Hispanic), Great Blue Heron, Great White Heron (white morph of the Great Blue Heron), Treganza's Heron, Wurdemann's Heron (intermediate morph of the Great Blue Heron which has a white head). HABITS: Feeds on amphibians, small birds, crayfish, decapods, fishes, frogs, insects, mice, mollusks, reptiles, rodents, spiders and turtles. Nests are bulky platforms made up of sticks and located on cliffs, islets, rocky islands, swamps and trees. HABITAT: Within the range of this species it has been reported from wetland ecological formations within the forest, woodland, grassland and desertscrub ecological formations. NOTES: If disturbed, adults may abandon nests and roosting sites and quit feeding nestlings. *14 (subspp. *herodius* and *tregansai* (Court) - 081306), 20, 55, 69, 73, 84, 93, 106 (091006), **WTK** (July 4, 2005)*

Odontophoridae: The Quail Family

***Callipepla gambelii* W. Gambel subsp. *gambelii*: Gambel's Quail**

SYNONYMY: *Lophortyx gambelii* W. Gambel. COMMON NAMES: Arizona Quail, Cordoniz de Gambel (Hispanic), Codorniz (Hispanic) Chiquiri (Hispanic), Desert Quail, Gambel's Quail, Kikaichu (Tohono O'odham). HABITS: The species feeds on insects, plant material and seeds. The eggs are laid in scrapes or grass lined nests located on the ground under prickly-pear cacti. HABITAT: Within the range of this species it has been reported from the woodland, scrub, grassland, desertscrub and wetland ecological formations. *14 (071906), 55, 69, 73, 84, 93, 106 (071906), **WTK** (July 4, 2005)*

Lophortyx gambelii (see *Callipepla gambelii* var. *gambelii*)

CLASS MAMMALIA: The MAMMALS

Antilocapridae: The Pronghorn Family

***Antilocapra americana* G. Ord: Pronghorn**

COMMON NAMES: American Pronghorn, "Antelope", Chihuahuan Pronghorn, Chihuahuan Pronghorn Antelope, Prong-horn, Pronghorn, Pronghorn Antelope, Prong-horned Antelope, Sonoran Pronghorn, Sonoran Pronghorn Antelope. HABITS: Feeds on cacti, forbs, grasses and shrubs. HABITAT: Within the range of this species it has been reported from the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. *8, 14 (113006 - subspp. *americana* (Ord), *mexicana* Merriam and *sonoriensis* Goldman), **55** (recorded as *Antilocapra americana* Ord. Prong-horned Antelope. Formerly widely distributed in grassland areas throughout the state; presently restricted to areas of favorable habitat.), 65, 73, 106 (052806), 100 (color photograph), 110 (Historic Range: Southwest Arizona, south of the Bill Williams River and east to the Santa Cruz River. In Mexico, the northern part of the State of Sonora.), 118 (recorded as *Antilocapra americana americana* (Ord) - Distribution: mapping and records for northeastern and northwestern Arizona; *Antilocapra americana mexicana* Merriam - Distribution: Southeastern Arizona, and *Antilocapra americana sonoriensis* Goldman - Distribution: Southwestern Arizona. Figure 111, Page 255)*

***Antilocapra americana* subsp. *mexicana* C.H. Merriam: Chihuahuan Pronghorn**

COMMON NAMES: "Antelope", Chihuahuan Pronghorn, Chihuahuan Pronghorn Antelope, Prong-horn, Pronghorn, Pronghorn Antelope, Prong-horned Antelope. HABITS: The species feeds on cacti, forbs, grasses and shrubs. HABITAT: Within the range of this species it has been reported from the woodland, grassland, desertscrub and wetland ecological formations. NOTES: EXTIRPATED from southeastern Arizona, several reintroductions have taken place. *8 (Historically throughout south-eastern and south-central Arizona.), 14 (113006 - historically occurred in grass-shrub valleys and grasslands of southeastern and south-central Arizona), 55 (species: recorded as *Antilocapra americana* Ord. Prong-horned Antelope. Formerly widely distributed in grassland areas throughout the state; presently restricted to areas of favorable habitat.), 65 (species), 73 (species), 100 (color photograph of species), 106 (052806 - species), **118** (recorded as *Antilocapra americana mexicana* Merriam - Distribution: Southeastern Arizona. Figure 111, Page 255)*

***Antilocapra americana* subsp. *sonoriensis* Goldman: Sonoran Pronghorn**

COMMON NAMES: "Antelope", Prong-horn, Pronghorn, Pronghorn Antelope, Prong-horned Antelope, Sonoran Pronghorn, Sonoran Pronghorn Antelope. HABITS: The species feeds on cacti including chain-fruit cholla, forbs, grasses, ocotillo and sagebrush. HABITAT: Within the range of this species it has been reported from the desertscrub and wetland ecological formations. *8, 14 (113006 - a marginal distribution record was identified near Cipriano Well in Organ Pipe Cactus National Monument), 55 (species: recorded as *Antilocapra americana* Ord. Prong-horned Antelope. Formerly widely distributed in grassland areas throughout the state; presently restricted to areas of favorable habitat.), 65 (species), 73 (species), 100 (color photograph of species, note on subspecies), 106 (052806), 110 (Historic Range: Southwest Arizona, south of the Bill Williams River and east to the Santa Cruz River. In Mexico, the northern part of the State of Sonora.), **118** (recorded as *Antilocapra americana sonoriensis* Goldman - Distribution: Southwestern Arizona. Figure 111, Page 255)*

Bovidae: The Cow, Sheep and Allies Family

***Ovis canadensis* G. Shaw: Rocky Mountain Bighorn Sheep**

COMMON NAMES: Berrego Cimarron (Hispanic), Bighorn, Bighorn Sheep, Desert Bighorn, Desert Bighorn Sheep, Mountain Sheep, Rocky Mountain Bighorn Sheep. HABITS: Feeds on agave, brittle bush, bursage, bush muhly, cacti, catclaw, cholla, coffeeberry, desert fluffgrass, desert ironwood, desert thorn, fairy duster, filaree, galleta, grama, jojoba, mesquite, mallow, Nevada joint fir, plantain, prickly-pear, ratany, ricegrass, saguaro, saltbush, threeawn and turpentine broom. Young are dropped in small scraped out depressions located in protected places on inaccessible peaks. HABITAT: Within the range of this species it has been reported from the tundra, forest, woodland, scrub, grassland, desertscrub

and wetland ecological formations. *14, **55** (recorded as *Ovis canadensis* Shaw. Bighorn. Probably formerly statewide in mountainous or rocky situations; presently restricted to scattered low desert mountains.), 65, 73, 100 (color photograph), 106 (052906), 118 (recorded as *Ovis canadensis mexicana* Merriam - Distribution: Probably formerly statewide in mountainous situations. Figure 112, Page 257)*

***Ovis canadensis* subsp. *mexicana* C.H. Merriam: Desert Bighorn Sheep**

COMMON NAMES: Berrego Cimarron (Hispanic), Berrego Cimarron del Desierto (Hispanic), Bighorn, Bighorn Sheep, Desert Bighorn, Desert Bighorn Sheep, Mountain Sheep, Rocky Mountain Bighorn Sheep. HABITS: The species feeds on agave, brittle bush, bursage, bush muhly, cacti, catclaw, cholla, coffeeberry, desert fluffgrass, desert ironwood, desert thorn, fairy duster, filaree, galleta, grama, jojoba, mesquite, mallow, Nevada joint fir, plantain, prickly-pear, ratany, ricegrass, saguaro, saltbush, threeawn and turpentine broom; young are dropped in small scraped out depressions located in protected places on inaccessible peaks. HABITAT: Within the range of this species it has been reported from the tundra, forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. *14, 55 (species: recorded as *Ovis canadensis* Shaw. Bighorn. Probably formerly statewide in mountainous or rocky situations; presently restricted to scattered low desert mountains."), 65 (species), 73 (species), 100 (color photograph of species, species record), 106 (072306), **118** (recorded as *Ovis canadensis mexicana* Merriam - Distribution: Probably formerly statewide in mountainous situations. Figure 112, Page 257)*

Canidae: The Dog and Allies Family

***Canis latrans* T. Say: Coyote**

COMMON NAME: Coyote, Prairie Wolf. HABITS: Feeds on amphibians, berries, birds, carrion, fruits, gophers, insects, mice, rabbits, reptiles and squirrels. The young are born in dens that may be dug in the ground or located in caves. HABITAT: Within the range of this species it has been reported from the tundra, forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. *14, **55** (recorded as *Canis latrans* Say. Coyote. Statewide (120 - 9,100 feet).), 65 (color photograph), 73, 100 (color photograph), 106 (052906), 118 (recorded as *Canis latrans mearnsi* Merriam - Distribution: Statewide. Figure 87, Page 217)*

***Canis latrans* subsp. *mearnsi* Merriam: Coyote**

COMMON NAME: Coyote. HABITS: The species feeds on amphibians, berries, birds, carrion, fruits, gophers, insects, mice, rabbits, reptiles and squirrels. The young are born in dens that may be dug in the ground or located in caves. HABITAT: Within the range of this species it has been reported from the tundra, forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. *14 (species), 55 (species: recorded as *Canis latrans* Say. Coyote. Statewide (120 - 9,100 feet).), 65 (color photograph of species, species record), 73 (species), 100 (color photograph of species, species record), 106 (052906 - species), **118** (recorded as *Canis latrans mearnsi* Merriam - Distribution: Statewide. Figure 87, Page 217)*

***Canis lupus* Nelson and Goldman: Mexican Gray Wolf**

COMMON NAMES: Lobo, Lobo Mexicano (Hispanic), Mexican Gray Wolf, Mexican Wolf, Timber Wolf. HABITS: Feeds on berries, birds, fish, fruits, insects, deer, elk, javelina, livestock, small mammals, bighorn sheep, pronghorn and rabbits. Maternity dens are chambers without nests usually located in the ground on high ground, under rock ledges, slopes of canyon walls or hills near water. HABITAT: Within the range of this species it has been reported from forest, woodland, grassland and wetland ecological formations. NOTES: The Mexican Gray Wolf is the smallest subspecies of gray wolf in North America. This wolf generally avoids desert areas. At one time the Mexican Gray Wolf was extirpated from Arizona; however, successful re-introduction efforts are bringing it back from near extinction. *8, 14 (082608), **55** (recorded as *Canis lupus* Frisch. Gray Wolf. Formerly throughout the

eastern portions of the state, at present rare or approximately extinct.), 73, 100 (color photograph), 106 (082608), 110 (recorded as *Canis lupus baileyi* - shows the historic range as being roughly that portion of Pima County east of the Tohono O'odham Nation), 118 (recorded as *Canis lupus baileyi* Nelson and Goldman - Distribution: Southeastern Arizona. Figure 88, Page 219)*

***Canis lupus* subsp. *baileyi* Nelson and Goldman: Mexican Gray Wolf**

COMMON NAMES: Lobo, Lobo Mexicano (Hispanic), Mexican Gray Wolf, Mexican Wolf, Timber Wolf. HABITS: Feeds on berries, birds, fish, fruits, insects, deer, elk, javelina, livestock, small mammals, bighorn sheep, pronghorn and rabbits. Maternity dens are chambers without nests usually located in the ground on high ground, under rock ledges, slopes of canyon walls or hills near water. HABITAT: Within the range of this species it has been reported from forest, woodland, grassland and wetland ecological formations. NOTES: The Mexican Gray Wolf is the smallest subspecies of gray wolf in North America. This wolf generally avoids desert areas. At one time the Mexican Gray Wolf was extirpated from Arizona; however, successful re-introduction efforts are bringing it back from near extinction. *8, 14 (082608), 55 (species: recorded as *Canis lupus* Frisch. Gray Wolf. Formerly throughout the eastern portions of the state, at present rare or approximately extinct.), 73 (species), 100 (species, color photograph of species), 106 (082608), 110 (recorded as *Canis lupus baileyi* - shows the historic range as being roughly that portion of Pima County east of the Tohono O'odham Nation), **118** (recorded as *Canis lupus baileyi* Nelson and Goldman - Distribution: Southeastern Arizona. Figure 88, Page 219)*

***Urocyon cinereoargenteus* (J.C. von Schreber): Common Gray Fox**

COMMON NAMES: Common Gray Fox, Gray Fox, Zorra Gris (Hispanic). HABITS: The species feeds on birds, desert cottontails, hackberry and prickly-pear fruits, grasses, insects (crickets and grasshoppers), juniper berries, lizards, manzanita berries, nuts, small rodents and snakes. Nests are made of bark, grasses and leaves and located in underground burrows, small caves, piles of rock, amongst boulders, crevices in cliffs and in hollows in trees. HABITAT: Within the range of this species it has been reported from the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTE: The Gray Fox climbs trees. *14 (082608 - subsp. *scottii* (Mearns)), **55** (recorded as *Urocyon cinereoargenteus* (Schreber). Gray Fox. Statewide with the possible exception of the northeast portion (120 - 5,800 feet).), 65 (species, color photograph), 73, 100 (color photograph), 106 (052906 - species with a listing of 16 subspecies), 118 (recorded as *Urocyon cinereoargenteus scottii* Mearns - Distribution: Probably statewide. Figure 90, Page 222)*

***Urocyon cinereoargenteus* subsp. *scottii* Mearns: Common Gray Fox**

COMMON NAMES: Common Gray Fox, Gray Fox, Zorra Gris (Hispanic). HABITS: The species feeds on birds, desert cottontails, hackberry and prickly-pear fruits, grasses, insects (crickets and grasshoppers), juniper berries, lizards, manzanita berries, nuts, small rodents and snakes. Nests are made of bark, grasses and leaves and located in underground burrows, small caves, piles of rock, amongst boulders, crevices in cliffs and in hollows in trees. HABITAT: Within the range of this species it has been reported from the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTE: The Gray Fox climbs trees. *14 (082608 - subsp. *scottii* (Mearns)), 55 (species: recorded as *Urocyon cinereoargenteus* (Schreber). Gray Fox. Statewide with the possible exception of the northeast portion (120 - 5,800 feet).), 65 (species, color photograph of species), 73 (species), 100 (species, color photograph of species), 106 (052906 - species with a listing of 16 subspecies), **118** (recorded as *Urocyon cinereoargenteus scottii* Mearns - Distribution: Probably statewide. Figure 90, Page 222)*

***Vulpes macrotis* C.H. Merriam: Kit Fox**

COMMON NAMES: Kit Fox, Zorra del Desierto (Hispanic). HABITS: Feeds on berries, birds, cottontail rabbits, crickets, grasses, grasshoppers, ground squirrels, jack rabbits, kangaroo rats, lizards and pocket mice. The young are born in dens in underground burrows that have been excavated in soft soils.

HABITAT: Within the range of this species it has been reported from the woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTE: *Vulpes velox* (T. Say): The Swift Fox is generally considered a separate species by most authors. *14 (050907 - subspp. *macrotis* Merriam and *neomexicanus* Merriam), **55** (recorded as *Vulpes macrotis* Merriam. Kit Fox. Widely distributed at lower elevations throughout the southern part of the state (120 - 5,000 feet).), 65, 73, 78, 100 (color photograph), 106 (052906), 118 (recorded as *Vulpes macrotis arispus* Elliot - Distribution: Lower elevations in western and southern part of the state. *Vulpes macrotis neomexicana* Merriam - Distribution: Extreme southeastern Arizona. Figure 89, Page 220)*

***Vulpes macrotis* subsp. *arispus* Elliot: Kit Fox**

COMMON NAMES: Kit Fox, Zorra del Desierto (Hispanic). HABITS: The species feeds on berries, birds, cottontail rabbits, crickets, grasses, grasshoppers, ground squirrels, jack rabbits, kangaroo rats, lizards and pocket mice. The young are born in dens in underground burrows that have been excavated in soft soils. HABITAT: Within the range of this species it has been reported from the woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTE: *Vulpes velox* (T. Say): The Swift Fox is generally considered a separate species by most authors. *14 (050907 - subspp. *macrotis* Merriam and *neomexicanus* Merriam), 55 (species: recorded as *Vulpes macrotis* Merriam. Kit Fox. Widely distributed at lower elevations throughout the southern part of the state (120 - 5,800 feet).) 65 (species), 73 (species), (100 - color photograph), 106 (052906), **118** (recorded as *Vulpes macrotis arispus* Elliot - Distribution: Lower elevations in western and southern part of the state. Figure 89, Page 220)*

Vulpes velox (see Note under *Vulpes macrotis*)

Castoridae: The Beaver Family

***Castor canadensis* H. Kuhle: American Beaver**

COMMON NAMES: American Beaver; Beaver; Beaver Castor (Hispanic). HABITS: Feeds on bark, branches, buds, leaves or needles and twigs of alder, aspen, birch, cattail, cottonwood, maple, mesquite, tamarix and willow, and the roots of pond lilies and other tuberous plants; kits are born in lodges or dens dug into banks, nest materials include stalks and leave of tules, sedges, herbs and fine rootlets. HABITAT: Within the range of this species it has been reported that riparian habitats are required with beaver reported from creeks, streams, rivers, marshes, cienegas, ponds and lakes in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: Beaver dams help reduce erosion, collect and retain organic matter and sediment and raise water tables (Las Cienegas National Conservation Area, Appendix 1, Chapter 3). Beaver dams may also help to reduce flooding and provide habitat for other animals including otters and waterfowl. The extent of the historical distribution of the American Beaver in Pima County is unknown. *14, 49, **55** (recorded as *Castor canadensis* Kuhle. Beaver. formerly widespread in all of the permanent streams of the state; now restricted in distribution), 73, 100 (color photograph), 106 (052906), 118 (recorded as *Castor canadensis repentinus* Goldman - Distribution: Formerly in the Colorado River from the Grand Canyon southward to Mexico and *Castor canadensis frondator* Mearns - Distribution: Formerly San Pedro and Gila River drainages. Figure 60, Page 155)*

Cervidae: The Deer and Allies Family

***Odocoileus hemionus* (C.S. Rafinesque-Schmaltz): Mule Deer**

COMMON NAMES: Black-tailed Deer, Burro, Desert Mule Deer, Mule Deer, Venado Pardo (Hispanic). HABITS: Feeds on acorns, beans, branches, fruits, leaves or needles, nuts, seeds and/or twigs of aspen, barberry, bitterbrush, blackberry, buckbrush, buckwheat, calliandra, ceanothus, catclaw, cedar,

cliffrose, dogwood, Douglas fir, huckleberry, joint fir, jojoba, juniper, mountain mahogany, mountainlover, oak, pinyon, ponderosa pine, poplar, sagebrush, saltbush, serviceberry, thimbleberry, white fir, wild cherry, willow and yew, and grasses lupines, mistletoe, moss, mushrooms, salal, sedges and spurges. HABITAT: Within the range of this species it has been reported from the tundra, forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. *14, **55** (recorded as *Odocoileus hemionus* (Rafinesque). Black-tailed or Mule Deer. Statewide, but not of uniform distribution (250 - 9,000 feet).), 65, 73, 100 (color photograph), 106 (052906), 118 (recorded as *Odocoileus hemionus crooki* (Mearns) - Distribution: Northeastern, central and southeastern part of the state. Figure 109, Page 252)*

***Odocoileus hemionus* subsp. *crooki* (Mearns): Mule Deer**

COMMON NAMES: Black-tailed Deer, Burro, Desert Mule Deer, Mule Deer, Venado Pardo (Hispanic). HABITS: The species feeds on acorns, beans, branches, fruits, leaves or needles, nuts, seeds and/or twigs of aspen, barberry, bitterbrush, blackberry, buckbrush, buckwheat, calliandra, ceanothus, catclaw, cedar, cliffrose, dogwood, Douglas fir, huckleberry, joint fir, jojoba, juniper, mountain mahogany, mountainlover, oak, pinyon, ponderosa pine, poplar, sagebrush, saltbush, serviceberry, thimbleberry, white fir, wild cherry, willow and yew, and grasses lupines, mistletoe, moss, mushrooms, salal, sedges and spurges. HABITAT: Within the range of this species it has been reported from the tundra, forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. *14 (species), 55 (species: recorded as *Odocoileus hemionus* (Rafinesque) Black-tailed or Mule Deer. Statewide, but not of uniform distribution (250 - 9,000 feet).), 65, 73 (species), 100 (species, color photograph of species), 106 (052906 - species), **118** (recorded as *Odocoileus hemionus crooki* (Mearns) - Distribution: Northeastern, central and southeastern part of the state. Figure 109, Page 252)*

***Odocoileus virginianus* (Zimmermann): Coues' White-tailed Deer**

COMMON NAMES: Arizona Whitetail, Coues' Deer, Coues' White-tailed Deer, Desert Whitetail, Maso (Yaqui), Fantail, Sonora White-tailed Deer, Sonoran Fantail, Venado Cola Blanca (Hispanic), Virginia Deer, Whitetail, White-tailed Deer, Whitetail Deer. HABITS: The species feeds on fungi, grass and acorns, branches, buds, cones, fruits, leaves, mast, needles and /or twigs of alder, barberry, buckbrush, calliandra, catclaw acacia, Emory and scrub oaks and other evergreen oaks, hackberry, hemlock, holly-leaf buckthorn, juniper, mesquite, mountainlover, Oregon-grape, pinyon, ratany, sagebrush, skunkbush, spiderwort, spruce, willow, yellow-leaf silktassel. Young are generally dropped along ridges and hillsides. HABITAT: Within the range of this species it has been reported from the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. *14, **55** (recorded as *Odocoileus virginianus* (Zimmermann). White-tailed Deer. Southeastern Arizona (1,200 - 9,000 feet).), 65, 73, 100 (color photograph), 106 (052906), 118 (recorded as *Odocoileus virginianus couesi* (Coues & Yarrow) - Distribution: Southern Arizona. Figure 110, Page 254)*

***Odocoileus virginianus* subsp. *couesi* (E. Coues & Yarrow): Coues' White-tailed Deer**

COMMON NAMES: Arizona Whitetail, Coues' Deer, Coues' White-tailed Deer, Desert Whitetail, Fantail, Maso (Yaqui), Sonora White-tailed Deer, Sonoran Fantail, Venado Cola Blanca (Hispanic), Virginia Deer, Whitetail, White-tailed Deer, Whitetail Deer. HABITS: The species feeds on fungi, grass and acorns, branches, buds, cones, fruits, leaves, mast, needles and /or twigs of alder, barberry, buckbrush, calliandra, catclaw acacia, Emory and scrub oaks and other evergreen oaks, hackberry, hemlock, holly-leaf buckthorn, juniper, mesquite, mountainlover, Oregon-grape, pinyon, ratany, sagebrush, skunkbush, spiderwort, spruce, willow, yellow-leaf silktassel. Young are generally dropped along ridges and hillsides. HABITAT: Within the range of this species it has been reported from the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. *14, 55 (species: recorded as *Odocoileus virginianus* (Zimmermann). White-tailed Deer. Southeastern Arizona (1,200 - 9,000 feet).), 65, 73 (species), 100 (species, color photograph of species), 106 (052906 - species), **118**

(recorded as *Odocoileus virginianus couesi* (Coues & Yarrow) - Distribution: Southern Arizona. Figure 110, Page 254)*

Erethizontidae: The Porcupine Family

***Erethizon dorsatum* C. Linnaeus: Common Porcupine**

COMMON NAMES: American Porcupine, Canadian Porcupine, Common Porcupine, North American Porcupine, Porcupine, Puerco Espin (Hispanic). HABITS: Feeds on the bark of cedar, fir, hemlock, mesquite and pine trees and ocotillo and on acorns, apple trees, ash leaves, aspen trees, basswood, young beech trees and beachnuts, buckbrush (Ceanothus sp.), buds, clover, dwarf mistletoe, fungi, grass (juveniles), herbs (juveniles), leaves, lupine, oak leaves, pine needles, fruits of pricklypear cacti, skunk cabbage, sugar maples and twigs. Shelter is sought in caves, hollow logs, mine shafts, piles of rocks, rocky slopes and rock walls. The young are born in dens (no nest structure) located in the cavities of dying tree, tree stumps, caves, under rocks and man-made structures. Dens may be used for many years and generations. HABITAT: Within the range of this species it has been reported from the tundra, forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. *14 (121108 - subspp. *couesi* (Mearns) and *epixanthum* (Brandt)), **55** (recorded as *Erethizon dorsatum* Linnaeus. Porcupine. Probably statewide but more common in wooded areas (3,000 - 9,000 feet).), 65, 73, 100 (color photograph), 106 (052906), 118 (recorded as *Erethizon dorsatum couesi* Mearns - Distribution: Statewide in mountains and riparian situations. Figure 86, Page 215)*

***Erethizon dorsatum* subsp. *couesi* Mearns: Common Porcupine**

COMMON NAMES: American Porcupine, Canadian Porcupine, Common Porcupine, North American Porcupine, Porcupine, Puerco Espin (Hispanic). HABITS: Feeds on the bark of cedar, fir, hemlock, mesquite and pine trees and ocotillo and on acorns, apple trees, ash leaves, aspen trees, basswood, young beech trees and beachnuts, buckbrush (Ceanothus sp.), buds, clover, dwarf mistletoe, fungi, grass (juveniles), herbs (juveniles), leaves, lupine, oak leaves, pine needles, fruits of pricklypear cacti, skunk cabbage, sugar maples and twigs. Shelter is sought in caves, hollow logs, mine shafts, piles of rocks, rocky slopes and rock walls. The young are born in dens (no nest structure) located in the cavities of dying tree, tree stumps, caves, under rocks and man-made structures. Dens may be used for many years and generations. HABITAT: Within the range of this species it has been reported from the tundra, forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. *14 (121108 - subspp. *couesi* (Mearns) and *epixanthum* (Brandt)), 55 (species: recorded as *Erethizon dorsatum* Linnaeus. Porcupine. Probably statewide but more common in wooded areas (3,000 - 9,000 feet).), 65 (species), 73 (species), 100 (color photograph of species, species record), 106 (052906), **118** (recorded as *Erethizon dorsatum couesi* Mearns - Distribution: Statewide in mountains and riparian situations. Figure 86, Page 215)*

Felidae: The Cat Family

***Felis concolor* (C. Linnaeus): Mountain Lion**

SYNONYMY: *Puma concolor* (C. Linnaeus). COMMON NAMES: American Lion, Brown Tiger, California Lion, Cat-a-Mountain, Catamount, Catamount Cat (a mountain Red Tiger), Cougar, Deer Tiger, El Leon (Mexico), Florida Panther, Ghost Cat, Indian Devil, King Cat, Leon de Montana (Hispanic), Mexican Lion, Mountain Lion, Mountain Screamer, Painted Cat, Painter, Panther; Puma (Indian), Ted Tiger (Belize), Silver Lion, Sneak Cat, Sucuarana (Brazil), Yuma Mountain Lion. HABITS: Feeds on beavers, bighorn sheep, birds, black bears, bobcats, cottontail rabbits, coyotes, deer (its major prey species in Arizona), elk, jackrabbits, javelina, livestock, porcupines, pronghorn, raccoons, skunks and small mammals. Kittens are born in dens located in protected areas such as shallow caves, crevices,

downed logs, rock shelters and impenetrable thickets. HABITAT: Within the range of this species it has been reported from the tundra, forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: Running should be curtailed in areas where Mountain Lions are known to frequent, a person running may elicit an attack response from a nearby Mountain Lion. Mountain Lions are extremely agile and have great jumping power and have been reported as being able to leap to a height of 18 feet into a tree. *8 (*Puma concolor* (Linnaeus)), 14 (091108 - *Puma concolor* subspp. *azteca* (Merriam); *hippolestes* (Merriam); *kaibabensis* (Nelson and Goldman), and *stanleyana* (Goldman). The Yuma Mountain Lion (*Felis concolor browni*) is included as a separate record.), **55** (recorded as *Felis concolor* Linnaeus. Mountain Lion. Statewide (200 - 8,000 feet).), 65, 73, 100 (color photograph), 106 (052906), 118 (recorded as *Felis concolor azteca* Merriam - Distribution: Statewide except extreme western and northwestern parts; *Felis concolor browni* (Merriam) - Distribution: Southwestern part of the state, and *Felis concolor kaibabensis* Nelson and Goldman - Distribution: Northwestern Arizona, north and west of the Colorado River. Figure 105, Page 245)*

***Felis concolor* (C. Linnaeus) subsp. *azteca* Merriam: Mountain Lion**

SYNONYMY: *Puma concolor* subsp. *azteca* Merriam. COMMON NAMES: American Lion, Brown Tiger, California Lion, Cat-a-Mountain, Catamount, Catamount Cat (a mountain Red Tiger), Cougar, Deer Tiger, El Leon (Mexico), Florida Panther, Ghost Cat, Indian Devil, King Cat, Leon de Montana (Hispanic), Mexican Lion, Mountain Lion, Mountain Screamer, Painted Cat, Painter, Panther; Puma (Indian), Silver Lion, Sneak Cat. HABITS: Feeds on beavers, bighorn sheep, birds, black bears, bobcats, cottontail rabbits, coyotes, deer (its major prey species in Arizona), elk, jackrabbits, javelina, livestock, porcupines, pronghorn, raccoons, skunks and small mammals. Kittens are born in dens located in protected areas such as shallow caves, crevices, downed logs, rock shelters and impenetrable thickets. HABITAT: Within the range of this species it has been reported from the tundra, forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: Running should be curtailed in areas where Mountain Lions are known to frequent, a person running may elicit an attack response from a nearby Mountain Lion. Mountain Lions are extremely agile and have great jumping power and have been reported as being able to leap to a height of 18 feet into a tree. *8 (*Puma concolor* (Linnaeus)), 14 (091108 - subspp. *azteca* (Merriam)), 55 (species: recorded as *Felis concolor* Linnaeus. Mountain Lion. Statewide (200 - 8,000 feet).), 65 (species), 73 (species), 85 (052906 - species), 100 (color photograph of species, species record), 106 (052906 - species), **118** (recorded as *Felis concolor azteca* Merriam - Distribution: Statewide except extreme western and northwestern parts. Figure 105, Page 245)*

Felis onca subsp. *arizonensis* (see *Panthera onca* subsp. *arizonensis*)

Felis pardalis subsp *sonoriensis* (see *Leopardus pardalis* subsp *sonoriensis*)

Felis rufus (see *Lynx rufus*)

Felis rufus subsp. *baileyi* (see *Lynx rufus* subsp. *baileyi*)

Felis yaguarondi (see *Herpailurus yaguarondi*)

***Herpailurus yaguarondi* B.G. Lacepede: Jaguarundi**

SYNONYMY: *Felis yaguarondi* Fischer, *Puma yaguarondi*. COMMON NAMES: Jaguarundi, Jaguarundi Cat. HABITS: Feeds on birds, fishes, fruits, small to medium-size mammals and reptiles. Dens are located in brush, thickets and under downed trees. HABITAT: Within the range of this species it has been reported from woodland, scrub, grassland, desertscrub and wetland ecological formations. *8 (*Herpailurus yaguarondi tolteca*), 14 (091108 - *Herpailurus yaguarondi tolteca*), **55** (recorded as *Felis yaguarondi* Fischer. Jaguarundi. Rare in the southern part of the state; no recent records.), 100 (color

photograph), 106 (072306 - includes a listing of subspecies), **118** (recorded as *Felis yaguarondi cacomitli* Berlandier - Distribution: Rare in southern part of the state.)*

***Leopardus pardalis* (C. Linnaeus): Ocelot**

SYNONYMY: (*Felis pardalis* Linnaeus). COMMON NAMES: Jaguatirica (Brazil), Manigordo (Costa Rica), McKenney's Wildcat, Ocelot, Painted Leopard, Tigrillo. HABITS: (Feeds on amphibians, lesser anteaters, armadillos, birds, fish, insects, land crabs, small to medium-sized mammals (including mice, rats and rabbits among others) and reptiles (including lizards, snakes and land tortoises). Kittens are born in a nest lined with grass or other materials located in rocky bluffs, caves, rocky dens, hollow logs or dense thickets. HABITAT: Within the range of this species it has been reported from the woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTE: EXTIRPATED. *8, 14 (091108 - subsp *sonoriensis*), **55** (recorded as *Felis pardalis* Linnaeus. Ocelot. Formerly southeastern Arizona as far north as Fort Verde; no recent records.), 100 (color photograph), 106 (091108 - includes a listing with location of subspecies), 118 (recorded as *Felis pardalis* subsp. *sonoriensis* Goldman - Distribution: Formerly southeastern Arizona as far north as Ft. Verde. Figure 104, Page 244)*

***Leopardus pardalis* subsp *sonoriensis* Goldman: Ocelot**

SYNONYMY: (*Felis pardalis* Linnaeus, *Felis pardalis* subsp. *sonoriensis* Goldman). COMMON NAMES: Jaguatirica (Brazil), Manigordo (Costa Rica), McKenney's Wildcat, Ocelot, Painted Leopard, Tigrillo. HABITS: (Feeds on amphibians, lesser anteaters, armadillos, birds, fish, insects, land crabs, small to medium-sized mammals (including mice, rats and rabbits among others) and reptiles (including lizards, snakes and land tortoises). Kittens are born in a nest lined with grass or other materials located in rocky bluffs, caves, rocky dens, hollow logs or dense thickets. HABITAT: Within the range of this species it has been reported from the woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTE: EXTIRPATED. *8 (species), 14 (091108 - subsp *sonoriensis*), 55 (species: recorded as *Felis pardalis* Linnaeus. Ocelot. Formerly southeastern Arizona as far north as Fort Verde; no recent records.), 100 (species, color photograph of species), 106 (091108 - includes a listing with location of subspecies), **118** (recorded as *Felis pardalis* subsp. *sonoriensis* Goldman - Distribution: Formerly southeastern Arizona as far north as Ft. Verde. Figure 104, Page 244)*

***Lynx rufus* (J.C. von Schreber): Bobcat**

SYNONYMY: *Felis rufus* (J.C. von Schreber). COMMON NAMES: Bobcat, Gato Montes (Hispanic), Wildcat. HABITS: Feeds on almost any meat source available including ground nesting birds, carrion, domestic cats, cottontail rabbits, deer, foxes, jackrabbits, lizards, small mammals, opossums, porcupines, raccoons, reptiles, rodents, bighorn sheep, skunks and woodchucks. Shelter may be taken in a rock cleft, thickets or on the branches of trees. Young are born in dens located in rocky caves, rock shelters, recesses and protected areas with nests made of leaves and other dry plant material. HABITAT: Within the range of this species it has been reported from the tundra, forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. *14 (091108 - *Lynx rufus baileyi* Schreber), **55** (recorded as *Lynx rufus* (Schreber). Bobcat. Statewide (120 - 9,300 feet).), 65, 73, 100 (color photograph), 106 (052906), 118 (recorded as *Lynx rufus baileyi* Merriam - Distribution: Statewide. Figure 106, Page 247)*

***Lynx rufus* subsp. *baileyi* Merriam: Bobcat**

SYNONYMY: *Felis rufus* subsp. *baileyi* Elliot. COMMON NAMES: Bobcat, Gato Montes (Hispanic), Wildcat. HABITS: Feeds on almost any meat source available including ground nesting birds, carrion, domestic cats, cottontail rabbits, deer, foxes, jackrabbits, lizards, small mammals, opossums, porcupines, raccoons, reptiles, rodents, bighorn sheep, skunks and woodchucks. Shelter may be taken in a rock cleft, thickets or on the branches of trees. Young are born in dens located in rocky caves, rock shelters, recesses and protected areas with nests made of leaves and other dry plant material. HABITAT: Within the range of this species it has been reported from the tundra, forest, woodland, scrub,

grassland, desertscrub and wetland ecological formations. *14 (091108 - *Lynx rufus baileyi* Schreber), 55 (species: recorded as *Lynx rufus* (Schreber). Bobcat. Statewide (120 - 9,300 feet).), 65, 73 (species), 100 (species, color photograph of species), 106 (052906 - spies), **118** (recorded as *Lynx rufus baileyi* Merriam - Distribution: Statewide. Figure 106, Page 247)*

***Panthera onca* (C. Linnaeus): Jaguar**

SYNONYMY: *Felis onca* (C. Linnaeus). COMMON NAMES: Black Panther, Blank Panther, Jaguar, Jaguar (Hispanic), Jaguarete (Spanish), Yaguar. HABITS: Feeds on armadillos, birds, caiman, capybaras, deer, fish, frogs, livestock, pacas, peccaries (javelina), mice, rabbits, tapirs, turtles and other vertebrates. Young are born in dens located in caves, rocky areas, dense brush and thickets. HABITAT: Within the range of this species it has been reported from the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTE: EXTIRPATED from Arizona. *8, 14 (091008 - *Panthera onca* subsp. *arizonensis* Goldman), **55** (recorded as *Felis onca* Linnaeus. Jaguar. Probably formerly rare throughout the state. Today an occasional individual is found in the southern part of the state.), 65, 100 (color photograph), 106 (052906), 118 (recorded as *Felis onca arizonensis* Goldman - Distribution: Probably formerly rare throughout the state. Today an occasional individual found in the southern part of the state. Figure 104, Page 244)*

***Panthera onca* subsp. *arizonensis* Goldman: Jaguar**

SYNONYMY: *Felis onca* subsp. *arizonensis* Goldman. COMMON NAMES: Black Panther, Blank Panther, Jaguar, Jaguar (Hispanic), Jaguarete (Spanish), Yaguar. HABITS: Feeds on armadillos, birds, caiman, capybaras, deer, fish, frogs, livestock, pacas, peccaries (javelina), mice, rabbits, tapirs, turtles and other vertebrates. Young are born in dens located in caves, rocky areas, dense brush and thickets. HABITAT: Within the range of this species it has been reported from the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTE: EXTIRPATED from Arizona. *8, 14 (091008 - *Panthera onca* subsp. *arizonensis* Goldman), 55 (species: recorded as *Felis onca* Linnaeus. Jaguar. Probably formerly rare throughout the state. Today an occasional individual is found in the southern part of the state.), 65 (species), 100 (species, color photograph of species), 106 (052906), **118** (recorded as *Felis onca arizonensis* Goldman - Distribution: Probably formerly rare throughout the state. Today an occasional individual found in the southern part of the state. Figure 104, Page 244)*

Puma concolor (see *Felis concolor*)

Puma concolor subsp. *azteca* (see *Felis concolor* subsp. *azteca*)

Puma yaguarondi (see *Herpailurus yaguarondi*)

Geomyidae: The Pocket Gopher Family

***Thomomys bottae* (J.F. Eydoux & P. Gervais): Botta's Pocket Gopher**

COMMON NAMES: Botta's Pocket Gopher, Southwestern Pocket Gopher, Tuza de Botta (Hispanic), Valley Pocket Gopher. HABITS: Feeds on bulbs, grasses, herbaceous plants, roots and tubers. Young are born in nests in underground burrows. HABITAT: Within the range of this species it has been reported from the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. *14 (051107 - subspp. *actuosus*, *albatus*, *alexandrae*, *alienus*, *aureus*, *catalinae*, *cervinus*, *collis*, *connectens*, *cultellus*, *desertorum*, *fulvus*, grahamensis, *guadalupensis*, *hualpaiensis*, *lachuguilla*, *mearnsi*, *modicus*, *morulus*, *muralis*, *opulentus*, *paguatae*, *pectoralis*, *peramplus*, *pervagus*, *pinalensis*, *planirostris*, *planorum*, *pusillus*, *rufidulus*, *ruidosae*, *suboles*, *subsimilus*, *taylori*, *toltecus* and *tularosae*), **55** (recorded as *Thomomys bottae* (Eydoux and Gervais). Valley Pocket Gopher. Widely distributed throughout the state at all elevations.), 65, 73, 100 (color photograph), 106 (052906), 118 (Distribution: mapping and

records show numerous varieties throughout Arizona, only those shown as occurring in Pima County are listed here. recorded as *Thomomys bottae catalinae* Goldman - Distribution: Known only from the higher elevations of the Santa Catalina Mountains, Pima County. *Thomomys bottae comobabiensis* Huey - Distribution: Slopes of Comobabi Mountains, Pima County. *Thomomys bottae growlerensis* Huey - Distribution: Known from southwestern Pima County. *Thomomys bottae hueyi* Goldman - Distribution: Known only from the higher elevations in the Rincon Mountains, Pima County. *Thomomys bottae modicus* Goldman - Distribution: Known from the Santa Cruz and Altar Valleys. *Thomomys bottae phasma* Goldman - Distribution: Known from southeastern Yuma County. *Thomomys bottae proximus* Burt & Campbell - Distribution: Oak Zone of the Santa Rita and Huachuca Mountains. *Thomomys bottae pusillus* Goldman - Distribution: Known only from the region of the type locality [Coyote Mountains, 3,000 feet, Pima County, Arizona]. Figure 46, Page 107)*

***Thomomys bottae* subsp. *modicus* Goldman: Botta's Pocket Gopher**

COMMON NAMES: Botta's Pocket Gopher, Southwestern Pocket Gopher, Tuza de Botta (Hispanic), Valley Pocket Gopher. HABITS: The species feeds on bulbs, grasses, herbaceous plants, roots and tubers. Young are born in nests in underground burrows. HABITAT: Within the range of this species it has been reported from the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. *14 (051107 - species, several varieties listed), 55 (species: recorded as *Thomomys bottae* (Eydoux and Gervais). Valley Pocket Gopher. Widely distributed throughout the state at all elevations.), 65 (species), 73 (species), 100 (species, color photograph of species), 106 (052906 - species), **118** (recorded as *Thomomys bottae modicus* Goldman - Distribution: Known from the Santa Cruz and Altar Valleys. Figure 46, Page 107)*

Heteromyidae: The Kangaroo Rat and Pocket Mouse Family

***Chaetodipus baileyi* C.H. Merriam: Bailey's Pocket Mouse**

SYNONYMY: *Perognathus baileyi* C.H. Merriam. COMMON NAMES: Bailey's Pocket Mouse, Raton de Bailey (Hispanic). HABITS: The species feeds on vegetation, and fruits and seeds of cacti, grasses and other herbs. Nests are located underground burrows. HABITAT: Within the range of this species it has been reported from the woodland, scrub, grassland, and desertscrub ecological formations. *14 (082508 - subsp. *baileyi* Merriam), **55** (recorded as *Perognathus baileyi* Merriam. Bailey's Pocket Mouse. Widely distributed in the southern part of the state (900 - 4,700 feet).) , 65 (genus), 73, 100 (color photograph), 106 (082508), 118 (recorded as *Chaetodipus baileyi baileyi* Merriam - Distribution: Grasslands of southeastern Arizona. Figure 51, Page 133)*

***Chaetodipus baileyi* subsp. *baileyi* C.H. Merriam: Bailey's Pocket Mouse**

SYNONYMY: *Perognathus baileyi* subsp. *baileyi* C.H. Merriam. COMMON NAMES: Bailey's Pocket Mouse, Raton de Bailey (Hispanic). HABITS: The species feeds on vegetation, and fruits and seeds of cacti, grasses and other herbs. Nests are located underground burrows. HABITAT: Within the range of this species it has been reported from the woodland, scrub, grassland, and desertscrub ecological formations. *14 (082508 - subsp. *baileyi* Merriam), 55 (species: recorded as *Perognathus baileyi* Merriam. Bailey's Pocket Mouse. Widely distributed in the southern part of the state (900 - 4,700 feet).), 65 (genus), 73 (species), 100 (species, color photograph of species), 106 (082508), **118** (recorded as *Chaetodipus baileyi baileyi* Merriam - Distribution: Grasslands of southeastern Arizona. Figure 51, Page 133)*

***Chaetodipus hispidus* S.F. Baird: Hispid Pocket Mouse**

SYNONYMY: *Perognathus hispidus* S.F. Baird. COMMON NAME: Hispid Pocket Mouse. HABITS: Feeds on insects (grasshoppers) and seeds. Nests are constructed of grasses and located in underground burrows. HABITAT: Within the range of this species it has been reported from the

woodland, scrub, grassland, desertscrub and wetland ecological formations. *14 (082508 - subspp. *hispidus* Baird and *conditi*), **55** (recorded as *Perognathus hispidus* Baird. Hispid Pocket Mouse. Locally common in grasslands of southeastern part of the state; an isolated population occurs near Camp Verde (3,200 - 5,000 feet).), 65 (gen.), 73, 100, 106 (082508), 118 (recorded as *Perognathus hispidus conditi* Allen - Distribution: Grasslands of southeastern Arizona. Figure 51, Page 132)*

***Chaetodipus hispidus* subsp. *conditi* Allen: Hispid Pocket Mouse**

SYNONYMY: *Perognathus hispidus* subsp. *conditi* Allen S.F. Baird. COMMON NAME: Hispid Pocket Mouse. HABITS: The species feeds on insects (grasshoppers), leaves and seeds. Nests are constructed of grasses and located in underground burrows. HABITAT: Within the range of this species it has been reported from the woodland, scrub, grassland, desertscrub and wetland ecological formations. *14 (082508 - subsp. *conditi*), 55 (species: recorded as *Perognathus hispidus* Baird. Hispid Pocket Mouse. Locally common in grasslands of southeastern part of the state; an isolated population occurs near Camp Verde (3,200 - 5,000 feet).), 65 (genus), 73 (species), 100 (species), 106 (082508 - species), **118** (recorded as *Perognathus hispidus conditi* Allen - Distribution: Grasslands of southeastern Arizona. Figure 51, Page 132)*

***Chaetodipus intermedius* C.H. Merriam: Rock Pocket Mouse**

SYNONYMY: *Perognathus intermedius* C.H. Merriam. COMMON NAMES: Raton de Rocas de Bosla (Hispanic), Rock Pocket Mouse. HABITS: Feeds on seeds. Burrows are dug in soil near to or under rocks. HABITAT: Within the range of this species it has been reported from the woodland, scrub, grassland, desertscrub and wetland ecological formations. *14 (051007 - subspp. *altar* Dice; *beardi*; *crititus*; *intermedius* (Merriam); *nigrimontis*; *phasma*; *rupestris* Benson, and *umbrosus*), **55** (recorded as *Perognathus intermedius* Merriam. Rock Pocket Mouse. Widely distributed in rocky areas in the Colorado River valley, western and southern Arizona (120 - 6,000 feet).”), 65 (genus), 73 (*Perognathus intermedius*), 100, 106 (051007), 118 (recorded as *Chaetodipus intermedius crinitis* Benson - Distribution: Known from south of the upper Colorado River. *Chaetodipus intermedius intermedius* Merriam - Distribution: Known from Mohave County southward and eastward, across most of the state to Cochise County. *Chaetodipus intermedius nigrimontis* Blossom - Distribution: Known only from the vicinity of the type locality (Black Mountain, 10 mi SW Tucson). *Chaetodipus intermedius phasma* Goldman - Distribution: Known from southern Yuma County and extreme southwestern Pima County. *Chaetodipus intermedius pinicate* Blossum - Distribution: Known from the Pinicate lava area in southern Yuma County. *Chaetodipus intermedius umbrosus* Benson - Distribution: Known from grassland area just south of the Mogollon Rim. Figure 54, Page 141)*

***Chaetodipus intermedius* subsp. *intermedius* C.H. Merriam: Rock Pocket Mouse**

SYNONYMY: *Perognathus intermedius* subsp. *intermedius* C.H. Merriam. COMMON NAMES: Raton de Rocas de Bosla (Hispanic), Rock Pocket Mouse. HABITS: The species feeds on seeds. Burrows are dug in soil near to or under rocks. HABITAT: Within the range of this species it has been reported from the woodland, scrub, grassland, desertscrub and wetland ecological formations. *14 (051007), 55 (species: recorded as *Perognathus intermedius* Merriam. Rock Pocket Mouse. Widely distributed in rocky areas in the Colorado River valley, western and southern Arizona (120 - 6,000 feet).), 65 (genus), 73 (species - recorded as *Perognathus intermedius*), 100 (species), 106 (051007 - species), **118** (recorded as *Chaetodipus intermedius intermedius* Merriam - Distribution: Known from Mohave County southward and eastward, across most of the state to Cochise County. Figure 54, Page 141)*

***Chaetodipus penicillatus* S.W. Woodhouse: Desert Pocket Mouse**

SYNONYMY: *Perognathus penicillatus* S.W. Woodhouse. COMMON NAMES: Desert Pocket Mouse, Raton de Desierto (Hispanic), Sonoran Desert Pocket Mouse. HABITS: Feeds on seeds of creosote bush, grass, greythorn, herbs and mesquite. Nests are made in underground burrows. HABITAT: Within the range of this species it has been reported from the scrub, grassland, desertscrub and wetland

ecological formations. *14 (051007 - subsp. *pricei* (J.A. Allen)), **55** (recorded as *Perognathus penicillatus* Woodhouse. Desert Pocket Mouse. Widely distributed in desert and low grasslands of southern and western Arizona (120 - 5,200 feet.).), 65 (genus), 73 (recorded as *Perognathus penicillatus*), 100 (color photograph), 106 (051007), 118 (recorded as *Perognathus penicillatus angustirostris* Osgood - Distribution: Known from southern Yuma County. *Perognathus penicillatus eremicus* Mearns - Distribution: Known from extreme southeastern Arizona. *Perognathus penicillatus penicillatus* Woodhouse - Distribution: Known from southern Mohave and northern Yuma Counties. *Perognathus penicillatus pricei* Allen - Distribution: Known from south-central Arizona and *Perognathus penicillatus sobrinus* Goldman - Distribution: Perhaps occurs in extreme northwestern Arizona. Figure 53, Page 137)*

***Chaetodipus penicillatus* subsp. *pricei* (S.W. Woodhouse): Desert Pocket Mouse**

SYNONYMY: *Perognathus penicillatus* subsp. *pricei* S.W. Woodhouse). COMMON NAMES: Desert Pocket Mouse, Raton de Desierto (Hispanic), Sonoran Desert Pocket Mouse. HABITS: The species feeds on seeds of creosote bush, grass, greythorn, herbs and mesquite. The nest is made in underground burrows. HABITAT: Within the range of this species it has been reported from the scrub, grassland, desertscrub and wetland ecological formations. *14 (051007), 55 (species: recorded as *Perognathus penicillatus* Woodhouse. Desert Pocket Mouse. Widely distributed in desert and low grasslands of southern and western Arizona (120 - 5,200 feet).), 65 (genus), 73 (species, *Perognathus penicillatus*), 100 (species, color photograph of species), 106 (051007 - species), **118** (recorded as *Perognathus penicillatus pricei* Allen - Distribution: Known from south-central Arizona. Figure 53, Page 137)*

***Dipodomys merriami* Mearns: Merriam's Kangaroo Rat**

COMMON NAMES: Merriam's Kangaroo Rat, Rata de Nopalera Merriam (Hispanic). HABITS: Feeds on ants, green plant material and seeds of creosote bush, grama grass, mesquite, ocotillo and purselane. Nests are made in underground burrows often located under bushes. HABITAT: Within the range of this species it has been reported from the woodland, scrub, grassland, desertscrub and wetland ecological formations. *14 (051007 - subspp. *ambiguus* (Merriam) and *olivaceus* (Swarth)), **55** (recorded as *Dipodomys merriami* Mearns. Merriam's Kangaroo Rat. Widely distributed in western and southern parts of the state (120 - 5,000 feet).), 65 (color photograph), 73, 100 (color photograph), 106 (gen. with a listing of species), 118 (recorded as *Dipodomys merriami merriami* Mearns - Distribution: Occurs throughout most of the western and southern part of the state. *Dipodomys merriami regillus* Goldman - Distribution: Known from extreme southern Yuma County and *Dipodomys merriami vulcani* Benson - Distribution: Known from northern Arizona north of the Colorado River. Figure 56, Page 145)*

***Dipodomys merriami* subsp. *merriami* Mearns: Merriam's Kangaroo Rat**

COMMON NAMES: Merriam's Kangaroo Rat, Rata de Nopalera Merriam (Hispanic). HABITS: The species feeds on ants, green plant material and seeds of creosote bush, grama grass, mesquite, ocotillo and purselane. Nests are made in underground burrows often located under bushes. HABITAT: Within the range of this species it has been reported from the woodland, scrub, grassland, desertscrub and wetland ecological formations. *14 (051007), 55 (species: recorded as *Dipodomys merriami* Mearns. Merriam's Kangaroo Rat. Widely distributed in western and southern parts of the state (120 - 5,000 feet).), 65 (species, color photograph of species), 73 (species), 100 (species, color photograph of species), 106 (genus with a listing of species), **118** (recorded as *Dipodomys merriami merriami* Mearns - Distribution: Occurs throughout most of the western and southern part of the state. Figure 56, Page 145)*

***Dipodomys spectabilis* C.H. Merriam: Banner-tailed Kangaroo Rat**

COMMON NAMES: Banner-tailed Kangaroo Rat, Kangaroo Rat, Rata de Nopalera (Hispanic). HABITS: Feeds on grasses, forbs, succulent plants, insects, rodents and seeds. Nests are made up of chaff, stems and leaves of grass located in underground burrows in firm soils. HABITAT: Within the range of this species it has been reported from the forest, woodland, scrub, grassland, desertscrub and

wetland ecological formations. *14 (051007 - subspp. *baileyi* (Goldman); *perblandus*, and *spectabilis* (Merriam)), **55** (recorded as *Dipodomys spectabilis* Merriam. Banner-tailed Kangaroo Rat. Locally common in grasslands of southeastern Arizona (1,300 - 5,000 feet).), 65 (color photograph), 85 (052906), 100 (color photograph), 106 (gen., listing of species), 118 (recorded as *Dipodomys spectabilis perblandus* Goldman - Distribution: Known from the grasslands of southern Pinal and Pima County and *Dipodomys spectabilis spectabilis* Merriam - Distribution: Known from the grasslands of Cochise County. Figure 55, Page 143)*

***Dipodomys spectabilis* subsp. *perblandus* Goldman: Banner-tailed Kangaroo Rat**

COMMON NAMES: Banner-tailed Kangaroo Rat, Kangaroo Rat, Rata de Nopalera (Hispanic). HABITS: The species feeds on grasses, forbs, succulent plants, insects, rodents and seeds. Nests are made up of chaff, stems and leaves of grass located in underground burrows in firm soils. HABITAT: Within the range of this species it has been reported from the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. *14 (051007), 55 (species: recorded as *Dipodomys spectabilis* Merriam. Banner-tailed Kangaroo Rat. Locally common in grasslands of southeastern Arizona (1,300 - 5,000 feet).), 65 (species, color photograph), 100 (species, color photograph), 106 (genus, listing of species), **118** (recorded as *Dipodomys spectabilis perblandus* Goldman - Distribution: Known from the grasslands of southern Pinal and Pima County. Figure 55, Page 143)*

***Perognathus amplus* Osgood: Arizona Pocket Mouse**

COMMON NAME: Arizona Pocket Mouse. HABITS: The species feeds on green plants, insects and seeds. Nests are located in underground burrows. HABITAT: Within the range of this species it has been reported from the woodland, scrub, grassland, desertscrub and wetland ecological formations. *14, **55** (recorded as *Perognathus amplus* Osgood. Arizona Pocket Mouse. Locally common in desert areas on south-central, western and north-central parts of the state (500 - 5,100 feet).), 65 (genus), 73, 100 (color photograph), 118 (recorded as *Perognathus amplus ammodytes* Benson - Distribution: Known only from the upper part of the Colorado River; *Perognathus amplus amplus* - Distribution: Known only from the vicinity of Fort Verde, Yavapai County; *Perognathus amplus cineris* Benson - Distribution: Known only from the region of the Wupatki National Monument; *Perognathus amplus jacksoni* Goldman - Distribution: known from central Arizona; *Perognathus amplus pergracilis* Goldman - Distribution: Known from Mojave County south of the Colorado and extreme northern Yuma County [now La Paz County]; *Perognathus amplus rotundus* Goldman - Distribution: Southwestern Yuma County, and *Perognathus amplus taylori* Goldman - Distribution: Known from south central Arizona. Figure 50, Page 129)*

***Perognathus amplus* subsp. *taylori* Goldman: Arizona Pocket Mouse**

COMMON NAME: Arizona Pocket Mouse. HABITS: The species feeds on green plants, insects and seeds. Nests are located in underground burrows. HABITAT: Within the range of this species it has been reported from the woodland, scrub, grassland, desertscrub and wetland ecological formations. *55 (species: recorded as *Perognathus amplus* Osgood. Arizona Pocket Mouse. Locally common in desert areas on south-central, western and north-central parts of the state (500 - 5,100 feet).), 65 (genus), 73 (species), 100 (species, color photograph of species), **118** (recorded as *Perognathus amplus taylori* Goldman. Distribution: Known from south central Arizona. Figure 50, Page 129)*

Perognathus baileyi subsp. *baileyi* (see *Chaetodipus baileyi* subsp. *baileyi*)

***Perognathus flavus* S.F. Baird: Silky Pocket Mouse**

COMMON NAME: Silky Pocket Mouse. HABITS: Feeds on seeds and invertebrates (though very few are taken). Nests are located in underground burrows. HABITAT: Within the range of this species it has been reported from the woodland, scrub, grassland, desertscrub and wetland ecological formations. *14 (082508 - subspp. *bunkeri* (Cockrum); *flavus* (Baird); *gilvus* (Osgood); *goodpasteri*

(Hoffmeister); *hopiensis* (Goldman), and *sanuluisi* (Hill)), **55** (recorded as *Perognathus flavus* Baird. Silky Pocket Mouse. Locally common in grasslands throughout the state (2,900 - 6,500 feet).), 65 (genus), 73, 100 (color photograph), 106 (082508), 118 (recorded as *Perognathus flavus flavus* Baird - Distribution: Southeastern part of the state. Figure 48, Page 124)*

***Perognathus flavus* subsp. *flavus* S.F. Baird: Silky Pocket Mouse**

COMMON NAME: Silky Pocket Mouse. HABITS: The species feeds on seeds and invertebrates (though very few are taken). Nests are located in underground burrows. HABITAT: Within the range of this species it has been reported from the woodland, scrub, grassland, desertscrub and wetland ecological formations. *14 (082508 - subsp. *flavus* (Baird)), 55 (species: recorded as *Perognathus flavus* Baird. Silky Pocket Mouse. Locally common in grasslands throughout the state (2,900 - 6,500 feet).), 65 (genus), 73 (species), 100 (species, color photograph of species), 106 (082508), **118** (recorded as *Perognathus flavus flavus* Baird - Distribution: Southeastern part of the state. Figure 48, Page 124)*

Perognathus hispidus (see *Chaetodipus hispidus*)

Perognathus hispidus subsp. *conditi* (see *Chaetodipus hispidus* subsp. *conditi*)

Perognathus intermedius (see *Chaetodipus intermedius*)

Perognathus intermedius subsp. *intermedius* (see *Chaetodipus intermedius* subsp. *intermedius*)

***Perognathus longimembris* (E. Coues): Little Pocket Mouse**

COMMON NAME: Little Pocket Mouse. HABITS: Feeds on greens and seeds. HABITAT: Within the range of this species it has been reported from the scrub, grassland, desertscrub and wetland ecological formations. *14 (082308), 55 (recorded as *Perognathus longimembris* (Coues). Little Pocket Mouse. Known from scattered localities in the western part of the state (500 - 4,500 feet).), 65 (genus), 73, 100 (color photograph), 106 (082308), **118** (recorded as *Perognathus longimembris pimensis* Huey - Distribution: Southcentral part of the state. Figure 49, Page 127)*

***Perognathus longimembris* subsp. *pimensis* Huey: Little Pocket Mouse**

COMMON NAME: Little Pocket Mouse. HABITS: Feeds on greens and seeds. HABITAT: Within the range of this species it has been reported from the scrub, grassland, desertscrub and wetland ecological formations. *14 (082308), 55 (recorded as *Perognathus longimembris* (Coues). Little Pocket Mouse. Known from scattered localities in the western part of the state (500 - 4,500 feet).), 65 (genus), 73 (species), 85 (052906), 100 (species, color photograph of species), 106 (082308), **118** (recorded as

Perognathus penicillatus (see *Chaetodipus penicillatus*)

Perognathus penicillatus subsp. *pricei* (see *Chaetodipus penicillatus* subsp. *pricei*)

Leporidae: The Hare and Rabbit Family

***Lepus alleni* (Mearns): Antelope Jack Rabbit**

COMMON NAME: Antelope Jack Rabbit. HABITS: Feeds on cacti, Catclaw Acacia, grasses, herbs and the bark, buds and leaves of mesquite. Young are born in a nest that is usually located above ground. HABITAT: Within the range of this species it has been reported from the woodland, scrub, grassland, desertscrub and wetland ecological formations. *14, **55** (recorded as *Lepus alleni* (Mearns). Antelope Jack Rabbit. Occurs in the central third of the southern half of the state.), 65, 73, 100 (color

photograph), 106 (052906), 118 (recorded as *Lepus alleni* subsp. *alleni* Mearns - Distribution: Occurs in the central third of the southern half of the state. Figure 31, Page 68)*

***Lepus alleni* subsp. *alleni* Mearns: Antelope Jack Rabbit**

COMMON NAME: Antelope Jack Rabbit. HABITS: The species feeds on cacti, Catclaw Acacia, grasses, herbs and the bark, buds and leaves of mesquite. Young are born in a nest that is usually located above ground. HABITAT: Within the range of this species it has been reported from the woodland, scrub, grassland, desertscrub and wetland ecological formations. *14 (species), 55 (species: recorded as *Lepus alleni* (Mearns). Antelope Jack Rabbit. Occurs in the central third of the southern half of the state.), 65 (species), 73 (species), 100 (species, color photograph of species), 106 (052906 - species), **118** (recorded as *Lepus alleni* subsp. *alleni* Mearns - Distribution: Occurs in the central third of the southern half of the state. Figure 31, Page 68)*

***Lepus californicus* (J.E. Gray): Black-tailed Jack Rabbit**

COMMON NAMES: Black-tailed Jack Rabbit, "Jackass Rabbit". HABITS: Feeds on grass, mesquite leaves and prickly-pear cacti. Young are born in nests located either above or below ground in forms that have been lined with breast hair, after birth the young are moved to separate nests and cared for individually by the female. HABITAT: Within the range of this species it has been reported from the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. *14, **55** (recorded as *Lepus californicus* Gray. Black-tailed Jack Rabbit. Statewide.), 65, 73, 100 (color photograph), 106 (052906), 118 (recorded as *Lepus californicus deserticola* Mearns - Distribution: Occurs in the western half of the state; *Lepus californicus eremicus* J.A. Allen - Distribution: Southeastern Arizona, and *Lepus californicus texianus* Waterhouse - Distribution: Occurs in the northeastern quarter of the state. Figure 32, Page 69)*

***Lepus californicus* subsp. *eremicus* J.A. Allen: Black-tailed Jack Rabbit**

COMMON NAMES: Black-tailed Jack Rabbit, "Jackass Rabbit". HABITS: The species feeds on grass, mesquite leaves and prickly-pear cacti. Young are born in nests located either above or below ground in forms that have been lined with breast hair, after birth the young are moved to separate nests and cared for individually by the female. HABITAT: Within the range of this species it has been reported from the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. *14 (species), 55 (species: recorded as *Lepus californicus* Gray. Black-tailed Jack Rabbit. Statewide.), 65 (species), 73 (species), 100 (species, color photograph of species), 106 (052906 - species), **118** (recorded as *Lepus californicus eremicus* J.A. Allen - Distribution: Southeastern Arizona. Figure 32, Page 69)*
Lepus californicus subsp. *eremicus* J.A. Allen: Black-tailed Jack Rabbit

***Sylvilagus audubonii* (S.F. Baird): Desert Cottontail**

COMMON NAME: Desert Cottontail. HABITS: Feeds on green plants, cacti, bark and twigs. Young are born into nests lined with forbs, grasses and the female's fur which are located on the ground and in brush piles, piles of rocks, and burrows abandoned by other animals. HABITAT: Within the range of this species it has been reported from the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. *14, **55** (recorded as *Sylvilagus audubonii* (Baird). Desert Cottontail. Common at elevations below 6,000 feet throughout the state.), 65, 73, 100 (color photograph), 106 (052906), 118 (recorded as *Sylvilagus audubonii arizonae* (J.A. Allen) - Distribution: Widely distributed at elevations up to 6,000 feet in the western half of the state; *Sylvilagus audubonii minor* (Mearns) - Distribution: Known only from the southeastern part of the state, and *Sylvilagus audubonii warreni* Nelson - Distribution: Known only from the northeastern part of the state. Figure 34, Page 74)*

***Sylvilagus audubonii* (S.F. Baird) subsp. *arizonae*: Desert Cottontail**

COMMON NAME: Desert Cottontail. HABITS: The species feeds on green plants, cacti, bark and twigs. Young are born into nests lined with forbs, grasses and the female's fur which are located on

the ground and in brush piles, piles of rocks, and burrows abandoned by other animals. HABITAT: Within the range of this species it has been reported from the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. *14 (species), 55 (species: recorded as *Sylvilagus audubonii* (Baird). Desert Cottontail. Common at elevations below 6,000 feet throughout the state.), 65 (species), 73 (species), 100 (species, color photograph of species), 106 (052906 - species), **118** (recorded as *Sylvilagus audubonii arizonae* (J.A. Allen) - Distribution: Widely distributed at elevations up to 6,000 feet in the western half of the state. Figure 34, Page 74)*

Mephitidae: The Skunk Family

***Conepatus leuconotus* M.H. Lichtenstein: Common Hog-nosed Skunk**

SYNONYMY: *Conepatus mesoleucus* M.H. Lichtenstein. COMMON NAMES: Common Hog-nosed Skunk, Hog-nosed Skunk, Hognose Skunk, Rooter Skunk, Zorrillo Nariz de Puerco (Hispanic). HABITS: Feeds on arachnids, birds, insects, small mammals, mollusks, plant material, reptiles and worms. These skunks take refuge in caves, crevices in rocks and in the ground. Rocky areas are used for denning with the young born beneath rocks, grasses are used for nesting. HABITAT: Within the range of this species it has been reported from forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. *14 (072306 - subspp. *mearnsi* (C.H. Merriam) and *venaticus* (Goldman)), **55** (recorded as *Conepatus mesoleucus* Lichtenstein. Hog-nosed Skunk. Southeastern part of the state (2,000 - 6,000 feet).), 65, 73 (*Conepatus mesoleucus*), 100 (*Conepatus mesoleucus*, color photograph), 106 (072306 - genus), 118 (recorded as *Conepatus mesoleucus venaticus* Goldman - Distribution: South central and southeastern Arizona. Figure 102, Page 241)*

***Conepatus leuconotus* subsp. *venaticus* (Goldman): Common Hog-nosed Skunk**

SYNONYMY: *Conepatus mesoleucus* subsp. *venaticus* Goldman. COMMON NAMES: Common Hog-nosed Skunk, Hog-nosed Skunk, Hognose Skunk, Rooter Skunk, Zorrillo Nariz de Puerco (Hispanic). HABITS: The species feeds on arachnids, birds, insects, small mammals, mollusks, plant material, reptiles and worms. These skunks take refuge in caves, crevices in rocks and in the ground. Rocky areas are used for denning with the young born beneath rocks, grasses are used for nesting. HABITAT: Within the range of this species it has been reported from forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. *14 (072306 - subsp. *venaticus* (Goldman)), 55 (species: recorded as *Conepatus mesoleucus* Lichtenstein. Hog-nosed Skunk. Southeastern part of the state (2,000 - 6,000 feet).), 65 (species), 73 (species: *Conepatus mesoleucus*), 100 (species record (*Conepatus mesoleucus*), color photograph of species), 106 (072306 - genus), **118** (recorded as *Conepatus mesoleucus venaticus* Goldman - Distribution: South central and southeastern Arizona. Figure 102, Page 241)*

Conepatus mesoleucus (see *Conepatus leuconotus*)

Conepatus mesoleucus subsp. *venaticus* (see *Conepatus leuconotus* subsp. *venaticus*)

***Mephitis macroura* M.H. Lichtenstein: Hooded Skunk**

COMMON NAMES: Hooded Skunk, Zorrillo (Hispanic). HABITS: Feeds on small birds, insects and other invertebrates, rodents and plant material. The young are born in a dens located in burrows or among rocks. HABITAT: Within the range of this species it has been reported from the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. *14 (050807 - subsp. *milleri* (Mearns)), **55** (recorded as *Mephitis macroura* (Lichtenstein). Hooded Skunk. Southeastern part of the state (2,000 - 6,000 feet).), 65, 73, 100 (color photograph), 106 (053006 - genus), 118 (recorded as *Mephitis macroura milleri* (Mearns) - Distribution: South central and southeastern Arizona. Figure 101, Page 240) *

***Mephitis macroura* subsp. *milleri* (Mearns): Hooded Skunk**

COMMON NAMES: Hooded Skunk, Zorrillo (Hispanic). HABITS: The species feeds on small birds, insects and other invertebrates, rodents and plant material. The young are born in a dens located in burrows or among rocks. HABITAT: Within the range of this species it has been reported from the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. *14 (050807 - subsp. *milleri* (Mearns)), 55 (species: recorded as *Mephitis macroura* (Lichtenstein). Hooded Skunk. Southeastern part of the state (2,000 - 6,000 feet).), 65 (species), 73 (species), 100 (species, color photograph of species), 106 (053006 - genus), **118** (recorded as *Mephitis macroura milleri* (Mearns) - Distribution: South central and southeastern Arizona. Figure 101, Page 240)*

***Mephitis mephitis* (J.C. von Schreber): Striped Skunk**

COMMON NAMES: Striped Skunk, Zorrillo Rayado (Hispanic). HABITS: Feeds on amphibians, berries, the eggs of ground nesting birds, carrion, crayfish, earthworms, fishes, fruits, insects (beetles, crickets and grasshoppers among others), mollusks, plant material, reptiles, rodents, snails and spiders. The young are born in nests made of dried grasses and leaves located in dirt banks, underground burrows abandoned by other animals, downed logs, pits and rock outcrops. HABITAT: Within the range of this species it has been reported from the tundra, forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: The Striped Skunk is most active dusk through dawn. This species is the chief carrier of rabies in the United States and those active during the daylight hours frequently being found to be rabid. *14 (082308 - subspp. *estor* Merriam, *hudsonica* (Richardson) and *varians* (Gray)), **55** (recorded as *Mephitis mephitis* (Schreber). Striped Skunk. Statewide (300 - 9,000 feet).), 65 (color photograph), 73, 100 (color photograph), 106 (053006 - genus), 118 (recorded as *Mephitis mephitis estor* Merriam - Distribution: Statewide. Figure 100, Page 239)*

***Mephitis mephitis* (J.C. von Schreber) subsp. *estor* Merriam: Striped Skunk**

COMMON NAMES: Striped Skunk, Zorrillo Rayado (Hispanic). HABITS: Feeds on amphibians, berries, the eggs of ground nesting birds, carrion, crayfish, earthworms, fishes, fruits, insects (beetles, crickets and grasshoppers among others), mollusks, plant material, reptiles, rodents, snails and spiders. The young are born in nests made of dried grasses and leaves located in dirt banks, underground burrows abandoned by other animals, downed logs, pits and rock outcrops. HABITAT: Within the range of this species it has been reported from the tundra, forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: The Striped Skunk is most active dusk through dawn. This species is the chief carrier of rabies in the United States and those active during the daylight hours frequently being found to be rabid. *14 (082308 - subsp. *estor* Merriam), 55 (species: recorded as *Mephitis mephitis* (Schreber). Striped Skunk. Statewide (300 - 9,000 feet).), 65 (species, color photograph of species), 73 (species), 100 (species, color photograph of species), 106 (053006 - genus), **118** (recorded as *Mephitis mephitis estor* Merriam - Distribution: Statewide. Figure 100, Page 239)*

***Spilogale gracilis* Merriam: Western Spotted Skunk**

SYNONYMY: *Spilogale putorius* subsp. *gracilis* Merriam. COMMON NAMES: Spotted Skunk, Western Spotted Skunk, Zorillo Pinto (Hispanic). HABITS: Feeds on arachnids, berries, birds and bird eggs, carrion, fruits, insects, small mammals, scorpions and seeds. Dens are made in rock crevices and hollow logs. HABITAT: Within the range of this species it has been reported from the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. *14 (051107 - *Spilogale putorius* subsp. *gracilis* Merriam is a synonym for *Spilogale gracilis* C. Linnaeus the Western Spotted Skunk. *Spilogale putorius* subsp. *leucoparia* is a synonym for *Spilogale putorius* C. Linnaeus the Eastern Spotted Skunk), **55** (recorded as *Spilogale putorius* (Linnaeus). Spotted Skunk. Probably statewide (120 - 7,000 feet).), 65 (*Spilogale putorius*), 73 (recorded as *Spilogale gracilis*), 100 (recorded as *Spilogale gracilis*, color photograph), 106 (053006 - genus), **118** (recorded as *Spilogale putorius gracilis* Merriam - Distribution: Probably statewide. Figure 99, Page 237)*

Spilogale putorius (see footnotes 14, 55, 65 and 85 under *Spilogale gracilis*)

Spilogale putorius subsp. *gracilis* (see *Spilogale gracilis*)

Molossidae: The Free-tailed Bat Family

***Eumops perotis* (H. Schinz): Greater Western Mastiff Bat**

COMMON NAMES: Bonnet Bat, Greater Western Bonneted Bat, Greater Mastiff Bat, Greater Western Mastiff Bat, Mastiff Bat, Murcielago Mastiff (Hispanic), Western Mastiff Bat. HABITS: Feeds on crickets, long-horned grasshoppers, moths and other small insects. Roosts in crevices and shallow caves in cliffs and rock walls at lower elevations. HABITAT: Within the range of this species it has been reported from the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. *8 (*Eumops perotis californicus*), 14 (051107 - subsp. *californicus* (Merriam)), **55** (recorded as *Eumops perotis* (Schinz). Western Mastiff Bat. Rare; in small colonies in rock crevices at lower elevations in the western and southern part of the state.), 65, 73, 92, 100 (color photograph), 106 (053006 - family), 118 (recorded as *Eumops perotis californicus* (Merriam) - Distribution: Probably throughout southern Arizona in the Lower Sonoran Life Zone.)*

***Eumops perotis* subsp. *californicus* (Merriam): Greater Western Mastiff Bat**

COMMON NAMES: Bonnet Bat, Greater Western Bonneted Bat, Greater Mastiff Bat, Greater Western Mastiff Bat, Mastiff Bat, Murcielago Mastiff (Hispanic), Western Mastiff Bat. HABITS: The species feeds on crickets, long-horned grasshoppers, moths and other small insects. Roosts in crevices and shallow caves in cliffs and rock walls at lower elevations. HABITAT: Within the range of this species it has been reported from the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. *8, 14 (051107), 55 (species: recorded as *Eumops perotis* (Schinz). Western Mastiff Bat. Rare; in small colonies in rock crevices at lower elevations in the western and southern part of the state.), 65 (species), 73 (species), 92 (species), 100 (species, color photograph of species), 106 (053006 - family), **118** (recorded as *Eumops perotis californicus* (Merriam) - Distribution: Probably throughout southern Arizona in the Lower Sonoran Life Zone. Figure 29, Page 65)*

***Nyctinomops femorosaccus* (C.H. Merriam): Pocketed Free-tailed Bat**

SYNONYMY: Also recorded as *Nyctinomops femorosacca* (C.H. Merriam), *Tadarida femorosacca* (Miller). COMMON NAMES: Pocketed Free-tailed Bat, Murcielago Cola en Bolsa (Hispanic). HABITS: Feeds on ants, leafhoppers, moths, wasps and other insects. Roosts in rocky crevices. HABITAT: Within the range of this species it has been reported from the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. *8, 14, 55 (recorded as *Tadarida femorosacca* (Merriam). Pocketed Free-tailed Bat. Rare; found at lower elevations in the western and southern part of the state.), 100, 106 (053006 - family), **118** (recorded as *Tadarida femorosacca* (Miller) - Distribution: Probably occurs throughout the Lower Sonoran Life Zone of southern Arizona. Figure 27, Page 63)*

***Nyctinomops macrotis* (J.E. Gray): Big Free-tailed Bat**

SYNONYMY: *Tadarida macrotis* (J.E. Gray), *Tadarida molossa* (Pallas). COMMON NAMES: Big Free-tailed Bat, Murcielago Cola Libre (Hispanic), Murcielago Cola Suelta Mayor (Spanish) HABITS: Feeds on insects. Roosts in rocky cliffs, crevices, fissures, caves and holes in trees. HABITAT: Within the range of this species it has been reported from the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations ecological formations. *8, 14, 42 (053006), **55** (recorded as *Tadarida molossa* (Pallas). Big Free-tailed Bat. Rare; statewide, mainly at elevations below 5,000 feet.), 73, 100 (color photograph), 106 (053006 - family), **118** (recorded as *Tadarida molossa* (Pallas) - Distribution: Probably occurs throughout the Lower Sonoran Life Zone of Arizona. Figure 28, Page 64)*

***Tadarida brasiliensis* (I.G. Saint-Hilaire) (subsp *mexicana* (Saussure) is the only subspecies reported as occurring in Arizona): Brazilian Free-tailed Bat**

COMMON NAMES: Brazilian Free-tailed Bat, Guano Bat, Mexican Free-tail Bat, Mexican Free-tailed Bat, Murcielago Braziliano (Hispanic). HABITS: Feeds on ants, beetles, leafhoppers, moths and other small insects. Roosts in caverns; caves; crevices in rocks; fissures in cliffs; buildings; mines, and under bridges. HABITAT: Within the range of this species it has been reported from the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. *8, 14, **55** (recorded as *Tadarida brasiliensis* (I.Geof. St.-Hilaire). Mexican Free-tailed Bat. Locally abundant throughout the state, especially at elevations below 5,000 feet.), 65, 73, 92, 100 (color photograph), 106 (053006), 118 (recorded as *Tadarida brasiliensis mexicana* (Saussure) - Distribution: Probably statewide in some part of the year. Figure 26, Page 62)*

***Tadarida brasiliensis* (I.G. Saint-Hilaire) subsp *mexicana* (Saussure): Brazilian Free-tailed Bat**

COMMON NAMES: Brazilian Free-tailed Bat, Guano Bat, Mexican Free-tail Bat, Mexican Free-tailed Bat, Murcielago Braziliano (Hispanic). HABITS: Feeds on ants, beetles, leafhoppers, moths and other small insects. Roosts in caverns; caves; crevices in rocks; fissures in cliffs; buildings; mines, and under bridges. HABITAT: Within the range of this species it has been reported from the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. *8, 14, 55 (species: recorded as *Tadarida brasiliensis* (I.Geof. St.-Hilaire). Mexican Free-tailed Bat. Locally abundant throughout the state, especially at elevations below 5,000 feet.), 65 (species), 73 (species), 92 (species), 100 (species, color photograph of species), 106 (053006), **118** (recorded as *Tadarida brasiliensis mexicana* (Saussure) - Distribution: Probably statewide in some part of the year. Figure 26, Page 62)*

Tadarida femorosacca (see *Nyctinomops femorosacca*)

Tadarida macrotis (see *Nyctinomops macrotis*)

Tadarida molossa (see *Nyctinomops macrotis*)

Muridae: The Mouse and Rat Family

***Neotoma albigula* Hartley: White-throated Wood Rat**

COMMON NAMES: Packrat, White-throated Packrat, Trade Rat, White-throated Wood Rat. HABITS: Feeds on cacti, forbs, fruits, juniper, leaves, mesquite beans, seeds and yucca. Nests are built under mesquite, cholla and prickly-pear cacti, or in rocky crevices using sticks, pieces of cholla and prickly-pear cacti, and rubbish, sometimes with underground burrows. HABITAT: Within the range of this species it has been reported from the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. *14 (051106 - subspp. *albigula*; l*aplataensis* (F.W. Miller); *melas* (Dice); *mernsi*; *warreni* (Merriam), and *venusta*), **55** (recorded as *Neotoma albigula* Hartley. White-throated Wood Rat. Widely distributed at elevations below 7,000 feet throughout all of the state south of the Colorado River (120 - 8,000 feet).), 65 (color photograph), 73, 100 (color photograph), 106 (053006 - genus), 118 (recorded as *Neotoma albigula albigula* Hartley - Distribution: Occurs commonly south of the Mogollon Rim; *Neotoma albigula mearnsi* Goldman - Distribution: Know from southern Yuma County; *Neotoma albigula laplataensis* F.W. Miller - Distribution: Known from northeastern Arizona, and *Neotoma albigula venusta* True - Distribution: Known from western Arizona. Figure 76, Page 193)*

***Neotoma albigula* subsp. *albigula* Hartley: White-throated Wood Rat**

COMMON NAMES: Packrat, White-throated Packrat, Trade Rat, White-throated Wood Rat. HABITS: The species feeds on cacti, forbs, fruits, juniper, leaves, mesquite beans, seeds and yucca. Nests

are built under mesquite, cholla and prickly-pear cacti, or in rocky crevices using sticks, pieces of cholla and prickly-pear cacti, and rubbish, sometimes with underground burrows. HABITAT: Within the range of this species it has been reported from the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. *14 (051107 - subsp. *albigula*), 55 (species: recorded as *Neotoma albigula* Hartley. White-throated Wood Rat. Widely distributed at elevations below 7,000 feet throughout all of the state south of the Colorado River (120 - 8,000 feet).), 65 (species, color photograph of species), 73 (species), 100 (species, color photograph of species), 106 (053006 - genus), **118** (recorded as *Neotoma albigula albigula* Hartley - Distribution: Occurs commonly south of the Mogollon Rim. Figure 76, Page 193)*

***Onychomys torridus* (E. Coues): Southern Grasshopper Mouse**

COMMON NAMES: Chapulinero del Sur (Hispanic), Scorpion Mouse, Southern Grasshopper Mouse. HABITS: Feeds on arthropods, beetles, grasshoppers, insects, lizards, other species of mice, scorpions, seeds and small vertebrates. Nests are located in underground burrows. HABITAT: Within the range of this species it has been reported from the woodland, scrub, grassland, desertscrub and wetland ecological formations. *14 (020307 - subsp. *torridus*), **55** (recorded as *Onychomys torridus* (Coues). Southern Grasshopper Mouse. Widely distributed in the western and southern parts of the state (120 - 5,000 feet).), 65 (genus), 73, 100 (color photograph), 106 (020307 - genus, listing of species), 118 (recorded as *Onychomys torridus longicaudus* Merriam - Distribution: Extreme northwestern Arizona; *Onychomys torridus perpallidus* Mearns - Distribution: Wesern Arizona, and *Onychomys torridus torridus* (Coues) - Distribution: Southeastern quarter of the state. Figure 62, Page 161)*

***Onychomys torridus* subsp. *torridus* (E. Coues): Southern Grasshopper Mouse**

COMMON NAMES: Raton Chapulinero del Sur (Hispanic), Scorpion Mouse, Southern Grasshopper Mouse. HABITS: The species feeds on arthropods, beetles, grasshoppers, insects, lizards, other species of mice, scorpions, seeds and small vertebrates. Nests are located in underground burrows. HABITAT: Within the range of this species it has been reported from the woodland, scrub, grassland, desertscrub and wetland ecological formations. *14 (020307 - subsp. *torridus*), 55 (species: recorded as *Onychomys torridus* (Coues). Southern Grasshopper Mouse. Widely distributed in the western and southern parts of the state (120 - 5,000 feet).), 65 (genus), 73 (species), 100 (species, color photograph of species), 106 (053006 - genus, listing of species), **118** (recorded as *Onychomys torridus torridus* (Coues) - Distribution: Southeastern quarter of the state. Figure 62, Page 161)*

***Peromyscus eremicus* (S.F. Baird): Cactus Mouse**

COMMON NAMES: Cactus Mouse, Raton de Cactaceas (Hispanic). HABITS: Feeds on flowers, small fruits, insects, green plant material and seeds. Nests are made within the abandoned burrows of other animals, clumps of cacti and among rocks. HABITAT: Within the range of this species it has been reported from the woodland, scrub, grassland, desertscrub and wetland ecological formations. *14, **55** (recorded as *Peromyscus eremicus* (Baird). Cactus Mouse. Widely distributed in western and southern Arizona (120 - 6,000 feet).), 65 (genus), 73, 100 (color photograp), 106 (053006 - genus), 118 (recorded as *Peromyscus eremicus anthonyi* (Merriam) - Distribution: Southeastern part of the state; *Peromyscus eremicus eremicus* (Baird) - Distribution: Almost all of the western and southern part of the state; *Peromyscus eremicus papagensis* Goldman - Distribution: Known only from the Pinacate lava in southern Yuma County, and *Peromyscus eremicus pullus* Blossum - Distribution: Known only from Black Mountain 10 mi. SSW Tucson, Pima County, Arizona. Figure 67, Page 171)*

***Peromyscus eremicus* subsp. *eremicus* (S.F. Baird): Cactus Mouse**

COMMON NAMES: Cactus Mouse, Raton de Cactaceas (Hispanic). HABITS: The species feeds on flowers, small fruits, insects, green plant material and seeds. Nests are made within the abandoned burrows of other animals, clumps of cacti and among rocks. HABITAT: Within the range of this species it has been reported from the woodland, scrub, grassland, desertscrub and wetland ecological

formations. *14 (species), 55 (species: recorded as *Peromyscus eremicus* (Baird). Cactus Mouse. Widely distributed in western and southern Arizona (120 - 6,000 feet).), 65 (genus), 73 (species), 100 (species, color photograph of species), 106 (053006 - genus), **118** (recorded as *Peromyscus eremicus eremicus* (Baird) - Distribution: Almost all of the western and southern part of the state. Figure 67, Page 171)*

***Peromyscus leucopus* (C.S. Rafinesque): White-footed Mouse**

COMMON NAME: Raton Patas Blancas (Hispanic), White-footed Mouse, Wood Mouse. HABITS: Feeds on berries, crustaceans, fungi, insects and other invertebrates, nuts, seeds and possibly small vertebrates. Nests are made of shredded bark, feathers, forbs, grasses, hair, leaves, mosses and plant fibers located in concealed places in banks, burrows, cavities in live and dead trees, holes in the ground, under rocks, in shrubs and tree stumps and logs. HABITAT: Within the range of this species it has been reported from the woodland, scrub, grassland, desertscrub and wetland ecological formations. *14 (121008 - subspp. *arizonae* (J.A. Allen) and *tornillo* (Mearns)), **55** (recorded as *Peromyscus leucopus* (Rafinesque. White-footed Mouse. Known from eastern and central parts of the state (2,300 - 6,500 feet).), 65 (genus), 73, 100 (color photograph), 106 (053006 - genus), 118 (recorded as *Peromyscus leucopus arizonae* (Allen) - Distribution: Southeastern part of the state and *Peromyscus leucopus ochraceus* Osgood - Distribution: Along the Little Colorado River and an isolated population on the south edge of the Mogollon Rim which probably represents an unnamed race. Figure 70, Page 180)*

***Peromyscus leucopus subsp. arizonae* (J.A. Allen): White-footed Mouse**

COMMON NAME: Raton Patas Blancas (Hispanic), White-footed Mouse, Wood Mouse. HABITS: Feeds on berries, crustaceans, fungi, insects and other invertebrates, nuts, seeds and possibly small vertebrates. Nests are made of shredded bark, feathers, forbs, grasses, hair, leaves, mosses and plant fibers located in concealed places in banks, burrows, cavities in live and dead trees, holes in the ground, under rocks, in shrubs and tree stumps and logs. HABITAT: Within the range of this species it has been reported from the woodland, scrub, grassland, desertscrub and wetland ecological formations. *14 (121008 - subsp. *arizonae* (J.A. Allen)), 55 (species: recorded as *Peromyscus leucopus* (Rafinesque. White-footed Mouse. Known from eastern and central parts of the state (2,300 - 6,500 feet).), 65 (genus), 73 (species), 100 (color photograph of species, species), 106 (053006 - genus), **118** (recorded as *Peromyscus leucopus arizonae* (Allen) - Distribution: Southeastern part of the state. Figure 70, Page 180)*

***Peromyscus maniculatus* (Wagner): Deer Mouse**

COMMON NAMES: Deer Mouse, Raton Venado (Hispanic). HABITS: Feeds on bark, berries, bones, centipedes, earthworms, small fruits, fungi, insects, leaves, nuts and snails. Nests are built in buildings, underground burrows, rock crevices debris, in and under logs, and clumps of vegetation. HABITAT: Within the range of this species it has been reported from the tundra, forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. *14 (050907 - subspp. *blandus* (Osgood) and *rufinus* (Merriam)), **55** (recorded as *Peromyscus maniculatus* (Wagner). Deer Mouse. Statewide (120 - 11,400 feet).), 65 (genus), 73, 100 (color photograph), 106 (053006 - genus), 118 (recorded as *Peromyscus maniculatus blandus* Osgood - Distribution: Extreme southeastern part of the state; *Peromyscus maniculatus rufinus* (Merriam) - Distribution: Higher elevations throughout the state, and *Peromyscus maniculatus sonoriensis* (Le Conte) - Distribution: Grasslands at lower elevations throughout the state. Figure 69, Page 177)*

***Peromyscus maniculatus* subsp. *sonoriensis* (Le Conte): Deer Mouse**

COMMON NAMES: Deer Mouse, Raton Venado (Hispanic). HABITS: The species feeds on bark, berries, bones, centipedes, earthworms, small fruits, fungi, insects, leaves, nuts and snails. Nests are built in buildings, underground burrows, rock crevices debris, in and under logs, and clumps of vegetation. HABITAT: Within the range of this species it has been reported from the tundra, forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. *14 (050907 - species, and

subspp. *blandus* (Osgood) and *rufinus* (Merriam)), 55 (species: recorded as *Peromyscus maniculatus* (Wagner). Deer Mouse. Statewide (120 - 11,400 feet).), 65 (genus), 73 (species), 100 (species, color photograph of species), 106 (053006 - genus), **118** (recorded as *Peromyscus maniculatus sonoriensis* (Le Conte) - Distribution: Grasslands at lower elevations throughout the state. Figure 69, Page 177)*

***Peromyscus merriami* Mearns: Merriam's Mouse**

COMMON NAMES: Merriam's Mouse, Mesquite Mouse. HABITS: Probably feeds on invertebrates and seeds. HABITAT: Within the range of this species it has been reported from the grassland, desertscrub and wetland ecological formations. *14 (082308), **55** (recorded as *Peromyscus merriami* Mearns. Merriam's Mouse. Known from scattered localities is Pinal, Pima and Santa Cruz counties (1,600 - 3,600 feet).), 73 (note on species), 100, 106 (072306 - genus, listing of species), 118 (recorded as *Peromyscus merriami merriami* Mearns - Distribution: Known from mesquite bosque situations in southern Arizona. Figure 68, Page 174)*

***Peromyscus merriami* subsp. *merriami* Mearns: Merriam's Mouse**

COMMON NAMES: Merriam's Mouse, Mesquite Mouse. HABITS: The species probably feeds on invertebrates and seeds. HABITAT: Within the range of this species it has been reported from the grassland, desertscrub and wetland ecological formations. *14 (082308), 55 (species: recorded as *Peromyscus merriami* Mearns. Merriam's Mouse. Known from scattered localities is Pinal, Pima and Santa Cruz counties (1,600 - 3,600 feet).), 73 (note on species), 100 (species), 106 (072306 - genus, listing of species), **118** (recorded as *Peromyscus merriami merriami* Mearns - Distribution: Known from mesquite bosque situations in southern Arizona. Figure 68, Page 174)*

***Reithrodontomys megalotis* (Baird): Western Harvest Mouse**

COMMON NAME: Western Harvest Mouse. HABITS: Feeds on arachnids, grasses, insects (larvae and adults) and seeds of grasses, forbs and shrubs. Spherical nests are made of woven plant material and lined with plant fibers and can be located near the ground or above the ground in dense vegetation. HABITAT: Within the range of this species it has been reported from the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. *14 (050907 - subspp. *arizonensis*; *aztecus* J.A. Allen, and *megalotis* (Baird)), **55** (recorded as *Reithrodontomys megalotis* (Baird). Western Harvest Mouse. Statewide (120 - 8,000 feet).), 73, 100 (color photograph), 106 (053006), 118 (recorded as *Reithrodontomys megalotis arizonensis* (Allen) - Distribution: Known only from the region of the type locality (Chiricahua Mountains); *Reithrodontomys megalotis aztecus* (Allen) - Distribution: Extreme northeastern part of state, and *Reithrodontomys megalotis megalotis* (Baird) - Distribution: At medium and low elevations statewide except extreme northeastern part of the state. Figure 64, Page 164)*

***Reithrodontomys megalotis* subsp. *megalotis* (Baird): Western Harvest Mouse**

COMMON NAME: Western Harvest Mouse. HABITS: The species feeds on arachnids, grasses, insects (larvae and adults) and seeds of grasses forbs and shrubs. Spherical nests are made of woven plant material and lined with plant fibers and can be located near the ground or above the ground in dense vegetation. HABITAT: Within the range of this species it has been reported from the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. *14 (050907 - subsp. *megalotis* (Baird)), 55 (species: recorded as *Reithrodontomys megalotis* (Baird). Western Harvest Mouse. Statewide (120 - 8,000 feet).), 73 (species), 100 (species, color photograph of species), 106 (053006), **118** (recorded as *Reithrodontomys megalotis megalotis* (Baird) - Distribution: At medium and low elevations statewide except extreme northeastern part of the state. Figure 64, Page 164)*

***Sigmodon arizonae* subsp. *ciengae* A.B. Howell: Arizona Cotton Rat (IDed in 12S-12E)**

SYNONYMY: *Sigmodon hispidus* subsp. *cienegae* A.B. Howell. COMMON NAMES: Arizona Cotton Rat, Cotton Rat. HABITS: Possibly feeding on berries, carcasses, fruits, insects and seeds. The nests are made of grass. HABITAT: Within the range of this species it has been reported from the

woodland, grassland, desertscrub and wetland ecological formations. *14 (082608), 73 (note on species), 100 (species), 106 (053005 - genus), **118** (recorded as *Sigmodon hispidus* subsp. *cienegae* A.B. Howell - Distribution: Locally common in southeastern Arizona. Figure 74, Page 188)*

Sigmodon hispidus subsp. *cienegae* (see *Sigmodon arizonae* subsp. *ciengae*)

Mustelidae: The Weasel and Allies Family

***Lontra canadensis* (J.C. von Schreber): Southwestern River Otter**

SYNONYMY: *Lutra canadensis* (J.C. von Schreber). COMMON NAMES: Arizona Otter, Arizona River Otter, Nearctic River Otter, Northern River Otter, Pah-hua-pe'na (Tewa - Taos Indians), River Otter, Southwestern River Otter. HABITS: Feeds on amphibians, crustaceans, fishes, large aquatic insects, small mammals, aquatic plants and turtles. Nests are made of grasses, leaves, reeds and sticks located in dens dug in banks or within abandoned beaver and nutria dens and man-made structures. HABITAT: Within the range of this species it has been reported from permanently flowing water of streams and rivers, ponds, including beaver ponds, lakes, marshes and cienegas in areas where there is overhanging bank vegetation and haul-out and slide sites for access and where dens can be established in banks in wetland ecological formations within the forest, woodland, scrub, grassland and desertscrub ecological formations. It is believed that it formerly inhabited the Black river, Colorado River, Gila River and Salt River. NOTES: Subspecies *sonora* (Rhoads) is the only subspecies reported as occurring in Arizona. The historical presence of the River Otter in Pima County is unknown. *Lontra canadensis lataxina* (Cuvier) was introduced into central Arizona during 1981 - 1983. *8 (*Lontra canadensis sonora* Rhoads), 14 (051507 - subsp. *sonorae* (Rhoads) and introduced subsp. *lataxina* (Cuvier)), **55** (recorded as *Lutra canadensis* (Schreber) "Formerly in all of the larger permanent river systems; now rare."), 73 (recorded as *Lutra canadensis*), 100 (recorded as *Lutra canadensis*, color photograph), 106 (051507 - *Lontra canadensis* (Schreber)), 118 (recorded as *Lontra canadensis sonora* Rhoads - Distribution: Formerly occurred in the Colorado and Gila rivers and their major tributaries. Today greatly reduced in numbers. Figure 103, Page 242)*

Lutra canadensis (see *Lontra canadensis*)

***Taxidea taxus* (J.C. von Schreber): American Badger**

COMMON NAMES: American Badger, Badger, Badger Tejon (Hispanic). HABITS: Feeds on ground dwelling birds (and eggs), carrion, insects, rodents and snakes. Young are born in dens in underground burrows. HABITAT: Within the range of this species it has been reported from the tundra, forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. *14 (050907 - subsp. *berlandieri* Schreber), **55** (recorded as *Taxidea taxus* (Schreber). Badger. Statewide (120 - 7,000 feet).), 65, 73, 100 (color photograph), 106 (053006), **118** (recorded as *Taxidea taxus* - Distribution: Statewide. Figure 98, Page 235)*

Phyllostomidae: The Leaf-nosed Bat Family

***Choeronycteris mexicana* Tschudi: Mexican Long-tongued Bat**

COMMON NAMES: Hognose Bat, Hog-nosed Bat, Long-tongued Bat, Mexican Hog-nosed Bat, Mexican Long-tailed Bat, Mexican Long-tongued Bat, Murcielago Lengua Larga Mexicano (Hispanic). HABITS: Feeds on fruits, insects, nectar and pollen. Roosts are located under bridges, and in shallow caves, rock fissures and mine tunnels. HABITAT: Within the range of this species it has been reported from the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. *8, 14, 55 (recorded as *Choeronycteris mexicana* Tschudi. Mexican Long-tailed Bat. Uncommon; usually found near

the fronts of shallow caves and mine tunnels. Known from Pima, Santa Cruz and Cochise counties.), 73, 92, 100 (color photograph), 106 (053006), 118 (recorded as *Choeronycteris mexicana* Tschudi - Distribution: Known only from the southeastern part of the state. Figure 8, Page 33)*

***Leptonycteris curasoae* subsp. *yerbabuenae* (Martinez & Villa-R.): Southern Long-nosed Bat**

SYNONYMY: *Leptonycteris nivalis sanborni* D.F. Hoffmeister, *Leptonycteris sanborni* (Saussure). COMMON NAMES: Lesser Long-nosed Bat, Little Long-nosed Bat, Mexican Long-nosed Bat, Murcielago de Sanborn (Hispanic), Sanborn's Long-nosed Bat, Sanborn's Southern Long-nosed Bat, Southern Long-nosed Bat. HABITS: The species feeds on insects, nectar, pollen and the nectar and soft-bodied fruits of agaves and cacti. Roosts are located in caves, rock crevices, abandoned mines and tunnels. HABITAT: Within the range of this species it has been reported from the woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTE: Long-nosed bats are pollinators of Agaves, Cardons, Organ Pipe Cacti and Saguaros. *8, 14 (050907 - Populations may be compromised by roost-site disturbance, loss of food sources and direct killing by humans.), 35 (This species is vulnerable to disturbances at roosting sites by cave explorers.), 55 (species: recorded as *Leptonycteris nivalis* (Saussure). Long-nosed Bat. Locally common in moist caves. Known from Pinal, Pima, Santa Cruz and Cochise Counties.), 92 (recorded as *Leptonycteris sanborni*), 100 (species, recorded as *Leptonycteris curasoae* and *Leptonycteris nivalis*, color photographs), 106 (053006), 110 (recorded as *Leptonycteris sanborni*), **118** (recorded as *Leptonycteris nivalis nivalis* (Saussure) - Distribution: Known only from the southeastern part of the state. Figure 9, Page 35)*

Leptonycteris nivalis (see footnote 55 under *Leptonycteris curasoae* subsp. *yerbabuenae*)

Leptonycteris nivalis nivalis (see footnote 118 under *Leptonycteris curasoae* subsp. *yerbabuenae*)

Leptonycteris nivalis sanborni (see *Leptonycteris curasoae* subsp. *yerbabuenae*)

Leptonycteris sanborni (see *Leptonycteris curasoae* subsp. *yerbabuenae*)

***Macrotus californicus* S.F. Baird: California Leaf-nosed Bat**

COMMON NAMES: California Leaf-nosed Bat, Leaf-nosed Bat, Leafnose Bat, Waterhouse's Leaf-nosed Bat, Murcielago de California (Hispanic). HABITS: Feeds on beetles, butterflies, caterpillars, cicadas, crickets, dragonflies, grasshoppers, leafhoppers, moths and other insects. Roosts are located in caves and abandoned mine tunnels. HABITAT: Within the range of this species it has been reported from the grassland, desertscrub and wetland ecological formations. *8, 14 (050907 - subspp. *californicus* (Audubon & Bachman) and *stephensi* (Dalquest)), 55 (recorded as *Macrotus californicus* Baird. Leaf-nosed Bat. Locally common in shallow caves, mine tunnels and under bridges. Occurs widely at lower elevations in the western and southern parts of the state."), 73, 92, 100 (color photograph), 106 (053006), **118** (recorded as *Macrotus californicus* Baird - Distribution: Known from lower elevations in the southern and western parts of the state. Figure 7, Page 32)*

Procyonidae: The Raccoon and Allies Family

***Bassariscus astutus* (M.H. Lichenstein): Ringtail**

COMMON NAMES: Band-tailed Cat, Cacomistle, Civet Cat, Coon CatGato Minero (Hispanic), Miner's Cat, Ringtail, Ringtail Cat, Ring-tailed Cat. HABITS: Feeds on berries, birds, fruits, carrion, crickets, eggs, insects, lizards, small mammals, snakes and spiders. Nests are made of grass located in dens in underground burrows, caves, cliffs, rocky outcrops, cavities in logs, stumps and trees and man-made structures. HABITAT: Within the range of this species it has been reported from the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. *8 (subspp. *arizonensis*;

nevadensis, and *yumanensis*), 14 (050907 - subspp. *arizonensis* Goldman; *flavus* Rhoads; *nevadensis*, and *yumanensis* Huey), **55** (recorded as *Bassariscus astutus* (Lichenstein). Ringtail. Statewide (120 - 6,500 feet).), 65 (color photograph), 73, 100 (color photograph), 106 (051107), 118 (recorded as *Bassariscus astutus arizonensis* Goldman - Distribution: Statewide except extreme southeastern and southwestern parts; *Bassariscus astutus flavus* Rhoads - Distribution: Extreme southeastern part of the state, and *Bassariscus astutus yumanensis* Huey - Distribution: Southwestern Arizona. Figure 93, Page 227)*

***Bassariscus astutus* subsp. *arizonensis* Goldman: Ringtail**

COMMON NAMES: Band-tailed Cat, Cacomistle, Civet Cat, Coon CatGato Minero (Hispanic), Miner's Cat, Ringtail, Ringtail Cat, Ring-tailed Cat. HABITS: The species feeds on berries, birds, fruits, carrion, crickets, eggs, insects, lizards, small mammals, snakes and spiders. Nests are made of grass located in dens in underground burrows, caves, cliffs, rocky outcrops, cavities in logs, stumps and trees and man-made structures. HABITAT: Within the range of this species it has been reported from the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. *8, 14 (050907), 55 (species: recorded as *Bassariscus astutus* (Lichenstein). Ringtail. Statewide (120 - 6,500 feet).), 65 (species, color photograph of species), 73 (species), 100 (species, color photograph of species), 106 (053106 - species), **118** (recorded as *Bassariscus astutus arizonensis* Goldman - Distribution: Statewide except extreme southeastern and southwestern parts. Figure 93, Page 227)*

***Nasua narica* (C.H. Merriam): White-nosed Coati**

COMMON NAMES: Antoon, Chula, Chulo, Coati (Indian Name), Coatimundi, El Gato Solo (Los Gatos en Familia), Pizote, White-nosed Coati. HABITS: Feeds on the berries of juniper and manzanita, birds, carrion, eggs, fruits, insects (including among others crickets and grasshoppers) and other invertebrates, prickly pear fruit, lizards, small mammals, nuts, snakes, tubers, worms and yucca fruits. Young are born in dens located in caves, crevices in rocks, mines shafts and cavities among tree roots. HABITAT: Within the range of this species it has been reported from the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. *14 (091008), 55 (recorded as *Nasua narica* (Linnaeus). Coati. In woodland situations in the Graham, Chiricahua, Huachuca, Patagonia and Pena Blanca mountains (5,000 to 7,500 feet).), 65, 73, 100 (color photograph), 106 (053106), **118** (recorded as *Nasua narica pallida* Allen - Distribution: Mountains of southern and southeastern part of the state. Figure 95, Page 230)*

***Procyon lotor* (C. Linnaeus): Common Raccoon**

COMMON NAMES: Common Raccoon, Mexican Raccoon, Northern Raccoon, Raccoon, Racuno (Hispanic). HABITS: Feeds on annelid worms, berries, birds, nestlings and eggs, carrion, crayfishes, small fishes, frogs, fruits, insects, small mammals, nuts, shellfish, turtles and turtle eggs and vegetables. Nests are made of leaves located in dens in small caves, amongst boulders, rocky crevices in cliffs and cavities in trees. HABITAT: Within the range of this species it has been reported from the tundra, forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTE: Racoons are never very far from permanent water. *14 (090108 - subspp. *fuscipes* (Mearns); *hirus* (Nelson & Goldman); *mexicanus* (Baird), and *pallidus* (Merriam)), **55** (recorded as *Procyon lotor* (Linnaeus). Raccoon. Riparian situations along the Colorado, Little Colorado and Gila river systems and in the grasslands of the southeastern portion of the state (120 - 6,900 feet).), 65 (color photograph), 73, 100 (color photograph), 106 (053106), 118 (recorded as *Procyon lotor* subsp. *mexicanus* Merriam - Distribution: Northern and Western Arizona and *Procyon lotor* subsp. *mexicanus* (Baird) - Distributio: Southeastern Arizona. Figure 94, Page 229)*

***Procyon lotor* subsp. *mexicanus* Baird: Common Raccoon**

COMMON NAMES: Common Raccoon, Mexican Raccoon, Northern Raccoon, Raccoon, Racuno (Hispanic). HABITS: Feeds on annelid worms, berries, birds, nestlings and eggs, carrion, crayfishes, small fishes, frogs, fruits, insects, small mammals, nuts, shellfish, turtles and turtle eggs and

vegetables. Nests are made of leaves located in dens in small caves, amongst boulders, rocky crevices in cliffs and cavities in trees. HABITAT: Within the range of this species it has been reported from the tundra, forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTE: Racoons are never very far from permanent water. *14 (090108 - subspp. *fuscipes* (Mearns); *hirus* (Nelson & Goldman); *mexicanus* (Baird), and *pallidus* (Merriam)), 55 (species: recorded as *Procyon lotor* (Linnaeus). Raccoon. Riparian situations along the Colorado, Little Colorado and Gila River systems and in the grasslands of the southeastern portion of the state (120 - 6,900 feet).), 65 (color photograph), 73 (species), 100 (species, color photograph of species), 106 (053106), **118** (recorded as *Procyon lotor mexicanus* Baird - Distribution: Southeastern Arizona. Figure 94, Page 229)*

Sciuridae: The Squirrel and Allies Family

***Ammospermophilus harrisii* (J.J. Audubon & Bachman): Harris' Antelope Squirrel**

SYNONYMY: *Citellus harrisii* (J.J. Audubon & Bachman). COMMON NAMES: Ardilla de Tierra Harris (Hispanic), Harris Antelope Squirrel, Harris' Antelope Squirrel, Yuma Antelope Squirrel. HABITS: Feeds on fruits, insects, plants and seeds. Dens are located in underground burrows. HABITAT: Within the range of this species it has been reported from the grassland, desertscrub and wetland ecological formations. *14 (082308), 55 (recorded as *Citellus harrisii* (Audubon & Bachman). Harris Antelope Squirrel. Southern and western parts of the state at elevations below 6,500 feet.), 65 (color photograph), 73, 100 (color photograph), 106 (053106 - genus), **118** (recorded as *Citellus harrisii harrisii* (Audubon & Bachman) - Distribution: Southern and western Arizona except for most of Yuma County. *Citellus harrisii saxicola* (Mearns) - Distribution: Southwestern Arizona. Figure 38, Page 85)*

Citellus harrisii (see *Ammospermophilus harrisii*)

Citellus harrisii subsp. *harrisii* (see footnote 118 under *Ammospermophilus harrisii*)

Citellus harrisii subsp. *saxicola* (see footnote 118 under *Ammospermophilus harrisii*)

Citellus spilosoma subsp. *canescens* (see *Spermophilus spilosoma* subsp. *canescens*)

Citellus tereticaudus (see *Spermophilus tereticaudus*)

Citellus tereticaudus subsp. *neglectus* (see footnote 118 under *Spermophilus tereticaudus*)

Citellus variegatus (see *Spermophilus variegatus*)

Citellus variegatus subsp. *grammurus* (see *Spermophilus variegatus* subsp. *grammurus*)

***Spermophilus tereticaudus* S.F. Baird: Round-tailed Ground Squirrel**

SYNONYMY: *Citellus tereticaudus* S.F. Baird. COMMON NAME: Round-tailed Ground Squirrel. HABITS: Feeds on buds of burroweed and mesquite, cacti, green vegetation, insects, seeds of creosote bush, mesquite, flowers of ocotillo, paloverde, plantain, and saltbush, observed visiting road kill and taking scavenging Gambel's Quail chicks; nests are made of plant fibers and stems and located in dens in underground burrows. HABITAT: Within the range of this species it has been reported from the desertscrub ecological formation. *14, 55 (recorded as *Citellus tereticaudus* Baird. Round-tailed Ground Squirrel. Lower Sonoran Life-zone of the western part of the state (below 3,200 feet).), 65, 73, 100 (color photograph), 106 (053106 - genus), **118** (recorded as *Citellus tereticaudus neglectus* (Merriam) - Distribution: Lower Sonoran Life Zone of southwestern Arizona. Figure 39, Page 90)*

***Spermophilus variegatus* (Erxleben): Rock Squirrel**

SYNONYMY: *Citellus variegatus* (Erxleben). COMMON NAMES: Ardilla Coluda (Hispanic), Rock Squirrel. HABITS: Feeds on acorns, berries, small birds, chicks and eggs, carrion, insects, fruits, small mammals, nuts and seeds. Nests are made of leaves, pine needles and plant fibers and located in dens in underground burrows between boulders, rock crevices and talus. HABITAT: Within the range of this species it has been reported from the tundra, forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. *14, **55** (recorded as *Citellus variegatus* (Erxleben). Rock Squirrel. Statewide, especially at elevations below 6,000 feet.), 65 (color photograph), 73, 100 (color photograph), 106 (053106 - genus), 118 (recorded as *Citellus variegatus grammurus* (Say) - Distribution: Statewide, especially common below 6000 feet. Figure 37, Page 82)*

***Spermophilus variegatus* subsp. *grammurus* (Erxleben): Rock Squirrel**

SYNONYMY: *Citellus variegatus* subsp. *grammurus* (Say). COMMON NAMES: Ardilla Coluda (Hispanic), Rock Squirrel. HABITS: The species feeds on acorns, berries, small birds, chicks and eggs, carrion, insects, fruits, small mammals, nuts and seeds burrows. Nests are made of leaves, pine needles and plant fibers and located in dens in underground burrows between boulders, rock crevices and talus. HABITAT: Within the range of this species it has been reported from the tundra, forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. *14, 55 (species: recorded as *Citellus variegatus* (Erxleben). Rock Squirrel. Statewide, especially at elevations below 6,000 feet.), 65 (species, color photograph of species), 73 (species), 100 (species, color photograph of species), 106 (053106 - genus), **118** (recorded as *Citellus variegatus grammurus* (Say) - Distribution: Statewide, especially common below 6000 feet. Figure 37, Page 82)*

Soricidae: The Shrew Fmaily

***Notiosorex crawfordi* (E. Coues): Crawford's Desert Shrew**

COMMON NAMES: Crawford's Desert Shrew, Crawford's Gray Shrew, Desert Shrew, Gray Shrew, Musarana del Deseirto Crawford (Hispanic). HABITS: Feeds on centipedes, insects, lizards, small mice, scorpions, sowbugs and spiders. Nests are made of shredded bark and leaves and located in packrat dens or under dead agaves. HABITAT: Within the range of this species it has been reported from forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. *14 (050907 - subsp. *crawfordi* (Coues)), **55** (recorded as *Notiosorex crawfordi* (Coues). Desert Shrew. Locally common, widely distributed statewide at elevations below 6,000 feet, especially in riparian situations.), 65, 73, 100 (color photograph), 106 (051107), 118 (recorded as *Notiosorex crawfordi crawfordi* (Coues) - Distribution: Probably occurs statewide at elevations below 6000 feet. Figure 5, Page 30)*

***Notiosorex crawfordi* subsp. *crawfordi* (E. Coues): Crawford's Desert Shrew**

COMMON NAMES: Crawford's Desert Shrew, Crawford's Gray Shrew, Desert Shrew, Gray Shrew, Musarana del Deseirto Crawford (Hispanic). HABITS: The species feeds on centipedes, insects, lizards, small mice, scorpions, sowbugs and spiders. Nests are made of shredded bark and leaves and located in packrat dens or under dead agaves. HABITAT: Within the range of this species it has been reported from forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. *14 (050907 - subsp. *crawfordi* (Coues)), 55 (species: recorded as *Notiosorex crawfordi* (Coues). Desert Shrew. Locally common, widely distributed statewide at elevations below 6,000 feet, especially in riparian situations.), 65 (species), 73 (species), 100 (species, color photograph of species), 106 (051107 - species), **118** (recorded as *Notiosorex crawfordi crawfordi* (Coues) - Distribution: Probably occurs statewide at elevations below 6000 feet. Figure 5, Page 30)*

Tayassuidae: The Javelina Family

Dicotyles tajacu (see *Peccari tajacu*)

Dicotyles tajacu subsp. *sonoriensis* (see *Peccari tajacu* subsp. *sonoriensis*)

Pecari angulatus (see footnote 65 under *Peccari tajacu* subsp. *sonoriensis*)

***Peccari tajacu* (C. Linnaeus): Collared Peccary**

SYNONYMY: *Dicotyles tajacu* (C. Linnaeus), *Tayassu tajacu* (C. Linnaeus). COMMON NAMES: Collared Peccary, Jabalina (Hispanic), Javelina, "Musk Hog", Peccary. HABITS: Feeds on agaves, amphibians, berries, bulbs, fruits, fungi, grasses, insects, mesquite beans, nuts, roots, palm nuts, succulent plants, prickly-pear and other cacti, reptiles, rodents, roots, sotol, tubers and worms. Javelina bed down during the day in thick brush and prickly-pear thickets and at night in burrows usually under the roots of trees. HABITAT: Within the range of this species it has been reported from forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. *14 (050907 - subspp. *angulatus* (Cope) and *sonoriensis* (Mearns)), **55** (recorded as *Tayassu tajacu* (Linnaeus), Javelina. Southeastern and central parts of the state (1,200 - 6,000 feet).), 65 (recorded as *Pecari angulatus*), 73 (recorded as *Dicotyles tajacu*), 100 (recorded as *Tayassu tajacu*, color photograph), 106 (051107 - *Tayassu tajacu*), 118 (recorded as *Tayassu tajacu sonoriensis* (Mearns) - Distribution: Southern part of the state. Figure 107, Page 249)*

***Peccari tajacu* subsp. *sonoriensis* (Mearns): Collared Peccary**

SYNONYMY: *Dicotyles tajacu* subsp. *sonoriensis* (Mearns), *Tayassu tajacu* subsp. *sonoriensis* (Mearns). COMMON NAMES: Collared Peccary, Jabalina (Hispanic), Javelina, "Musk Hog", Peccary. HABITS: The species feeds on agaves, amphibians, berries, bulbs, fruits, fungi, grasses, insects, mesquite beans, nuts, roots, palm nuts, succulent plants, prickly-pear and other cacti, reptiles, rodents, roots, sotol, tubers and worms. Javelina bed down during the day in thick brush and prickly-pear thickets and at night in burrows usually under the roots of trees. HABITAT: Within the range of this species it has been reported from forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. *14 (050907 - subsp. *sonoriensis* (Mearns)), 55 (species: recorded as *Tayassu tajacu* (Linnaeus). Javelina. Southeastern and central parts of the state (1,200 - 6,000 feet).), 65 (species, recorded as *Pecari angulatus*), 73 (species, recorded as *Dicotyles tajacu*), 100 (species, recorded as *Tayassu tajacu*, color photograph of species), 106 (051107 - species, recorded as *Tayassu tajacu*), **118** (recorded as *Tayassu tajacu sonoriensis* (Mearns) - Distribution: Southern part of the state. Figure 107, Page 249)*

Tayassu tajacu (see *Peccari tajacu*)

Tayassu tajacu subsp. *sonoriensis* (see see *Peccari tajacu* subsp. *sonoriensis*)

Ursidae: The Bear Family

Euarctos americanus (see *Ursus americanus*)

Euarctos americanus subsp. *amblyceps* (see *Ursus americanus* subsp. *amblyceps*)

***Ursus americanus* P.S. von Pallas: Black Bear**

SYNONYMY: *Euarctos americanus* (P.S. von Pallas). COMMON NAMES: American Black Bear, Black Bear, Cinnamon Bear, Oso Negro (Hispanic). HABITS: Feeds on acorns, ants, beetles, berries, buds, carrion, crickets, currants, fish, fruits, grapes, grubs, insects, leaves, pinyon nuts, prickly-pear fruit, raspberries, sprouts, small to medium-size mammals and other vertebrates and twigs. Shelter is

taken in dense cover and they climb trees to escape danger. Nests are made of grasses leaves, mud and sticks located in a den. HABITAT: Within the range of this species it has been reported from the tundra, forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. *14 (050907 - subsp. *amblyceps* (Baird)), **55** (recorded as *Euarctos americanus* (Pallas). Black Bear. Formerly common throughout the mountainous areas of the state, now greatly reduced in numbers and distribution.), 73, 100 (color photograph), 106 (050907 - includes a listing of subspecies and their distribution), 118 (recorded as *Euarctos americanus amblyceps* (Baird) - Distribution: Probably formerly occurred throughout the state, at least in mountainous areas. Figure 91, Page 224)*

***Ursus americanus* subsp. *amblyceps* (Baird): Black Bear**

SYNONYMY: *Euarctos americanus* subsp. *amblyceps* (Baird). COMMON NAMES: American Black Bear, Black Bear, Cinnamon Bear, Oso Negro (Hispanic). HABITS: The species feeds on acorns, ants, beetles, berries, buds, carrion, crickets, currants, fish, fruits, grapes, grubs, insects, leaves, pinyon nuts, prickly-pear fruit, raspberries, sprouts, small to medium-size mammals and other vertebrates and twigs. Shelter is taken in dense cover and they climb trees to escape danger. Nests are made of grasses leaves, mud and sticks located in a den. HABITAT: Within the range of this species it has been reported from the tundra, forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. *14 (050907 - subsp. *amblyceps* (Baird)), 55 (species: recorded as *Euarctos americanus* (Pallas). Black Bear. Formerly common throughout the mountainous areas of the state, now greatly reduced in numbers and distribution.), 73 (species), 100 (species, color photograph of species), 106 (050907 - includes a listing of subspecies and their distribution), **118** (recorded as *Euarctos americanus amblyceps* (Baird) - Distribution: Probably formerly occurred throughout the state, at least in mountainous areas. Figure 91, Page 224)*

***Ursus arctos* subsp. *horribilus* Ord: Grizzly Bear**

SYNONYMY: *Ursus horribilus* Ord. COMMON NAMES: Apache Grizzly, Arizona Grizzly, Grizzly Bear, Navajo Grizzly, New Mexico Grizzly, Oso Gris (Hispanic), Silvertip Bear, Sonora Grizzly, Texas Grizzly. HABITS: The species feeds on berries, carrion, fish (bass, salmon, trout), fungi, grasses, insects (Army Cutworm moths), leaves, large mammals (Bison, Black Bear, Caribou, Deer, Elk, Moose, Mountain Goats) and small mammals (rodents), nuts (Whitebark Pine nuts), roots and sprouts. The Grizzly Bear beds down in depressions in thickets. Dens are excavated from under rocks or located in caves, crevices or hollow trees. HABITAT: Within the range of this species it has been reported from tundra, forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: The last confirmed "kill" in Arizona was made on the slopes of Mount Baldy (Apache County) in the summer of 1939. Grizzly Bears were killed-off by American immigrants because of the risks posed to humans and livestock. The Grizzly Bear has been EXTIRPATED from Arizona. *14 (050907 - *Ursus arctos* subspp. *horriaeus* (Baird) and *perturbans* (Merriam)), **39** (recorded as *Ursus horribilus* - included the following note when referring to Grizzly Bears in the Tucson Area "Jack O'Connor told us of a kill in the Catalinas in 1915. Up until 1912, there were quite a few grizzly bears in the Catalinas and also the Galiuros. The Santa Cruz River bottom was a favorite hangout of these bears, all the way from Nogales to the Tucson area. We have a few authentic reports of desert grizzlies, but Jack talked with some old timers who hunted them in the river bottom." The following dates of last known "kills" were provided: Arizona on September 13, 1935 (however, there was a possible sighting in 1936); California in August 1922; New Mexico has two "last" kills one in the spring of 1923 and the other in 1933; Texas on November 2, 1890, and Utah on August 22, 1923. A grizzly bear was killed in the Sierra del Pinitos in Sonora Mexico, a few miles southeast of Nogales, Arizona, on June 18, 1955. This booklet included the listing of six subspecies taken in Arizona: *Ursus horribilus apache*, the Apache Grizzly; *Ursus horribilus arizonae-merriam*, the Arizona Grizzly; *Ursus horribilus baird*, the New Mexico Grizzly; *Ursus horribilus kennerlyi*, the Sonora Grizzly; *Ursus horribilus navajo*, the Navajo Grizzly, and *Ursus horribilus texensis*, the Texas Grizzly), **40** (recorded as *Ursus arctos* - Grizzly Bears were historically present in the Rincon and Santa Catalina Mountains and along the Santa Cruz River bottom from Nogales to Tucson), 55 (recorded as *Ursus*

horribilus Ord. Grizzly Bear. Formerly throughout the mountainous areas of the state, now extinct in Arizona.), 73 (recorded as *Ursus horribilus*), 100 (species: *Ursus arctos*, color photograph), 106 (051207 - *Ursus arctos* subsp. *horribilus* Ord), **118** (recorded as *Ursus horribilus* - Distribution: Formerly statewide, now extinct in Arizona. Figure 92, Page 225)*

Ursus arctos (see footnotes 14 and 100 under *Ursus arctos* subsp. *horribilus*)

Ursus horribilus (see *Ursus arctos* subsp. *horribilus*)

Ursus horribilus apache (see footnote 39 under *Ursus arctos* subsp. *horribilus*)

Ursus horribilus arizonae-merriam (see footnote 39 under *Ursus arctos* subsp. *horribilus*)

Ursus horribilus baird (see footnote 39 under *Ursus arctos* subsp. *horribilus*)

Ursus horribilus kennerlyi (see footnote 39 under *Ursus arctos* subsp. *horribilus*)

Ursus horribilus navajo (see footnote 39 under *Ursus arctos* subsp. *horribilus*)

Ursus horribilus texensis (see footnote 39 under *Ursus arctos* subsp. *horribilus*)

Vespertilionidae: The Plain-nosed Bat Family

***Antrozous pallidus* (J.L. Le Conte): Pallid Bat**

COMMON NAMES: Murcielago Palid (Hispanic), Pallid Bat. HABITS: Feeds on flightless arthropods on the ground, insects, lizards and nectar. Roosts under bridges, buildings, in caves, crevices in cliffs, rocky outcrops, under slabs of rocks, hollow trees and tunnels. HABITAT: Within the range of this species it has been reported from forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. *8, 14, **55** (recorded as *Antrozous pallidus* (Le Conte). Pallid Bat. Locally common throughout the state.), 73, 92 (color photograph), 100 (color photograph), 106 (053106), 118 (recorded as *Antrozous pallidus pallidus* (Le Conte) - Distribution: Statewide. Figure 25, Page 60)*

***Antrozous pallidus* subsp. *pallidus* (J.L. Le Conte): Pallid Bat**

COMMON NAMES: Murcielago Pallid (Hispanic), Pallid Bat. HABITS: The species feeds on flightless arthropods on the ground, insects, lizards and nectar. Roosts under bridges, buildings, in caves, crevices in cliffs, rocky outcrops, under slabs of rocks, hollow trees and tunnels. HABITAT: Within the range of this species it has been reported from forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. *8, 14, 55 (species: recorded as *Antrozous pallidus* (Le Conte). Pallid Bat. Locally common throughout the state.), 73 (species), 92 (species, color photograph of species), 100 (species, color photograph of species), 106 (053106 - species), **118** (recorded as *Antrozous pallidus pallidus* (Le Conte) - Distribution: Statewide. Figure 25, Page 60)*

Corynorhinus townsendii (see *Plecotus townsendii*)

Corynorhinus townsendii subsp. *pallescens* (see *Plecotus townsendii* subsp. *pallescens*)

Dasypterus ega (see *Lasiurus xanthinus*)

***Eptesicus fuscus* (Palisot de Beauvois): Big Brown Bat**

COMMON NAMES: Big Brown Bat, Murcielago Cafe' Grande (Hispanic). HABITS: The species feeds on insects. Roosts under bridges, in buildings, caves, crevices in cliff faces, mines and holes in saguaros and trees. HABITAT: Within the range of this species it has been reported from tundra, forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. *14, **55** (recorded as *Eptesicus fuscus* (Palisot de Beauvois). Big Brown Bat. Locally common throughout the state.), 73, 92 (color photograph), 100 (color photograph), 106 (053106), 118 (recorded as *Eptesicus fuscus pallidus* (Young) - Distribution: Statewide. Figure 20, Page 52)*

***Eptesicus fuscus* subsp. *pallidus* (Young): Big Brown Bat**

COMMON NAMES: Big Brown Bat, Murcielago Cafe' Grande (Hispanic). HABITS: The species feeds on insects. Roosts under bridges, in buildings, caves, crevices in cliff faces, mines and holes in saguaros and trees. HABITAT: Within the range of this species it has been reported from tundra, forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. *14, 55 (species: recorded as *Eptesicus fuscus* (Palisot de Beauvois). Big Brown Bat. Locally common throughout the state.), 73 (species), 92 (species, color photograph of species), 100 (species, color photograph of species), 106 (053106 - species), **118** (recorded as *Eptesicus fuscus pallidus* (Young) - Distribution: Statewide. Figure 20, Page 52)*

***Euderma maculatum* (J.A. Allen): Spotted Bat**

COMMON NAMES: Death's Head Bat, Jackass Bat, Murcielago Pinto (Hispanic), Pinto Bat, Spotted Bat. HABITS: Feeds on insects. Roosts in cracks and crevices in caves, cliffs and ledges, and under loose rock in rocky situations, possibly in close proximity to water. HABITAT: Within the range of this species it has been reported from forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTE: This bat is rarely encountered. Riparian habitats seem to be important. *8, 14 (053007), 55 (recorded as *Euderma maculata* (J.A. Allen). Spotted Bat. Extremely rare; known from four specimens, Maricopa and Yuma counties.), 73, 92, 100 (color photograph), 106 (072306), **118** (recorded as *Euderma maculata* (J.A. Allen) - Distribution: Can be expected almost anywhere in the state although recorded from only four localities. Figure 23, Page 57)*

***Lasionycteris noctivagans* (J.L. Le Conte): Silver-haired Bat**

COMMON NAMES: Murcielago Plateado (Hispanic), Silver-haired Bat. HABITS: Feeds on caddis flies, flies, moths and other insects. Uncommon tree dwelling bat found under bark, in bird nests, dead trees, fissures in rock ledges, tree hollows, and woodpecker holes. HABITAT: Wthin the range of this species it has been reported from tundra, forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. *8, 14, 55 (recorded as *Lasionycteris noctivagans* (Le Conte). Silver-haired Bat. Uncommon solitary tree-dwelling bat found throughout the state at elevations above 5,000 feet), 73, 92 (color photograph), 100 (color photograph), 106 (053106 - family), **118** (recorded as *Lasionycteris noctivagans* (Le Conte) - Distribution: Probably statewide, at least during certain seasons of the year. Figure 18, Page 48)*

***Lasiurus blossevillii* (Müller): Western Red Bat**

SYNONYMY: *Lasiurus borealis teliotis* (H. Allen). COMMON NAMES: Desert Red Bat, Murcielago Rojo (Hispanic), Red Bat, Western Red Bat. HABITS: Feeds on insects including ants; beetles, bugs, cicadas, crickets, flies, leafhoppers, moths and plant hoppers among others. Roosts in the foliage of herbs, shrubs and trees, saguaro boots and sometimes under leaf litter on the ground or in cave-like situations. HABITAT: Within the range of this species it has been reported from the forest, woodland, scrub, grasslands, desertscrub and wetland ecological formations. NOTES: The Red Bat feeds on moths including many crop pests. In Arizona this bat is associated with riparian corridors and wooded areas. *8, 14 (120908), 55 (recorded as *Lasiurus borealis* (Muller). Red Bat. Uncommon solitary tree bat throughout the state in the region of trees.), 73 (recorded as *Lasiurus borealis*), 92 (recorded as *Lasiurus borealis*, color photograph of *Lasiurus borealis*), 100 (recorded as *Lasiurus borealis*, color photograph of

Lasiurus borealis), 106 (120908), **118** (recorded as *Lasiurus borealis teliotis* (H. Allen) - Distribution: Probably statewide in riparian communities of the Upper Sonoran and Transitional Life Zones. Figure 21, Page 54)*

Lasiurus borealis teliotis (see *Lasiurus blossevillii*)

***Lasiurus cinereus* (Palisot de Beauvois): Hoary Bat**

COMMON NAMES: Hoary Bat, Murcielago (Hispanic). HABITS: Feeds primarily on moths. Roosts in buildings, caves, mines, in dense foliage in shrubs and trees and under leaves on the ground. HABITAT: Within the range of this species it has been reported from tundra, forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. *8, 14 (091308 - *Lasiurus cinereus cinereus* (Palisot de Beauvois)), **55** (recorded as *Lasiurus cinereus* (Palisot de Beauvois). Hoary Bat. Uncommon tree dwelling bat found throughout the state in the region of trees.), 73, 92 (color photograph), 100 (color photograph), 106 (genus - 053106), 118 (recorded as *Lasiurus cinereus cinereus* (Beauvois) - Distribution: Statewide. Figure 22, Page 55)*

***Lasiurus cinereus* subsp. *cinereus* (Palisot de Beauvois): Hoary Bat**

COMMON NAMES: Hoary Bat, Murcielago (Hispanic). HABITS: Feeds primarily on moths. Roosts in buildings; caves; mines; in dense foliage in shrubs and trees, and under leaves on the ground. HABITAT: Within the range of this species it has been reported from tundra, forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. *8, 14 (091308 - *Lasiurus cinereus cinereus* (Palisot de Beauvois)), 55 (species: recorded as *Lasiurus cinereus* (Palisot de Beauvois). Hoary Bat. Uncommon tree dwelling bat found throughout the state in the region of trees.), 73, 92 (species, color photograph of species), 100 (species, color photograph of species), 106 (053106 - genus), **118** (recorded as *Lasiurus cinereus cinereus* (Beauvois) - Distribution: Statewide. Figure 22, Page 55)*

Lasiurus ega (see *Lasiurus xanthinus*)

Lasiurus ega subsp. *xanthinus* (see *Lasiurus xanthinus*)

***Lasiurus xanthinus* (Thomas): Western Yellow Bat**

SYNONYMY: *Dasypterus ega* (Gervais), *Lasiurus ega*, *Lasiurus ega* subsp. *xanthinus*. COMMON NAMES: Murcielago Amarillo (Hispanic), Southern Yellow Bat, Western Yellow Bat, Yellow Bat. HABITS: Feeds on flying insects. Roosts in shrubs, trees and under vines. HABITAT: Within the range of this species it has been reported from the woodland, grassland, desertscrub and wetland ecological formations. *14 (072606), **55** (recorded as *Dasypterus ega* (Gervais). Yellow Bat. Rare; known only from two specimens from Tucson.), 73, 92 (color photograph), 100, 106 (072606 - genus with a listing of species)*

***Myotis californicus* (J.J. Audubon & Bachman): California Myotis Bat**

COMMON NAMES: California Bat, California Myotis, California Myotis Bat, Murcielago de California (Hispanic). HABITS: Feeds on arachnids and insects. Roosts in crevices and cracks in cliffs and canyon walls, caves, mine shafts and manmade shelters. HABITAT: Within the range of this species it has been reported from forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. *8 (*Myotis californicus* N. Miller), 14 (051007 - subspp. *californicus* (Audubon & Bachman) and *stephensi* (Dalquest)), **55** (recorded as *Myotis californicus* Audubon & Bachman. California Myotis. Locally common throughout the state.), 73, 100 (color photograph), 106 (053106 - genus), 118 (recorded as *Myotis californicus californicus* (Audubon & Bachman) - Distribution: Eastern and southeastern Arizona, and *Myotis californicus stephensi* Dalquest - Distribution: Northern and western part of the state. Figure 16, Page 45)*

***Myotis californicus* (J.J. Audubon & Bachman) subsp. *californicus*: California Myotis Bat**

COMMON NAMES: California Bat, California Myotis, California Myotis Bat, Murcielago de California (Hispanic). HABITS: The species feeds on arachnids and insects. Roosts in crevices and cracks in cliffs and canyon walls, caves, mine shafts and manmade shelters. HABITAT: Within the range of this species it has been reported from forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. *8 (species: *Myotis californicus* N. Miller), 14 (051007 - subspp. *californicus* (Audubon & Bachman) and stephensi (Dalquest)), 55 (species, recorded as *Myotis californicus* Audubon & Bachman. California Myotis. Locally common throughout the state.), 73 (species), 100 (species, color photograph of species), 106 (053106 - genus), 118 (recorded as *Myotis californicus californicus* (Audubon & Bachman) - Distribution: Eastern and southeastern Arizona. Figure 16, Page 45)*

***Myotis californicus* (J.J. Audubon & Bachman) subsp. *stephensi*: California Myotis Bat**

COMMON NAMES: California Bat, California Myotis, California Myotis Bat, Murcielago de California (Hispanic). HABITS: The species feeds on arachnids and insects. Roosts in crevices and cracks in cliffs and canyon walls, caves, mine shafts and manmade shelters. HABITAT: Within the range of this species it has been reported from forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. *8 (species: recorded as *Myotis californicus* N. Miller), 14 (051007 - subspp. *californicus* (Audubon & Bachman) and stephensi (Dalquest)), 55 (species: recorded as *Myotis californicus* Audubon & Bachman. California Myotis. Locally common throughout the state.), 73 (species), 100 (species), 106 (genus - 053106), **118** (recorded as *Myotis californicus stephensi* Dalquest - Distribution: Northern and western part of the state. Figure 16, Page 45)*

***Myotis velifer* (J.A. Allen): Cave Myotis Bat**

COMMON NAMES: Cave Bat, Cave Myotis, Cave Myotis Bat, Mexican Brown Bat, Murcielago de Cueva (Hispanic), Southwestern Cave Myotis. HABITS: Feeds on small moths and other small insects. Roosts in holes and pockets in caves, crevices, bridges, buildings, abandoned mine shafts, tunnels, and trees. HABITAT: Within the range of this species it has been reported from forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. *8 (recorded as *Myotis velifer velifer* J.A. Allen), 14 (091308 - subspp. *brevis* (Vaughan) and *incautus* (J.A. Allen), subsp. *grandis* (Hayward) has also been reported), **55** (recorded as *Myotis velifer* (J.A. Allen). Cave Myotis. Locally abundant in summer months at lower elevations (below 5,000 feet) throughout the southern and western parts of the state.), 73, 92, 100 (color photograph), 106 (053106 - genus), 118 (recorded as *Myotis velifer brevis* Vaughan - Distribution: Probably statewide. Figure 11, Page 37)*

***Myotis velifer* subsp. *brevis* Vaughan: Cave Myotis Bat**

COMMON NAMES: Cave Bat, Cave Myotis, Cave Myotis Bat, Mexican Brown Bat, Murcielago de Cueva (Hispanic), Southwestern Cave Myotis. HABITS: The species feeds on small moths and other small insects. Roosts in holes and pockets in caves, crevices, bridges, buildings, abandoned mine shafts, tunnels, and trees. HABITAT: Within the range of this species it has been reported from forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. *14 (051007), 55 (species: recorded as *Myotis velifer* (J.A. Allen). Cave Myotis. Locally abundant in summer months at lower elevations (below 5,000 feet) throughout the southern and western parts of the state.), 73 (species), 92 (species), 100 (species, color photograph of species), 106 (053106 - genus), **118** (recorded as *Myotis velifer brevis* Vaughan - Distribution: Probably statewide. Figure 11, Page 37)*

***Myotis yumanensis* (H. Allen): Yuma Myotis Bat**

COMMON NAMES: Murcielago de Yuma (Hispanic), Yuma Myotis, Yuma Myotis Bat. HABITS: Feeds on small insects. Roosts in caves, crevices and swallow nests in cliffs and rocky walls, tree cavities, under bridges and in buildings in close proximity to water. HABITAT: Within the range of this species it has been reported from the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. *8, 14 (072306 - subsp. *yumanensis*), **55** (recorded as *Myotis yumanensis* (H.

Allen). Yuma Myotis. Locally common, statewide in distribution.), 73, 100 (color photograph), 106 (072306 - genus with a listing of species), 118 (recorded as *Myotis yumanensis yumanensis* (H. Allen) - Distribution: Probably statewide at low and medium elevation. Figure 10, Page 36)*

***Myotis yumanensis* subsp. *yumanensis* (H. Allen): Yuma Myotis Bat**

COMMON NAMES: Murcielago de Yuma (Hispanic), Yuma Myotis, Yuma Myotis Bat. HABITS: Feeds on small insects. Roosts in caves, crevices and swallow nests in cliffs and rocky walls, tree cavities, under bridges and in buildings in close proximity to water. HABITAT: Within the range of this species it has been reported from the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. *8, 14 (072306 - subsp. *yumanensis*), 55 (species: recorded as *Myotis yumanensis* (H. Allen). Yuma Myotis. Locally common, statewide in distribution.), 73 (species), 100 (species, color photograph of species), 106 (072306 - genus, listing of species), **118** (recorded as *Myotis yumanensis yumanensis* (H. Allen) - Distribution: Probably statewide at low and medium elevation. Figure 10, Page 36)*

***Pipistrellus hesperus* (H. Allen): Western Pipistrelle Bat**

COMMON NAMES: Canyon Bat, Flittermouse, Murcielago del Poniente (Hispanic), Western Pipistrelle, Western Pipistrelle Bat. HABITS: Feeds on insects. Roosts in buildings, crevices in canyon walls, caves, cliffs, rocky outcrops, under rocks and in mine shafts. HABITAT: Within the range of this species it has been reported from forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. *8 (recorded as *Pipistrellus hesperus* N. Miller), 14 (051007 - subspp. *hesperus* (H. Allen) and *maximus* (Hatfield)), **55** (recorded as *Pipistrellus hesperus* (H. Allen). Western Pipistrelle. Common throughout the state.), 73, 100 (color photograph), 106 (053106 - genus), 118 (recorded as *Pipistrellus hesperus apus* Elliot - Distribution: Southeastern Arizona, and *Pipistrellus hesperus hesperus* (H. Allen) - Distribution: Northern and western Arizona. Figure 19, Page 49)*

***Pipistrellus hesperus* (H. Allen) subsp. *apus* Elliot: Western Pipistrelle Bat**

COMMON NAMES: Canyon Bat, Flittermouse, Murcielago del Poniente (Hispanic), Western Pipistrelle, Western Pipistrelle Bat. HABITS: Feeds on insects. Roosts in buildings, crevices in canyon walls, caves, cliffs, rocky outcrops, under rocks and in mine shafts. HABITAT: Within the range of this species it has been reported from forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. *8 (species: recorded as *Pipistrellus hesperus* N. Miller), 14 (051007), 55 (species: recorded as *Pipistrellus hesperus* (H. Allen). Western Pipistrelle. Common throughout the state.), 73 (species), 100 (species, color photograph of species), 106 (053106 - genus), **118** (recorded as *Pipistrellus hesperus apus* Elliot - Distribution: Southeastern Arizona. Figure 19, Page 49)*

***Plecotus townsendii* (Cooper) (subsp. *pallescens* is the subspspecies reported as occurring in Arizona): Pale Townsend's Big-eared Bat**

SYNONYMY: (for *P.t.* subsp. *pallescens*: *Corynorhinus townsendii* subsp. *pallescens* (Frost)). COMMON NAMES: Lump-nosed Bat, Mule-eared Bat, Murcielago de Townsend (Hispanic), Pale Townsend's Big-eared Bat, Western Big-eared Bat, Western Long-eared Bat, Western Lump-nosed Bat. HABITS: The species feeds on small moths and other small insects; roosts on open ceilings in caves and rock shelters, and under bridges and in water diversion tunnels, abandoned mines, mine tunnels and buildings. HABITAT: Within the range of this species it has been reported from tundra, forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTE: The Pale Townsend's Big-eared Bat is a rather sedentary species that is extremely sensitive to human disturbance and the vandalism of roost caves. *14 (053007), **55** (recorded as *Plecotus townsendii* (Cooper). Lump-nosed Bat. Locally common throughout the state at elevations above 5,000 feet; rare at lower elevations.), 73, 92 (color photograph), 100 (color photograph), 118 (recorded as *Corynorhinus townsendii pallescens* Miller - Distribution: Probably more or less state wide but more abundant in the Upper Sonoran and Transitional Life Zones. Figure 24, Page 58)*

***Plecotus townsendii* subsp. *pallescens* (Miller): Pale Townsend's Big-eared Bat**

SYNONYMY: *Corynorhinus townsendii* subsp. *pallescens* (Frost). COMMON NAMES: Lump-nosed Bat, Mule-eared Bat, Murcielago de Townsend (Hispanic), Pale Townsend's Big-eared Bat, Western Big-eared Bat, Western Long-eared Bat, Western Lump-nosed Bat. HABITS: The species feeds on small moths and other small insects; roosts on open ceilings in caves and rock shelters, and under bridges and in water diversion tunnels, abandoned mines, mine tunnels and buildings. HABITAT: Within the range of this species it has been reported from tundra, forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTE: The Pale Townsend's Big-eared Bat is a rather sedentary species that is extremely sensitive to human disturbance and the vandalism of roost caves. *14 (053007), 55 (species: recorded as *Plecotus townsendii* (Cooper). Lump-nosed Bat. Locally common throughout the state at elevations above 5,000 feet; rare at lower elevations.), 73 (species), 92 (species, color photograph of species), 100 (species, color photograph of species), **118** (recorded as *Corynorhinus townsendii pallescens* Miller - Distribution: Probably more or less state wide but more abundant in the Upper Sonoran and Transitional Life Zones. Figure 24, Page 58)*

CLASS OSTEICHTHYES: The BONY FISHES

Cyprinidae: The Minnow Family

***Agosia chrysogaster* (C.F. Girard): Longfin Dace**

COMMON NAME: Longfin Dace. HABITS: Feeds on algae, crustaceans, detritus, filamentous algae, insects and zooplankton. Eggs are laid in nests made in shallow depressions on stream bottoms. HABITAT: The Longfin Dace lives in shallow and sandy rocky runs, clear and cool mountain brooks, flowing pools of creeks, gravelly and sandy streams and small to medium rivers. *8, 14, 55, 61, 67, 73, **ADS** (Sunday, August 1, 2010, Section B, Page 6, Report: Native fish return to Santa Cruz)*

ACKNOWLEDGEMENTS

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FOOTNOTES and REFERENCES
for the Species Distribution Listings compiled for Arizona

(1) General Mapping:

Arizona Atlas & Gazetteer. 2002. DeLorme.
www.delorme.com

National Geographic Arizona Seamless USGS Topographic Maps. Maps created with TOPO! R C 2002 National Geographic.

Tucson Metropolitan Street Atlas 2005 Edition. Wide World of Maps, Inc., Phoenix, Arizona.
www.maps4u.com

(2) Physiographic Province Mapping:

Walker, Henry P. and Don Bufkin. 1979. Historical Atlas of Arizona, University of Oklahoma Press, Norman, Page 4A and Map.

(3) Soils Mapping:

Arizona General Soil Map, July 1975, United States Department of Agriculture, Soil Conservation Service and the University of Arizona Agricultural Experiment Station, compiled by J.E. Jay, Y.H. Havens, D.M. Hendricks, D.F. Post and C.W. Guernsey.

Richardson, M.L. and M.L. Miller. March 1974. United States Department of Agriculture - Soil Conservation Service in cooperation with the Pima County Natural Resource Conservation District, Report and Interpretations for the General Soil Map of Pima County, Arizona and General Soil Map Pima County Arizona. Arizona General Soil Map, July 1975, United States Department of Agriculture - Soil Conservation Service and the University of Arizona Agricultural Experiment Station, compiled by J.E. Jay, Y.H. Havens, D.M. Hendricks, D.F. Post and C.W. Guernsey.

(4) Biotic Communities Mapping and Definitions

Ecological formations used in the listings follow those presented in the mapping for the Biotic Communities of the Southwest.

Brown, David E. 1982. Biotic Communities of the American Southwest – United States and Mexico, Desert Plants, Volume 4, Numbers 1-4, Published by the University of Arizona for the Boyce Thompson Southwestern Arboretum, Tucson, Arizona.

Brown, David E. and Charles H. Lowe. Revised June 1983. Biotic Communities of the Southwest, August 1980, General Technical Report RM-78, United Stated Department of Agriculture, Forest Service, Rocky Mountain Forest and Range Experiment Station.

Brown, David E., Charles H. Lowe and Charles P. Pase. June 1980. A Digitized Systematic Classification for Ecosystems with an Illustrated Summary of the Natural Vegetation of North America, United States Department of Agriculture, Forest Service, General Technical Report RM-73

(5) Nomenclature:

for Plants:

Generally follows that presented by The Biota of North America Program of the North Carolina Botanical Garden (BONAP) with A Synonymized Checklist of the Vascular Flora of the United States, Puerto Rico and the Virgin Islands, Full Index 1998.
http://www.bonap.org/
http://www.csdl.tamu.edu/FLORA/b98/check98.htm

The International Plant Names Index (2004, 2005)
Published on the Internet:
http://www.ipni.org [accessed 2004, 2005, 2006]

(http://plants.usda.gov). National Plant Data Center, Baton Rouge, LA 70874-4490 USA

for Vertebrate Animals:

Section on Arizona Habitats, The University of Arizona Press, Tucson, Arizona and E. Lendell Cockrum. 1960. The Recent Mammals of Arizona: Their Taxonomy and Distribution, The University of Arizona Press, Tucson, Arizona.

Biota Information System of New Mexico (BISON-M), New Mexico Game and Fish, New Mexico Natural Heritage Program
http://nmnhp.unm.edu/bisonm/bisonquery.php

for Invertebrate Animals:

Arizona Game and Fish Department. Unpublished Abstracts Compiled and Edited by the Heritage Data Management System, Arizona Game and Fish Department, Phoenix, AZ.
http://www.gf.state.az.us/w_c/edits/species_concern.shtml

Biota Information System of New Mexico (BISON-M), New Mexico Game and Fish, New Mexico Natural Heritage Program
http://nmnhp.unm.edu/bisonm/bisonquery.php

(6) Growth Habits of Plants:

Generally coincides with that presented by the National Plants Database. USDA, NRCS. 2004. The PLANTS Database, Version 3.5 (http://plants.usda.gov). National Plant Data Center, Baton Rouge, LA 70874-4490 USA

Common names identified in the USDA NRCS database have been printed in bold lettering: A few of the plants were not provided with a common name in the USDA NRCS database and additional resources were used, including:

Arizona Game and Fish Department. Unpublished Abstracts Compiled and Edited by the Heritage Data Management System, Arizona Game and Fish Department, Phoenix, AZ. *8*

Sunset Western Garden Book Kathleen N. Brenzel, 2001, Sunset Publishing Corporation, Menlo Park, California. *18*

(7) Arid Zone Trees, A Resource for Landscape Professionals, dedicated to providing quality trees to the Landscape Industries that are appropriate to the Desert Southwest
http://www.aridzonetrees.com/index.htm

(8) Arizona Game and Fish Department. Unpublished abstracts compiled and edited by the Heritage Data Management System, Arizona Game and Fish Department, Phoenix, AZ. http://www.gf.state.az.us/w_c/edits/species_concern.shtml

Amphibians: 2002. *Bufo microscaphus*, Arizona Toad; 2005. *Bufo retiformis*, Sonoran Green Toad; 2001. *Eleutherodactylus augusti* subsp. *cactorum*, Western Barking Frog; 2003. *Gastrophryne olivacea*, Great Plains Narrow-mouthed Toad; 2002. *Hyla arenicolor*, Canyon Treefrog; 2003. *Pternohyla fodiens*, Lowland Burrowing Treefrog; 2001. *Rana chiricahuensis*, Chiricahua Leopard Frog, and 2001. *Rana yavapaiensis*, Lowland Leopard Frog.

Arachnids: 2004. *Albiorix anophthalmus*, a cave obligate Pseudoscorpion.

Birds: 2003. *Accipiter gentilis*, American Goshawk; 2003. *Aimophila quinquestriata*, Five-striped Sparrow; 2002. *Aimophila ruficeps* subsp. *rupicola*: Yuma Rufous-crowned Sparrow; 2001. *Ammodramus bairdii*, Baird's Sparrow; 2001. *Ammodramus savannarum* subsp. *ammolequs*, Arizona Grasshopper Sparrow; 2001. *Anthus spragueii*, Sprgaue's Pipit; 2002. *Aquila chrysaetos*, Golden Eagle; 2000. *Asturina nitida*, Northern Grey Hawk; 2001. *Athene cunicularia* subsp. *hypugaea*, Western Burrowing Owl; 2001. *Buteo regalis*, Ferruginous Hawk; 2001. *Buteo swainsoni*, Swainson's Hawk; 2005. *Buteogallus anthracinus*, Common Black-hawk; 2003. *Caracara cheriway*, Crested Caracara; 2002. *Ceryle alcyon*, Belted Kingfisher; 2001. *Chloroceryle americana*, Green Kingfisher; 2002. *Coccyzus americanus* subsp. *occidentalis*, Western Yellow-billed Cuckoo; 2001-08-27. *Colinus virginianus* subsp. *ridgwayi*, Masked Bobwhite; 2002. *Dendrocygna autumnalis*, Black-bellied Whistling-duck; 2001. *Dendrocygna bicolor*, Fulvous Whistling-duck; 2002. *Dolichonyx oryzivorus*, Bobolink; 2002. *Egretta thula*, Snowy Egret; 2002. *Elanus leucurus*, White-tailed Kite; 2003 *Empidonax fulvifrons* subsp. *pygmaeus*, Northern Buff-breasted Flycatcher; 2003. *Empidonax hammondii*, Hammond's Flycatcher; 2002. *Empidonax traillii* subsp. *extimus*, Southwestern Willow Flycatcher; 1998. *Falco peregrinus* subsp. *anatum*, American Peregrine Falcon; 2001. *Glaucidium brasilianum* subsp. *cactorum*, Cactus Ferruginous Pigmy-owl; 2002. *Haliaeetus leucocephalus*, Bald Eagle; 2004. *Lanius ludovicianus*, Loggerhead Shrike; 2005. *Otus flammeolus*, Flammulated Owl; 2002. *Pandion haliaetus*, Osprey; 2002. *Plegadis chihi*, White-faced Ibis; 2002. *Polioptila nigriceps*, Black-capped Gnatcatcher; 2001. *Rallus longirostris* P. Boddaert subsp. *yumanensis*, Yuma Clapper Rail; 2002. *Setophaga ruticilla*, American Redstart; 2005. *Strix occidentalis* subsp. *lucida*, Mexican Spotted Owl; 2001. *Trogon elegans*, Elegant Trogon; 2003. *Tyrannus melancholicus*, Tropical Kingbird, and 2002. *Vireo bellii* subsp. *arizonae*, Arizona Bell's Vireo.

Dicots: 2000. *Abutilon parishii*, Pima Indian Mallow; 2004. *Ammoselinum giganteum*, Sand Parsley; 2003. *Amoreuxia gonzalezii*, Saiya; 2003. *Amsonia kearneyana*, Kearney's Blue Star; 2004. *Arenaria* aberrans, Mt. Dellenbaugh Sandwort; 1995. *Aster potosinus*, Lemmon's Aster; 2004. *Berberis harrisoniana*, Kofa Barberry; 2000. *Boerhavia* megaptera, Tucson Mountain Spiderling; 2004. *Bursera fagaroides*, Torch Wood Copal; 2003. *Capsicum annuum* var. *glabriusculum*, Chiltepin; 2005. *Castela emoryi*, Crucifixion Thorn; 2004. *Cirsium mohavense*, Mohave Thistle; 2001. *Cleome multicaulis*, Playa Spider Plant; 2001. *Colubrina californica*, California Snakewood; 2001. *Coryphantha scheeri* var. *robustispina*, Pima Pineapple Cactus; 2005. *Coryphantha scheeri* var. *valida*, Slender Needle Corycactus; 2004. *Croton wigginsii*, Dune Croton; 2005. *Cryptantha ganderi*, Gander's Cryptantha; 2001. *Dalea tentaculoides*, Gentry Indigo Bush; 2005. *Desmanthus covillei*, Coville Bundleflower; 2004. *Echinocactus horizonthalonius* var. *nicholii*, Nichol Turk's Head Cactus; 2005. *Echinocactus polycephalus*, Cotton-top Cactus; 2005. *Echinocereus fasciculatus*, Magenta-flower Hedgehog Cactus; 2003. *Echinocereus triglochidiatus* var. *arizonicus*, Arizona Hedgehog Cactus; 2004. *Echinomastus erectocentrus* var. *acunensis*, Acuna Cactus; 2003. *Echinomastus erectocentrus* var. *erectocentrus*, Needle-spined Pineapple Cactus; 2001. *Erigeron arisolius*, Arid Throne Fleabane; 2003. *Eriogonum capillare,* San Carlos Wild-buckwheat; 2005. *Eriogonum ericifolium* var. *ericifolium*, Heathleaf Wild-

buckwheat; 2004. *Euphorbia gracillima*, Mexican Broomspurge; 2005. *Euphorbia platysperma*, Dune Spurge; 2005. *Ferocactus cylindraceus* var. *cylindraceus*. California Barrel Cactus; 2001. *Graptopetalum bartramii*, Bartram Stonecrop; 2000. *Hackelia ursina*, Chihuahuan Stickseed; 2000. *Hedeoma dentata*, Mock-pennyroyal; 2000. *Hermannia* pauciflora, Sparseleaf Hermannia; 2001. *Heterotheca rutteri*, Huachuca Golden Aster; 2005. *Ibervillea tenuisecta*, Texas Globe Berry; 2000. *Ipomoea tenuiloba*, Trumpet Morning-glory; 2003. *Lilaeopsis schaffneriana* var. *recurva*, Huachuca Water Umbel; 2000. *Lupinus huachucanus*, Huachuca Mountain Lupine; 2004. *Mammillaria mainiae*, Counter Clockwise Fishhook Cactus; 2004. *Matelea cordifolia*, Sonoran Milkweed Vine; 2006. *Passiflora arizonica*, Arizona Passionflower; 2003. *Pectis imberbis*, Beardless Chinch Weed; 2005. *Peniocereus striatus*, Dahlia Rooted Cereus; 2004. *Penstemon superbus*, Superb Beardtongue; 2005. *Perityle ajoensis*, Ajo Rock Daisy; 2005. *Petalonyx linearis*, Longleaf Sandpaper-plant; 2004. *Pholisma sonorae*, Sand Food; 2004. *Plagiobothrys pringlei*, Pringle Popcorn-flower; 2005. *Rhus kearneyi*, Kearney Sumac; 2005. *Stenocereus thurberi*, Organ Pipe Cactus; 2005. *Stephanomeria schottii*, Schott Wire Lettuce; 2004. *Stevia lemmonii*, Lemmon's Stevia; 2004. *Tragia laciniata*, Sonoran Noseburn; 2004. *Tumamoca macdougalii*, Tumamoc Globeberry; 2005. *Vauquelinia californica* subsp. *sonorensis*, Sonoran Mountain Rosewood, and 2004. *Viola umbraticola*, Shade Violet.

Ferns: 1997. *Cheilanthes pringlei*, Pringle Lip Fern and 2003. *Notholaena lemmonii*, Lemmon Cloak Fern.

Fishes: 2002. *Agosia chrysogaster*, Longfin Dace; 2002. *Catostomus clarki*, Desert Sucker; 2002. *Catostomus insignis,* Sonora Sucker; 2001. *Cyprinodon eremus*, Quitobaquito Pupfish; 2001. *Cyprinodon macularius*, Desert Pupfish; 2002. *Gila intermedia*, Gila Chub; 2002. *Gila robusta*, Roundtail Chub; 2001. *Poeciliopsis occidentalis* subsp. *occidentalis*, Gila Topminnow, and 2001. *Poeciliopsis occidentalis* subsp. *sonorensis*, Yaqui Topminnow.

Gastropods: 2003. *Tryonia quitobaquitae*, Quitobaquito Tryonia.

Insects: 2001. *Agathymus aryxna*, Arizona Giant Skipper; 2001. *Agathymus polingi*, Poling's Giant Skipper; 2004. *Anthocharis cethura*, Desert Orangetip; 2001. *Calephelis rawsoni* subsp. *arizonensis*, Arizona Metalmark; 2002. *Heterelmis stephani*, Stephan's Heterelmis Riffle Beetle; 2001. *Limenitis archippus* subsp. *obsoleta*, Obsolete Viceroy Butterfly, and 2001. and *Neophasia terlootii*, Chiricahua Pine White.

Mammals: 2002. *Antrozous pallidus*, Pallid Bat; 2002. *Antilocapra americana* subsp. *mexicana*, Chihuahuan Pronghorn Antelope; 2002. *Antilocapra americana* subsp. *sonoriensis*, Sonoran Pronghorn Antelope; 2004. *Bassariscus astutus*, Ringtail; 2001. *Canis lupus baileyi*, Mexican Gray Wolf; 2003. *Choeronycteris mexicana*, Mexican Long-tongued Bat; 2004. *Eptesicus fuscus*, Big Brown Bat; 2003. *Euderma maculatum*, Spotted Bat; 2002. *Eumops perotis* subsp. *californicus*, Greater Western Bonneted Bat; 2003. *Eumops underwoodi*, Underwood's Mastiff Bat; 2004. *Herpailurus yaguarondi*, Jaguarundi; 2004. *Lasionycteris noctivagans*, Silver-haired Bat; 2003. *Lasiurus blossevillii*, Western Red Bat; 2004. *Lasiurus cinereus*, Hoary Bat; 2004. *Leopardus pardalis* subsp *sonoriensis*, Ocelot; 2003. *Leptonycteris curasoae* subsp. *yerbabuenae*, Lesser Long-nosed Bat; 2002. *Lontra canadensis* subsp. *sonora*, Southwestern River Otter; 2001. *Macrotus californicus*, California Leaf-nosed Bat; 2003. *Myotis auriculus*, Southwestern Myotis; 2004. *Myotis californicus*, California Myotis; 2003. *Myotis ciliolabrum***,** Western Small-footed Myotis; 2003. *Myotis occultus*, Fringed Myotis; 2003. *Myotis yumanensis*, Yuma Myotis; 2003. *Nyctinomops femorosacca*, Pocketed Free-tailed Bat; 2003. *Nyctinomops macrotis*, Big Free-tailed Bat; 2003. *Myotis thysanodes*, Fringed Myotis; 2002. *Myotis velifer*, Cave Myotis; 2004. *Panthera onca*, Jaguar; 2004. *Pipistrellus hesperus*, Western Pipistrelle; 2007. *Puma concolor*, Mountain Lion; 2005. *Sciurus arizonensis*, Arizona Gray Squirrel; 2003. *Sigmodon ochrognathus*, Yellow-nosed Cotton Rat, and 2004. *Tadarida brasiliensis*, Brazilian Free-tailed Bat.

Monocots: 2005. *Agave* x *ajoensis*, Ajo Agave; 2003. *Agave murpheyi*, Hohokam Agave; 1994. *Agave parviflora* subsp. *parviflora*, Santa Cruz Striped Agave; 2005. *Agave schottii* var. *treleasei*, Trelease Agave; 2005. *Agave utahensis* var. *kaibabensis,* Kaibab Agave; 2005. *Allium bigelovii*, Bigelow Onion; 1999. *Allium gooddingii*, Goodding Onion; 2005. *Allium parishii*, Parish Onion; 2004. *Carex chihuahuensis*, Chihuahuan Sedge; 2000. *Carex ultra*, Arizona Giant Sedge; 2004. *Cathestecum erectum*, False Grama; 2004. *Hexalectris revoluta*, Chisos Coral-root; 2005. *Hexalectris spicata*, Crested Coral Root; 2001. *Lilium parryi*, Lemon Lily; 2005. *Listera convallarioides*, Broadleaf Twayblade; 2000. *Muhlenbergia xerophila*, Weeping Muhly, and 2005. *Schiedeella arizonica*, Fallen Ladies'-tresses.

Reptiles: 2001. *Aspidoscelis burti* subsp. *stictogrammus*, Giant Spotted Whiptail; 2003. *Aspidoscelis burti* subsp. *xanthonotus*, Redback Whiptail; 2002. *Chionactis occipitalis* subsp. *klauberi*, Tucson Shovel-nosed Snake; 2003. *Chionactis palarostris* subsp. *organica*, Organ Pipe Shovel-nosed Snake; 2001. *Crotalus lepidus* subsp. *klauberi*, Banded Rock Rattlesnake; 2001. *Gopherus agassizi*, Desert Tortoise; 2002. *Heloderma suspectum* subsp. *cinctum*, Banded Gila Monster; 2002. *Heterodon nasicus* subsp. *kennerlyi*, Mexican Hog-nosed Snake; 2005. *Kinosternon sonoriense*, subsp. *longifemorale*, Sonoyta Mud Turtle; 2003. *Lichanura trivirgata* subsp. *gracia*, Desert Rosy Boa; 2003. *Phrynosoma mcallii*, Flat-tailed Horned Lizard; 2005. *Sauromalus ater*, Common Chuckwalla; 2001. *Thamnophis eques* subsp. *megalops*, Mexican Garter Snake; 2003. *Uma rufopunctata*, Yuma Desert Fringe-toed Lizard, and 2003. *Xantusia arizonae*, Arizona Night Lizard.

(9) Arizona Rare Plant Committee. Arizona Rare Plant Field Guide, A Collaboration of Agencies and Organizations.

(10) Arizona Sonora Desert Museum, Migratory Pollinators Program, Spring 2003 Update, Table 3. Plants Visited by Hummingbirds in Sonora
http://desertmuseum.org/pollination/table_3.html

(11) Barnes, Will C. 1988. Arizona Place Names, The University of Arizona Press, Tucson, Arizona.

(12) Benson, Lyman. 1981. The Cacti of Arizona, The University of Arizona Press, Tucson, Arizona.

(13) Benson, Lyman and Robert A. Darrow. 1981. Trees and Shrubs of the Southwestern Deserts, The University of Arizona Press, Tucson, Arizona.

(14) Biota Information System of New Mexico (BISON-M), New Mexico Game and Fish, New Mexico Natural Heritage Program
http://nmnhp.unm.edu/bisonm/bisonquery.php

(15) Bowers, Janice E. and Steven P. McLaughlin. 1987. Flora and Vegetation of the Rincon Mountains, Pima County, Arizona. Desert Plants, Vol. 8, No. 2, pp. 50-95, 1987.

(16) Bowers, J.E., and R.M. Turner. 1985. A Revised Vascular Flora of Tumamoc Hill, Tucson, Arizona. Madrono, Vol.32, No.4, pp. 225-252, 20 December 1985.

(17) Breitung, August J., The Agaves, The Cactus and Succulent Journal 1968 Yearbook, Abbey Garden Press, Reseda, California.

(18) Brenzel, Kathleen N. 2001. Sunset Western Garden Book, Sunset Publishing Corporation, Menlo Park, California.

(19) Brown, David E. 1982. Biotic Communities of the American Southwest – United States and Mexico, Desert Plants, Volume 4, Numbers 1-4, Published by the University of Arizona for the Boyce Thompson Southwestern Arboretum, and associated map: Brown, David E. and Lowe, Charles H., Biotic Communities of the Southwest, August 1980, General Technical Report RM-78, United Stated Department of Agriculture, Forest Service, Rocky Mountain Forest and Range Experiment Station Revised June 1983.

(20) Bull, John and John Farrand, Jr. 1977. The Audubon Society Field Guide to North American Birds: Eastern Region, Alfred A. Knopf, Inc., New York, New York.

(21) Catalogue of New World Grasses
http://mobot.mobot.org/W3T/Search/index/nwgctA.html

(22) Chambers, Nina – Sonoran Institute & Hawkins, Trica Oshant - Environmental Education Exchange. Invasive Plants of the Sonoran Desert, A Field Guide.

(23) Checklist of North American Butterflies Occurring North of Mexico
http://www.naba.org/pubs/enames2.html

(24) Checklist of Plants, Organ Pipe Cactus National Monument, August 2005.

(25) Dollar, Derrick; Scott Richardson and Erin Deely. 2000. Mammal Survey for the Mason Audubon Center, Tucson, Arizona USA.

(26) Duffield, Mary Rose and Warren D. Jones. 1981. Plants for Dry Climates, HP Books, Los Angeles, California.

(27) Earle, W. Hubert. 1963. Cacti of the Southwest, Rancho Arroyo book distributors, Tempe, Arizona.

(28) Epple, Anne Orth. 1995. A Field Guide to the Plants of Arizona, Falcon Press Publishing Co., Inc., Helena, Montana.

(29) Erickson, Jim. 1998. 2 Areas Near Santa Ritas Sought for Conservation, Park, the Arizona Daily Star, Tuesday, 17 November 1998.

(30) Especies con Usos No Maderables en Bosques de Encino, Pino y Pino-Encino en los Estados de Chihuahua, Durango, Jalisco, Michoacan, Guerrero y Oaxaca.
http://www.semarnat.gob.mx/pfnm/indices.htm

(31) Felger, Richard S. 1997. Checklist of the Vascular Plants of Cabeza Prieta National Wildlife Refuge, Arizona, Drylands Institute, Tucson, Arizona.

(32) Florida Nature
http://www.floridanature.org/
http://www.floridanature.org/copyright.asp

(33) Gould, Frank W. 1951. Grasses of Southwestern United States, University of Arizona Press, Tucson, Arizona.

(34) Hawksworth, Frank G. and Delbert Wiens. March 1996. United States Department of Agriculture, Forest Service. Agricultural Handbook 709 - Dwarf Mistletoes: Biology, Pathology, and Systematics.

http://www.rmrs.nau.edu/publications/ah_709/index.html

(35) Haynes, Lisa and Susan Schuetze. 1997. Pamphlet: A Sampler of Arizona's Threatened and Endangered Wildlife, Arizona Game and Fish Department and Arizona Department of Agriculture.

(36) The Hermannia Pages: American Species
http://www.meden.demon.co.uk/Malvaceae/Hermannia/American.html

(37) Heymann, M.M. 1975. Reptiles and Amphibians of the American Southwest, Doubleshoe Publishers, Scottsdale, Arizona.

(38) Hodge, Carle. 1991. All About Saguaros, Arizona Highways Magazine, Arizona Department of Transportation, Phoenix, Arizona.

(39) Hoffmeister. 1980. *Ursus arctos*, Specimens in Collections

(40) Housholder, Bob. 1966. The Grizzly Bear in Arizona

(41) Howery, Larry D. and Gina Ramos. Arizona's Invasive Weeds, The University of Arizona, Cooperative Extension Service and United States Department of the Interior, Bureau of Land Management.

(42) Integrated Taxonomic Information System (ITIS) on-line database:
http://www.itis.usda.gov.

(43) The International Plant Names Index (2004), accessed 2005 and 2005, published on the Internet:
http://www.ipni.org

(44) Jepson Flora Project
http://ucjeps.berkeley.edu/
http://ucjeps.berkeley.edu/copyright.html

(45) Johnson, Matthew Brian. 2004. Cacti, other Succulents, and Unusual Xerophytes of Southern Arizona, Boyce Thompson Southwestern Arboretum / Arizona Lithographers, Tucson, Arizona.

(46) Kearney, Thomas K., Robert H. Peebles and collaborators. 1960. Arizona Flora. Second Edition with Supplement by John Thomas Howell and Elizabeth McClintock and collaborators, 4th printing 1973, University of California Press, Berkeley, Los Angeles, California.

(47) Krausman, Paul R. and Michael L. Morrison. 2003. Wildlife Ecology and Management, Santa Rita Experimental Range (1903 to 2002), USDA Forest Service Proceedings RMRS-P-30.2003 Pages 59 thru 67.

(48) Landscaping with Native Arizona Plants. 1973. Natural Vegetation Committee, Arizona Chapter, Soil Conservation Society of America, The University of Arizona Press, Tucson, Arizona.

(49) Las Cienegas National Conservation Area - Records and Reports.

(50) Laymon, Stephen A. Paper: Yellow-billed Cuckoo.

(51) Lellinger, David B. 1985. A Field Manual of the Ferns and Fern-Allies of the United States and Canada, Smithsonian Institution Press, Washington, D.C.

(52) Little, Elbert L. 1980. The Audubon Society Field Guide to North American Trees – Western Region, Alfred A. Knopf, New York, New York.

(53) Little, Elbert L., Jr. December 1950. Southwestern Trees - A Guide to the Native Species of New Mexico and Arizona, Agriculture Handbook No. 9, United State Department of Agriculture, Forest Service, U.S. Government Printing Office, Washington 25 D.C.

(54) Lowe, Charles H., Cecil R. Schwalbe and Terry B. Johnson. 1986. The Venomous Reptiles of Arizona, Arizona Game and Fish Department, Phoenix, Arizona.

(55) Lowe, Charles H. 1964. The Vertebrates of Arizona with Major Section on Arizona Habitats, The University of Arizona Press, Tucson, Arizona.

(56) Maus, Kathryn. October 12, 2001. Plants of the West Branch of the Santa Cruz River, The West Branch Flora, Arid Lands Resource Sciences, University of Arizona, Tucson, Arizona.
http://www.co.pima.az.us/cmo/sdcp/sdcp2/reports/WB/pflora.htm

(57) Maus, Kathryn. September 9, 2002. "Checklist for the Plants of the West Branch of the Santa Cruz, Tucson, Arizona..
http://eebweb.arizona.edu/HERB/WESTBRANCH/westbranch.html

(58) McLaughlin, Steven P. July 18, 1990. Flora of Buenos Aires National Wildlife Refuge (including Arivaca Cienega), Office of Arid Land Studies, University of Arizona.

(59) Medina, Alvin L. 2003. Historical and Recent Flora of the Santa Rita Experimental Range, USDA Forest Service Proceedings RMRS-P-30.2003 Pages 141 thru 148.

(60) Milne, Lorus and Margery. 1980. The Audubon Society Field Guide to North American Insects and Spiders, Alfred A. Knopf, New York, New York.

(61) Minckly, W.L. 1973. Fishes of Arizona, Sims Printing Company, Inc., Phoenix, Arizona.

(62) Missouriplants.com
http://www.missouriplants.com/index.html

(63) National Plants Database: USDA, NRCS. 2004. The PLANTS Database, Version 3.5, National Plant Data Center, Baton Rouge, LA 70874-4490 USA.
http://plants.usda.gov

with links to the following sites:

USDA, ARS, National Genetic Resources Program.
Germplasm Resources Information Network (GRIN) [Online Database].
National Germplasm Resources Laboratory, Beltsville, Maryland.
URL: http://www.ars-grin.gov/cgi-bin/npgs/html/taxon.pl?447394 (29 November 2008)
http://www.ars-grin.gov/npgs/aboutgrin.html

Flora of North America

www.efloras.org

United State Department of Agriculture Forest Service, Fire Effects Information System
http://www.fs.fed.us/database/feis/index.html

Grass Manual on the Web

The Center for Plant Conservation

Kemper Center for Home Gardening
http://www.mobot.org/gardeninghelp/plantinfo.shtml

Burke Museum of Natural History and Culture
http://www.washington.edu/burkemuseum/

(64) Native Grasses from South Texas, Texas A&M University System, Agricultural Program.
http://uvalde.tamu.edu/herbarium/grasses.htm

(65) Olin, George. 1975. Mammals of the Southwest Deserts, Popular Series No. 8, Southwest Parks and Monuments Association.

(66) Owensby, Clenton. 2002. Line Drawings of Kansas Grasses
http://spuds.agron.ksu.edu/ksgrasskey/linedraw.htm

(67) Page, Lawrence M. and Brooks M. Burr. 1991. A Field Guide to Freshwater Fishes – North America North of Mexico, Peterson Field Guides, Houghton Mifflin Company, Boston, Massachusetts.

(68) Parker, Kittie F. 1982. An Illustrated Guide to Arizona Weeds, University of Arizona Press, Tucson, Arizona.

(69) Peterson, Roger Tory. 1961. A Field Guide to Western Birds, Houghton Mifflin Company, Boston, Massachusetts.

(70) Pima Community College – Desert Ecology of Tucson, Arizona
http://wc.pima.edu/Bfiero/tucsonecology/plants/wflow_heri.htm

(71) Pima County Parks and Recreation Department, Cienega Creek Natural Preserve Bird Checklist, Tucson, Arizona.

(72) Pima County Sonoran Desert Conservation Plan Threatened and Endangered Species
http://www.pima.gov/cmo/sdcp/sdcp2/fsheets/facts.html

(73) Ransom, Jay Ellis. 1981. Harper and Row's Complete Field Guide to North American Wildlife, Western Edition, Harper and Row, New York, New York.

(74) Raven, Peter H., Ray F. Evert and Helena Curtis. 1976 Biology of Plants, Second Edition, Worth Publishers, Inc.

(75) Richardson, M.L. and M.L. Miller. March 1974. United States Department of Agriculture, Soil Conservation Service in cooperation with The Pima County Natural Resource Conservation District,

Reports and Interpretations for the General Soil Map of Pima County, Arizona and General Soil Map Pima County Arizona.

(76) Richmond, D.L. and M.L. Richardson. January 1974. United States Department of Agriculture, Soil Conservation Service in cooperation with the Natural Resource Conservation Districts in Mohave County, General Soil and Interpretations, Mohave County, Arizona and General Soil Map Mohave County, Arizona.

(77) Rondeau, Renee, Thomas R. Van Devender, C. David Bertelson, Philip Jenkins, Rebecca K. Wilson, Mark A. Dimmitt. December, 1996. Annotated Flora of the Tucson Mountains, Pima County, Arizona, Desert Plants, Volume 12, Number 2.
http://eebweb.arizona.edu/herb/TUCSONS/tucsonsA-C.html

(78) Rosen, Philip C. 15 October 2001. Biological Values of the West Branch of the Santa Cruz River, With an Outline for a Potential River Park or Reserve, Including a Preliminary Flora by Kathryn Maus (Plants of the West Branch of the Santa Cruz , The West Branch Flora has been recorded separately as Footnote 56), School of Renewable Natural Resources, University of Arizona, Tucson, Arizona.
http://www.co.pima.az.us/cmo/sdcp/sdcp2/reports/WB/WestB.htm

(79) Rosenberg, Gary H. and Russel, Ruth. 1999. Checklist of North American Birds United States and Canada Including Hawaii 2000, Tucson Audubon Society.

(80) Schmutz, Ervin M., Barry N. Freeman, Raymond E. Reed. 1968. Livestock- Poisoning Plants of Arizona, The University of Arizona Press, Tucson, Arizona.

(81) School of Botanical Medicine - Checklist of the Vascular Plants of Arizona (excluding grasses and their allies)
http://www.ibiblio.org/london/alternative-healthcare/Southwest-School-of-Botanical-Medicine/HOMEPAGE/Floras/AZchklst.txt

(82) Southeast Arizona Butterfly Association (SEABA), Plant List - SEABA's Butterfly Garden at the Tucson Audubon Society's Mason Center
http://www.naba.org/chapters/nabasa/home.html

(83) Southwest Parks and Monument Association. 1991. A Checklist of Mammals, Amphibians and Reptiles of Organ Pipe Cactus National Monument, Tucson, Arizona.

(84) Southwest Parks and Monument Association. 1999. A Checklist of the Birds of Organ Pipe Cactus National Monument, Tucson, Arizona.

(85) Southwest Environmental Information Network (SEINet)
http://seinet.asu.edu/collections/selection.jsp?cat=plantae

(86) Spellenberg, Richard. 1979. The Audubon Society Field Guide to North American Wildflowers - Western Region, Alfred A. Knopf, New York, New York.

(87) Stebbins, Robert C. 1985. A Field Guide to Western Reptiles and Amphibians, Peterson Field Guides, Houghton Mifflin Company, Boston, Massachusetts.

(88) Texas Native Shrubs
http://aggie-horticulture.tamu.edu/ornamentals/nativeshrubs/indexscientific.htm

(89) Thornber, J.J. Vegetation Groups in the Desert Laboratory Domain *in* Spalding. 1909. The Distribution and Movements of Desert Plants, Carnegie Institution of Washington, Publication No. 113: 103 - 112.

(90) Tohono Chul Park, Field Checklist of Birds, Tucson, Arizona.

(91) Turner, Raymond M., Janice E. Bowers and Tony L. Burgess. 1995. Sonoran Desert Plants An Ecological Atlas, The University of Arizona.

(92) Tuttle, Merlin D. 1988. America's Neighborhood Bats, University of Texas Press, Austin, Texas.

(93) Udvardy, Miklos D.F. 1977. The Audubon Society Field Guide to North American Birds: Western Region, Alfred A. Knopf, Inc., New York, New York.

(94) United States Fish and Wildlife Service, Cabeza Prieta National Wildlife Refuge: Listing of Amphibians (April 15, 2002 Update), Listing of Birds (March 2004), Listing of Mammals (April 15, 2002 Update), Listing of Plants (April 15, 2002 Update) and Listing of Reptiles (April 15, 2002 Update).
http://www.fws.gov/southwest/refuges/arizona/cabeza.html

(94 ES 1998) United States Department of the Interior, Endangered Species on Cabeza Prieta National Wildlife Refuge (October 1998).

(94 ETCS 1994) United States Department of the Interior, Endangered, Threatened and Candidate Species Cabeza Prieta National Wildlife Refuge (June 1994).

(95) University of Arizona

Herbarium, P.O. Box 210036 Herring Hall, 1130 East South Campus Drive, Tucson, Arizona 85721; 520-621-7243; FAX: 520-621-7186
http://ag.arizona.edu/herbarium/

Department of Entomology, Forbes 410, PO Box 2100: (36), Tucson, Arizona 85721-0036; 520-621-1151; FAX: 520-621-1150
http://ag.arizona.edu/ento/insectid.htm

(96) University of Michigan, Animal Diversity Web
http://animaldiversity.ummz.umich.edu/

(97) Venomous Creatures of the Southwest, Arizona-Sonora Desert Museum and the Arizona Poison Control System. University of Arizona, Poison and Drug Information Center, College of Pharmacy, Tucson 1-800-222-1222, and the Samaritan Regional Poison Center, Good Samaritan Medical Center - Phoenix and the Arizona Department of Health Services - Emergency Medical Services Division.
http://www.pharmacy.arizona.edu/outreach/poison/
http://www.pharmacy.arizona.edu/outreach/poison/venom.php
http://www.pharmacy.arizona.edu/outreach/poison/plants.php

(98) Walker, Henry P. and Don Bufkin. 1979. Historical Atlas of Arizona, University of Oklahoma Press, Norman, Page 4A and Map.

(99) Walters, James W. R3 78-9, A Guide to Forest Diseases of Southwestern Conifers, Forest Insect and Disease Management, State and Private Forestry, Southwestern Region, Forest Service, United States Department of Agriculture, Albuquerque, New Mexico.

(100) Whitaker, John O., Jr. 1996. National Audubon Society Field Guide to North American Mammals, Alfred A. Knopf, New York, New York.

(101) Whitson, Tom D., Larry C. Burrill, Steven A. Dewey, David W. Cudney, B.E. Nelson, Richard D. Lee, Robert Parker. 1996. Weeds of the West, Pioneer of Jackson Hole, Jackson, Wyoming.

(102) Wiens, John F. Vascular Plants of Ragged Top, compiled by John F. Wiens from 1987 - 2000, The Arizona Native Plant Society, The Plant Press, Volume 25 Number 1, Spring 2001.

(103) Wildflowers and Other Plants of Southern California, with Photographs by Michael L. Charters
http://www.calflora.net/bloomingplants/index.html

(104) Lehr, J. Harry. 1978. A Catalogue of the Flora of Arizona, Desert Botanical Garden, Phoenix, Arizona. Northland Press, Flagstaff, Arizona.

(105) Humphrey, Robert H., Albert L. Brown and A.C. Everson. April 1956. Bulletin 243, Common Arizona Range Grasses, Agricultural Experiment Station, University of Arizona, Tucson, Arizona.

(106) Wikipedia, The Free Encyclopedia
http://en.wikipedia.org/wiki/Main_Page

(107) McGinnies, William G. 1981. Discovering the Desert, Legacy of the Carnegie Desert Botanical Laboratory, The University of Arizona Press, Tucson, Arizona.

(108) Dodge, Natt N. 1964. Organ Pipe Cactus National Monument / Arizona, Natural History Handbook Series, No. 6, Washington, D.C.

(109) Grow Native! Don't Plant a Pest, A Guide to Invasive Landscape Plants and Their Native Alternatives - Southeastern Arizona. Arizona Native Plant Society.
www.aznps.org

(110) United States fish and Wildlife Service, Ecological Services Field Office, Endangered and Threatened Species of Arizona - Summer 1991.

(111) California Register of Big Trees
http://www.ufei.org/BigTrees/index.html

(112) Kitt Peak Handouts: Common Trees and Shrubs on Kitt Peak; Common Birds of Kitt Peak; Common Mammals of Kitt Peak, and Common Reptiles and Amphibians of Kitt Peak.

(113) Halbedel, E. June 2005. The Birds of Kitt Peak, Revised 3rd Edition.

(114) Nearctica.com, Inc. 1999, The Natural World of North America.
http://www.nearctica.com/
http://www.nearctica.com/nomina/nomina.htm

(115) The Firefly Forest

http://fireflyforest.net/firefly/
and Wildflowers of Tucson, Arizona
http://www.fireflyforest.com/flowers/index.html

(116) Krausman, Paul R. and Michael L. Morrison, Wildlife Ecology and Management, Santa Rita Experimental Range (1903 to 2002), USDA Forest Service Proceedings RMRS-P-30.2003: 59 - 67.

(117) Medina, Alvin L., Historical and Recent Flora of the Santa Rita Experimental Rage, USDA Forest Service Proceedings RMRS-P-30.2003: 141 - 148.

(118) Cockrum, E. Lendell. 1960. The Recent Mammals of Arizona: Their Taxonomy and Distribution, The University of Arizona Press, Tucson, Arizona.

(119) Stockwell, William Palmer and Lucretia Breazaele. April 1, 1933. Arizona Cacti, University of Arizona Bulletin, Vol. 4, No. 3, Biological Science Bulletin No. 1, University of Arizona, Tucson, Arizona.

(120) Duncan, Russell B. Two Rare Plants and the Warm Season Flora of a Unique Habitat in Pima County, Arizona: The Pantano Formation, Claystone Member Deposits, The Arizona Native Plant Society, The Plant Press, Autumn 2003: 7-14.

(121) Reichhardt, Karen. *Triteliopsis palmeri* - Blue Sand Lily, an Elusive Plant of the Sand Dunes, The Arizona Native Plant Society, The Plant Press, Volume 30 Number 2, October 2006: 10-11.

(122) Kaiser, Jack. Common Ferns of Southern Arizona, The Arizona Native Plant Society, The Plant Press, Volume 18 Number 2, Spring 1994: 5-12.

(123) McDonald, Christopher. Pima Pineapple Cactus, The Arizona Native Plant Society, The Plant Press, Volume 31 Number 1, April 2007: 1-4.

(124) Historical Common Names of Great Plains Plants
http://www.unl.edu/agnicpls/gpcn/index.html

(125) Munson, T.V. Foundations of American Grape Culture, T.V. Munson & Son, Denison, Texas, 1909.

(126) Adams, Robert P. *Juniperus* of Canada and the United States: Taxonomy, Key and Distribution, Biology Department, Baylor University, Box 727, Gruver, TX 79040 USA, December 2008.
Robert_Adams@baylor.edu
http://www.juniperus.org/AdamsPapersPDFFiles/218-Phyto90(3)255-314AdamsKeytoJuniperusCanadaandUS.pdf

(127) Native American Ethnobotany, University of Michigan. A database of plants used as drugs, foods, dyes, fibers and more, by native peoples of North America.
http://herb.umd.umich.edu/

(128) Desert-Tropicals.com, Philippe Faucon
http://www.desert-tropicals.com/index.html

(129) Plants of the Southwest, Santa Fe, New Mexico 87501 U.S.A.
http://www.plantsofthesouthwest.com/

(130) Little, V.A. 1963. General and Applied Entomology, Harpers and Row, Publishers, Inc. New York, N.Y.

(131) The University of Arizona, Cooperative Extension, Pima county Home Horticulture.
http://ag.arizona.edu/pima/gardening/gardening.html

(132) The Gymnosperm Database
http://www.conifers.org/index.html

(132) PIER, Pacific Island Ecosystems at Risk, Plant threats to Pacific ecosystems
http://www.hear.org/pier/index.html

(133) USDA, ARS, National Genetic Resources Program. Germplasm Resources Information Network (GRIN) [Online Database]. National Germplasm Resources Laboratory, Beltsville, Maryland.URL: http://www.ars-grin.gov/cgi-bin/npgs/html/taxon.pl?447394 (03 October 2009)
http://www.ars-grin.gov/npgs/aboutgrin.html

(134) Austin, Daniel F. Baboquivari Mountain Plants, The Plant Press, The Arizona Native Plant Society, Volume 33, Number 2, Fall 2009: 1-4.

(135) Encyclopedia of Life. Available from http://www.eol.org. Accessed 19 December 2009, 25 January 2010

(136) Flora of North America
www.efloras.org

(137) Kleinman, Dr. Russ, Associate Botanist, Dale A. Zimmerman Herbarium. Vascular Plants of the Gila Wilderness
http://www.wnmu.edu/academic/nspages2/gilaflora/index.html

(138) Van Devender, T.R. and R.K., Phelps, V., Thayer, D. and ASDM Docents, Paper - 15 April, 2 Oct., 23 Dec. 1986; 11 April 1987; Waterman Mountains: limestone ridges and lower slopes; 2400-2700 ft. elev.; T12S, R8E Sec. 32+33; 32D20’30-35”N; 111D 26-27’ W.

(HR) Historical Record (possibly without author and/or observation date)

(TC) Tucson Citizen (Month Day, Year Section and Page Number)

(ADS) Arizona Daily Star (Month Day, Year Section and Page Number)

(AHS) Arizona Historical Society

(ANN) Anonymous

(JFW) John F. Wiens

(MBJ) Matthew B. Johnson, Program Manager and Curator of the Desert Legume Program - Boyce Thompson Southwestern Arboretum

(PCM) Personal Communication (Date)

(PDJ) Philip D. Jenkins, Assistant Curator of the University of Arizona Herbarium

(RGM) G. Meades

(TBL) Township Bird Listing

(WTK) William T. Kendall

(KGUN) Channel 9 (ABC - Month Day, Year & Program)

(KOLD) Channel 13 (CBS - Month Day, Year & Program)

(KVOA) Channel 4 (NBC - Month Day, Year & Program)

(MIX FM) 94.9 MIX fm (Month Day, Year & Program)