Le Jardin de Mère Nature dans une Petite Planète

(Mother Nature's Garden on a Small Planet)

a SPECIES DISTRIBUTION LISTING for

TOWNSHIP 14 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 northwest into the Tucson Mountains.
William T. Kendall, September 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)*

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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Class Magnoliopsida: The Dicots

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Acknowledgements

Footnotes and References for the Species Distribution Listings

TOWNSHIP NOTES

LOCATION: This township is located in east-central Pima County in south-central Arizona. This township is bounded on the south by the alignment for Synder Hill and Irvington Roads and on the east by the alignment for Camino de Oeste. Portions of this township are located within Tucson Mountain Park.

Historic Mining Activities: General mining activities included a gravel pit.

LANDMARKS: A portion of the Tucson Mountains is located in this township. Named passes and peaks include Brown Mountain (3,098 feet), Cat Mountain (western portion), Bushmaster Peak (4,054± feet), Gates Pass (3,190± feet), Golden Gate Mountain (4,288 feet) and Tower Peak (4,138± feet). Named washes include the Oeste Wash.

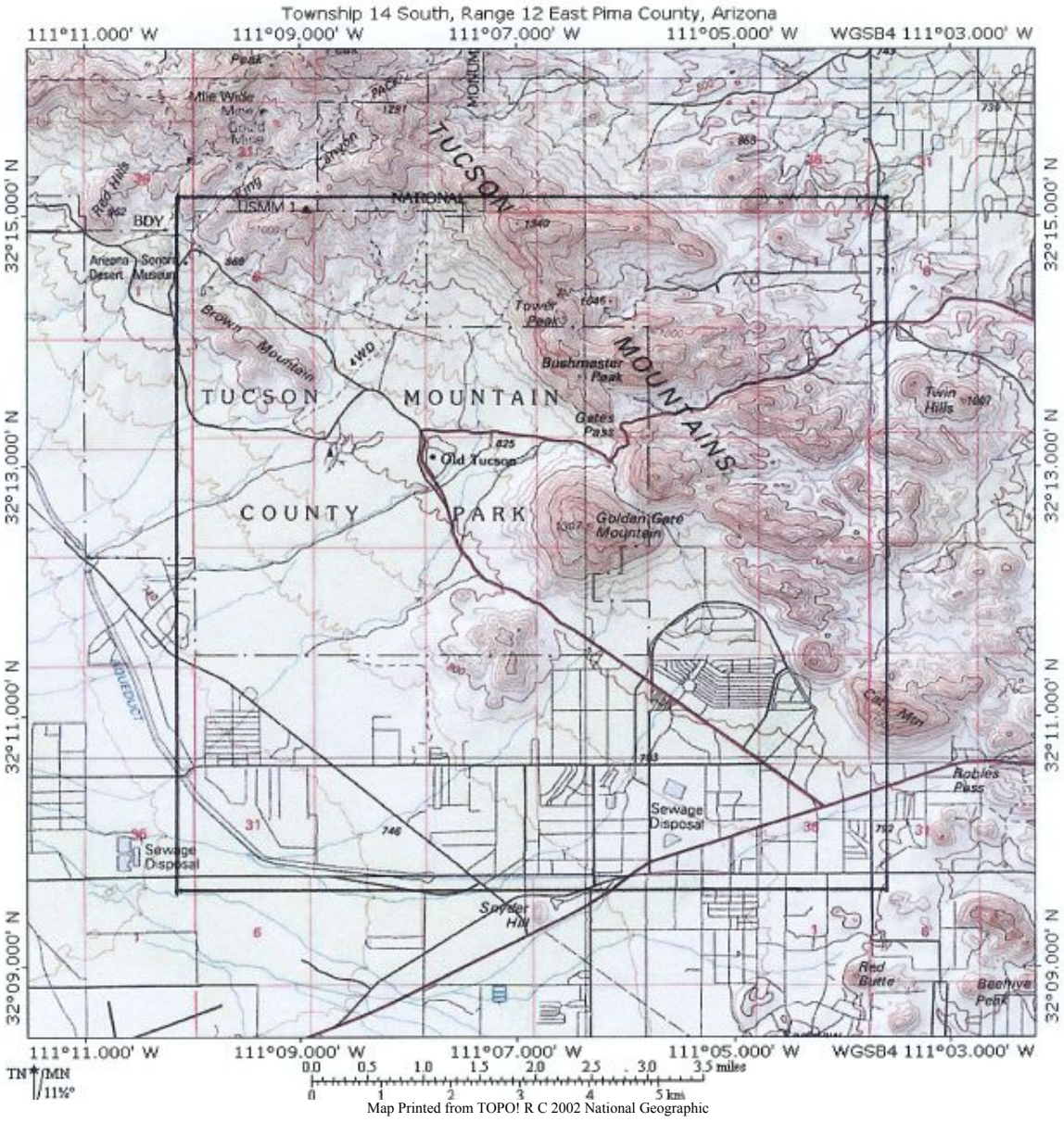
ELEVATION: Elevations range from approximately 2,373 feet at the southwest corner to approximately 4,288 feet at Golden Gate Mountain (1).

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 Continental-Sonoita-Tubac Association (deep, arid soils on uplands); Mohave-Tres Hermanos-Anway Association (deep, arid soils on the valley plains); 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: Portions of this township are located within the Lower Colorado River Subdivision and the Arizona Upland Subdivision of the Sonoran Desertscrub Regional Formation of the Desertscrub Formation with associated Wetlands (4).



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)

Saguaro (*Carnegiea gigantea* - 5’ to 60’)
Sonoran Scrub Oak (*Quercus turbinella* - 10” to 60’, see species record)
Velvet Mesquite (*Prosopis velutina* - 2’ to 56’)
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’)
Soaptree Yucca (*Yucca elata* - acaulescent to 30’)
Prairie Acacia (*Acacia angustissima* - a shrub 6” to 10’ or a tree 6½ to 26½‘)
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’)
Rosary Babybonnets (*Coursetia glandulosa* - 3’ to 20’)
Whitethorn Acacia (*Acacia constricta* - 1’ to 20’)
Longleaf Joint-fir (*Ephedra trifurca* - 20” to 16½’)
Chain-fruit Cholla (*Cylindropuntia fulgida* var. *fulgida* - 3’ to 15’)
Staghorn Cholla (*Cylindropuntia versicolor* - 3’ to 15’)
Allthorn (*Koeberlinia spinosa* - 2’ to 15’, most likely var. *spinosa* - 3’ to 6’)
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’)
Jojoba (*Simmondsia chinensis* - 8” to 13’)
Pencil Cholla (*Cylindropuntia arbuscula* - 20” to 12’)
Skunkbush Sumac (*Rhus trilobata* - 1’ to 12’)
Fishhook Barrel Cactus (*Ferocactus wislizeni* - 1’ to 11’)
Desert Broom (*Baccharis sarothroides* - 3’ to 10’)
Pancake Pricklypear Cactus (*Opuntia chlorotica* - 2’ to 10’)
Teddybear Cholla (*Cylindropuntia bigelovii* - 20” to 10’)
Berlandier Lycium (*Lycium berlandieri* - 20” to 10’)
Cane Cholla (*Cylindropuntia spinosior* - 16” to 10’)
Fourwing Saltbush (*Atriplex canescens* - 1’ to 10’)
Le Conte Barrel Cactus (*Ferocactus cylindraceus* var. *lecontei* - 10” to 10’)
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’)

Vines and Climbers

Schott Yellowhood (*Nissolia schottii* - 9’ to 16’)
Scarlet Creeper (*Ipomoea cristulata* - 8” to 11½’)
Slender Janusia (*Janusia gracilis* - 16” to 10’)
Redstar (*Ipomoea coccinea* - 5” to 10’)

Little Snapdragon Vine (*Maurandella antirrhiniflora* - 1' to 8')

Shrubs (2 to 7 feet maximum height)

Major Cholla (*Cylindropuntia acanthocarpa* var. *major* - 2' to 7')
Canyon Ragweed (*Ambrosia ambrosioides* - 1' to 7')
Limberbush (*Jatropha cardiophylla* - 1' to 7')
Tulip Pricklypear Cactus (*Opuntia phaeacantha* - 10" to 7')
Desert Rosemallow (*Hibiscus coulteri* - 3" to 7')
Wright Beebrush (*Aloysia wrightii* - 20" to 78")
Rock Sage (*Salvia pinguifolia* - 20" 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')
Coulter Brickellbush (*Brickellia coulteri* - 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')
Mariola (*Parthenium incanum* - 1' to 4')
Threadleaf Snakeweed (*Gutierrezia microcephala* - 8" to 4')
Arizona Rosemallow (*Hibiscus biseptus* - 18" to 40")
Arizona Cockroach Plant (*Haplophyton crooksii* - 7" to 40")
Burroweed (*Isocoma tenuisecta* - 6" to 40")
Wright Buckwheat (*Eriogonum wrightii* var. *wrightii* - 4" to 30")

Grasses

Wright Sacaton (*Sporobolus wrightii* - 36" to 100")
California Brome (*Bromus carinatus* - 12" to 72")
Cane Bluestem (*Bothriochloa barbinodis* - 24" to 60")
Sourgrass (*Digitaria insularis* - 24" to 60")
Spike Dropseed (*Sporobolus contractus* - 16" to 60")
Tanglehead (*Heteropogon contortus* - 8" to 60")
Green Sprangletop (*Leptochloa dubia* - 4" to 60")
Red Sprangletop (*Leptochloa panicea* subsp. *brachiata* - 4" to 60")
Whiplash Pappusgrass (*Pappophorum vaginatum* - 16" to 52")
Sideoats Grama (*Bouteloua curtipendula* - 3" to 52")
Arizona Cottontop (*Digitaria californica* - 12" to 48")
Plains Bristlegrass (*Setaria vulpiseta* - 12" to 48")
Sand Dropseed (*Sporobolus cryptandrus* - 12" to 48")
Spidergrass (*Aristida ternipes* var. *gentilis* - 8" 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”)
Liebmann’s Bristlegrass (*Setaria liebmannii* - 6” to 40”)
Arizona Brome (*Bromus arizonicus* - 4” to 40”)
Squirreltail (*Elymus elymoides* - 3” to 40”)
Sixweeks Threeawn (*Aristida adscensionis* - 1¼” to 40”)
Tobasagrass (*Pleuraphis mutica* - 12” to 36”)
Vine Mesquite Grass (*Panicum obtusum* - 6” to 32”)
Slender Grama (*Bouteloua repens* - 4” to 32”)
Slim Tridens (*Tridens muticus* - 3” to 32”)
Black Grama (*Bouteloua eriopoda* - 8” to 30”)
Rothrock Grama (*Bouteloua rothrockii* - 8” to 30”)
Blue Grama (*Bouteloua gracilis* - 4” to 28”)
Purple Threeawn (*Aristida purpurea* var. *purpurea* - 4” to 24”)
Sprucetop Grama (*Bouteloua chondrosioides* - 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”)
Sixweeks Grama (*Bouteloua barbata* - ½” to 18”)
Red Grama (*Bouteloua trifida* var. *trifida* - 2” to 16”)
Curly Mesquite (*Hilaria belangeri* var. *belangeri* - 2” to 14”)
Desert Fluffgrass (*Dasyochloa pulchella* - ½” to 6”)

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

Hoary Indian Mallow (*Abutilon incanum* - 8” to 13’)
Desert Night-blooming Cereus (*Peniocereus greggii* var. *transmontanus* - 1’ to 8’)
Apricot Mallow (*Sphaeralcea ambigua* - 16” to 78”)
Sonoran Pricklypoppy (*Argemone gracilenta* - 1’ to 6’)
Tansyleaf Tansyaster (*Machaeranthera tanacetifolia* - 4” to 6’)
Parry Penstemon (*Penstemon parryi* - 2’ to 5’)
Brownfoot (*Acourtia wrightii* - 1’ to 5’)
White Sagebrush (*Artemisia ludoviciana* - 1’ to 5’)
Yellow Monkeyflower (*Mimulus guttatus* - 2” to 5’)
Rock Hibiscus (*Hibiscus denudatus* - 10” to 56”)
Parry False Prairie-clover (*Marina parryi* - 8” to 50”)
Bladdermallow (*Herissantia crispa* - 8” to 4’)
Spreading Fanpetals (*Sida abutifolia* - 8” to 4’ in length)
Bluestem Pricklepoppy (*Argemone pleiacantha* -5” to 4’)
Desert Tobacco (*Nicotiana obtusifolia* var. *obtusifolia* - 12” to 42”, see note)
Scarlet Four O’Clock (*Mirabilis coccinea* - 6” to 42”)
Violet Ruellia (*Ruellia nudiflora* var. *nudiflora* - 12” to 40”)
Mesa Tansyaster (*Machaeranthera tagetina* - 8” to 40”)
Prairie Flax (*Linum lewisii* var. *lewisii* - 4” to 40”)
Desert Senna (*Senna covesii* - 10” to 32”)
Whitestem Paperflower (*Psilostrophe cooperi* - 4” to 32”)
Abert Buckwheat (*Eriogonum abertianum* - 2” to 32”)
Covena (*Dichelostemma capitatum* subsp. *pauciflorum* - 16” 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’)
Wavy Scaly Cloakfern (*Astrolepis sinuata* subsp. *sinuata* - 4” to 24”)
Golden Dogweed (*Thymophylla pentachaeta* var. *pentachaeta* - 4” to 24”)
Flatcrown Buckwheat (*Eriogonum deflexum* var. *deflexum* - 2” to 24”)
Whitedaisy Tidytips (*Layia glandulosa* - 2” to 24”)
Orange Flame Flower (*Phemeranthus aurantiacus* - 6” to 20”)
Nevada Biscuitroot (*Lomatium nevadense* var. *parishii* - 4” to 20”)
Desert Zinnia (*Zinnia acerosa* - 3” to 20”)
Bajada Lupine (*Lupinus concinnus* - 3” to 18”)
Cleftleaf Wildheliotrope (*Phacelia crenulata* - 3” to 18”)
Bundle Hedgehog Cactus (*Echinocereus fasciculatus* - 2” to 18”)
Spiny Cliffbrake (*Pellaea truncata* - 3” to 16½”)
Miniature Woollystar (*Eriastrum diffusum* - 1½” to 14”)
Fairyswords (*Cheilanthes lindheimeri* - 3” to 13½”)
Desert Unicorn-plant (*Proboscidea althaeifolia* - 7” 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”)
Cochise Scaly Cloakfern (*Astrolepis cochisensis* subsp. *cochisensis* - 3” to 12”)
Shrubby Purslane (*Portulaca suffrutescens* - 3” to 12”)
Thornber Pincushion Cactus (*Mammillaria thornberi* - 2” to 12”)
Sand Bells (*Nama hispidum* - 2” to 12”)
Graham Pincushion Cactus (*Mammillaria grahamii* - 1” to 12”)
Desert Holly (*Acourtia nana* - 2” to 10”)
Wright’s Lipfern (*Cheilanthes wrightii* - 1½” to 10”)
California Caltrop (*Kallstroemia californica* - 2” to 8” in height, with stems extending to 5’ in length)
Pringle’s Lipfern (*Cheilanthes pringlei* - 1½” to 7”)
Arizona Spikemoss (*Selaginella arizonica* - ½” to 1½”)

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 Lycopodiophyta: The Lycopods

CLASS LYCOPODIOPSIDA: The CLUBMOSSES, FIRMOSSES and SPIKEMOSSES

Selaginellaceae: The Spike-moss Family

***Selaginella arizonica* W.R. Maxon: Arizona Spikemoss**

COMMON NAMES: Arizona Selaginella, Arizona Spike-moss, Arizona Spikemoss, Desert Spike-moss, Flor de Piedra (Hispanic), Resurrection Fern. DESCRIPTION: Terrestrial perennial evergreen forb/herb (mat-forming and spreading prostrate or decumbent stems ½ to 1½ inches in height); the minute leaves are green or yellowish-green; the strobili are solitary; the megaspores of the sporangium are orange or yellow. HABITAT: Within the range of this species it has been reported from mountains; rocky mountainsides; rocky mesas; rocky cliffs; rocky canyons; bases of cliffs; pockets of soil in bedrock; crevices in rocks; rocky bluffs; rocky ledges; rocky ridges; rocky foothills; rocky hilltops; rocky hillsides; rocky, stony, stony-sandy, gravelly, gravelly-sandy-loamy and loamy slopes, bajadas; rocky outcrops; on boulders and rocks; amongst boulders and rocks; bases of rocks; basins; streambeds; bouldery-gravelly-sandy, rocky, gravelly and sandy washes; rocky-gravelly drainages; banks of rivers, and riparian areas growing in wet, moist and dry bouldery, bouldery-gravelly-sandy, rocky, rocky-gravelly, stony, stony-sandy, gravelly and sandy ground and gravelly-sandy loam and loam ground, occurring from 1,900 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. *Selaginella arizonica* is native to southwest-central and southern North America. *5, 6, 15, 43 (052510), 46 (Page 28), 51, 63 (052510), 77, **85** (052510 - color presentation)*

Division Pteridophyta: The Ferns

CLASS FILICOPSIDA: The FERNS

Pteridaceae: The Maidenhair Fern Family

***Astrolepis cochisensis* (L.N. Goodding) D.M. Benham & M.D. Windham subsp. *cochisensis*: Cochise Scaly Cloakfern**

SYNONYMY: *Notholaena cochisensis* L.N. Goodding, *Notholaena sinuata* (M. Lagasca y Segura ex O. Swartz) G.F. Kaulfuss var. *cochisensis* (L.N. Goodding) C.A. Weatherby. COMMON NAMES: Cloak Fern, Cochise's Cloak Fern, Cochise Scaly Cloakfern, Helechillo (Hispanic), Jimmy Fern, Jimmyfern, Narrow Cloakfern, Scaly Cloak Fern, Scaly Star Fern. DESCRIPTION: Terrestrial perennial evergreen forb/herb (fronds are 3 to 12 inches in length); the leaf blades are olive green or green above and reddish-brown beneath with brown to reddish-brown stipes; sporulation generally takes place summer through fall. HABITAT: Within the range of this species it has been reported from mountains; mountainsides; cliffs; bouldery-sandy and rocky canyons; rocky and sandy canyon walls; talus slopes; bases of cliffs; crevices in rocks; buttes; rocky ledges; rocky and silty-loamy ridges; foothills; hills; rocky and gravelly-loamy hillsides; rocky, stony, gravelly-loamy and clayey-loamy slopes; rocky outcrops; amongst boulders and rocks; on boulders; flats; basins; valley floors; arroyos; rocky draws; along streams; in bouldery streambeds; in rocks along creeks; along and in sandy washes, and riparian areas growing in dry bouldery, bouldery-sandy, rocky, stony and sandy ground and gravelly loam, clayey loam and silty loam ground, occurring from 1,100 to 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. *Astrolepis cochisensis* subsp. *cochisensis* is native to southwest-central and southern North America. *5, 6, 15 (recorded as *Notholaena cochisensis* Goodding), 16 (recorded as *Notholaena cochisensis* Goodding), 28 (color photograph of *Notholaena cochisensis*), 43 (081009), 46 (recorded as *Notholaena sinuata* (Lag.) Kaulf. var. *cochisensis* (Goodding) Weatherby, Page 41), 51 (color photograph of *Notholaena cochisensis*), 63 (081009), 77 (recorded as *Notholaena cochisensis* Goodd.), 80 (*Notholaena sinuata* var. *cochisensis* is listed as a Secondary Poisonous Range Plant. "Apparently only the variety *cochisensis* is poisonous. The nature of the poison is unknown but it is excreted in the milk and is not destroyed by drying of the plant. Sheep are most susceptible, especially pregnant ewes, but goats and cattle may be poisoned. ... The danger is greatest from the middle of November through February when other forage is dry and the evergreen fern remains succulent and relatively palatable. ... Losses may be prevented by deferring infested ranges during the danger period or by feeding supplements." See text for additional information.), **85** (081009 - color presentation of dried material), 115 (color presentation of species), 122*

***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 lindheimeri* W.J. Hooker: Fairyswords**

COMMON NAMES: Canaguala, Fairy Sword, Fairy Swords, Fairy-swords, Fairyswords, Hierba de la Pena (Hispanic), Kalawala, Lindheimer Lip Fern, Lindheimer's Lip Fern, Lindheimer Lipfern. DESCRIPTION: Terrestrial perennial evergreen forb/herb (fronds are 3 to 13½ inches in length); the leaf blades are gray-green or light green above with a brown underside and black-brown, purplish-black or dark reddish-brown stipes; sporulation generally takes place summer through fall. HABITAT: Within the range of this species it has been reported from mountains; bouldery, bouldery-rocky-gravelly and rocky mountainsides; rocky mesas; along rocky cliff; rock walls; rocky and gravelly-loamy canyons; rocky canyon walls; rocky canyon bottoms; talus slopes; along rocky bases of cliffs and rock walls; crevices in boulders and rocks; rocky buttes; rock ledges; under ledges; rocky ridges; ridgetops; foothills; rocky hills; bouldery-gravelly and rocky hilltops; bouldery, rocky, rocky-gravelly, rocky-sandy-loamy and gravelly hillsides; rocky slopes; rocky outcrops; amongst boulders and rocks; along bases of boulders and rocks; flats; along roadsides; gulches; springs; along streams; along rocky creeks; along and in creekbeds; along and in rocky washes; within rocky drainages; (rocky) edges of arroyos; rock shelves; around and in stock tanks, and rocky riparian areas growing in moist, damp and dry bouldery, bouldery-rocky, bouldery-rocky-gravelly, bouldery-gravelly, rocky, rocky-gravelly, rocky-sandy and gravelly ground; rocky-sandy loam and gravelly loam ground, and 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. *Cheilanthes lindheimeri* is native to southwest-central and southern North America. *5, 6, 15 (color photograph, Page 93 in habitat with associated species), 28 (color photograph), 43 (052610), 46 (Page 39), 51 (color photograph), 58, 63 (052610 - color presentation), 77, **85** (052610 - color presentation of dried material), 122*

***Cheilanthes pringlei* G.E. Davenport: Pringle's Lipfern**

SYNONYMY: *Cheilanthes sonorensis* L.N. Goodding. COMMON NAMES: Pringle Lip Fern, Pringle Lipfern, Pringle's Lip Fern, Pringle's Lipfern. DESCRIPTION: Terrestrial perennial evergreen forb/herb (fronds are 1½ to 7 inches in length); the leaf blades are bright green on both sides with red-brown stipes; sporulation generally take place between late spring and fall. HABITAT: Within the range of this species it has been reported from mountains; cliffs; soil filled crevices in bedrock, boulders and rocks; rocky canyons, canyon walls; bouldery and rocky canyon bottoms; bases of cliffs; crevices in boulders and rocks; knolls; rocky ledges; under rock ledges; stony hills; rocky slopes; around rocks; bases of rocks; shaded rocky areas; seeps; along creekbeds; along rivers, and along washes growing in dry bouldery, rocky and stony ground often reported as growing in shaded areas, occurring from 300 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 may be confused with *Cheilanthes wrightii*; however, *C. pringlei* has scales on the pinnae. *Cheilanthes pringlei* is native to southwest-central and southern North America. *5, 6, 8, 43 (081109), 46 (Page 40), 51 (color photograph), 63 (081109), 77, **85** (081109 - color presentation of dried material), 122*

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

Cheilanthes sonorensis (see *Cheilanthes pringlei*)

***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 cochisensis (see *Astrolepis cochisensis* subsp. *cochisensis*)

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

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

Pellaea longimucronata (see *Pellaea truncata*)

***Pellaea truncata* L.N. Goodding: Spiny Cliffbrake**

SYNONYMY: *Pellaea longimucronata* auct. non W.J. Hooker. COMMON NAMES: Cliff Brake; Cliff-brake Fern, Spiny Cliff-brake, Spiny Cliffbrake. DESCRIPTION: Terrestrial perennial evergreen forb/herb (fronds are 3 to 16½ inches in length); the leaf blades are blue-green or gray-green with chestnut-brown, reddish or red-brown stipes; sporulation takes place between late spring and fall. HABITAT: Within the range of this species it has been reported from mountains; rocky cliffs; crevices in cliffs; crags; bouldery and rocky canyons; along canyon walls; along canyon bottoms; rocky gorges; talus slopes; along bases of cliffs; crevices in rocks; sandy pockets of soil; rocky bluffs; rock ledges; under rocky ledges; ridgelines; foothills; rocky hills; bouldery-rocky and rocky hillsides; bouldery, bouldery-rocky, bouldery-gravelly, rocky, gravelly, gravelly-loamy and sandy-clayey-loamy slopes; bajadas; bouldery and rocky outcrops; amongst boulders and rocks; bases of boulders and rocks; niches in rock cliffs; rocky arroyos; rocky draws; gulches; ravines; seeps; along streams; rocky and sandy streambeds; along creeks; along and in bouldery-sandy and sandy washes; within drainages; bog-like areas; gravelly swales; banks of creeks; edges of streambeds; sandy benches; silty-loamy terraces, and bouldery riparian areas growing in dry bouldery, bouldery-rocky, bouldery-gravelly, bouldery-sandy, rocky, rocky-gravelly, rocky-sandy, gravelly and sandy ground; bouldery loam, bouldery-rocky loam, rocky loam, rocky-gravelly loam, gravelly-sandy loam and silty loam ground, and rocky clay ground, occurring from 600 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. *Pellaea truncata* is native to southwest-central and southern North America. *5, 6, 15, 16, 28 (color photograph), 43 (081209), 46 (recorded as *Pellaea longimucronata* Hook., Page 38), 51 (color photograph), 63 (081209 - color presentation), 77, **85** (081209 - color presentation), 115 (color presentation)*

Superdivision Spermatophyta: The Seed Plants

Division Gnetophyta: The Gnetophytes

CLASS GNETOPSIDA: The GNETOPS

Ephedraceae: The Mormon-tea Family

***Ephedra trifurca* J. Torrey ex S. Watson: Longleaf Joint-fir**

COMMON NAMES: Brigham Young Tea, Canatilla, Desert Ephedra, Desert Joint-fir, Desert Jointfir, Itama Real, Kanutio (Yaqui), Long-leaf Jointfir, Long-leafed Joint-fir, Long-leaved Joint Fir, Long-leaved Jointfir, Longleaf Ephedra, Longleaf Joint-fir, Longleaf Jointfir, Longleaf Mormon Tea, Mexican Tea, Mexican-tea, Mormon Tea, Popotilla (Hispanic), Popotillo (Hispanic), Tepopote (Hispanic), Teposote (Hispanic). DESCRIPTION: Terrestrial perennial evergreen shrub (20 inches to 16½ feet in height with a crown 8 to 10 feet in width, one plant was described as being 3 feet in height with a crown 5 feet in width); the stems are blue-green, green, olive-green or yellow-green; the tiny flowers are pale yellow with male and female flowers occurring on separate plants; the production of the tan-brown strobili (female and male cones) generally takes place between early February and late May (additional record: one for mid-January). HABITAT: Within the range of this species it has been reported from mountains; mesas; canyons; clayey ridges; foothills; gravelly hills; hilltops; rocky hillsides; knolls; rocky, rocky-gravelly, gravelly, gravelly-loamy and sandy slopes; rocky-sandy and gravelly-sandy alluvial fans; sandy bajadas; rocky outcrops; gravelly lava hills; sand hills; sand dunes; ridges of sand dunes; inter-dune swales; rocky, rocky-gravelly and sandy plains; rocky, gravelly and sandy flats; sandy basins; valley floors; along rocky, rocky-sandy, gravelly, gravelly-clayey-loamy and sandy roadsides; within sandy arroyos; riverbeds; along and in sandy and sandy-silty washes; within drainages; edges of swales; (rocky, gravelly-sandy-loamy and sandy) banks of arroyos, rivers and washes; edges of rivers; (sandy) margins of lakes; gravelly terraces; floodplains; along canals, and disturbed areas growing in dry rocky, rocky-gravelly, rocky-sandy, gravelly, gravelly-sandy and sandy ground; gravelly loam, gravelly-sandy loam and gravelly-clayey loam ground; 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 and may live to be 50 years of age. 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 valuable as a soil binder. This plant is browsed by Bighorn Sheep. *Ephedra trifurca* is native to southwest-central and southern North America. *5, 6, 13, 15, 16, 18, 28 (color photograph), 43 (081209), 46 (Page 61), 48 (genus), 58, 63 (081209 - color presentation), 77, 85 (081209 - color presentation), 91, 127, **HR***

Division Magnoliophyta: The Flowering Plants

CLASS LILIOPSIDA: The MONOCOTS

Agavaceae: The Century-plant Family

***Yucca elata* (G. Engelmann) G. Engelmann: Soaptree Yucca**

SYNONYMY: *Yucca elata* (G. Engelmann) G. Engelmann var. *elata*, *Yucca elata* (G. Engelmann) G. Engelmann var. *utahensis* (S.A. McKelvey) J.L. Reveal, *Yucca elata* (G. Engelmann) G. Engelmann var. *verdiensis* (S.A. McKelvey) J.L. Reveal, *Yucca utahensis* S.A. McKelvey, *Yucca verdiensis* S.A. McKelvey. COMMON NAMES: Amole (a common name given to the roots), Datil, Palmella, Palmilla (Spanish, meaning "small palm"), Palmlilja Jukka, Palmilla, Palmella, Seifen-palmlilie (German), Soap-tree Yucca, Soaptree, Soaptree Yucca, Soap Weed, Soapweed, Soap-weed Yucca, Soapweed, Soapweed Yucca, Spanish Bayonet, Takui (Tohono O'odham), Utah Yucca, Verde Yucca. DESCRIPTION: Terrestrial perennial evergreen leaf-succulent shrub or tree (acaulescent to 30 feet in height and 8 to 10 feet in diameter with a flowering stalk reaching 2 to 8 feet in height); the narrow leaves may be gray-green, pale green or green with dried leaves adhering to the stem; the bell-shaped flowers are cream, creamish-white, greenish-white, white or yellowish-white; flowering generally takes place between mid-April and early August (additional records: two for late February, one for late August, one for mid-September and one for late November). HABITAT: Within the range of this species it has been reported from mountains; rocky-sandy-clayey-loamy and sandy mesas; plateaus; canyons; meadows; rocky foothills; hills; rocky and gravelly hillsides; along rocky, rocky-sandy-clayey-loamy, shaley-gravelly-sandy, and sandy slopes; sandy bajadas; sand dunes; prairies; sandy plains; shaley esplanades; gravelly, sandy and sandy-loamy flats; basins; gravelly-silty-loamy and sandy valley floors; along rocky-sandy, gravelly gravelly-sandy-clayey-loamy, sandy and sandy-loamy roadsides; along clayey arroyos; rocky draws; along creeks; along rivers; along and in gravelly and sandy washes; within drainages; within drainage ways; inter-dune swales; edges of rivers; benches; terraces; floodplains, and disturbed areas growing in dry rocky, rocky-gravelly, rocky-sandy, shaley, shaley-gravelly-sandy, gravelly and sandy ground; rocky-sandy-clayey loam, gravelly loam, gravelly-sandy-clayey loam, gravelly-silty loam, sandy loam, sandy-clayey loam, clayey loam and loam ground, and silty clay and clay ground, occurring from 900 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 in toys or in games, as ceremonial drug or medication, as a decoration and as a commodity used in personal hygiene. The growth rate of wild growing plants is about 1 inch in height each year with taller plants being 200 to 300 years of age. *Yucca elata* is native to southwest-central and southern North America. *5, 6, 13 (color photograph, placed in the Liliaceae), 15, 16, 18, 26 (color photograph), 28, 43 (081309), 45 (color photograph), 46 (recorded as *Yucca elata* Engelm., Page 188; *Yucca utahensis* McKelvey, Page 188, and *Yucca verdiensis* McKelvey, Page 188, genus *Yucca* placed in the Liliaceae), 53 (placed in the Liliaceae), 58, 63 (081309 - color presentation), 77, **85** (081309 - color presentation), 115 (color presentation), 127, 134*

Yucca elata var. *elata* (see *Yucca elata*)

Yucca elata var. *utahensis* (see *Yucca elata*)

Yucca elata var. *verdiensis* (see *Yucca elata*)

Yucca utahensis (see *Yucca elata*)

Yucca verdiensis (see *Yucca elata*)

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*

Andropogon contortus (see *Heteropogon contortus*)

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

***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*

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

Poaceae (Gramineae): The Grass Family

Andropogon barbinodis (see *Bothriochloa barbinodis*)

***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 hamulosa (see *Aristida ternipes* var. *gentilis*)

***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, **WTK** (September 4, 2005)*

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

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

***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; rocky banks; 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; 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. *purpurea*: Purple Threeawn**

SYNONYMY: *Aristida purpurea* T. Nuttall var. *laxiflora* E.D. Merrill. COMMON NAMES: Perennial Three-awn, Purple Needle-grass, Purple Threeawn, Tres Barbas Purpurea. DESCRIPTION: Terrestrial perennial graminoid (a bunchgrass (clumpgrass) with erect culms 4 inches to 2 feet in height); the awns are purple; the spikelets are maroonish or reddish-violet; based on few available flowering records flowering generally takes place between early April and late May (additional records: one for early February and one for mid-September). HABITAT: Within the range of this species it has been reported from mountains; mesas; rocky summits; sandy canyon bottoms; crevices in rocks; gravelly bluffs; sandy foothills; rocky hills; rocky hillsides; sandy bases of escarpments; rocky, cindery, gravelly, sandy and sandy-loamy slopes; bajadas; sand hills; sand dunes; sandy banks; breaks; rocky-sandy and sandy steppes; clayey prairies; plains; cindery, gravelly and sandy flats; valley floors; along railroad right-of-ways; along sandy roadsides; rocky arroyos; along bouldery streambeds; along and in gravelly washes; rocky drainage ways; swamps; rocky-clayey benches; terraces; gravelly floodplains; riparian areas, and disturbed areas growing in dry in rocky desert pavement; bouldery-cindery, rocky, rocky-sandy, cindery, gravelly and sandy ground; rocky-clayey loam, gravelly-clayey loam, sandy loam and clayey loam ground, and rocky 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: This plant may be an attractive component of a restored native habitat. *Aristida purpurea* var. *purpurea* is native to south-central and southern North America. *5, 6, 33 (species, *Aristida purpurea* Nutt., Page 244), 43 (081809), 46 (recorded as *Aristida purpurea* Nutt., Page 120 and *Aristida purpurea* Nutt. var. *laxiflora* Merr., Page 120), 48 (species), 63 (081809), 77, **85** (092609 - 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), **WTK** (September 4, 2005)*

***Aristida ternipes* A.J. Cavanilles var. *gentilis* (J.T. Henrard) K.W. Allred: Spidergrass**

SYNONYMY: *Aristida hamulosa* J.T. Henrard, *Aristida ternipes* A.J. Cavanilles var. *hamulosa* (J.T. Henrard) J.S. Trent, *Aristida ternipes* A.J. Cavanilles var. *minor* (G. Vasey) A.S. Hitchcock. COMMON NAMES: Arizona Threeawn, Hook Threeawn, Mesa Threeawn, Poverty Threeawn, Spidergrass, Three Awn, Threeawn Spider Grass, Three-awn, Three-awn Grass, Threeawn, Wild Oat, Zacate Arana de Tres. DESCRIPTION: Terrestrial perennial tufted graminoid (a bunchgrass (clumpgrass) 8 inches to 4 feet in height); the flowers are maroon-red; flowering generally takes place between mid-March and mid-December. HABITAT: Within the range of this species it has been reported from mountains; mesas; plateaus; rock cliffs; canyons; rocky canyon bottoms; crevices in boulders; rocky and rocky-clayey ridges; foothills; rocky, gravelly-sandy, gravelly-clayey-loamy and sandy hills; hillsides; piedmonts; rocky and sandy slopes; bajadas; amongst rocks; sandy hills; sandy prairies; gravelly and sandy plains; sandy and silty flats; rocky valley floors; railroad right-of-ways; along gravelly-loamy, sandy and clayey-loamy roadsides; shallow draws; along streambeds; along creeks; along and in sandy washes; drainages; within drainages; sandy and sandy-clayey-loamy swales; sandy beaches; benches; terraces; floodplains; mesquite bosques; along fencelines; stock tanks (charcos or repressos); ditches; riparian areas, and disturbed areas growing in dry bouldery, rocky, gravelly, gravelly-sandy and sandy ground; rocky-gravelly loam, gravelly loam, gravelly-sandy loam, gravelly-clayey loam, sandy-clayey loam and clayey loam ground, and silty 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. *Aristida ternipes* var. *gentilis* is native to southwest-central and southern North America and Central America. *5, 6, 15 (recorded as *Aristida hamulosa* Henr.), 33 (recorded as *Aristida hamulosa* Henr., Page 239), 43 (092709), 46 (recorded as *Aristida hamulosa* Henr., Page 120), 58 (*Aristida hamulosa* Henr.), 63 (092709), 77 (recorded as *Aristida hamulosa* Henr.), **85** (092709 - color presentation of dried material), 105 (note on page 15)*

Aristida ternipes var. *hamulosa* (see *Aristida ternipes* var. *gentilis*)

Aristida ternipes var. *minor* (see *Aristida ternipes* var. *gentilis*)

***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*

***Bothriochloa barbinodis* (M. Lagasca y Segura) W.G. Herter: Cane Bluestem**

SYNONYMY: *Andropogon barbinodis* M. Lagasca y Segura. COMMON NAMES: Algodonero, Beard-grass, Bristlejoint Bluestem, Cane Beard Grass, Cane Beardgrass, Cane Bluestem, Feather Bluestem, Feather Grass, Palmer's Cane Bluestem, Perforated Bluestem, Pinhole Beardgrass, Pinhole Bluestem, Pitted Beardgrass, Plains Beardgrass, Popotillo, Silver Beardgrass; Ya-jewel-g-ute (Havasupai), Zacate Popotillo, Zacatón (Hispanic). DESCRIPTION: Terrestrial perennial graminoid (a bunchgrass (clumpgrass) 2 to 5 feet in height, one plant was reported to be 4 inches in width at the base); the foliage is bluish-green or yellow-green curing to a dull red, reddish-brown or yellow; the spikelets are tawny-green or tan; the silvery-white inflorescences are oblong to fan-shaped; flowering generally takes place between late March and early December (additional records: one for early February and one for mid-February). HABITAT: Within the range of this species it has been reported from rocky mountains; gravelly mesas; plateaus; along cliff faces; rocky and gravelly-loamy canyons; along bedrock, bouldery-sandy, rocky, rocky-sandy, gravelly, gravelly-sandy and sandy canyon bottoms; rocky chasms; rocky bases of cliffs; crevices in bedrock, boulders and rocks; buttes; rocky and sandy-loamy ridges; rocky ridgetops; clearings in woodlands; meadows; rocky foothills; rocky hills; rocky and gravelly hillsides; escarpments; rocky, gravelly, sandy, sandy-loamy, sandy-clayey, sandy-clayey-loamy and clayey loam slopes; bajadas; rocky outcrops; amongst boulders and rocks; sandy plains; gravelly and clayey flats; rocky valley floors; railroad right-of-ways; clayey roadbeds; along gravelly, gravelly-loamy, sandy and silty-clayey-loamy roadsides; along rocky, stony and sandy arroyos; sandy bottoms of arroyos; draws;

gullies; ravines; seeps; springs; along sandy streams; along and in bouldery streambeds; along creeks; along and in creekbeds; along rivers; within bouldery-cobbly-sandy riverbeds; along and in rocky, rocky-gravelly, cobbly-sandy-loamy, gravelly, gravelly-sandy, gravelly-loamy, sandy and clayey washes; within gravelly-sandy-loamy drainages; within rocky drainage ways; swales; rock tanks; along (sandy) banks of creeks, rivers, washes and lakes; (sandy) edges of creeks; bouldery-sandy and sandy beaches; benches; rocky and gravelly terraces; floodplains; mesquite bosques; stock tanks; along and in ditches; bouldery-cobbly-sandy, rocky and sandy riparian areas, and disturbed areas growing in moist and dry rocky desert pavement; bouldery, bouldery-cobbly-sandy, bouldery-gravelly, bouldery-sandy, rocky, rocky-gravelly, rocky-sandy, stony, cobbly-sandy, gravelly, gravelly-sandy and sandy ground; rocky loam, rocky-clayey loam, cobbly-sandy loam, gravelly loam, gravelly-sandy loam, sandy loam, sandy-clayey loam, clayey loam, silty-clayey loam and loam ground; gravelly clay, sandy clay and clay ground, and silty ground, occurring from 100 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 is extremely drought-resistant and tolerant of coastal conditions. Pronghorn (*Antilocapra americana*) browse this plant. *Bothriochloa barbinodis* is native to southwest-central and southern North America; Central America, and South America. *5, 6, 15, 16, 30, 33 (recorded as *Andropogon barbinodis* Lag., Page 306), 43 (092709), 46 (recorded as *Andropogon barbinodis* Lag., Page 142), 48, 58, 63 (092709 - color presentation), 77, **85** (092809 - color presentation of dried material), 105 (*Andropogon barbinodis* Lag.)*

***Bouteloua barbata* M. Lagasca y Segura: Sixweeks Grama**

SYNONYMY: *Bouteloua barbata* M. Lagasca y Segura var. *barbata*. COMMON NAMES: Navajita Annual, Six Weeks Grama, Six-weeks Grama, Sixweeks Grama, Six-weeks Grass, Zacate Liebrero. DESCRIPTION: Terrestrial annual tufted graminoid (a bunchgrass (clumpgrass) with spreading culms ½ to 18 inches in height); the foliage is light green or dark violet curing to straw; the spikelets are purplish, red-green or reddish; flowering may take place throughout the year, but occurs mostly between late July and late November (additional records: one for mid-January, one for early February, one for early March, one for mid-March, one for late March, one for late April, one for early July, two for mid-December and two for late December). HABITAT: Within the range of this species it has been reported from mountains; mountaintops; gravelly mountainsides; gravelly and sandy mesas; rocky canyons; canyon bottoms; talus; sandy bases of cliffs; buttes; ledges; rocky ridgetops; meadows; bouldery, rocky, rocky-sandy, gravelly and sandy hills; rocky-gravelly hilltops; rocky hillsides; sandy bases of escarpments; rocky, rocky-gravelly, gravelly, gravelly-sandy-clayey, sandy and sandy-loamy slopes; rocky and gravelly alluvial fans; sandy bajadas; amongst rocks; sandy lava flows; sand hills; sand dunes; sand hummocks; margins of dunes; in blow-sand deposits; prairies; sandy plains; rocky, rocky-sandy, gravelly, gravelly-sandy, sandy and clayey flats; basins; sandy and sandy-clayey valley floors; valley bottoms; beach dunes; sandy coastal plains; shell mounds; along railroad right-of-ways; rocky-gravelly roadbeds; along rocky-gravelly, cobbly, gravelly, sandy and sandy-clayey-loamy roadsides; along and in sandy arroyos; bottoms of arroyos; draws; gullies; along streams; streambeds; along sandy creeks; sandy riverbeds; along and in rocky, gravelly, sandy and silty-clayey washes; along and in sandy drainages; pebbly-sandy waterholes; oases; sandy and silty lakebeds; sandy playas; depressions; swales; along (gravelly) banks of rivers and washes; edges of washes and lakebeds; (rocky-sandy) shores of lakes; mudflats; sand bars; sandy-clayey-loamy beaches; benches; gravelly debris fans; gravelly terraces; bottomlands; sandy floodplains; mesquite bosques; stock tanks (charcos or repressos); silty ditches; sandy ditch banks; sandy riparian areas; gravelly waste places, and disturbed areas growing in dry desert pavement; bouldery, rocky, rocky-gravelly, rocky-sandy, cobbly, gravelly, gravelly-sandy, pebbly-sandy and sandy ground; rocky loam, sandy loam and sandy-clayey loam ground; gravelly-sandy clay, sandy clay, silty clay and clay ground, and 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. Sixweeks Grama (annual) may be confused with the short-lived perennial Rothrock Grama (*Bouteloua rothrockii*).

Bouteloua barbata is native to southwest-central and southern North Americasouthwest-central and southern North America. *5, 6, 15, 16 (recorded as *Bouteloua barbata* Lag. var. *barbata*), 33 (Page 153), 43 (092909), 46 (Page 127), 58, 63 (092809 - color presentation), 68, 77, **85** (092909 - color presentation of dried material), 105*

Bouteloua barbata var. *barbata* (see *Bouteloua barbata*)

Bouteloua barbata var. *rothrockii* (see *Bouteloua rothrockii*)

***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; shaley 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, **WTK** (September 4, 2005)*

***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 gracilis* (C.L. von Wildenow ex K.S. Kunth) M. Lagasca y Segura ex D. Griffiths: Blue Grama**

COMMON NAMES: Blue Grama, Blue Grama Grass, Eyelash Grass, Mosquito Grass, Navajita (Spanish), Navajita Azul (Spanish), Zacate Cepillo (Hispanic), Zacate Chino (Hispanic), Zacate Navajita (Hispanic). DESCRIPTION: Terrestrial perennial graminoid (a bunchgrass (clumpgrass) 4 to 28 inches (one record for 5 feet) in height with the seedstalks being 7 inches to 4 feet in height); the foliage is blue-green or grayish-green curing to gray, straw-yellow or yellow; the flowers are maroon, purplish-brown or dark red; flowering generally takes place between early June and late October (additional records: one for mid-April and one for late November). HABITAT: Within the range of this species it has been reported from mountains; gravelly mountaintops; along bouldery, rocky and sandy mesas; rocky plateaus; rocky crags; cliffs; clifftops; rocky and sandy canyon rims; along rocky canyons; stony canyon walls; canyon bottoms; bases of cliffs; pockets of sandy soil; sandy buttes; gravelly knolls; rocky ledges; rocky, sandy-loamy and loamy ridges; gravelly ridgetops; sandy clearings in forests and woodlands; rocky and gravelly meadows; foothills; rocky, rocky-clayey, gravelly, sandy and silty hills; bouldery-silty and gravelly-silty hilltops; rocky hillsides; rocky escarpments; bouldery, rocky, rocky-sandy-clayey, rocky-clayey, shaley, shaley-sandy, stony-sandy, cobbly, cindery, gravelly, gravelly-sandy, gravelly-loamy, sandy, sandy-loamy, sandy-clayey, sandy-clayey-loamy, loamy, clayey, silty-clayey, humusy and humusy-loamy, slopes; cobbly-clayey alluvial fans; bajadas; rocky and sandy outcrops; amongst boulders and rocks; craters; lava flows; sandhills; sand dunes; sandy-clayey breaks; rocky and sandy and sandy-loamy prairies; llanos; sandy plains; rocky, sandy, sandy-clayey, sandy-loamy, loamy, clayey, silty-clayey and humusy-loamy flats; basins; sandy valley floors; valley bottoms; railroad right-of-ways; along cindery, gravelly, gravelly-sandy, gravelly-loamy, sandy and sandy-loamy roadsides; sandy and clayey-loamy arroyos; sandy bottoms of arroyos; gravelly draws; grassy ravines; along streams; gravelly-loamy streambeds; along creeks; along rocky and clayey creekbeds; in rocky-sandy soil along rivers; riverbeds; within rocky, sandy and clayey washes; within cobbly-gravelly drainages; along lakes; lakebeds; swales; banks of gullies, streams and rivers; edges of drainages and ponds; margins of streams; (rocky) shores of lakes; clayey mudflats; sandy and sandy-clayey benches; along terraces; bottomlands; sandy floodplains; mesquite bosques; around reservoirs; sandy and clayey-loamy riparian areas; loamy waste places, and disturbed areas growing in moist and dry bouldery, rocky, rocky-sandy, shaley, shaley-sandy, stony-sandy, cobbly, cobbly-gravelly, cindery, gravelly, gravelly-sandy and sandy ground; rocky loam, gravelly loam, sandy loam, sandy-clayey loam, clayey loam, humusy loam and loam ground; rocky clay, rocky-sandy clay, cobbly clay, sandy clay, silty clay and clay ground; bouldery silty, gravelly silty and silty ground, and humusy ground, occurring from 700 to 11,000 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 fairy rings. 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 (used in basketry and to make brooms and brushes) crop; it was also noted as having been used as a forage grass, as a ceremonial item, as a cooking tool (strainer), as a toy or game, as a drug or medication and as an indicator of a season (one fruit spike foretold a mild winter and two or more spikes foretold a severe winter). Like Buffalo Grass (*Buchloë dactyloides*) and Hairy Grama (*Bouteloua hirsuta*) it is a hardy, drought resistant species of the Great Plains. Blue Grama is an important forage plant for Bison (*Bos bison*), Mule Deer (*Odocoileus hemionus*), Elk (*Cervus elaphus*), Pronghorn (*Antilocapra americana*), Bighorn Sheep (*Ovis canadensis*) and Scaled Quail (*Callipepla squamata*), some small mammals and songbirds feed on the seeds. *Bouteloua gracilis* is native to central and southern North America. *5, 6, 15, 30, 33 (Page 149, "Blue grama is the most widespread and also the most valuable of the gramas. It occurs on all major soil types and is adapted to widely varying habitats."), 43 (082810), 46 (Page 128), 48, 58, 63 (082810 - color presentation), 77, **85** (082810 - 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*)

***Bouteloua rothrockii* G. Vasey: Rothrock's Grama**

SYNONYMY: *Bouteloua barbata* M. Lagasca y Segura var. *rothrockii* (G. Vasey) F.W. Gould. COMMON NAMES: Navajita Liebrero, Rothrock Grama, Rothrock's Grama. DESCRIPTION: Terrestrial perennial tufted graminoid (a bunchgrass (clumpgrass) with erect culms 8 to 30 inches in height); the foliage is green curing to straw; the flowers may be brownish-red, pale green, green, orange or reddish; the anthers are pink or white; flowering generally takes place between late July and late September (additional records: one for early March, one for mid-May, one for late May, one for late October and one for mid-November). HABITAT: Within the range of this species it has been reported from mountains; rocky-gravelly mountainsides; gravelly and sandy mesas; canyons; sandy canyon bottoms; rocky and rocky-gravelly and gravelly-loamy foothills; rocky and rocky-sandy hills; rocky, gravelly and gravelly-sandy-loamy hillsides; rocky, rocky-gravelly, gravelly, sandy, sandy-loamy and clayey slopes; rocky alluvial fans; gravelly and sandy bajadas; prairies; along cobbly and sandy plains; bouldery-sandy, gravelly and sandy flats; basins; gravelly-loamy valley floors; valley bottoms; along gravelly and sandy roadsides; sandy draws; sandy bottoms of gulches; streambeds; sandy riverbeds; along washes; rocky drainages; within drainages; swales; edges of washes; along margins of cienegas; benches; terraces; sandy floodplains; mesquite bosques; riparian areas, and disturbed areas growing in dry bouldery-sandy, rocky, rocky-gravelly, rocky-sandy, cobbly, gravelly and sandy ground; rocky-clayey loam, gravelly loam, gravelly-sandy loam, gravelly-clayey loam, sandy loam and sandy-clayey loam ground, and clay ground, occurring from 1,100 to 5,700 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This short-lived perennial may be an attractive component of a restored native habitat, it has been described as being hardy and drought-resistant. Rothrock Grama (perennial) may be confused with the annual Sixweeks Grama (*Bouteloua barbata*). *Bouteloua rothrockii* is native to southwest-central and southern North America. *5, 6, 15, 16 (recorded as *Bouteloua barbata* Lag. var. *rothrockii* (Vasey) Gould), 33 (Page 151), 43 (093009), 46 (Page 128), 48, 58, 63 (093009 - color presentation), 77, **85** (100109 - color presentation of dried material), 105*

***Bouteloua trifida* G. Thurber (var. *trifida* is the variety reported as occurring in Arizona): Red Grama**

COMMON NAMES: China, Navajita, Navajita Roja, Red Grama, Red Gramma, Three-awn Grama. DESCRIPTION: Terrestrial perennial tufted graminoid (2 to 16 inches in height); the foliage may be purple; the spikelets (flowers) are reddish-purple; the anthers are yellow; flowering generally takes place between mid-March and late May (additional records: one for early August, two for mid-August, one for early September and two for late October). HABITAT: Within the range of this species it has been reported from rocky mountains; mesas; rocky cliffs; rocky canyons; along canyon walls; gorges; talus slopes; crevices in rocks; pockets of soil in bedrock; bluffs; rocky ledges; bouldery ridges; foothills; bouldery, rocky, rocky-gravelly, stony-gravelly and loamy hills; bouldery and rocky hillsides; bouldery-rocky, rocky, gravelly, sandy and sandy-loamy slopes; bajadas; rocky outcrops; clayey prairies; plains; gravelly flats; basins; valley floors; roadbeds; along rocky, gravelly-sandy and clayey roadsides; sandy arroyos; gulches; springs; along streams; along and in bedrock, cobbly-gravelly-sandy and gravelly-sandy washes; within rocky drainages; within drainage ways; around pools; depressions; (rocky) banks of arroyos; floodplains; ditches, and riparian areas growing in dry bouldery, bouldery-rocky, rocky, rocky-cobbly-gravelly-sandy, rocky-gravelly, stony, stony-gravelly, cobbly-gravelly-sandy, gravelly, gravelly-sandy and sandy ground; sandy loam ground, and clay ground, occurring from 700 to 5,100 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 drought resistant and may form patches or rings, and it is sometimes mistaken for an *Aristida* spp. because of the three-awned spikelets. *Bouteloua trifida* is native to southwest-central and southern North America. *5, 6, 15, 16, 33 (Page 151), 43 (100109), 46 (Page 128), 63 (100109), 77, **85** (100109)*

Brachiaria arizonica (see *Urochloa arizonica*)

***Bromus arizonicus* (C.L. Shear) G.L. Stebbins: Arizona Brome**

SYNONYMY: *Bromus carinatus* W.J. Hooker & G.W. Arnott var. *arizonicus* C.L. Shear. COMMON NAMES: Arizona Brome. DESCRIPTION: Terrestrial annual graminoid (4 to 40 inches in height); the flowers are burgundy; flowering generally takes place between early February and early September (additional records: two for late October). HABITAT: Within the range of this species it has been reported from mountains; mountaintops; mesas; rocky canyons; sandy canyon bottoms; talus slopes; bluffs; ledges; ridges; openings in woodlands; sandy meadows; foothills; hills; rocky hillsides; rocky, gravelly and sandy-loamy slopes; bouldery outcrops; amongst boulders and rocks; sand dunes; sandy plains; gravelly and sandy flats; sandy-clayey-loamy valley bottoms; coastal bluffs; coastal dunes; sandy coastal flats; along gravelly and sandy roadsides; within arroyos; bottoms of arroyos; gulches; around springs; around seeping streams; in sand along streams; streambeds; along creeks; creekbeds; along rivers; sandy riverbeds; along and in gravelly, gravelly-sandy, gravelly-sandy-silty, gravelly-loamy and sandy washes; within drainages; marshy areas; along (rocky) banks of streams, rivers and washes; (rocky, gravelly-sandy and sandy) edges of washes; along shores of lakes; gravel and sand bars; sandy beaches; sandy benches; bottomlands; sandy floodplains; along ditches; ditch banks; gravelly-sandy and sandy riparian areas; waste places, and disturbed areas growing in moist and dry bouldery, bouldery-rocky-sandy, rocky, rocky-sandy, shaley, cobbly-sandy, gravelly, gravelly-sandy and sandy ground; gravelly loam, sandy loam, sandy-clayey loam, clayey loam and loamy ground; clay ground, and gravelly-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. *Bromus arizonicus* is native to southwest-central and southern North America. *5, 6, 15, 16, 33 (Page 44), 43 (100109), 46 (Page 77), 58, 63 (100109), 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** (100209 - color presentation of dried material)*

***Bromus carinatus* W.J. Hooker & G.W. Arnott: California Brome**

COMMON NAMES: Basiawari (Hispanic), Basicuáare (Hispanic), Bromo de California (Hispanic), California Brome, Camaloti (Hispanic), Grama (Hispanic), Masiyague (Hispanic), Mountain Brome, Mountain Bromegrass, Pipillo (Hispanic), Pipilo (Hispanic), Sweet Brome, Tigrillo (Hispanic), Tupikua (Purépecha), Zacate (Hispanic), Zacate Bromo (Hispanic). DESCRIPTION: Terrestrial annual or perennial tufted graminoid (a bunchgrass (clumpgrass) 1 to 6 feet in height and up to 4 to 12 inches in width at the base); the foliage may be reddish or yellow-green; the flowers may be dull green, green, purplish or purplish-red; the anthers are cream-yellow or pale yellow; flowering generally takes place between late March and early October (additional records: one for late February, one for early March, two for late October and one for late December). HABITAT: Within the range of this species it has been reported from mountains; bedrock-shaley-clayey mountaintops; mesas; rock walls; along bouldery and gravelly-loamy canyons; along rocky and gravelly canyon bottoms; chasms; rocky talus; rocky bases of cliffs; crevices in rocks; along bluffs; buttes; bouldery ridges; ridgetops; along ridgelines; openings in forests and woodlands; meadows; foothills; rocky and loamy hills; rocky hillsides; bouldery, hummocks; bouldery, rocky, shaley-clayey-loamy, stony-gravelly, sandy, sandy-loamy, loamy and clayey slopes; rocky-sandy-loamy alluvial fans; sandy bajadas; bouldery and rocky outcrops; amongst rocks; lava flows; sand dunes; pebbly and sandy plains; gravelly, sandy and silty-loamy flats; basins; gravelly-silty valley floors; coastal dunes; sandy coastal flats; along coasts; railroad right-of-ways; along gravelly, sandy,

sandy-loamy and loamy roadsides; along and in arroyos; sandy-loamy bottoms of arroyos; along bouldery-rocky and sandy draws; gulches; gullies; sandy-loamy ravines; seeps; springs; edges of springs; along streams; along streambeds; along creeks; along sandy creekbeds; along rivers; riverbeds; along and in rocky-sandy, rocky-silty, gravelly, gravelly-sandy, gravelly-sandy-silty and sandy washes; within gravelly drainages; along and in drainage ways; among and in pools; rocky-clayey lakebeds; cienegas; marshes; swamps; gravelly depressions; along (rocky-silty and sandy) banks of arroyos, streams, creeks, rivers, washes and pools; edges of springs and drainages; margins of seeps, streams, rivers and washes; shores of lakes; sandy benches; rocky strands; terraces; loamy bottomlands; sandy floodplains; mesquite bosques; along canals; along ditches; bouldery and gravelly-loamy riparian areas; waste places, and disturbed areas growing in wet, moist, damp and dry bouldery, bouldery-rocky, rocky, rocky-sandy, stony-gravelly, gravelly, gravelly-sandy and sandy ground; rocky-sandy loam, shaley-clayey loam, gravelly loam, gravelly-clayey loam, sandy loam, clayey loam, silty loam and loam ground; rocky clay, shaley-clayey and clay ground; rocky silty, gravelly-silty, gravelly-sandy silty and silty ground, and humusy ground, occurring from sea level to 11,000 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. *Bromus carinatus* is native to west-central and southern North America and Central America. *5, 6, 15, 30, 33 (Page 45), 43 (100209), 46 (Page 77), 58, 63 (100209 - color presentation), 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** (100209 - color presentation of dried material, also recorded as *Bromus carinatus* var. *carinatus* Hook. & Arn.), 101 (color photograph), 127*

Bromus carinatus var. *arizonicus* (see *Bromus arizonicus*)

Bromus carinatus var. *carinatus* (see footnote 85 under *Bromus carinatus*)

***Bromus diandrus* A.W. Roth (subsp. *rigidus* (A.W. Roth) J.M. Lainz Ribalaygua is the variety reported as occurring in Arizona): Ripgut Brome**

SYNONYMY: (for *B.d.* var. *rigidus*: *Bromus diandrus* A.W. Roth var. *rigidus* (A.W. Roth) F. Sales, *Bromus rigidus* A.W. Roth. COMMON NAMES: Brome, Great Brome, Ripgut Brome, Ripgut Grass, Ripgutgrass. DESCRIPTION: Terrestrial annual or perennial graminoid (8 inches to 3 feet in height); the foliage is dark green; flowering generally takes place between late February and early July (additional records: one for mid-January, two for early February, one for late October, one for late November and one for mid-December). HABITAT: Within the range of this species it has been reported from mountains; rocky-clayey mountaintops; sandy mesas; plateaus; cliffs; bouldery-rocky and rocky canyons; bouldery-gravelly-sandy and sandy canyon bottoms; rocky talus; pockets of sandy-humusy soil in rocks; ridges; sandy-loamy ridgetops; openings in woodlands; meadows; foothills; rocky hills; bouldery-rocky, rocky and clayey hillsides; bouldery, rocky, rocky-clayey, cobbly-sandy-loamy, cobbly-clayey, gravelly-sandy-loamy, sandy and loamy slopes; bouldery-gravelly-sandy alluvial fans; rocky outcrops; amongst boulders; bases of boulders; sand dunes; prairies; gravelly and clayey flats; valley floors; coastal dunes; along gravelly railroad right-of-ways; along sandy roadsides; within sandy arroyos; gravelly-sandy soil along streams; along creeks; along rivers; rocky and sandy washes; within bouldery-

rocky and sandy drainages; sandy pondbeds; depressions; along sloughs; swales; along (sandy) banks of creeks and rivers; edges of lakes; along margins of creeks and washes; sandy beaches; along sandy benches; shelves; sandy terraces; loamy bottomlands; bouldery-gravelly-sandy, gravelly, sandy, sandy-silty and loamy floodplains; mesquite bosques; dams; ditches; rocky-sandy and gravelly-sandy riparian areas; waste places, and disturbed areas growing in moist and dry bouldery, bouldery-rocky, bouldery-gravelly-sandy, rocky, rocky-sandy, gravelly-sandy and sandy ground; cobbly-sandy-loamy, gravelly, gravelly-sandy loam, sandy loam, sandy-silty loam and loam ground; rocky clay, cobbly clay and clay ground; sandy silty ground, and sandy humus ground, occurring from sea level to 8,500 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. *Bromus diandrus* is native to middle and southern Europe; western Asia, and northern Africa. *5, 6, 33 (recorded as *Bromus rigidus* Roth, Page 50), 43 (100309), 46 (recorded as *Bromus rigidus* Roth, Page 78), 63 (100309), 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** (100309 - color presentation of dried material), 101 (color photograph, *Bromus rigidus* Roth), 127*

Bromus diandrus var. *rigidus* (see *Bromus diandrus* subsp.*rigidus*)

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

Bromus rigidus (see *Bromus diandrus* subsp.*rigidus*)

***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*

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, **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 (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), **WTK** (September 4, 2005)*

***Digitaria insularis* (C. Linnaeus) C.C. Mez ex E.L. Ekman: Sourgrass**

SYNONYMY: *Trichachne insularis* (C. Linnaeus) C.G. Nees von Esenbeck. COMMON NAMES: Barba de Indio (Spanish), Cotton Grass, Feather Grass, Plumerillo Café (Hispanic), Rabo de Zorra (Spanish), Sour Grass, Sourgrass, Zacate Mano Punta Café (Hispanic), Zacate Taiwan (Hispanic). DESCRIPTION: Terrestrial perennial graminoid (a bunchgrass (clumpgrass) 2 to 5 feet in height); the foliage is green; the inflorescence is pale green; based on very few flowering records, flowering generally takes place between late June and early September (flowering records: one for late June, one for early August and one for early September, flowering ending as late as November has been reported). HABITAT: Within the range of this species it has been reported from mountains; cliffs; rocky canyons; canyon bottoms; bases of cliffs; foothills; hills; rocky hilltops; rocky-clayey hillsides; rocky slopes; gravelly plains; bouldery-sandy and rocky flats; along clayey-loamy roadsides; arroyos; draws; within

rocky drainages; drainage ways; rocky and sandy floodplains; sandy riparian areas, and disturbed areas growing in moist and dry bouldery, bouldery-sandy, rocky, gravelly and sandy ground; sandy clay and clayey loam ground, and rocky clay ground, occurring from sea level to 7,300 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. *Digitaria insularis* is native to south-central and southern North America; Central America and coastal islands in the Caribbean Sea, and South America. *5, 6, 30, 33 (recorded as *Trichachne insularis* (L.) Nees., Pages 296-297), 43 (100609), 46 (recorded as *Trichachne insularis* (L.) Nees., Page 131), 58, 63 (100609), 77, **85** (100609 - color presentation of dried material)*

***Elymus elymoides* (C.S. Rafinesque-Schmaltz) G.D. Swezey: Squirreltail**

COMMON NAMES: Alkali Rye, Barb Goatgrass, Beardless Wild Rye, Bottle Brush, Bottle Brush Grass, Bottlebrush Squirreltail, Bottlebrush Squirrel Tail, Creeping Wild Rye, Porcupine Grass, Squaw Grass, Squirrel Tail, Squirreltail, Western Bottle-brush Grass, Zee'iilwo'ii Ntsaaigii (Navajo). DESCRIPTION: Terrestrial perennial graminoid (a bunchgrass (clumpgrass) 3 to 40 inches in height, plants were reported that were 12 inches in height and 6 inches in width at the base, plants were reported that were 20 inches in height and 2 inches in width at the base); the foliage is green; the spikelets (flowers) are gray-green or green; flowering generally takes place between mid-March and mid-September (additional records: one for early October and one for mid-October). HABITAT: Within the range of this species it has been reported from mountains; rocky and gravelly mountaintops; rocky fell-fields; sandy-clayey-loamy mesas; rocky plateaus; canyon rims; bouldery and rocky canyons; gravelly-sandy canyon bottoms; rocky gorges; rocky and clayey scree; rocky talus slopes; bases of cliffs; crevices; clayey buttes; stony knolls; rocky ledges; ridges; rocky and sandy ridgetops; ridgelines; clearings in forests; rocky-silty, sandy and loamy meadows; foothills; rocky and clayey hills; sandy hilltops; rocky hillsides; bouldery, rocky, rocky-gravelly-loamy, rocky-sandy, rocky-loamy, rocky-clayey-loamy, shaley, gravelly, gravelly-loamy, sandy, sandy-loamy, clayey-loamy, clayey-silty and silty-clayey slopes; gravelly bajadas; gravelly mudslopes; bouldery and rocky outcrops; amongst boulders, rocks and gravels; bases of rocks; sandy alcoves; sandy lava flows; lava beds; sand dunes; sandy hummocks; blow-sand deposits; loamy steppes; sandy prairies; pebbly and sandy plains; rocky, gravelly, sandy, sandy-clayey, clayey, silty-loamy and silty-clayey flats; rocky basins; sandy and sandy-silty valley floors; clayey valley bottoms; along clayey railroad right-of-ways; along rocky-gravelly-silty, cindery and clayey roadsides; within arroyos; draws; gulches; rocky and sandy gullies; seeps; springs; along streams; streambeds; along creeks; rocky creekbeds; along rivers; along and in rocky, rocky-sandy and sandy washes; within cobbly-gravelly drainages; within rocky drainage ways; playas; depressions; along (gravelly and sandy) banks of rivers; along edges of washes; margins of playas; rocky-sandy benches; gravelly and clayey terraces; bottomlands; along sandy and sandy-clayey floodplains; mesquite bosques; around stock tanks; fencelines; along ditches; sandy riparian areas, and disturbed areas growing in shallow water and wet, moist, damp and dry desert pavement; bouldery, rocky, rocky-gravelly, rocky-sandy, shaley, cobbly-gravelly, cindery, gravelly, gravelly-sandy, pebbly and sandy ground; rocky-gravelly-sandy-clayey loam, rocky-gravelly loam, rocky-clayey loam, rocky loam, stony-clayey loam, gravelly-sandy-clayey loam, gravelly loam, gravelly-clayey loam, sandy loam, sandy-clayey loam, clayey loam, silty loam, humusy loam and loam ground; rocky clay, shaley clay, sandy clay, silty clay and clay ground, and rocky-gravelly-silty, rocky silty, sandy silty, clayey silty and silty ground sometimes in the protection or shade of bushes, shrubs or trees, occurring from 1,500 to 11,600 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. 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. *Elymus elymoides* is native to west-central and southern North America. *5, 6, 15, 33 (*Elymus elymoides* (Raf.) Swezey (*Sitanion hystrix* J.G. Smith) subsp. *elymoides*, Pages 115-117), 43 (100809), 46 (subsp. *elymoides*, recorded as *Sitanion hystrix* J.G. Smith, "The mature awns penetrate the flesh of

grazing animals, causing inflammation.", Page 96), 48, 63 (100809 - color presentation), 68, 77, **85** (100909 - color presentation of dried material), 127*

***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 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*

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.")*

***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.)*

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

COMMON NAMES: Common Curlymesquite, Creeping Curly-mesquite, Curly Mesquite, Curly-mesquite, Curlymesquite, Curly Mesquite Grass, Curlymesquite 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 and one for mid-September). HABITAT: Within the range of this species it has been reported from mountains; mesas; rocky canyons; rocky canyon bottoms; gravelly-sandy-clayey ridges; ridgelines; ridgetops; meadows; foothills; rocky hills; hilltops; rocky hillsides; rocky, rocky-gravelly-sandy, gravelly and gravelly-sandy-clayey slopes; gravelly bajadas; boulder and rock outcrops; amongst boulders, rocks and gravels; sandy plains; gravelly and sandy flats; along grassy roadsides; along arroyos; along streams; 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, gravelly and sandy ground; bouldery-gravelly loam, gravelly loam, sandy loam and clayey loam ground, and gravelly-sandy clay and clay ground, occurring from 1,500 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 may not be overly drought resistant or shade tolerant. Variety *belangeri* is stoloniferous. In native stands most of the rapid growth is shown after the beginning of the summer rains. *Hilaria belangeri* var. *belangeri* was the dominant grass species of the Texas shortgrass prairies. Curlymesquite is grazed by pronghorn and deer. *Hilaria belangeri* var. *belangeri* is native to southwest-central and southern North America. *5, 6, 15, 33 (species, Pages 158-159), 43 (101209), 46 (species, Page 122), 48, 58, 63 (101209), **85** (101209), 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.)*

Hilaria mutica (see *Pleuraphis mutica*)

Hopia obtusa (see *Panicum obtusum*)

***Hordeum murinum* C. Linnaeus subsp. *glaucum* (E.G. von Steudel) N.N. Tzvelev: Smooth Barley**

SYNONYMY: *Hordeum stebbinsii* G. Covas. COMMON NAMES: Barley, Smooth Barley, Wild Barley, -ya-jewel-g-ute- (Hairs Kills Horses - Supai). DESCRIPTION: Terrestrial annual graminoid (4 to 16 inches in height); the florets are green; flowering generally takes place between early March and early June (additional record: one for mid-February). HABITAT: Within the range of this species it has been reported from mountains; mountainsides; mesas; gravelly canyons; rocky-gravelly and sandy canyon bottoms; bases of cliffs; sandy bluffs; buttes; meadows; foothills; hills; rocky and sandy hillsides; rocky, cobbly-gravelly-loamy and loamy slopes; sandy bajadas; boulder outcrops; sand dunes; sandy flats; valley floors; along railroad right-of-ways; along sandy roadsides; arroyos; draws; gulches; springs; along streams; along creeks; loamy creekbeds; along and in rocky and gravelly-sandy washes; rocky drainage ways; pools; lakebeds; cienegas; depressions; banks of arroyos and rivers; edges of seeps, creekbeds and rivers, margins of playas; channel bars; along sandy and silty floodplains; around stock tanks; along canal banks; along ditches; banks of ditches; sandy riparian areas; waste places, and disturbed areas growing in dry bouldery, rocky, rocky-gravelly, gravelly, gravelly-sandy and sandy ground; cobbly-gravelly loam and loam ground; clayey ground, and silty ground, occurring from 100 to 9,100 feet in elevations 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. *Hordeum murinum* subsp. *glaucum* is native to southwestern Europe; western, central and southern Asia, and northern Africa. *5, 6, 15, 43 (101309), 46 (recorded as *Hordeum stebbinsii* Covas, Page 97), 58, 63 (101309 - color presentation), 77, **85** (101309 - color presentation of dried material), 127*

***Hordeum pusillum* T. Nuttall: Little Barley**

SYNONYMY: *Hordeum pusillum* T. Nuttall var. *pubens* A.S. Hitchock. COMMON NAMES: Little Barley, Little Wildbarley, Mouse Barley. DESCRIPTION: Terrestrial annual graminoid (geniculate or erect culms 4 to 24 inches in height); the foliage is gray-green turning yellow-green; the spikelets (flowers) are pale green; flowering generally takes place between mid-March and early June. HABITAT: Within the range of this species it has been reported from mountains; clayey-loamy mesas; plateaus; canyon rims; rocky canyons; canyon bottoms; bases of cliffs; rocky ridgetops; sandy and clayey meadows; rocky and sandy hills; rocky hillsides; rocky, clayey-loamy and clayey slopes; sandy alcoves; sandy steppes; sandy and clayey-loamy prairies; plains; gravelly and sandy flats; valley floors; along railroad right-of-ways; along gravelly, sandy-loamy and sandy-clayey-loamy roadsides; draws; gulches; ravines; seeps; around springs; streambeds; along creeks; clayey-loamy creekbeds; along rivers; sandy riverbeds; along and in clayey washes; among and in pools; in rocks around ponds; cienegas; clayey depressions; clayey swales; edges of marshes; margins of lakes; shores of lakes; sandy benches; sandy terraces; clayey bottomlands; floodplains; along fence lines; around stock tanks; in ditches; sandy riparian areas; waste places, and disturbed areas growing in moist, damp and dry rocky, gravelly and sandy ground; sandy loam, sandy-clayey loam and clayey loam ground; rocky clay and clay ground, and gravelly silty and silty ground, occurring from sea level to 8,100 in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTE: *Hordeum pusillum* is native to west-central and southeast-central and southern North America. *5, 6, 15, 16, 33 (Page 107), 43 (101309), 46 (Page 97), 58, 64 (101309 - color presentation), 77, **85** (101309 - color presentation of dried material)*

Hordeum pusillum var. *pubens* (see *Hordeum pusillum*)

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

***Leptochloa dubia* (K.S. Kunth) C.G. Nees von Esenbeck: Green Sprangletop**

COMMON NAMES: Green Spangletop, Green Sprangletop, Texas Crowfoot, Zacate Gigante (Spanish). DESCRIPTION: Terrestrial perennial tufted graminoid (a bunchgrass (clumpgrass) with erect

culms (few-stemmed) 4 to 60 inches in height, plants 2 to 4 inches in width at the base have been observed and reported); the foliage is bluish-green, gray-green, green or dark green; the spikelets (flowers) may be light brown, greenish or dark olive-green; flowering generally takes place between early July and early November (additional record: one for mid-December). HABITAT: Within the range of this species it has been reported from mountains; gravelly mountaintops; mountainsides; plateaus; rocky mesas; along bouldery-sandy, rocky and gravelly-loamy canyons; rocky-gravelly-sandy, rocky-gravelly-sandy-loamy and sandy canyon bottoms; bases of cliffs; crevices in rocks; buttes; sandy ledges; ridges; ridgetops; clearings in woodlands; meadows; foothills; rocky hills; rocky hillsides; escarpments; bouldery, rocky, shaley, gravelly, sandy, loamy and clayey-loamy slopes; rocky outcrops; amongst boulders and rocks; sandy lava flows; sandy plains; clayey-loamy flats; rocky valley floors; along gravelly and gravelly-loamy roadsides; along rocky arroyos; bottoms of arroyos; gulches; ravines; seeps; springs; along streams; sandy streambeds; along creeks; along clayey creekbeds; along rivers; along cobbly riverbeds; along and in rocky, gravelly, sandy and clayey washes; within drainages; marshes; banks of rivers; margins of creeks and cienegas; gravel bars; benches; along terraces; floodplains; sandy mesquite bosques; ditches; rocky-gravelly-sandy-loamy and sandy riparian areas, and disturbed areas growing in moist and dry rocky desert pavement; bouldery, bouldery-cobbly-sandy, bouldery-sandy, rocky, rocky-gravelly, shaley, cobbly, gravelly, gravelly-sandy and sandy ground; rocky loam, rocky-gravelly-sandy loam, gravelly loam, sandy loam, clayey loam and loam ground, and sandy clay and clay ground, occurring from sea level 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. *Leptochloa dubia* is native to south-central and southern North America; Central America, and central and southern South America. *5, 6, 33 (Pages 135-136), 43 (060810), 46 (Page 123), 48, 63 (060810 - color presentation), 77, **85** (060810 - color presentation of dried material), 105*

Leptochloa filiformis (see *Leptochloa panicea* subsp. *brachiata*)

Leptochloa mucronata (see *Leptochloa panicea* subsp. *mucronata*)

***Leptochloa panicea* (A.J. Retzius) J. Ohwi subsp. *brachiata* (E.G. von Steudel) N. Snow: Mucronate Sprangletop**

SYNONYMY: *Leptochloa filiformis* (J.B. de Lamarck) A.M. Palisot de Beauvpis. COMMON NAMES: Mucronate Sprangletop, Red Sprangletop. DESCRIPTION: Terrestrial annual or perennial graminoid (decumbent and spreading at the base or erect culms less than 4 to 60 inches in height); the foliage is magenta, purplish or reddish; the spikelets (flowers) are tinged with purple or red; flowering generally takes place between late August and late September (additional records: one for mid-March, two for mid-October, two for early November, one for mid-November and one for mid-December, flowering beginning as early as May has been reported). HABITAT: Within the range of this species it has been reported from mountains; mountaintops; mesas; rocky canyons; canyon bottoms; rocky talus slopes; shallow pockets of soil in bedrock; buttes; ridgetops; meadows; hills; rocky hillsides; rocky, gravelly, gravelly-loamy and clayey slopes; bajadas; bouldery and rocky outcrops; silty lava flows; rocky plains; flats; valley floors; along rocky and sandy roadsides; within arroyos; within draws; springs; along streams; along cobbly-sandy streambeds; along creeks; bouldery-cobbly-sandy riverbeds; along and in gravelly, gravelly-sandy, sandy, sandy-loamy and silty washes; drainages; within clayey drainage ways; playas; (rocky) banks of rivers and washes; edges of ponds; gravel bars; loamy bottomlands; sandy floodplains; around stock tanks; edges of canals; along and in ditches; along ditch banks; riparian areas, and disturbed areas growing in wet, damp and dry bouldery, bouldery-cobbly-sandy, rocky, cobbly-sandy, gravelly, gravelly-sandy and sandy ground; gravelly loam, sandy loam and loam ground; gravelly clay and clay ground, and silty ground, occurring from sea level to 6,100 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. *Leptochloa panicea* subsp. *brachiata* is native to south-central and southern North America; Central America, and central and southern South America. *5, 6, 15 (recorded

as *Leptochloa filiformis* (Lam.) Beauv.), 16 (recorded as *Leptochloa filiformis* (Lam.) Beauv.), 33 (recorded as *Leptochloa filiformis* (Lam.) Beauv., Page 135), 43 (101509), 46 (recorded as *Leptochloa filiformis* (Lam.) Beauv., Page 123), 58 (recorded as *Leptochloa filiformis* (Lam.) Beauv.), 63 (101509), 68 (recorded as *Leptochloa filiformis* (Lam.) Beauv.), 77 (recorded as *Leptochloa filiformis* (Lam.) Beauv.), **85** (101509 - color presentation of dried material)*

***Leptochloa panicea* (A.J. Retzius) J. Ohwi subsp. *mucronata* (A. Michaux) R. Nowack: Mucronate Sprangletop**

SYNONYMY: *Leptochloa mucronata* (A. Michaux) H.B. Kunth. COMMON NAMES: Desparramo Rojo, Mississippi Sprangletop, Mucronate Sprangletop, Slendergrass. DESCRIPTION: Terrestrial annual or perennial graminoid (decumbent and spreading at the base or erect culms less than 4 to 44 inches in height); the inflorescence is green; flowering generally takes place between mid-July and mid-October (flowering records: one for mid-March, one for mid-July, three for mid-August, one for early September, one for mid-September, two for early October, two for mid-October and one for mid-November). HABITAT: Within the range of this species it has been reported from mountains; gravelly canyons; canyon bottoms; chasms; ledges; rocky ridgetops; foothills; rocky and clayey hills; rocky hillsides; rocky and rocky-clayey slopes; rocky lava slopes; llanos; sandy-silty flats; valley bottoms; roadbeds; along gravelly roadsides; along arroyos; bottoms of arroyos; along streams; sandy streambeds; along creeks; in sandy soil along rivers; sandy riverbeds; along and in rocky, gravelly-sandy, gravelly-sandy-silty, sandy and silty washes; along drainages; playas; silty-muddy swampy areas; sandy-silty and silty depressions; banks of streams and rivers; (sandy) edges of ponds and playas; margins of arroyos and waterholes; benches; bottomlands; sandy floodplains; along fencelines; along ditches; banks of ditches; around stock tanks (charcos, repressos); gravelly riparian areas, and disturbed areas growing in wet, moist and dry rocky, gravelly, gravelly-sandy and sandy ground; rocky clay, gravelly clay and clay ground, and gravelly-sandy silty, sandy silty and silty ground, occurring from sea level to 5,600 feet in elevation in the forest, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an Exotic. *Leptochloa panicea* subsp. *mucronata* is native to south-central and southern North America. *5, 6, 33 (recorded as *Leptochloa mucronata pulchella* Scribn., brief note on page 135), 43 (101509), 46 (no record), 63 (101509), **85** (101509)*

***Melinis repens* (C.L. von Willdenow) G. Zizka: Rose Natal Grass**

SYNONYMY: *Rhynchelytrum repens* (C.L. von Willdenow) C.E. Hubbard, *Rhynchelytrum roseum* (C.G. Nees von Esenbeck) O. Stapf & C.E. Hubbard ex J.W. Bews. COMMON NAMES: Creeping Molasses Grass, Natal Grass, Natal Red-top, Natal Redtop, Pasto (Hispanic), Red Natal Grass, Rose Natal Grass, Yerba del Natal (Spanish), Zacate Natal (Hispanic), Zacate Rosado (Hispanic). DESCRIPTION: Terrestrial annual or perennial tufted graminoid (8 to 60 inches in height), the inflorescence has been described as being brownish-pink, pink, deep pink, darkish purple, purplish-pink, reddish, rose or white; the (spikelets) flowers are red or dark rose with long silky purplish-pink hairs and orange or orange-brown anthers; flowering generally takes place between late January and mid-December. HABITAT: Within the range of this species it has been reported from mountains; rocky mountainsides; rocky canyons; rocky canyon walls; along gravelly canyon bottoms; bases of cliffs; crevices in boulders and rocks; rocky bluffs; ledges; rocky ridges; rocky ridgetops; meadows; foothills; hills; rocky hilltops; rocky hillsides; bouldery, rocky, rocky-gravelly, sandy and clayey slopes; rocky outcrops; amongst boulders and rocks; fumaroles; sand dunes; cobbly-sandy and clayey flats; basins; valley floors; coastal plains; coastal flats; railroad right-of-ways; along sandy roadsides; along streams; rocky streambeds; along creeks; creekbeds; along and in rocky, stony and sandy washes; drainages; drainage ways; swamps; depressions; sloughs; bouldery swales; banks of streams and drainage ways; terraces; lowlands; sandy floodplains; riparian areas, and disturbed areas growing in moist and dry bouldery, rocky, rocky-gravelly, stony, cobbly-sandy, gravelly, gravelly-sandy and sandy ground; rocky loam ground, and clay ground, occurring from sea level to 6,400 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. *Melinis repens* is native to southern Asia and Africa. *5, 6, 15 (recorded as *Rhynchelytrum repens* (Willd.) C.E. Hubb.), 18, 22 (color photograph), 30, 33 (recorded as *Rhynchelytrum roseum* (Nees) Stapf & Hubb., Pages 271-272), 43 (101609), 46 (recorded as *Rhynchelytrum roseum* (Nees) Stapf & Hubb., Page 138), 63 (101609 - color presentation), 77 (recorded as *Rhynchelytrum repens* (Willd.) C.E. Hubb.), **85** (101609 - color presentation of dried material)*

***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-sandy banks; gravelly plains; rocky, gravelly-sandy, sandy and sandy loamy flats; open sandy ground amongst Ephedra spp. and Larrea spp.; 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; 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.”), **WTK** (September 4, 2005)*

Panicum arizonicum (see *Urochloa arizonica*)

***Panicum hirticaule* C.B. Presl: Mexican Panicgrass**

COMMON NAMES: Mexican Panicgrass, Panizo Cauchin (Spanish), Rough-stalk Witchgrass, Roughstalk Witchgrass, Roughstalked Witchgrass, Witchgrass, Woodland Panic. DESCRIPTION: Terrestrial annual graminoid (erect-spreading culms 2 to 44 inches in height); the spikelets (flowers) may be reddish-brown; flowering generally takes place between early August and early November (additional records: one for mid-May and one for late November). HABITAT: Within the range of this species it has been reported from mountains; gravelly and sandy mesas; rocky and gravelly canyons; gravelly, gravelly-sandy and sandy canyon bottoms; bases of cliffs; soil pockets in bedrock and rocks; rocky ridgetops; meadows; rocky foothills; rocky and rocky-loam hills; hilltops; bedrock, rocky, rocky-gravelly, rocky-clayey and gravelly hillsides; bouldery-rocky, rocky, cindery, gravelly, gravelly-loamy and sandy slopes; alluvial fans; bajadas; amongst boulders and rocks; bases of boulders and rocks; sand hills; dunes; rocky and sandy plains; rocky, sandy-loamy, clayey and sandy-silty flats; basins; valley floors; valley bottoms; along railroad right-of-ways; along rocky, rocky-loamy, sandy and silty roadsides; bottoms of arroyos; within sandy draws; ravines; along seepages; along streams; along bouldery-sandy and gravelly-sandy streambeds; along creeks; creekbeds; along rivers; along and in gravelly, gravelly-sandy, sandy, clayey, silty and silty-clayey washes; drainages; within sandy and clayey drainage ways; oases; clayey depressions; sink-holes; clayey-loamy and silty swales; (rocky-sandy) banks of washes, drainages and drainage ways; along (bouldery) margins of creeks, washes and sloughs; sand bars; benches; rocky shelves; along gravelly-sandy and sandy floodplains; gravelly lowlands amongst Creosote Bushes; mesquite bosques; around stock tanks; ditches; sandy riparian areas; waste places, and disturbed areas growing in wet, moist, damp and dry bouldery, bouldery-rocky, bouldery-sandy, rocky, rocky-gravelly, rocky-sandy, cindery, gravelly, gravelly-sandy and sandy ground; rocky loam, gravelly loam, sandy loam and clayey loam ground; rocky clay, gravelly clay, silty clay and clay ground, and 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. *Panicum hirticaule* is native to southwest-central and southern North America; Central America, and South America. *5, 6, 15, 16, 30, 33 (recorded as *Panicum capillare* L. var. *hirticaule* (Presl) Gould, Page 283; *Panicum capillare* L. var. *pampinsonum* (Hitchc. & Chase) Gould, Page 284; *Panicum capillare* L. var. *stramineum* (Hitchc. & Chase) Gould, Page 283, and *Panicum sonorum* Beal, Page 282), 43 (101809), 46 (Page 136), 58, 63 (101809 - recorded as *Panicum hirticaule* J. Presl, color presentation of seed), 80 (Species of the genus *Panicum* are listed as Rarely Poisonous and Suspected Poisonous Range Plants. Species of this genus have been reported to cause loss in livestock due to photosensitization and nitrate poisoning.), **85** (101809 - recorded as *Panicum hirticaule* J. Presl, color presentation of dried material), 127*

***Panicum obtusum* K.S. Kunth: Vine Mesquite**

SYNONYMY: *Hopia obtusa* (K.S. Kunth) F.O. Zuloaga & O. Morrone. COMMON NAMES: Grapevine Mesquite, Panic Grass, Vine Mesquite, Vine-mesquite, Vine Mesquite Grass, Vine-mesquite Grass, Wiregrass. DESCRIPTION: Terrestrial perennial graminoid (a sodgrass 6 to 32 inches in height or length that produces long stolons (1 to 10 feet in length) and short rhizomes); the foliage is light bluish-green or yellow-green curing to reddish-straw and then gray-tan; the flowers are purple; the anthers are maroon or purple; flowering generally takes place between mid-July and late August (flowering records: one for mid-September, one for late September, two for late October; flowering beginning as early as May has been reported). HABITAT: Within the range of this species it has been reported from mountains; mountainsides; gravelly-sandy mesas; rocky canyons; canyon bottoms; clayey bluffs; gravelly buttes;

knolls; ledges; along gravelly ridges; sandy meadows; foothills; hills; hillsides; shaley-sandy, gravelly, sandy-loamy, loamy, clayey and silty-clayey slopes; sandy dunes; sandy prairies; gravelly-sandy, sandy-loamy and clayey-loamy plains; rocky and sandy-loamy flats; rocky basins; valley floors; sandy-silty valley bottoms; along rocky, gravelly, gravelly-loamy and sandy roadsides; arroyos; rocky and loamy draws; silty bottoms of draws; gullies; ravines; seeps; springs; along streams; along streambeds; creeks; sandy soil along rivers; along sandy riverbeds; along and in rocky and sandy washes; within sandy and clayey-loamy drainages; along rocky drainage ways; pondbeds; playas; boggy areas; cienegas; marsh lands; swampy areas; silty-clayey depressions; clayey and silty swales; (sandy and sandy-silty) banks of arroyos, streams, rivers and washes; edges of springs and rivers; shores of lakes; mudflats; sand bars; benches; cobbly-sandy-silty terraces; bottomlands; floodplains; mesquite bosques; sandy margins of stock tanks (charcos); along and in ditches; sandy riparian areas, and disturbed areas growing in seasonally wet and moist and dry rocky, rocky-gravelly, shaley-sandy, gravelly, gravelly-sandy and sandy ground; gravelly loam, sandy loam, clayey loam and loam ground; sandy clay, silty clay and clay ground, and cobbly-sandy silty, sandy silty and silty ground, occurring from 1,000 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 and/or fodder crop; it was also noted as having been used as a drug or medication and as a commodity used in personal hygiene. This plant is useful in binding soils and controlling erosion. The foliage is browsed by Mule Deer (*Odocoileus hemionus*), White-tailed Deer (*Odocoileus virginianus*), Elk (*Cervus elaphus*), ground squirrels, jackrabbits, prairie dogs, Pronghorn (*Antilocapra americana*) and some small mammals; Gambel's Quail (*Callipepla gambelii*), Northern Bobwhite (*Colinus virginianus*), Mourning Dove (*Zenaida macroura*) and Scaled Quail (*Callipepla squamata*) feed on the seed, and the dense stands of Vine-mesquite Grass provide cover for rodents and upland game birds. *Panicum obtusum* is native to south-central and southern North America. *5, 6, 33 (Page 287), 43 (101809), 46 (Page 137), 48, 58, 63 (101809 - color presentation), 77, 80 (Species of the genus *Panicum* are listed as Rarely Poisonous and Suspected Poisonous Range Plants. Species of this genus have been reported to cause loss in livestock due to photosensitization and nitrate poisoning.), **85** (101809 - color presentation), 105, 127*

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), **WTK** (September 4, 2005)*

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*

***Phalaris minor* A.J. Retzius: Littleseed Canarygrass**

COMMON NAMES: Alfarino (Portuguese), Alpisillo, Alpiste Silvestre, Alpiste Vahillo (Spanish), Canarygrass, Kleines Glanzgras (German), Lesser Canary Grass, Lesser Canarygrass, Little-seed Canary Grass, Littleseed Canary Grass, Littleseed Canarygrass, Pasto Romano (Spanish), Pasto-romano (Portuguese), Phalaris Mineur (French), Small Canary Grass, Small-seeded Canary Grass, Talaceiro (Portuguese). DESCRIPTION: Terrestrial annual graminoid (decumbent, geniculate, ascending or erect culms 4 inches to 6 feet in height); flowering generally takes place between early March and early June. HABITAT: Within the range of this species it has been reported from mountains; mesas; rocky canyons; sandy canyon bottoms; bases of cliffs; rocky hills; rocky, rocky-loamy-clayey and rocky-clayey slopes; amongst rocks; sand dunes; plains; clayey flats; sandy basins; sandy valley floors; along sandy and gravelly-loamy roadsides; along sandy bottoms of arroyos; within gullies; seeps; along streams; along rivers; sandy riverbeds; along and in rocky, gravelly, gravelly-sandy and sandy washes; drainage ways; around poolbeds; lakebeds; depressions; (sandy) banks of rivers; along margins of washes, pools and ponds; mudflats; sandy terraces; loamy bottomlands; sandy floodplains; edges of stock tanks; reservoirs; along canals; along ditches; banks of ditches; sandy riparian areas, and disturbed areas growing in moist, damp and dry rocky, gravelly, gravelly-sandy and sandy ground; gravelly loam and loam ground, and rocky-loamy clay, rocky clay, clay ground, occurring from sea level to 5,900 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. *Phalaris minor* is native to southern Europe; western and southern Asia, and northern Africa. *5, 6, 16, 33 (Page 263), 43 (102009), 46 (Page 131), 63 (102009 - color presentation of seed), 77, **85** (102009 - color presentation), 101 (color photograph), 127*

***Pleuraphis mutica* S.B. Buckley: Tobosagrass**

SYNONYMY: *Hilaria mutica* (S.B. Buckley) G. Bentham. COMMON NAMES: Tobosa, Tobosa Grass, Tobosagrass. DESCRIPTION: Terrestrial perennial graminoid (a bunchgrass 1 to 3 feet in height); the foliage is dull bluish-green or gray-green curing to gray; the inflorescence is purplish, straw or white; the spikelets (flowers) are greenish-tan or tinged with pink; flowering generally takes place between May and October; however, under favorable conditions, flowering may take place throughout the year (flowering records: one for early April, one for mid-April, one for early July, three for mid-August, one for late August, three for mid-September, one for mid-October, one for late October and two for early November). HABITAT: Within the range of this species it has been reported from mountains; mountaintops; bouldery and gravelly-sandy mesas; canyons; buttes; gravelly-sandy-clayey ridges; ridgetops; foothills; rocky and sandy-loamy hills; rocky hilltops; rocky and sandy hillsides; across bouldery, bouldery-rocky-clayey, rocky, rocky-clayey, cobbly-clayey, gravelly-sandy-clayey, sandy, sandy-loamy and clayey slopes; alluvial fans; bajadas; bouldery and rocky outcrops; amongst boulders and rocky-gravels; lava hills; lava fields; prairies; gravelly plains; sandy, sandy-clayey, sandy-silty, loamy and clayey flats; basins; rocky and sandy valley floors; valley bottoms; along gravelly-sandy roadsides; arroyos; gullies; along creeks; along and in bedrock, rocky and sandy washes; drainages; along drainage ways; clayey depressions; swales; along margins of washes; benches; terraces; floodplains; lowlands; mesquite bosques, and ditches growing in dry rocky desert pavement; bouldery, rocky, rocky-gravelly, rocky-sandy, gravelly, gravelly-sandy and sandy ground, rocky-clayey loam, gravelly-clayey loam, sandy loam, sandy-clayey loam, clayey loam and loam ground; bouldery-rocky clay, rocky clay, cobbly clay, gravelly-sandy clay, sandy clay, silty clay and clay ground, and rocky-gravelly silty and silty ground, occurring from 1,100 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.

Pleuraphis mutica is native to southwest-central and southern North America. *5, 6, 16 (recorded as *Hilaria mutica* (Buckl.) Benth.), 33 (recorded as *Hilaria mutica* (Buckl.) Benth., Page 161), 43 (102009, *Hilaria mutica* Benth.), 46 (recorded as *Hilaria mutica* (Buckl.) Benth., Page 122), 48, 63 (102009 - color presentation), 77 (recorded as *Hilaria mutica* (Buckl.) Benth.), 80 (The Ergot Fungus (*Claviceps* sp.) is listed as a Secondary Poisonous Range Plant. Tobosa (*Hilaria mutica*) can be a host 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. Tobosa is listed as a Rarely Poisonous and Suspected Poisonous Range Plant. This perennial grass "may become infected with Ergot (Claviceps) and cause Ergot poisoning of livestock."), **85** (102009 - color presentation of dried material), 105 (recorded as *Hilaria mutica* (Buckl.) Benth.)*

***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)*

Rhynchelytrum repens (see *Melinis repens*)

Rhynchelytrum roseum (see *Melinis repens*)

***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)*

***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)*

***Setaria liebmannii* E.P. Fournier: Liebmann's Bristlegrass**

COMMON NAMES: Bristlegrass, Liebmann Bristlegrass, Liebmann's Bristlegrass. DESCRIPTION: Terrestrial annual graminoid (6 to 40 inches in height); the inflorescence may be greenish-red; flowering generally takes place between mid-August and mid-October (additional record: one for early November). HABITAT: Within the range of this species it has been reported from mountains; mountaintops; mountainsides; rocky mesas; rocky cliffs; bouldery-rocky and rocky canyons; canyon bottoms; rocky talus slopes; bases of cliffs; sandy openings in forests; rocky hills; hilltops; hillsides; rocky slopes; amongst rocks; llanos; plains; flats; growing in the shade of mesquites; beach dunes; along roadbeds; along roadsides; arroyos; along washes; within rocky drainages; marshy areas; (rocky) banks of arroyos; edges of arroyos; along ditches; riparian areas, and disturbed areas growing in wet and dry bouldery-rocky, rocky and sandy ground, occurring from sea level to 3,500 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. *Setaria liebmannii* is native to

southwest-central and southern North America and Central America. *5, 6, 16, 33 (Pages 269-270), 43 (102309), 46 (*Setaria liebmanni* Fourn., Page 139), 63 (102309), 77, **85** (102409)*

Setaria macrostachya (see NOTES and related footnotes 33, 46, 85 and 105 under *Setaria vulpiseta*)

***Setaria vulpiseta* (J.B. de Lamarck) J.J. Roemer & J.A. Schultes: Plains Bristlegrass**

COMMON NAMES: Assaak, Plains Bristlegrass, Xikkaa Kiix, Zacate Tempranero, Zacate Temprano. DESCRIPTION: Terrestrial perennial tufted graminoid (a bunchgrass with somewhat geniculate culms 1 to 4 feet in height, one plant was described as being 2 inches in width at the base, several plants were described as being 8 to 16 inches in width at the base); the stems and leaves are pale to bright green sometimes with a bluish tinge curing to an orange-brown; the flowers may be orange and purple; flowering generally takes place between late April and mid-October (additional records: one for early March and one for mid-November). HABITAT: Within the range of this species it has been reported from mountains; cliffs; rocky canyons; rocky canyonsides; canyon bottoms; canyonettes; rocky talus; bases of cliffs; crevices in rocks; amongst rocky buttes; crests of buttes; rocky ledges; ridges; openings in woodlands; foothills; hills; hilltops; hillsides; rocky and gravelly slopes; bajadas; rocky outcrops; amongst boulders and rocks; sandy dunes; sandy mesquite hummocks; plains; gravelly flats; valley floors; along gravelly roadsides; arroyos; gravelly-sandy-loamy draws; streambeds; sandy creeks; sandy riverbeds; along and in gravelly washes; within drainages; drainage ways; depressions; (gravelly-sandy) banks of streambeds, creeks and washes; (rocky) edges of streambeds and washes; benches; sandy-loamy bottomlands; sandy floodplains; mesquite bosques; stock tanks; riparian areas, and disturbed areas growing in muddy and moist and dry bouldery, rocky, gravelly, gravelly-sandy and sandy ground; gravelly loam, gravelly-sandy loam and sandy loam ground; sandy clay and clay ground, and cobbly-sandy silty ground sometimes in the partial shade of shrubs and trees, occurring from sea level to 6,000 feet in elevation in the woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: *Setaria vulpiseta*, the Plains Bristlegrass has been recorded in many texts as *Setaria macrostachya*; however, it has been reported that *Setaria macrostachya*, with the common name Large-spike Bristlegrass is an EXOTIC species that may also be found in Arizona. There appears to be some confusion as to what's what with this species with regard to its taxonomy. The native Plains Bristlegrass may be an attractive component of a restored native habitat, and the plant is reportedly a good soil binder. Plains Bristlegrass is an important forage grass with a high palatability; however, it is often selectively grazed over other range grasses and does not stand up well to heavy grazing. *Setaria vulpiseta* is native to south-central (again, some say that it is native and some say that it isn't) and southern North America; Central America, and South America. *5, 6, 15 (recorded as *Setaria macrostachya* H.B.K.), 16 (recorded as *Setaria macrostachya* H.B.K.), 33 (recorded as *Setaria macrostachya* H.B.K., Plains Bristlegrass,, Page 270), 43 (102409), 46 (recorded as *Setaria macrostachya* H.B.K., Plains Bristlegrass, Page 139 and reidentified as in the Supplement, Page 1041), 48 (recorded as *Setaria macrostachya*), 58 (recorded as *Setaria macrostachya* H.B.K.), 63 (102409 - color presentation of seed), 77 (recorded as *Setaria macrostachya* H.B.K.), **85** (102409 - *Setaria macrostachya* Kunth and *Setaria vulpiseta* (Lam.) Roemer & J.A. Schultes), 105 (recorded as *Setaria macrostachya* H.B.K.)*

***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*

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, **HR***

***Sporobolus cryptandrus* (J. Torrey) A. Gray: Sand Dropseed**

COMMON NAMES: Covered-spike Dropseed, Dropseed, Drop Seed Grass; Drop-seed Grass, Large-panicle Vilfa, Larfe-panicled Vilfa, Lesser Dropseed, Prairie Grass, Prairie-grass, Sand Drop-seed, Sand Dropseed, Sand Rush Grass, Sand Rush-grass, Sand Rushgrass, Sporobole à Fleurs Cacnées (French, alternate spelling Sporobole à Fleures Cachées also observed), Vai Tava'i (Yaqui, also called this grass Vaso which is the Yaqui generic name for grass), Zacate de Arena. DESCRIPTION: Terrestrial perennial graminoid (a bunchgrass (clumpgrass) with erect, rarely decumbent, culms 1 to 4 feet (one record of 6½ feet) in height and 1 to 8 inches in width at the base, plants 40 inches in height and 4 to 6 inches in width were reported); the foliage may be bluish-green, light green, dark green or purple curing to light straw-yellow; the spikelets (flowers) may be brownish, purplish, bright red-maroon or yellow; flowering generally takes place between late April and early June and between late July and late October (additional records: one for late January, one for early April and one for late May). HABITAT: Within the range of this species it has been reported from mountains; gravelly mountaintops; bouldery, rocky, gravelly-sandy and sandy mesas; sandy plateaus; rocky and sandy rims of canyons; cliffs; rocky and gravelly-loamy canyons; along bouldery-cobbly-sandy and sandy canyon bottoms; gorges; bouldery talus; sandy crevices in boulders and rock walls; bluffs; along tops of bluffs; buttes; rocky ledges; along rocky, gravelly-loamy and sandy ridges; glades; sandy and clayey meadows; tops of cinder cones; sandy foothills; gravelly and gravelly-sandy hills; sandy hillsides; escarpments; along bedrock, bouldery, rocky, rocky-gravelly, rocky-sandy-loamy, shaley, cobbly, gravelly, sandy, sandy-loamy and silty-clayey slopes; rocky outcrops; amongst boulders and rocks; sheltered nooks of rim rock; sandy lava flows; sand hills; sand dunes; sand hummocks; sandy and sandy-loamy prairies; pebbly, gravelly-sandy, sandy and sandy-clayey plains; bouldery, rocky, rocky-sandy, gravelly, sandy, clayey, clayey-loamy and silty-clayey flats; basin floors; gravelly-sandy valley floors; valley bottoms; coastal dunes; sandy coastal plains; sandy coastal flats; gravelly railroad right-of-ways; sandy roadways; along rocky-sandy, cindery, gravelly, gravelly-loamy, sandy, sandy-loamy, sandy-clayey, sandy-silty and clayey roadsides; sandy and clayey arroyos; bottoms of arroyos; draws; bottoms of draws; springs; gravelly-loamy soils along streams; along streambeds; rocky creekbeds; along rivers; along and in sandy riverbeds; along and in rocky, rocky-sandy, gravelly, sandy, sandy-loamy, clayey and silty-clayey washes; within drainages; drainage ways; clayey playas; gravelly-sandy depressions; clayey swales; (sandy and sandy-loamy) banks of arroyos, rivers, washes and lakes; (rocky, gravelly and sandy) edges of draws, gullies; streams, drainage ways, pools and depressions; (sandy) shores of lakes; gravelly and sandy beaches; sandy benches; stony-loamy, sandy and sandy-loamy terraces; loamy bottomlands; sandy floodplains; lowlands; mesquite bosques; around stock tanks (charcos); along and in loamy ditches; rocky and gravelly-sandy riparian areas; loamy waste places, and disturbed areas growing in dry bouldery, bouldery-cobbly-sandy, rocky, rocky-gravelly, rocky-sandy, shaley, cobbly, cindery, gravelly, gravelly-sandy, pebbly and sandy ground; stony loam, gravelly loam, sandy loam, sandy-clayey loam, sandy-silty loam, silty-clayey loam and loam ground; gravelly clay, gravelly-sandy clay, sandy-clay, silty clay and clay ground, and gravelly silty, sandy silty and silty 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 may be an attractive component of a

restored native habitat, established plants are 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 and/or fiber crop. When using this plant in landscaping and re-vegetation projects use plants and/or seed collected from as local a population as possible. Rocky Mountain Bighorn Sheep (*Ovis canadensis*) browse this plant, Scaled Quail (*Callipepla squamata*), Black-tailed Jackrabbits (*Lepus californicus*), Black-tailed Prairie Dogs (*Cynomys ludovicianus*) feed on this plant, small mammals and birds also utilize this plant. *Sporobolus cryptandrus* is native to central and southern North America and southern South America (report for Argentina found in the Germplasm Resources Information Network). *5, 6, 15, 16, 33 (very similar to *Sporobolus flexuosus* and difficult to distinguish without having mature panicles, Pages 226-227), 43 (102409 - *Sporobolus cryptandrus* A. Gray), 46 (Page 114), 48, 58, 63 (102409 - color presentation), 77, **85** (102409 - color presentation of dried material), 105, 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*)

Trichachne insularis (see *Digitaria insularis*)

Tridens pulchellus (see *Dasyochloa pulchella*)

Triodia pulchella (see *Dasyochloa pulchella*)

***Tridens muticus* (J. Torrey) G.V. Nash: Slim Tridens**

COMMON NAMES: Slim Tridens, Tridente. DESCRIPTION: Terrestrial perennial tufted graminoid (a bunchgrass 3 to 32 inches in height and 3 to 4 inches in width at the base, one plant was reported to be 32 inches in height and 4 inches in width at base); the foliage is bluish-green or gray-green curing to a light straw-yellow; flowering generally takes place between mid-April and early June and again between early August and mid-November (additional records: one for mid-January, one for early March and one for mid-March). HABITAT: Within the range of this species it has been reported from mountains; gravelly peaks; mesas; rocky cliffs; along bouldery and rocky canyons; along rocky and gravelly canyon bottoms; gorges; bouldery-sandy grottos; talus slopes; ledges; ridges; bouldery ridgetops; foothills; rocky and gravelly hills; bouldery, rocky and gravelly hillsides; rocky and gravelly slopes; rocky bajadas; boulder, rocky, shaley and chalky outcrops; amongst boulders and rocks; bases of rocks; lava flows; lava fields; plains; sandy-clayey flats; basins; valley floors; railroad right-of-ways; along rocky, gravelly-sandy and sandy roadsides; within rocky and gravelly arroyos; draws; ravines; seeps; springs; along streams; bouldery-sandy riverbeds; along and in rocky, gravelly, gravelly-loamy and sandy washes; drainage ways; around pools; (rocky) banks of washes; (gravelly) edges of streambeds; benches; stock tanks, and riparian areas growing in dry rocky and gravelly desert pavements; bouldery, bouldery-sandy, rocky, rocky-gravelly, rocky-sandy, gravelly and sandy ground; rocky loam, gravelly loam, sandy-clayey loam, clayey loam and loam ground; rocky clay, sandy clay and clay ground; sandy silty ground, and chalky ground, occurring from 500 to 6,300 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. Slim Tridens is browsed by Collard Peccary (*Peccari tajacu*), Mule Deer (*Odocoileus hemionus*) and other herbivores and birds and rodents feed on the seed. *Tridens muticus* is native to south-central and southern North America. *5, 6, 15, 16, 33 (Page 98), 43 (102509 - *Tridens muticus* Nash,), 46 (Page 91), 63 (102509 - color presentation), 77, **85** (102509 - color presentation of dried material), 105*

***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)*

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)*

***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*)

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*)

***Amaranthus palmeri* S. Watson: Carelessweed**

COMMON NAMES: Bledo, Careless Weed, Careless-weed, Carelessweed, Palmer Amaranth, Palmer's Amaranth, Palmer Pigweed, Pigweed, Red-root Pigweed, Quelite, Quiltite de las Aguas, Red-root, Rough Pig Weed. DESCRIPTION: Terrestrial annual forb/herb (8 to 80 inches in height, sometimes to 15 feet in height); the stems may be green or red; the leaves are green, the flowers (in spikes) are hyaline cream with green midribs, green, pink or white-green; flowering generally takes place between early June and late December (additional records: one for early February, two for mid-March, two for early May and one for mid-May). HABITAT: Within the range of this species it has been reported from mountains; sandy mesas; rocky and gravelly-loamy canyons; sandy canyon bottoms; talus slopes; gravelly ridgetops; meadows; foothills; rocky hills; rocky hillsides; rocky, gravelly, sandy, sandy-loamy and sandy-silty-loamy slopes, alluvial fans; bajadas; sand dunes; sandy plains; gravelly, sandy and loamy flats; basins; valley floors; along railroad right-of-ways; along gravelly-loamy, sandy and sandy-silty roadsides, stony arroyos; draws; springs; sandy streams; creeks; creekbeds; along and in rocky-cobbly-sandy and sandy riverbeds; along and in gravelly, gravelly-sandy, gravelly-sandy-silty and sandy washes; gravelly-sandy-loamy drainage ways; water holes; playas; cienegas; swampy areas; silty swales; (sandy and silty) banks of streams, creeks, rivers and washes; (sandy) edges of washes and marshes; (sandy-loamy) shores of ponds; mudflats; beaches; gravelly-sand and sand bars; sandy benches; sandy terraces; bottomlands; along sandy floodplains; sandy mesquite bosques; along fencelines; around stock tanks; along sandy and silty ditches; sandy and gravelly-sandy-silty riparian areas; waste places, and disturbed areas growing in dry rocky, rocky-cobbly-sandy, stony, gravelly, gravelly-sandy and sandy ground; gravelly loam, gravelly-sandy loam, sandy loam, sandy-clayey loam, sandy-silty loam, humus-clayey loam and loam ground; clay ground, and gravelly-sandy silty, sandy silty 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: 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. Mourning Doves (*Zenaida macroura*), Quail and Whitewing Doves (*Zenaida asiatica*) feed on the seeds.

Amaranthus palmeri is native to southwest-central and southern North America. *5, 6, 15, 16, 43 (110109), 46 (Page 266), 58, 63 (110109 - color presentation of seeds), 68 ("The plant is relished by livestock in all stages of growth, and is sometimes cut for hay or put into silos.... Palmer amaranth contains nitrate varying from a trace to over 9 percent. As in monolepis, the nitrate is not poisonous, but can be changed quickly into the toxic nitrite by enzymatic action."), 77, 80 (This species is listed as a Major Poisonous Range Plant. "The poisonous principle is nitrate. Most plants contain small amounts of nitrate, but carelessweed, under favorable growth conditions will store up high concentrations. ... Carelessweed is relished by livestock, particularly during the earlier stages of growth. It usually is most dangerous immediately following significant environmental changes, but poisonings have occurred at all growth stages under a variety of conditions. The nitrate content of carelessweed has been found to be significantly higher in plant samples collected in the morning as compared to afternoon samples. Some plots of ground will produce carelessweed of higher nitrate content than others. ... Known areas of carelessweed should be avoided by livestock during the early stages of growth and following periods of sudden temperature changes as occur in the fall or mid-summer at the higher elevations in Arizona. Carelessweed may remain dangerous as a component of hay or ensilage." See text for additional information.), 85 (110109 - color presentation of seed), 101 (color photograph), 115 (color presentation), 127, **WTK** (September 4, 2005)*

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 trilobata* T. Nuttall: Skunkbush Sumac**

COMMON NAMES: Agrillas (Hispanic), Agrito (Hispanic), Chascarillo, Fragrant Sumac; Ill-scented Sumac, Kith-a (Havasupai), K'o'se mowe (Zuni, "salty berries"), Lantrisco, Lemita, Lemonade Berry, Lemonade Sumac, Lentisco, Limonita, Skunk Bush, Skunk-bush, Skunkbush, Skunkbush Sumac, Squaw Berry, Squaw-bush, Squawbush, Three-leaf Sumac, Threeleaf Sumac. DESCRIPTION: Terrestrial perennial deciduous shrub (1 to 12 feet in height, one plant was described as being 5 feet in height and 5 feet in width, one plant was described as being 5½ feet in height and 8 feet in width, plants were observed and recorded as being 6 feet in height and 6 to 8 feet in diameter, one plant was reported to be 7 feet in height and 10 feet in width, one plant was reported to be 10 feet in height and 7 feet in width, plants reaching 16½ feet in height were reported at one location); the bark is gray or gray-brown; the stems are arching and spreading; the leaves are 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-yellow, greenish-white, reddish, white-cream, yellow or yellow-green; flowering generally takes place between late February and early November (additional records: two for early January, four for early February and one for early December); the mature berries are orange, orange-red, light red, bright red or bright reddish-orange. HABITAT: Within the range of this species it has been reported from mountains; mountaintops; rocky-gravelly mountainsides; mesas; plateaus; rim rock, cliff tops; shaded walls of cliffs; rims of canyons; bouldery, bouldery-rocky and rocky canyons; canyon walls; along bouldery-cobbly, rocky, rocky-gravelly, stony and sandy canyon bottoms; talus slopes; crevices in rocks; rocky bluffs; bouldery-sandy, rocky-gravelly-clayey, cindery and gravelly-clayey buttes; cindery knolls; rocky ledges; rocky, rocky-gravelly and sandy ridges; rocky and gravelly-clayey ridgetops; meadows; foothills; hills; bouldery, rocky and gravelly hillsides; rocky escarpments; sandy bases of escarpments; bouldery, bouldery-gravelly, rocky, rocky-loamy-clayey, shaley, cobbly, gravelly, gravelly-loamy, sandy, sandy-silty, loamy and clayey slopes; bouldery and rocky outcrops; amongst boulders and rocks; shaded niches; lava flows; lava beds; sand hills; sand dunes; banks; sandy breaks; prairies; plains; flats; basins; sandy bowls; sandy valleys; along gravelly, gravelly-loamy, gravelly-clayey and sandy roadsides; along and in rocky, rocky-sandy, gravelly and sandy arroyos; bottoms of arroyos; within rocky-gravelly-sandy and sandy draws; sandy-clayey bottoms of draws; within gulches; sandy gullies; along gravelly ravines; sandy bottoms of ravines; springs; along streams; along streambeds; along rocky creeks; creekbeds; along rivers; rocky riverbeds; along and in rocky-gravelly-sandy, gravelly, gravelly-sandy, sandy and silty washes; within gravelly-sandy and sandy drainages; marshy areas; sink holes; along (rocky) banks of draws, streams, creeks and rivers; margins of springs and creeks; (gravelly-sandy) shores of rivers; cobbly and silty benches; sandy terraces; rocky and sandy bottomlands; floodplains; banks of reservoirs; canal banks; along and in ditches; sandy and clayey-loamy riparian areas, and disturbed areas growing in wet and dry bouldery, bouldery-cobbly, bouldery-gravelly, rocky, rocky-gravelly, rocky-gravelly-sandy, rocky-sandy, shaley, stony, cobbly, cindery, gravelly, gravelly-sandy and sandy ground; rocky loam, rocky-clayey loam, gravelly-loamy, gravelly-clayey loam, sandy loam and clayey loam ground; rocky-gravelly clay, rocky-loamy clay, rocky-silty clay, gravelly clay, sandy-loamy clay, sandy clay, silty clay and clay ground, and sandy silty and silty ground, occurring from 500 to 10,500 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, 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, spice, fiber (used in basketry and in the making of cradles and hat, it was also used as a sewing material) and/or dye (used in the making of black, blue, red and red-brown dyes, and the fruit was used for its mordant effect) crop; it was also noted as having been used as a ceremonial item, as fuel, as a tool (used in making bows, arrows, spear shafts, hoe handles and seed fans), as a drug or medication, as an insecticide (the leaves were used on the body), and the roots were used as a perfume. *Rhus aromatica* of the eastern United States has a pleasant odor, whereas, *Rhus trilobata* (*Rhus aromatica* var. *trilobata*) of the western United States is ill-scented. It may be 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. CottontailsMule Deer (*Odocoileus hemionus*), White-tailed Deer (*Odocoileus virginianus*), Elk (*Cervus elaphus*), jackrabbits,, Porcupines (*Erethizon dorsatum*), Pronghorn (*Antilocapra americana*), Bighorn Sheep (*Ovis canadensis*) 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. According to one current treatment of *Rhus aromatica*, all Arizona specimens of this species belong to *Rhus trilobata* T. Nuttall var. *trilobata*. *Rhus trilobata* is native to central and southern North America. *5, 6, 13, 28 (color photograph), 30, 43 (082910), 46 (Pages 523-524), 48, 63 (082910 - color presentation), **85** (082910 - *Rhus aromatica* var. *trilobata* (Nutt.) Gray ex S. Wats., color presentation), 115 (color presentation), 127*

Apiaceae (Umbelliferae): The Carrot Family

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*

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*

Asclepiadaceae: The Milkweed Family

***Cynanchum arizonicum* (A. Gray) L.H. Shinners: Arizona Swallow-wort**

SYNONYMY: *Metastelma arizonicum* A. Gray. COMMON NAMES: Arizona Milkweed Vine, Arizona Smallwort, Arizona Swallow-wort, Arizona Swallowwort, Milkweed Vine. DESCRIPTION: Terrestrial perennial forb/herb or vine (a twining vine to 40 inches in length); the leaves are green; the small flowers are cream-white, white, pale yellow or yellowish; 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; mesas; rocky crags; rocky canyons; canyon bottoms; bases of cliffs; ridges; ridgetops; foothills; bouldery and rocky hills; rocky hilltops; rocky hills; rocky hillsides; rocky slopes; rocky outcrops; amongst boulders; valley floors; low sand dunes near beaches; arroyos; along sandy bottoms of arroyos; gulches, ravines, around seeping streams; creeks; along rocky washes; rocky drainages; rocky drainage ways, and riparian areas growing in dry bouldery, rocky and sandy ground, occurring from sea level to 5,300 feet in elevation in the woodland, scrub, grassland and desertscrub ecological formations. NOTE: *Cynanchum arizonicum* is native to southwest-central and southern North America. *5, 6, 15, 16, 43 (110709), 46 (*Metastelma arizonicum* Gray, Page 663), 58, 63 (110709), 77 (color photograph #61), **85** (110709)*

Gonolobus parvifolius (see *Matelea parvifolia*)

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

SYNONYMY: *Gonolobus parvifolius* 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 parvifolius* Torr., Page 665), 63 (110809), 77, **85** (110809 - color presentation)*

Metastelma arizonicum (see *Cynanchum arizonicum*)

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-loamy) 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), **HR***

***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, **HR***

***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 4, 2005)*

***Ambrosia cordifolia* (A. Gray) W.W. Payne: Tucson Bur Ragweed**

SYNONYMY: *Franseria cordifolia* A. Gray. COMMON NAMES: Chicurilla, Heartleaf Bursage, Sonoran Bursage, Tucson Bur Ragweed, Tucson Burr Ragweed. DESCRIPTION: Terrestrial perennial deciduous (cold and drought) subshrub or shrub (2 to 4 feet in height); the leaves are gray-green; the flowers are yellow; flowering generally takes place between early December and mid-May. HABITAT: Within the range of this species it has been reported from mountains; cliffs; rocky canyons; canyon bottoms; rocky and gravelly hills; gravelly hillsides; rocky and rocky-gravelly slopes; coastal plains; along roadsides; arroyos; springs; along and in washes; drainages; banks of arroyos; along edges of creeks and washes, and floodplains growing in dry rocky, rocky-gravelly, gravelly, gravelly-sandy and sandy soils and gravelly-sandy silty soils sometimes growing in the shade of trees and shrubs, occurring from 100 to 4,100 feet in elevation in the scrub and desertscrub ecological formations. NOTE: *Ambrosia cordifolia* is native to southwest-central and southern North America. *5, 6, 13, 43 (111009), 46 (*Fransera cordifolia* Gray, Page 896), 63 (111009), 77, **85** (111009 - color presentation), 91, 115 (color presentation)*

***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), **HR***

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

Aplopappus tenuisectus (see footnote 46 under *Isocoma tenuisecta*)

***Artemisia ludoviciana* T. Nuttall: White Sagebrush**

COMMON NAMES: Ajenjo (Hispanic), Ajenjo del País (Hispanic), Ambf (Otomí), Artemisia (Hispanic), Altamiza (Hispanic), Azumate de Puebla (Hispanic), Cola de Zorrillo (Hispanic), Cudweed, Cudweed Sagewort, Epazote de Castilla, Estafiate (Hispanic), Estomiate (Hispanic), Gray Sagewort, Green Sagewort, Hierba Maestra (Hispanic), Incieso Verde (Hispanic), Istafiate (Hispanic), Iztauhyatl (Náhuatl), Kamaistra (Popoloca), Louisiana Cudweed Sagewort, Louisiana Sage, Louisiana Sagewort, Louisiana Wormwood, Mexican White Sagebrush, Mexican Wormwood (*A.l.* subsp. *mexicana*), Mountain Sagewort, Mugwort Wormwood, Prairie-sage, Prairie Sage, Ros' Sabl' I (Rarámuri), Sagebrush, Sagewort, Silver Wormwood, Weißer Beifuß (German), Western Mugwort, Western-sage, White Sage, White-sage, White Sagebrush, White Sagewort, Wormwood. DESCRIPTION: Terrestrial perennial forb/herb or subshrub (decumbent to erect stems 1 to 5 feet in height and may form colonies up to 50 feet in diameter); the foliage is gray, gray-green, silver-green, white or whitish-gray; the flowers are cream, cream-yellow, greenish, greenish-yellow, white, white-green or yellow, on some plants both the disk and ray flowers are yellow; flowering generally takes place between late May and mid-December (additional records: one for early February, one for mid-March, one for late March, one for early April, one for mid-April and two for late April). HABITAT: Within the range of this species it has been reported from mountains; mountaintops; rocky mountainsides; rocky mesas; plateaus; rocky cliffs; cliff faces; rocky canyons; along rocky and sandy canyon bottoms; gorges; talus slopes; bases of cliffs; sandy bottoms of crevices; sandy bases of bluffs; buttes; rocky knolls; rocky and rocky-clayey ridges; ridgetops; rocky and loamy meadows; foothills; hills; rocky hillsides; bouldery, bouldery-gravelly-sandy, bouldery-sandy, rocky, rocky-gravelly, rocky-gravelly-loamy, rocky-loamy, rocky-clayey, shaley-sandy, stony-sandy-clayey, cobbly-loamy, gravelly, gravelly-loamy, sandy-loamy, loamy and silty-clayey slopes; alluvial fans; sandy bajadas; bouldery and rocky outcrops; amongst boulders, rocks and cobbles; bases of boulders and rocks; around ice caves; lava beds; sand dunes; bouldery-sandy debris fans; sandy banks; hilly sandy-loess prairies; plains; gravelly and sandy flats; valley floors; valley bottoms; along railroad right-of-ways; along rocky and sandy roadsides; along sandy arroyos; along bottoms of arroyos; sandy draws; gulches; rocky gullies; ravines; seeps; springs; along streams; streambeds; along creeks; along stony and sandy creekbeds; along rivers; riverbeds; along and in bouldery-rocky-sandy, rocky, cobbly, cobbly-loamy, gravelly, gravelly-loamy and sandy washes; within rocky-sandy, stony-loamy, cobbly-loamy and loamy drainages; bogs; marshes; depressions; (cobbly and silty) banks of gullies, ravines, streams, creeks and rivers; (rocky) edges of washes and ponds; along margins of river banks; (sandy) shores of lakes; sandy beaches; benches; terraces; rocky-sandy and cobbly-loamy bottomlands; floodplains; lowlands; fencerows; along ditches; rocky, rocky-sandy, cobbly and sandy riparian areas, and disturbed areas growing in wet, moist, damp and dry bouldery, bouldery-rocky-sandy, bouldery-gravelly-sandy, bouldery-sandy, rocky, rocky-gravelly, rocky-sandy, shaley-cobbly-sandy, shaley-sandy, stony, cobbly, gravelly and sandy ground; rocky loam, rocky-gravelly loam, rocky-clayey loam, stony loam, cobbly loam, gravelly loam, sandy loam, sandy-clayey loam, clayey loam and loam ground; rocky clay, stony-sandy clay, silty clay and clay ground, and silty ground, occurring from 1,200 to 11,500 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 and/or fiber crop; it was also noted as having been used as a drug or medication, incense and as a ceremonial item and charm. Prairie Sage is browsed by Pronghorm (*Antilocapra americana*); Elk (*Cervus elaphus*); Mule Deer (*Odocoileus hemionus*), and White-tailed Deer (*Odocoileus virginianus*);

the Sage-grouse (*Centrocercus minimus*) uses the plant for feed and cover; grasshoppers feed on this plant, and i t is the host plant for the Fruit Fly *Eutreta simplex*. The foliage is reportedly aromatic. *Artemisia ludoviciana* is native to central and southern North America. *5, 6, 30, 43 (081110), 46 (Page 940), 58, 63 (081110 - color presentation), 77 (*A.l.* subspp. *albula* (E.O. Wooton) K. Keck and *sulcata* (P.A. Rydberg) K. Keck), **85** (081110 - color presentation including habitat), 127*

Aster tagetinus (see *Machaeranthera tagetina*)

Aster tanacetifolius (see *Machaeranthera tanacetifolia*)

***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, **HR***

***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, **WTK** (September 4, 2005)*

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

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

***Brickellia coulteri* A. Gray: Coulter's Brickellbush**

SYNONYMY: *Brickellia coulteri* A. Gray var. *coulteri*. COMMON NAMES: Brickellbush, Coulter's Brickellbush. DESCRIPTION: Terrestrial perennial subshrub or shrub (1 to 5 feet in height); the florets (disc flowers only) may be cream, cream-maroon-purple, cream-purple, cream-white, cream-yellow, green, greenish-yellow, purplish, purplish-brown, white, yellow or yellow-green; flowering generally takes place between late January and mid-November (additional records: two for early December and two for mid-December). HABITAT: Within the range of this species it has been reported from bouldery mountains; rocky and gravelly-sandy mountainsides; cliff faces; rocky and rocky-sandy canyons; rocky canyon bottoms; rocky talus slopes; bases of cliffs; crevices in rocks; rock ledges; rocky ridges; clearings in woodlands; foothills; rocky hills; rocky hillsides; rocky slopes; rocky outcrops; amongst boulders and rocks; flats; basins; valley floors; arroyos; rocky bottoms of arroyos; rocky draws; rocky walls of ravines; springs; along streams; along bouldery and bouldery-rocky streambeds; along rivers; along and in rocky, rocky-gravelly, gravelly, gravelly-loamy and sandy washes; rocky and pebbly

drainages; bouldery and rocky drainage ways; around waterholes; along (sandy and silty-loamy) banks of washes and drainages; edges of washes; floodplains, and rocky and gravelly-sandy riparian areas growing in dry bouldery, rocky, rocky-gravelly, rocky-sandy, gravelly, gravelly-sandy, pebbly and sandy ground; gravelly loam, sandy loam, silty loam and loam ground, and rocky clay ground, occurring from sea level to 4,500 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. The flowers are reported to be fragrant. *Brickellia coulteri* is native to southwest-central and southern North America. *5, 6, 13, 15, 16, 28 (color photograph), 43 (111409), 46 (Page 849), 48 (genus), 58, 63 (111409), 77, **85** (111409 - color presentation), 115 (color presentation)*

Brickellia coulteri var. *coulteri* (see *Brickellia coulteri*)

***Centaurea melitensis* C. Linnaeus: Maltese Star-thistle**

COMMON NAMES: Cardo, Centáurea-estrela-de-malta (Portuguese), Coix de Malte (French), Malta Centaurea, Malta Starthistle, Malta Thistle, Maltese Centaury, Maltese Cockspur, Maltese Star Thistle, Maltese Star-thistle, Malteser Flockenblume (German), Napa Starthistle, Napa Thistle, Saucy Jack, Spotted Knapweed, Star-thistle, Tocalote. DESCRIPTION: Terrestrial annual or biennial forb/herb (8 to 38 inches in height); the foliage is blue-green or dull green; the flowers (disc flowers only, no ray flowers) are yellow; flowering generally takes place between early March and late July (additional records: one for mid-August, 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; mesas; clayey cliffs; canyons; sandy and clayey canyon bottoms; rocky edges of bluffs above the sea; sandy-loamy ridges; clayey ridgetops; openings in forests and woodlands; meadows; hills; rocky and rocky-sandy hillsides; rocky, rocky-loamy-clayey, rocky-clayey, sandy-silty, loamy and clayey slopes; bajadas; sand hills; gravelly banks; plains; flats; valley floors; coastal marshes; railroad right-of-ways; along gravelly-sandy-loamy, gravelly-sandy-clayey-loamy, gravelly-clayey loam, sandy-loamy and clayey roadsides; along arroyos; draws; gulches; springs; along creeks; riverbeds; along and in gravelly and sandy washes; salt marshes; depressions; banks of streams and lakes; along edges of washes and lagoons; silty benches; sandy terraces; floodplains; dikes; along sandy edges of stock tanks (charcos and repressos); ditches; along ditch banks; recently burned areas; riparian areas; waste places, and disturbed areas growing in muddy and wet, moist and dry rocky, rocky-sandy, shaley, gravelly, gravelly-sandy and sandy ground; gravelly loam, gravelly-sandy loam, gravelly-sandy-clayey loam, sandy loam, clayey loam, silty loam and loam ground; rocky-loamy clay and clay ground, and sandy silty and silty 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 that poses a significant threat to 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. *Centaurea melitensis* is native to northern Africa and southern Europe. *5, 6, 15, 16, 22 (color photograph), 41 (color photograph), 43 (111409), 46 (Page 955), 63 (111409), 68, 77, **85** (111409 - color presentation), 101 (note under *Centaurea solstitialis*), 115 (color presentation), 127*

***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*)

Conyza schiedeana (see *Laennecia schiedeana*)

***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 pentachaeta (see *Thymophylla pentachaeta* var. *pentachaeta*)

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, **WTK** (September 4, 2005)*

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)*

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

Erigeron schiedeanus (see *Laennecia schiedeana*)

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)*

Franseria ambrosioides (see Ambrosia ambrosioides)

Franseria confertiflora (see *Ambrosia confertiflora*)

Franseria cordifolia (see *Ambrosia cordifolia*)

Franseria deltoidea (see *Ambrosia deltoidea*)

***Gutierrezia microcephala* (A.P. de Candolle) A. Gray: Threadleaf Snakeweed**

COMMON NAMES: Broomweed, Little-head Sankeweed, Matchweed, Perennial Snakeweed, Resinweed, Sankeweed, Small-head Matchbrush, Small-head Snakeweed, Sticky Snakeweed, Threadleaf Snakeweed, Threadleaf Snakeweed, Thread Snakeweed, Three-leaf Snakeweed, Turpentineweed. DESCRIPTION: Terrestrial perennial subshrub or shrub (8 inches to 4 feet in height); the lower portion of the stem may be brown with the upper portion of the stem being green or yellow; the leaves are dark gray-green; the disk flowers are gold or yellow; the ray flowers are yellow; flowering generally takes place between mid-June and late November, plants may cease flowering during summer drought (additional records: two for early January, one for late January, one for late February, one for late March, one for early April, one for mid-April and three for late December). HABITAT: Within the range of this species it has been reported from mountains; mountainsides; sandy and sandy-silty mesas; plateaus; rocky rims of canyons and craters; rocky spurs; along rocky and gravelly-loamy canyons; rocky canyon walls; along rocky canyon bottoms; rocky gorges; rocky bases of cliffs; knolls; rocky ridges; sandy ridgetops; clearings in forests; meadows; foothills; bouldery, rocky and silty hills; gravelly-silty hilltops; rocky hillsides; bouldery-cobbly-gravelly, rocky, shaley, cobbly, cindery, gravelly, gravelly-loamy and sandy slopes; sandy bajadas; rocky and gypsum outcrops; amongst boulders; alcoves; rocky lava flows; sand hills; sand dunes; stony and sandy plains; sandy flats; basins; rocky valley floors; gravelly-sandy valley bottoms; along rocky railroad right-of-ways; along rocky, gravelly, gravelly-loamy and sandy roadsides; along arroyos; within gravelly draws; gullies; seeps; springs; along streams; gravelly-loamy streambeds; creekbeds; along rivers; along rocky, gravelly-sandy and sandy washes; silty lakebeds; along (gravelly and sandy) banks of streams, creeks, rivers and washes; (sandy) edges of washes and marshes; mudflats; beaches; benches; floodplains; mesquite bosques; ditches; sandy riparian areas, and disturbed areas growing in drained dry rocky desert pavement; bouldery, bouldery-rocky, bouldery-cobbly-gravelly, rocky, shaley, stony, cobbly, cindery, gravelly, gravelly-sandy and sandy ground; gravelly loam, sandy loam and clayey loam ground; rocky clay, gravelly clay and clay ground, and gravelly silty, sandy silty and silty ground, occurring from 1,200 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, as cooking tools and as decorations on prayer sticks. Threadleaf Snakeweed may live to be 18 years of age; however, the average lifespan is less than ten years. Threadleaf Snakeweed invades disturbed areas and may serve as an indicator of overgrazed rangelands reducing both native plant diversity and forage values, populations may best be reduced by increasing native grass competition. *Gutierrezia microcephala* is native to southwest-central and southern North America. *5, 6, 13, 15, 16, 28 (note under *Gutierrezia sarothrae*), 43 (112909), 46 (Snake-weeds "are more or less poisonous to sheep and goats when eaten in quantity, but are unpalatable and are seldom grazed. It is said that *G. microcephala* absorbs selenium in large quantity on certain soils.", Page 853), 58, 63 (112909 - color presentation), 68, 77, 80 (This species is listed as a Major Poisonous Range Plant. "The poisonous principal is apparently a saponin. It is most toxic at earlier stages of growth during early leaf development and when growing on sandy soils. ... Livestock apparently eat small amounts of the relatively unpalatable snakeweed without serious consequences. Therefore, range improvement to provide alternate, desirable feed and to reduce snakeweed infestations through grass competition will control most losses." See text for additional information.), **85** (113009 - color presentation), 86 (note under *Gutierrezia sarothrae*), 127*

***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*)

Haplopappus tenuisectus (see *Isocoma tenuisecta*)

***Hedosyne ambrosiifolia* (A. Gray) J.L. Strother: Ragged Marsh-elder**

SYNONYMY: *Iva ambrosiifolia* A. Gray. COMMON NAMES: Marsh Elder, Ragged Marsh-elder, Ragged Marshelder, Rag Sumpweed. DESCRIPTION: Terrestrial annual forb/herb or subshrub (32 inches to 5 feet in height); the flowers are yellow; flowering generally takes place between early August and late October (possibly flowering as early as May and as late as November). HABITAT: Within the range of this species it has been reported from mountains; canyons; canyon bottoms; bouldery bases of cliffs; ridges; gravelly hills; bouldery escarpments; rocky slopes; alluvial fan; rocky outcrops; amongst boulders; rocky flats; valley floors; arroyos; gulches; springs; along streams; riverbeds; along and in sandy washes; cienegas; terraces; mesquite bosques; floodplains; riparian areas, and disturbed areas growing in dry bouldery, rocky, gravelly and sandy ground, occurring from 1,000 to 6,600 feet in elevation in the grassland, desertscrub and wetland ecological formations. NOTE: *Hedosyne ambrosiifolia* is native to southwest-central and southern North America. *5, 6, 15 (recorded as *Iva ambrosiaefolia* (Gray) Gray), 43 (113009), 46 (recorded as *Iva ambrosiaefolia* Gray, Page 892), 63 (113009), 77 (recorded as *Iva ambrosiaefolia* A. Gray), **85** (113009 - color presentation of dried material)*

Heterotheca psammophila (see *Heterotheca subaxillaris*)

***Heterotheca subaxillaris* (J.B. de Lamarck) N.L. Britton & H.H. Rusby: Camphorweed**

SYNONYMY: *Heterotheca psammophila* B.L. Wagenknecht. COMMON NAMES: Camphor Daisy, Camphor Weed, Camphor-weed, Camphorweed, Golden Aster, Gordolobo, Telegraph Plant. DESCRIPTION: Terrestrial annual forb/herb (6 inches to 6 feet in height); the leaves are light green and sticky; the disk flowers are orange or yellow; the ray flowers are yellow or yellow-orange; flowering generally takes place between mid-May and late December (additional records: two for late January, two for early March and two for early April). HABITAT: Within the range of this species it has been reported from mountains; mesas; canyons; canyon bottoms; sandy ridgetops; sandy meadows; sandy foothills; sandy hilltops; rocky hillsides; rocky, gravelly and gravelly-sandy slopes; alluvial fans; bajadas; sand

dunes; sandy prairies; rocky-loamy, gravelly, gravelly-sandy, sandy and clayey flats; valley floors; along railroad right-of-ways; along gravelly, gravelly-sandy, gravelly-sandy-clayey-loamy and sandy roadsides; along arroyos; ravines; along streams; rocky creekbeds; rocky-gravelly-sandy and rocky-sandy creekbeds; riverbeds; along and in sandy and clayey washes; in drainages; around ponds; sandy depressions; along banks of rivers; along (gravelly and sandy-loamy) shores of ponds and lakes; benches; terraces; clayey bottomlands; floodplains; along and in ditches; ditch banks; sandy riparian areas, and disturbed areas growing in moist and dry rocky, rocky-gravelly, rocky-gravelly-sandy, rocky-sandy, gravelly, gravelly-sandy and sandy ground; rocky loam, gravelly-sandy loam, gravelly-sandy-clayey loam, gravelly-clayey loam and sandy loam ground, and gravelly 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: The foliage is strongly scented with crushed leaves smelling like camphor. *Heterotheca subaxillaris* is native to south-central and southern North America. *5, 6, 15, 16, 28 (color photograph), 43 (061909), 46 (Page 854, with an additional note on Page 1071 in the supplement), 58, 63 (120109 - color presentation), 68, 77, 85 (120209 - color presentation), 101 (color photograph), 115 (color presentation), **HR***

***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)*

***Isocoma tenuisecta* E.L. Greene: Burroweed**

SYNONYMY: *Haplopappus tenuisectus* (E.L. Greene) S.F. Blake. COMMON NAMES: Burro Weed, Burro-weed, Burrow Goldenweed, Burroweed, Hierba del Burrow, Shrine Jimmyweed. DESCRIPTION: Terrestrial perennial forb/herb or subshrub (6 to 40 inches in height and 12 to 40 inches in width); the bark is gray or whitish; the leaves are gray, green, silvery or yellow-green; the flowers are cream, tawny-yellow or yellow; flowering generally takes place between late July and mid-November (additional records: two for late June, one for early July, three for early December and one for late December). HABITAT: Within the range of this species it has been reported from rocky mountains; mesas; canyons; along canyon bottoms; rocky-loamy foothills; rocky hills; rocky and gravelly hillsides; rocky and gravelly slopes; bajadas; rocky outcrops; amongst rocks; rocky-clayey plains; gravelly, gravelly-clayey, sandy and clayey flats; along gravelly roadsides; sandy arroyos; draws; gulches; sandy bottoms of ravines; around streams; along and in sandy and sandy-silty washes; drainages; within clayey drainage ways; clayey playas; (rocky, gravelly-sandy and sandy) banks of arroyos and washes; mudflats; alluvial terraces; gravelly floodplains; mesquite bosques; ditch banks; gravelly-sandy and sandy riparian areas; waste places, and disturbed areas growing in dry rocky, gravelly, gravelly-sandy and sandy ground;

rocky loam ground; rocky clay, gravelly clay and 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. NOTES: This plant may be an attractive component of a restored native habitat. *Isocoma tenuisecta* is native to southwest-central and southern North America. *5, 6, 13, 15, 16, 28 (note under *Isocoma wrightii*), 43 (062009), 46 (recorded as *Aplopappus tenuisectus* (Greene) Blake, Page 862), 58, 63 (120209), 68, 77, 80 (This species is listed as a Major Poisonous Range Plant. "The poisonous principle of burroweed is the alcohol, tremetol. All parts of the plant are poisonous, although the dried flowers are most often eaten. ... Burroweed produces the affliction called "trembles." Poisoned animals tremble violently when exercised and usually lie down in the normal position. Upon arising, the trembling recurs. Appetite is markedly depressed, and the severely poisoned animal eventually stays down until it dies. Acetonemia, characterized by the odor of acetone in the urine and on the breath, is also a product of burroweed poisoning. ... Burroweed is generally low in palatability, but is eaten in quite large amounts when better forage is not available. Special precautions must be taken with new animals brought into burroweed-infested areas as they are more likely to graze the plants. Native livestock apparently become sickened from eating the plant and tend to avoid it. An adequate supply of good feed during harsh times when livestock might be more prone to consume burroweed, may reduce its consumption." See text for additional information.), **85** (120309 - color presentation), 115 (color presentation)*

Iva ambrosiifolia (see *Hedosyne ambrosiifolia*)

***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)*

***Laennecia schiedeana* (C.F. Lessing) G.L. Nesom: Pineland Horseweed**

SYNONYMY: *Conyza schiedeana* (C.F. Lessing) A.J. Cronquist, *Erigeron schiedeanus* C.F. Lessing. COMMON NAMES: Gordolobo (Hispanic), Pineland Horseweed, Pineland Marshtail, Simonillo (Hispanic), Xurhatajasi (Hispanic). DESCRIPTION: Terrestrial annual forb/herb (erect stems 1 to 2 feet in height); the stems may have a yellowish tinge; the foliage is gray-green or green; the flowers are cream-white, greenish-white, greenish-yellow, white or yelloowish-white; flowering generally takes place between late July and mid-October (additional record: one for early November). HABITAT: Within the range of this species it has been reported from mountains; canyons; rocky cliffs; crevices in rocks; pockets of soil on rocks; buttes; rocky ridges; ridgetops; clearings in forests; meadows; hilltops; bouldery-sandy and rocky slopes; rocky outcrops; amongst rocks; flats; along loamy roadsides; along creeks; washes; drainages; floodplains; riparian areas, and disturbed areas growing in moist and dry bouldery-sandy, rocky and gravelly ground; gravelly-loam and loam ground, and rocky humusy ground, occurring from 1,100 to 10,700 feet in elevation in the forest, woodland, scrub, grassland and desertscrub ecological formations. NOTE: *Laennecia schiedeana* is native to southwest-central and southern North America.

*5, 6, 15, 30, 43 (071310), 46 (*Erigeron schiedeanus* Less., Page 881), 63 (071310), 85 (071310 - color presentation), **HR***

***Layia glandulosa* (W.J. Hooker) W.J. Hooker & G.A. Arnott: Whitedaisy Tidytips**

COMMON NAMES: Tidy Tips, White Layia, White Tidytips, Whitedaisy Tidytips, DESCRIPTION: Terrestrial annual forb/herb (erect stems 2 to 24 inches in height); the stems are red-purple; the basal rosette of leaves are gray-green; the disk flowers are orange, orange-yellow, yellow or yellow-orange; the ray flowers cream, pure white, white-cream, whitish-cream, whitish-yellow, light yellow, yellow or yellowish fading to pinkish; the anthers are yellow; flowering generally takes place between mid-February and early July (additional records: one for late January and one for mid-September). HABITAT: Within the range of this species it has been reported from mountains; clayey mesas; plateaus; rocky canyons; canyon bottoms; buttes; ledges; rocky and sandy ridges; sandy ridgetops; gravelly openings in forests; meadows; foothills; rocky hills; hilltops; rocky and clayey hillsides; gravelly bases of hills; bouldery-gravelly, rocky, gravelly, gravelly-sandy, gravelly-loamy, sandy, sandy-clayey-loamy and clayey slopes; slopes; gravelly-sandy alluvial fans; bajadas; rocky outcrops; amongst boulders; sand dunes; prairies; sandy and sandy-silty flats; sandy coastal strands; along rocky, gravelly-sandy and sandy roadsides; sandy arroyos; along clayey-loamy draws; amongst grasses surrounding springs; along streams; along creeks; along creekbeds; rocky-sandy, gravelly, gravelly, gravelly-sandy and sandy washes; wash bottoms; clayey lakebeds; edges of washes and lakes; (sandy) shores of rivers; gravelly sandbars; benches; gravelly terraces; lowlands; riparian areas; recently burned areas in woodlands, and disturbed areas growing in dry bouldery, bouldery-gravelly, bouldery-sandy, rocky, rocky-sandy, gravelly, gravelly-sandy and sandy ground; gravelly loam, gravelly-silty loam, sandy loam, sandy-clayey loam and clayey loam ground; clay ground, and sandy silty ground, occurring from sea level 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 crop. *Layia glandulosa* is native to west-central and southern North America. *5, 6, 28 (color photograph), 43 (082910), 46 (Page 914), 63 (082910 - color presentation), 77, **85** (083010 - color presentation), 127*

***Machaeranthera tagetina* E.L. Greene: Mesa Tansyaster**

SYNONYMY: *Aster tagetinus* (E.L. Greene) S.F. Blake. COMMON NAMES: Mesa Tansy-aster, Mesa Tansyaster, Tansyleaf Spine Aster. DESCRIPTION: Terrestrial annual forb/herb (8 to 40 inches in height, one plant was described as being 10 inches in height and width); the foliage is gray-green; the disk flowers are yellow, the ray flowers may be blue, blue-purple, blue-violet, lavender, dark lavender, purple, purple-indigo or violet; flowering generally takes place between early July and mid-December (additional records: one for mid-March and one for mid-April). HABITAT: Within the range of this species it has been reported from mountains; mesas; canyons; canyon bottoms; bases of cliffs; ridges; ridgetops; foothills; hills; rocky and rocky-clayey hillsides; rocky, gravelly, gravelly-sandy-loamy and sandy-loamy slopes; alluvial fans; bajadas; rocky-loamy, gravelly, gravelly-sandy and clayey flats; basins; valley floors; gravelly roadbeds; along rocky roadsides; bottoms of arroyos; springs; along streams; along creeks; sandy creekbeds; along rocky washes; within drainage ways; banks of rivers; benches; terraces; floodplains; ditch banks; riparian areas, and disturbed areas growing in dry rocky, stony-sandy, gravelly, gravelly-sandy and sandy ground; rocky loam, gravelly-sandy loam, sandy loam and clayey loam ground, and rocky clay, sandy clay and clay ground, occurring from 300 to 8,100 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. *Machaeranthera tagetina* is native to southwest-central and southern North America. *5, 6, 16, 43 (062109), 46 (recorded as *Aster tagetinus* (Greene) Blake, Page 873), 58, 63 (120609), 77, 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** (083010 - color presentation)*

***Machaeranthera tanacetifolia* (K.S. Kunth) C.G. Nees von Esenbeck: Tansyleaf Tansyaster**

SYNONYMY: *Aster tanacetifolius* K.S. Kunth. COMMON NAMES: Aster, Tahoka Daisy, Tahoka-daisy, Tansy-aster, Tansy-leaf-aster, Tansyleaf Aster, Tansyleaf Goldenweed, Tansyleaf Spine Aster, Tansyleaf Tansyaster, Udeya Lianna (Zuni, "Blue Flower"). DESCRIPTION: Terrestrial annual or biennial forb/herb (4 inches to 6 feet in height); the foliage is gray-green or pale green; the disk flowers are yellow; the ray flowers may be light bluish-purple, blue, dark blue, blue-lavender, blue-purple, lavender, deep lavender, lavender-blue, pink, purple, red-violet, violet or violet-lavender; flowering generally takes places between late April and mid-November (additional record: one for early April). HABITAT: Within the range of this species it has been reported from mountains; mesas; sandy-loamy plateaus; rocky rims of canyons; along rocky and gravelly-loamy canyons; canyon bottoms; ridges; sandy ridgetops; meadows; foothills; sandy hills, hillsides; rocky, gravelly-loamy, sandy and sandy-loamy slopes; clayey breaks; sand hills; sand dunes; clayey breaks; rocky-sandy and sandy steppes; sandy and clayey prairies; plains; sandy and clayey flats; sandy valley floors; along cindery railroad right-of-ways; along rocky-gravelly, rocky-clayey, gravelly, gravelly-sandy, gravelly-loamy and sandy roadsides; bottoms of arroyos; draws; seeps; around and in springs; streambeds; along creeks; sandy creekbeds; along rivers; sandy riverbeds; within sandy washes; drainages; swampy areas; sumps; grassy swales; along banks of rivers; edges of lakes; sandy-loamy shores of ponds; sandy beaches; benches; sandy terraces; sandy bottomlands; lowlands; sandy floodplains; ditches; sandy riparian areas; waste places, and disturbed areas growing in damp and dry rocky, rocky-gravelly, rocky-sandy, cindery, gravelly, gravelly-sandy and sandy ground; rocky-sandy loam, gravelly loam and sandy loam ground; rocky clay, sandy clay and clay ground, and rocky silty, gravelly silty and gravelly-sandy silty ground, occurring from 1,000 to 8,100 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; it was noted as having been used as a drug or medication. *Machaeranthera tanacetifolia* is native to west-central and southern North America. *5, 6, 18, 28 (color photograph), 43 (062109), 46 (recorded as *Aster tanacetifolius* H.B.K., Page 873), 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 (color photograph), 127, **WTK** (September 4, 2005)*

***Malacothrix sonorae* W.S. Davis & P.H. Raven: Sonoran Desertdandelion**

COMMON NAME: Sonoran Desert Dandelion, Sonoran Desertdandelion. DESCRIPTION: Terrestrial annual forb/herb (7 to 10 inches in height); the flowers are white; flowering generally takes place between mid-March and early May (additional record: one for early June). HABITAT: Within the range of this species it has been reported from mountains; rocky cliffs; gravelly faces of cliffs; rock faces; rocky canyons; shaded canyon walls; canyon bottoms; hillsides; rocky slopes; rocky outcrops; amongst gravels; gulches; along streams; along creeks; along washes; drainage ways; margins of washes; around reservoirs, and bouldery and sandy riparian areas growing in dry bouldery, rocky, gravelly and sandy soils, occurring from 100 to 6,600 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTE: *Malacothrix sonorae* is native to southwest-central and southern North America. *5, 6, 43 (120809), 46 (no record), 63 (120809), **85** (120809 - color presentation)*

***Microseris lindleyi* (A.P. de Candolle) A. Gray: Lindley's Silverpuffs**

SYNONYMY: *Microseris linearifolia* (T. Nuttall) C.H. Schultz: Hierba de Pasmo, *Uropappus lindleyi* (A.P. de Candolle) T. Nuttall, *Uropappus linearifolius* T. Nuttall. COMMON NAMES: Lindley Silverpuffs, Lindley's Silverpuffs, Linearleaf Microseris, Narrowleaf Microseris, Silver Puffs, Starpoint. DESCRIPTION: Terrestrial annual forb/herb (2½ to 20 inches in height); the foliage is gray-green or green; the ray flowers (no disk flowers) are greenish, straw-yellow, white, pale yellow or yellow;

flowering generally takes place between mid-January and mid-June (additional record: one for early September). HABITAT: Within the range of this species it has been reported from mountains; rocky-clayey mountaintops; mesas; canyon rims; rocky, gravelly-sandy and sandy canyons; along rocky, rocky-sandy and sandy canyon bottoms; chasms; gorges; bases of cliffs; rocky knobs; knolls; rocky and rocky-stony ledges; rocky promontories; along ridges; rocky ridgetops; rocky-sandy meadows; sandy foothills; bouldery, rocky, cobbly-sandy-loamy, gravelly and gravelly-sandy hills; hilltops; rocky and clayey hillsides; along rocky, rocky-gravelly-loamy, rocky-sandy, rocky-clayey, gravelly, gravelly-sandy, gravelly-loamy, sandy-clayey-loamy, clayey, clayey-loamy, loamy and silty slopes; gravelly bajadas; bouldery and rocky outcrops; amongst boulders and rocks; lava flows; sand dunes; sandy plains; rocky and sandy flats; basins; sandy and clayey valley floors; along gravelly, gravelly-sandy and sandy roadsides; along bottoms of arroyos; around streams; gravelly-clayey-loamy streambeds; creeks; riverbeds; along and in rocky, gravelly, gravelly-sandy and sandy washes; along drainages; in cobbly drainage ways; sandy and clayey depressions; along (sandy) banks of arroyos, rivers and washes; edges of creeks; (sandy) margins of creeks; benches; shelves; sandy terraces; sandy and loamy bottomlands; floodplains; mesquite bosques; along fencelines; sandy riparian areas, and disturbed areas growing in dry bouldery, rocky, rocky-stony, rocky-sandy, cobbly, gravelly, gravelly-sandy and sandy ground; rocky-gravelly loam, cobbly-sandy loam, gravelly loam, gravelly-sandy loam, gravelly-clayey loam, sandy loam, sandy-clayey loam, clayey loam and loam ground; rocky-loamy clay, rocky clay and clay ground, and silty ground, occurring from 300 to 7,800 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTE: *Microseris lindleyi* is native to southwest-central and southern North America. *5, 6, 15, 16 (*Microseris linearifolia* (DC.) Schultz Bip.), 28 (recorded as *Microseris lindleyi* and *Microseris linearifolia*, color photographs), 43 (120809 - *Microseris lindleyi* A.Gray), 46 (*Microseris linearifolia* (DC.) Schultz Bip., Page 959), 58, 63 (120809 - color presentation), 77 (recorded as *Microseris linearifolia* (DC.) Schultz Bip., color photograph #20), **85** (120809 - color presentation), 115 (color presentation)*

Microseris linearifolia (see *Microseris lindleyi*)

***Parthenium incanum* K.S. Kunth: Mariola**

COMMON NAMES: Crowded Rayweed, Mariola. DESCRIPTION: Terrestrial perennial evergreen (?) shrub (1 to 4 feet in height, plants were described that were 8 inches in height and width, one plant was described as being 30 inches in height and 40 inches in width); the foliage is gray, gray-green or white; the flowers may be cream, cream-white, cream-yellow, green, greenish-white, greenish-yellow, white, whitish-green, yellow, pale yellow-white or yellow-cream; flowering generally takes place between late May and mid-December (additional records: one for early January, three for mid-January, one for late February, one for mid-March, one for mid-April and one for late April). HABITAT: Within the range of this species it has been range reported from mountains; mountainsides; sandy mesas; plateaus; cliffs; rocky and gravelly-loamy canyons; gorges; talus slopes; crevices in rock; hogbacks; knolls; ledges; ridges; ridgetops; sandy foothills; hills; rocky, sandy and sandy-loamy hillsides; bouldery escarpments; bouldery-rocky, rocky, rocky-gravelly, rocky-gravelly-loamy, rocky-sandy-clayey-loamy, rocky-loamy, rocky-silty-loamy, stony, gravelly, sandy, sandy-loamy, sandy-clayey, sandy-silty-clayey, clayey and chalky slopes; bajadas; rocky and clayey-loamy-gypsum outcrops; amongst rocks; lava flows; breaks; plains; gravelly and sandy flats; sandy esplanades; basins; valley floors; along rocky-sandy and gravelly-loamy roadsides; within rocky arroyos; ravines; springs; along rivers; along and in rocky, rocky-gravelly and gravelly washes; drainage ways; clayey depressions; (sandy) banks of creeks; (rocky-sandy) shores of lakes; floodplains; lowlands; riparian areas, and disturbed areas growing in dry bouldery, bouldery-rocky, rocky, rocky-gravelly, rocky-sandy, shaley, stony, gravelly and sandy ground; rocky loam, rocky-gravelly loam, rocky-sandy-clayey loam, rocky-silty loam, sandy loam and clayey loam ground; sandy clay, sandy-silty clay and clay ground, and chalky ground, occurring from 900 to 7,600 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 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 crop. *Parthenium incanum* is native to southwest-central and southern North America. *5, 6, 13, 15, 16, 43 (120909), 46 (Page 891), 63 (120909 - color presentation), 77, **85** (120909 - color presentation), 127*

Perezia nana (see *Acourtia nana*)

Perezia wrightii (see *Acourtia wrightii*)

***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), **WTK** (September 4, 2005)*

Selloa glutinosa (see *Gymnosperma glutinosum*)

***Thymophylla pentachaeta* (A.P. de Candolle) J.K. Small var. *pentachaeta*: Fiveneedle Pricklyleaf**

SYNONYMY: *Dyssodia pentachaeta* (A.P. de Candolle) B.L Robinson. COMMON NAMES: Common Dogweed, Dogweed, Five-needle Fetid Marigold, Five-needle Pricklyleaf, Fiveneedle Pricklyleaf, Golden Dogweed, Golden Dyssodia, Parralena, Parvialena, Scale Glandbush. DESCRIPTION: Terrestrial perennial forb/herb or subshrub (4 inches to 2 feet in height); the leaves are dark green; the flowers are orange-yellow or yellow; flowering generally takes place between mid-March and mid-December (additional records: two for mid-January, one for mid-February and one for late February). HABITAT: Within the range of this species it has been reported from mountains; rocky-sandy and gravelly mesas; rims of canyons; canyons; rocky canyon bottoms; gorges; gravelly bases of cliffs; crevices in boulders; sandy bluffs; shelving sandstone; bouldery-rocky-sandy and rocky ledges; ridges;

ridgetops; foothills; rocky and rocky-gravelly hills; cobbly hilltops; rocky and gravelly hillsides; rocky and rocky-sandy slopes; rocky alluvial fans; bajadas; rock outcrops; rocky plains; rocky and gravelly flats; basins, rocky valley floors; along rocky, cindery, gravelly-sandy, sandy and sandy-loamy roadsides; rocky gullies; along creeks; along washes; sandy drainages; clayey swales; banks of rivers; edges of washes; beaches; benches; floodplains; riparian areas; waste places and disturbed areas growing in dry desert pavement; bouldery, bouldery-rocky-sandy, rocky, rocky-gravelly, rocky-sandy, shaley, stony, cobbly; cindery, gravelly, gravelly-sandy and sandy ground; sandy loam ground; sandy-silty clay, silty clay, chalky clay and clay ground, and sandy silty ground, occurring from 100 to 6,800 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. This plant is a larval food plant of the Dainty Sulfur (*Nathalis iole*). *Thymophylla pentachaeta* is native to southwest-central and southern North America. *5, 6, 16 (recorded as *Dyssodia pentachaeta* (DC.) Robins.), 18, 28 (recorded as *Dyssodia pentachaeta*, color photograph), 43 (122209), 46 (recorded as *Dyssodia pentachaeta* (DC.) Robins., Page 933), 58 (recorded as *Dyssodia pentachaeta* (DC.) Robins.), 63 (122209 - this variety is not mapped as being present in Arizona), 77 (recorded as *Dyssodia pentachaeta* (DC.) Rob., color photograph #16), 82, **85** (122309), 86 (recorded as *Dyssodia pentachaeta*, color photograph), 115 (color presentation of species)*

***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), **WTK** (September 4, 2005)*

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

Uropappus lindleyi (see *Microseris lindleyi*)

Uropappus linearifolius (see *Microseris lindleyi*)

***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 is the subspecies reported as occurring in Arizona): Golden Crownbeard**

SYNONYMY: (for *V.e.* subsp. *exauriculata*: *Verbesina encelioides* (A.J. Cavanilles) G. Bentham & J.D. Hooker f. ex A. Gray var. *exauriculata* B.L. Robinson & J.M. Greenman). COMMON NAMES: American Dogweed, Butter Daisy, Butter-daisy, Cow Pasture Daisy, Cowpen Daisy, Crown-beard, Crownbeard, Girasolillo, Golden Crown-beard, Golden Crownbeard, Hierba de la Bruja, South African Daisy. DESCRIPTION: Terrestrial annual forb/herb (4 inches to 6½ feet in height, plants 8 inches in height and 12 inches in width were reported); the foliage is bluish-green, gray, gray-green, green, silvery or silvery-green; the disk flowers are gold, deep orange, green-orange, orange-yellow or yellow; the ray flowers are gold, deep orange, orange-yellow, yellow or yellow-orange; flowering generally takes place between early March and mid-December (additional records: two for late January and one for mid-February). HABITAT: Within the range of this species it has been reported from mountains; mountainsides; rocky-gravelly and sandy mesas; escarpments; sandy canyons; gravelly canyon bottoms; bouldery knobs; sandy ridges; sandy ridgetops; meadows; stony and clayey hills; hilltops; rocky-sandy hillsides; rocky, cindery, sandy, sandy-loamy, loamy and silty-clayey slopes; gravelly alluvial fans; gravelly bajadas; rock outcrops; sand dunes; plains; cindery, gravelly, sandy and clayey flats; basin bottoms; valley floors; sandy coastal dunes; along bouldery-gravelly, cindery, gravelly, gravelly-sandy, gravelly-sandy-clayey-loamy, gravelly-loamy, gravelly-clayey-loamy, sandy, sandy-loamy and sandy-clayey-loamy roadsides; arroyos; along draws; sandy streambeds; along creeks; gravelly creekbeds; along gravelly-sandy rivers; along and in sandy and sandy-loamy riverbeds; along and in rocky-sandy, stony, gravelly-sandy, sandy and clayey washes; along drainages; within drainage ways; around ponds and lakes; cienegas; depressions; sandy swales; (sandy and silty) banks of rivers; along (rocky and gravelly-sandy) edges of washes and swales; around margins of playas; marshy areas; along sandy beaches; terraces; sandy bottomlands; lowlands; gravelly and sandy floodplains; mesquite bosques; along ditches; sandy riparian areas; waste places, and disturbed areas growing in moist and dry bouldery, bouldery-gravelly, rocky, rocky-gravelly, rocky-sandy, cindery, gravelly, gravelly-sandy and sandy ground; rocky loam, gravelly loam, gravelly-sandy-clayey loam, gravelly-clayey loam,, sandy loam, sandy-clayey loam and loam ground; silty 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: 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 (*V.e.* subsp. *exauriculata*); it was also noted as having been used as a drug or medication, insecticide (*V.e.* subsp. *exauriculata*), protection (*V.e.* subsp. *exauriculata*), ceremonial items (*V.e.* subsp. *exauriculata*) and as a commodity used in personal hygiene (*V.e.* subsp. *exauriculata*). *Verbesina encelioides* is native to south-central and southern North America. *5, 6, 16, 28 (color photograph), 43 (062409), 46 (Page 907), 58, 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.), 77, 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), 115 (color presentation), 127*

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

***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; (gravelly-sandy) banks of washes; edges of swales; 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, **WTK** (September 4, 2005)*

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

***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)*

***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*

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*)

***Descurainia pinnata* (T. Walter) N.L. Britton: Western Tansymustard**

COMMON NAMES: Aasam (Yaqui), Green Tansy Mustard, Green Tansymustard, Huy Aasum (Yaqui), Moutarde Tanaisie (French), Northern Tansy-mustard, Palmita (Spanish), Pamita (Spanish), Pinnate Tansy Mustard, Pinnate Tansymustard, Sirolitutilli, Tansy Mustard, Tansy-mustard, Tansymustard, Western Tansy Mustard, Western Tansy-mustard, Western Tansymustard, Yellow Tansy Mustard. DESCRIPTION: Terrestrial annual, biennial or perennial forb/herb (erect stems 4 to 40 inches in height); the foliage may be gray-green, purplish or reddish; the flowers are cream, greenish-white, greenish-yellow, purplish, pale yellow, dull yellow, yellow, yellow-green, yellowish-green, white or white tinged with mauve; flowering generally takes place between mid-January and early September (additional record: one for late December). HABITAT: Within the range of this species it has been reported from mountains; rocky mountainsides; sandy mesas; plateaus; along sandy rims of canyons and craters; cliffs; rocky and sandy canyons; sandy canyonsides; along rocky, rocky-sandy and sandy canyon bottoms; sandy

bases of cliffs and escarpments; bluffs; rocky ledges; rocky ridges; rocky-sandy meadows; cinder cones; rocky tops of cinder cones; foothills; bouldery and rocky hills; bouldery-sandy, rocky, rocky-stony, clayey, gravelly-sandy and silty-loamy hillsides; bedrock, rocky, rocky-stony, rocky-cobbly, rocky-cobbly-sandy, rocky-sandy, cobbly-gravelly-sandy, cobbly-loamy, cindery, gravelly, gravelly-sandy, gravelly-silty-loamy, sandy, sandy-clayey and silty-clayey slopes; rocky-sandy alluvial fans; gravelly-sandy bajadas; rocky outcrops; amongst boulders and rocks; sheltered rocky coves; volcanic dikes and plugs; sand hills; sand dunes; sand sheets; blow-sand deposits; loamy steppes; sandy prairies; sandy plains; gravelly, gravelly-sandy, sandy, sandy-clayey and silty-loamy flats; basins; basin bottoms; shaley and sandy valley floors; valley bottoms; coastal plains; sandy coastal strands; along railroad right-of-way; along rocky, gravelly and sandy roadsides; along sandy arroyos; draws; seeps; springs; along streams; along streambeds; in sand along creeks; along rivers; bouldery-rocky-gravelly riverbeds; along and in bouldery, rocky, rocky-sandy, cobbly, cobbly-gravelly-sandy, gravelly, gravelly-sandy and sandy washes; within gravelly drainages; drainage ways; waterholes; banks of creeks and rivers; along edges of streams, creeks and washes; margins of marshy areas; shorelines of lakes; sandy terraces; loamy bottomlands; clayey and silty floodplains; mesquite bosques; clayey catchments; in dry stock tanks; on top of and within ditches; sandy riparian areas; waste places; recently burned areas of woodland and desertscrub, and disturbed areas growing in muddy and wet, moist and dry desert pavement; bouldery, bouldery-rocky-gravelly, bouldery-sandy, rocky, rocky-stony, rocky-cobbly, rocky-cobbly-sandy, rocky-gravelly-sandy, rocky-sandy, shaley, cobbly, cobbly-gravelly-sandy, cindery, gravelly, gravelly-sandy and sandy ground; rocky loam, rocky-clayey loam, cobbly loam, cobbly-sandy loam, gravelly loam, gravelly-sandy loam, gravelly-silty loam, sandy loam, sandy-clayey loam, silty loam and loam ground; sandy clay, silty clay and clay ground, and silty ground, occurring from sea level to 11,900 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, beverage and/or spice crop; it was also noted as having been used as a preservative (*D.p*. subsp. *halictorum*), fertilizer (*D.p*. subsp. *halictorum*), paint for pottery decoration (flowers mixed with dark iron pigment, *D.p*. subsp. *pinnata*) and as a drug or medication. This plant is a larval food plant of the Desert Orangetip Butterfly (*Anthocharis cethura*) and is sometimes planted in butterfly gardens to attract Orangetip, Checkered White and White Cabbage Butterflies. Black-tailed Jack Rabbits (*Lepus californicus*), Pronghorn (*Antilocapra americana*) and Rocky Mountain Mule Deer (*Odocoileus hemionus hemionus*) feed on this plant, and the Ord's Kangaroo Rat (*Dipodomys ordii*), Spotted Ground Squirrel (*Spermophilus spilosoma*), Townsend Ground Squirrel (*Spermophilus townsendii*) and Northern Grasshopper Mice (*Onychomys leucogaster*) feed on the seeds. *Descurainia pinnata* is native to northern, central and southern North America. *5, 6, 15, 16, 43 (010510), 46 (Page 349), 63 (010510 - color presentation), 68, 77, 80 (This species is listed as a Secondary Poisonous Range Plant. "Symptoms of poisoning are similar to the "blind staggers" disease caused by selenium, but the principle is unknown. Large quantities of the plant must be eaten for a considerably long time before symptoms appear. Consumption of toxic amounts is most likely to occur during the blossoming period in the spring. Poisoned cattle become partially or completely blind and wander aimlessly about until exhausted, or stand pushing against some solid object for hours. Animals lose their ability to use their tongue in swallowing and cannot eat or drink. They eventually die if neglected. As a result a popular term for the disease is "paralyzed tongue". ... Analysis of plants in Arizona shows that tansy mustard also may accumulate toxic levels of nitrate. Poisoning may be prevented by deferring heavily infested pastures during the spring-growth period, or by providing more desirable forage to reduce mustard consumption." See text for additional information.), **85** (010710 - color presentation), 101 (note), 127*

***Descurainia pinnata* (T. Walter) N.L. Britton subsp. *halictorum* (T.D. Cockerell) L.E. Detling: Western Tansymustard**

SYNONYMY: *Descurainia pinnata* (T. Walter) N.L. Britton var. *osmiarum* (T.D. Cockerell) L.H. Shinners - an alternate spelling of *osmiarum* (*osmiarium*) was observed. COMMON NAME: Western Tansymustard. DESCRIPTION: Terrestrial annual, biennial or perennial forb/herb (13 to 32 inches in

height); the flowers may be pink, white, pale yellow, yellow or yellowish; flowering generally takes place between early March and early June (additional records: one for mid-January and two for late June). HABITAT: Within the range of this species it has been reported from mountains; mountainsides; sandy mesas; plateaus; canyons; canyon bottoms; rocky ridges; meadows; clayey foothills; hilltops; rolling hills; hilltops; rocky, shaley and gravelly slopes; bajadas; calcareous outcrops; sandy-silty hummocks; steppes; prairies; rocky-sandy and sandy plains; shaley and sandy flats; valley floors; valley bottoms; along railroad right-of-ways; along gravelly roadsides; within sandy-loamy arroyos; draws; seeps; springs; along streams; along creeks; in rocky-sandy, gravelly and sandy washes; drainages; waterfalls; (sandy) banks of creeks and rivers; (rocky) edges of washes; shorelines; sandy benches; floodplains; sandy mesquite woodlands, and disturbed areas growing in dry rocky, rocky-sandy, shaley, cindery, gravelly and sandy ground; sandy loam and silty loam, and sandy silty ground, occurring from sea level to 11,800 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; it was also noted as having been used as a preservative and a fertilizer. This plant is a larval food plant of the Desert Orangetip Butterfly (*Anthocharis cethura*) and is sometimes planted in butterfly gardens to attract Orangetip, Checkered White and White Cabbage Butterflies. Black-tailed Jack Rabbits (*Lepus californicus*), Pronghorn (*Antilocapra americana*) and Rocky Mountain Mule Deer (*Odocoileus hemionus hemionus*) feed on this plant, and the Ord's Kangaroo Rat (*Dipodomys ordii*), Spotted Ground Squirrel (*Spermophilus spilosoma*), Townsend Ground Squirrel (*Spermophilus townsendii*) and Northern Grasshopper Mice (*Onychomys leucogaster*) feed on the seeds. *Descurainia pinnata* subsp. *halictorum* is native to southwest-central and southern North America. *5, 6, 43 (010510), 46 (Page 349), 58, 63 (010510), 68 (species), 80 (The species is listed as a Secondary Poisonous Range Plant. "Symptoms of poisoning are similar to the "blind staggers" disease caused by selenium, but the principle is unknown. Large quantities of the plant must be eaten for a considerably long time before symptoms appear. Consumption of toxic amounts is most likely to occur during the blossoming period in the spring. Poisoned cattle become partially or completely blind and wander aimlessly about until exhausted, or stand pushing against some solid object for hours. Animals lose their ability to use their tongue in swallowing and cannot eat or drink. They eventually die if neglected. As a result a popular term for the disease is "paralyzed tongue". ... Analysis of plants in Arizona shows that tansy mustard also may accumulate toxic levels of nitrate. Poisoning may be prevented by deferring heavily infested pastures during the spring-growth period, or by providing more desirable forage to reduce mustard consumption." See text for additional information.), **85** (010710 - color presentation of dried material), 127*

Descurainia pinnata var. *osmiarum* (see *Descurainia pinnata* subsp. *halictorum*)

***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-sandy plains; 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. *integrifolia* S. Watson: Wedgeleaf Draba**

COMMON NAMES: Wedge-leaf Draba, Wedgeleaf Draba, Wedgeleaf Whitlow Grass, Wedgeleaf Whitlowgrass, Whitlow Grass, Whitlow-grass, Whitlow-wort. DESCRIPTION: Terrestrial annual forb/herb (1½ to 5 inches in height, a plant 1¼ to 2¾ inches in height and 1¼ to 1½ inches in width was reported); the flowers are white; flowering generally takes place between mid-January and late April (additional records: one for mid-May, one for late May, one for early December and one for late December). HABITAT: Within the range of this species it has been reported from mountains; cliff walls; rocky canyons; rocky canyon bottoms; bases of cliffs; ledges; openings in chaparral; sandy hills; rocky-gravelly hillsides; rocky, rocky-gravelly-sandy, rocky-sandy, gravelly, gravelly and silty-clayey slopes; sandy bajadas; bouldery and rocky outcrops; amongst rocks; in the shade of rocks and shrubs; lava flows; rocky, gravelly, sandy and clayey flats; basins; sandy coastal flats; roadsides; along arroyos; draws; seeps; along streams; along creekbeds; along rivers; along and in rocky-sandy, gravelly-sandy and sandy washes; (sandy and silty) banks of washes; edges of washes and drainages; gravelly benches; loamy bottomlands; floodplains; riparian areas; recently burned areas in woodlands, and disturbed areas growing in moist and dry bouldery, rocky, rocky-gravelly, rocky-gravelly-sandy, rocky-sandy, gravelly, gravelly-sandy and sandy ground; rocky-sandy loam, rocky-clayey loam, gravelly-sandy loam and loam ground; silty clay ground, and silty ground, occurring from sea level to 7,400 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTE: *Draba cuneifolia* var. *integrifolia* is native to southwest-central and southern North America. *5, 6, 15, 43 (010710), 46 (Pages 347-348), 63 (010710), **85** (010810 - color presentation of dried material), 115 (color presentation of species)*

***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)*

Matthiola bicornis (see *Matthiola longipetala*)

***Matthiola longipetala* (É.P. Ventenat) A.P. de Candolle: Night Scented Stock**

SYNONYMY: *Matthiola bicornis* (J.E. Smith) A.P. de Candolle, *Matthiola longipetala* (É.P. Ventenat) A.P. de Candolle subsp. *bicornis* (J.E. Smith) P.W. Ball. COMMON NAMES: Evening Scented Stock, Evening-scented Stock, Evening Stock, Eveningstock, Night Scented Stock, Night-scented Stock, Night Stock, Perfumeplant. DESCRIPTION: Terrestrial annual or biennial forb/herb (10 to 20 inches in height); the foliage is gray-green; the flowers may be lavender, lavender-pink, magenta-violet, pink, purple, purple-red, purple & white, purplish fading to white or violet; flowering generally takes place between early February and late May. HABITAT: Within the range of this species it has been reported from mesas; amongst cobbles; flats; along clayey roadsides; around streams; along rivers; sandy riverbeds; in rocky, gravelly and sandy washes; ponds; along (rocky-silty and cobbly) banks of rivers; floodplains; riparian areas, and disturbed areas growing in dry rocky, cobbly, gravelly and sandy ground; clay ground, and rocky-silty ground, occurring from 2,400 to 5,900 feet in elevation in the woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: EXOTIC Invasive Plant. *Matthiola longipetala* is native to southeastern Europe; western and southern Asia, and northern Africa. *5, 6, 16 (recorded as *Matthiola bicornis* (Sibth. & Smith) DC.), 43 (011310 - *Matthiola bicornis* (L.) DC., *Matthiola longipetala* subsp. *bicornis* Ball), 46 (recorded as *Matthiola bicornis* (Sibth. & Smith) DC., note on Page 354), 63 (011310 - color presentation of seed), 77 (recorded as *Matthiola longipetala* (Vent.) DC. var. *bicornis* Sibth. & Smith), **85** (011310 - color presentation of dried material), 115 (color presentation)*

Matthiola longipetala subsp. *bicornis* (see *Matthiola longipetala*)

Matthiola longipetala var. *bicornis* (see footnote 77 under *Matthiola longipetala*)

***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*

***Sisymbrium orientale* C. Linnaeus: Indian Hedgemustard**

COMMON NAMES: Eastern Rocket, Indian Hedge Mustard, Indian Hedge-mustard, Indian Hedgemustard, Oriental Hedgemustard, Oriental Mustard, Tumble Mustard. DESCRIPTION: Terrestrial annual forb/herb (4 inches to 5 feet in height); the flowers are purple (one record), dull yellow, light yellow or yellow; flowering generally takes place between early February and late June (additional records: one for mid-July and one for late July, flowering ending as late as August has been reported). HABITAT: Within the range of this species it has been reported from mountains; mountainsides; sandy mesas; rocky canyons; bouldery-gravelly-sandy, rocky, rocky-sandy and gravelly-sandy canyon bottoms; gorges; talus; along ridges; ridgetops; openings in chaparral; foothills; sandy-clayey hilltops; cobbly-sandy-loamy hillsides; rocky, cobbly-sandy-loamy and sandy slopes; rocky-sandy and sandy bajadas; rocky outcrops; amongst rocks; lava fields; sandy flats; sandy ruts in roadbeds; rocky, rocky-loamy-clayey, gravelly and clayey-loamy roadsides; along arroyos; along bottoms of arroyos; draws; seeps; springs; along streams; along rocky stream courses; riverbeds; along and in rocky-sandy and sandy washes; within drainages; banks of streambeds and rivers; along (sandy) edges of washes and freshwater marshes; along (stony-sandy) margins of washes; along bouldery benches; sandy terraces; along fencelines; riparian areas; waste places; recently burned areas of woodland and chaparral, and disturbed areas growing in moist and dry bouldery, bouldery-gravelly-sandy, rocky, rocky-sandy, stony-sandy, gravelly, gravelly-sandy and sandy ground; cobbly-sandy loam, clayey loam and loam ground, and rocky-loamy clay, rocky clay and sandy clay ground, occurring from sea level to 7,600 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. A plant in fruit was collected on April 22, 1977, by Casey Hamilton at Milepost 210 on Interstate 10 at Eloy that was recorded as being a new record for this species for Arizona. *Sisymbrium orientale* is native to eastern and southern Europe; western, central and southern Asia, and northern Africa. *5, 6, 43 (011510), 63 (011510), 77, **85** (011510 - color presentation of dried material)*

Streptanthus arizonicus (see *Streptanthus carinatus* subsp. *arizonicus*)

***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)*

***Streptanthus carinatus* C. Wright *ex* A. Gray subsp. *arizonicus* (S. Watson) A.R. Kruckeberg, J.E. Rodman & R.D. Worthington: Lyreleaf Jewelflower**

SYNONYMY: *Streptanthus arizonicus* S. Watson. COMMON NAMES: Arizona Jewel Flower, Arizona Twist Flower, Lyreleaf Jewelflower, Lyreleaf Twistflower, Lyre-leaved Twistflower, Silver Bells, Twist Flower, Twistflower. DESCRIPTION: Terrestrial annual or biennial forb/herb (6 to 42 inches in height, one plant was described as being 10 inches in height with a crown 5 inches in width); the foliage is bluish-green or grayish-green; the flowers may be brownish, cream, cream-white, cream-yellow, bright golden-yellow, lemon-yellow, pinkish-cream, white, pale yellow, yellow or deep yellow tipped with 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; cliffs; rocky canyons; canyon bottoms; rocky bases of cliffs; ridges; foothills; gravelly hills; rocky slopes; gravelly bajadas; rocky outcrops; sandy lava flows; rocky and gravelly flats; sandy roadsides; rocky arroyos; along draws; cobbly-sandy riverbeds; along and in sandy washes; drainages; (gravelly) edges of arroyos; margins of rivers and washes; bottomlands, and floodplains growing in dry rocky, cobbly-sandy, gravelly and sandy ground and gravelly loam ground, occurring from 1,500 to 7,000 feet in elevation in the woodland, grassland, desertscrub and wetland ecological formations. NOTE: *Streptanthus carinatus* subsp. *arizonicus* is native to southwest-central and southern North America. *5, 6, 15, 16 (*Streptanthus arizonicus* Wats.), 28 (color photograph), 43 (063009), 46 (*Streptanthus arizonicus* Wats., Pages 331-332), 63 (011610 - color presentation), **85** (011610 - color presentation of dried material), 86 (color photograph of *Streptanthus arizonicus*), 115 (color presentation of species)*

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** (September 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. *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*

***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, **HR***

***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, **WTK** (September 4, 2005)*

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

COMMON NAMES: Brinkadora, Chain Cholla, Chain-fruit Cholla, Cholla, Cholla Brincadora, Choya, Club Cactus, Jumping Cahin-fruit Cholla, Jumping Cholla, Roseakaktus (Afrikaans), Smooth Chain-fruit Cholla (for var. *mamillata*), Sonora Jumping Cholla, Sonoran 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 5 feet in height and 5 feet in width, one plant was reported as being 79 inches in height and 16½ feet in width); the stems are gray-green, drab green or green; the spines golden-yellow, pink, reddish-brown or yellow turning brown with age; the flowers (¾ to 1 inch in diameter) are magenta,

pink or white streaked with lavender; the anthers are white; flowering generally takes place between mid-April and late September (additional records: one for early November and 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; sandy mountain slopes; mesas; canyons; ledges; rocky ridgetops; foothills; hills; rocky hillsides; rocky slopes; gravelly, gravelly-sandy and sandy bajadas; plains; gravelly, sandy and sandy-silty flats; valleys; along creeks; sandy riverbeds; along and in washes; banks of creeks and washes; benches; alluvial terraces, and floodplains growing in dry desert pavement; rocky, rocky-gravelly, gravelly, gravelly-sandy and sandy ground; gravelly loam and silty-clayey loam ground, and sandy silty ground, occurring from sea level 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. 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 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* is native to southwest-central and southern North America. *5, 6, 12 (recorded as *Opuntia fulgida* Engelm., Pages 48-52), 26 (genus, recorded as *Opuntia*), 27 (Pages 10-11, color photograph: Plate 10, Page 96), 28 (recorded as *Opuntia fulgida*, color photograph), 43 (011810), 45 (color photograph), 46 (recorded as *Opuntia fulgida* Engelm., Page 585), 48 (genus, recorded as *Opuntia*), 52 (recorded as *Opuntia fulgida*), 53 (recorded as *Opuntia fulgida* Engelm.), 63 (011810), **85** (011810 - color presentation), 91 (recorded as *Opuntia fulgida* Engelm.), 115 (color presentation), 119 (recorded as *Opuntia fulgida* Engelm.), 127*

***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*

***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*

***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*

***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** (September 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*

Echinocactus wislizeni (see *Ferocactus wislizeni*)

***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; rocky and sandy banks; plains; gravelly flats; valley floors; along cobbly creeks; along and in washes, 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*)

Ferocactus acanthodes var. *lecontei* (see *Ferocactus cylindraceus* var. *lecontei*)

***Ferocactus cylindraceus* (G. Engelmann) C.R. Orcutt var. *lecontei* (G. Engelmann) H. Bravo Hollis: LeConte's Barrel Cactus**

SYNONYMY: *Ferocactus acanthodes* (C. Lemaire) N.L. Britton & J.N. Rose var. *lecontei* (G. Engelmann) G. Lindsay, *Ferocactus lecontei* (G. Engelmann) N.L. Britton & J.N. Rose. COMMON NAMES: Barrel Cactus, Bisnaga, Biznaga, LeConte Barrel Cactus, LeConte's Barrel Cactus, Spiny Barrel Cactus, Compass Plant. DESCRIPTION: Terrestrial perennial stem-succulent shrub (erect stem 10 inches to 10 feet in height and to 1 foot in diameter); the stems are green; the spines are gray (thin radials), pink, red, red tipped with yellow, reddish-yellow or yellow; the flowers (1½ to 2½ inches in diameter) are greenish-yellow or yellow; the stigma lobes are greenish-yellow; flowering generally takes place between early May and early July (additional records: one for mid-March, one for mid-July, one for late July, one for early August, one for mid-August and six for late September); the ripe, fleshy scaly fruits are yellow. HABITAT: Within the range of this species it has been reported from mountains; canyons; canyon walls, ridges; ridgetops; rocky and gravelly hills, rocky hillsides, rocky and gravelly-loamy slopes, sandy alluvial fans, bajadas, amongst boulders; plains; sandy flats, valley floors; arroyos, and along washes growing in dry desert pavement; bouldery, rocky, gravelly and sandy ground, and gravelly loam and loam ground, occurring from 1,000 to 4,000 feet in elevation in the woodland, scrub 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* var. *lecontei* is native to southwest-central and southern North America. *5, 6, 12 (recorded as *Ferocactus acanthodes* (Lemaire) Britton & Rose var. *LeContei* (Engelm.) Lindsay, Pages 165-166), 18 (species), 26 (genus, color photograph of genus), 27 (recorded as *Ferocactus acanthodes* Lemaire var. *LeContei* (Engelmann) Lindsay, Page 122), 43 (052210), 45 (species, color photograph of species), 46 (recorded as *Ferocactus lecontei* (Engelm.) Britt. & Rose, Pages 573-574), 63 (052210), 85 (052210 - color presentation of dried material), 91, 119 (recorded as *Ferocactus lecontei* (Engelm.) B.&R.), HR*

Ferocactus lecontei (see *Ferocactus cylindraceus* var. *lecontei*)

***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** (September 4, 2005)*

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*

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*)

***Mammillaria thornberi* C.R. Orcutt: Thornber's Nipple Cactus**

SYNONYMY: *Mammillaria fasciculata* G. Engelmann. COMMON NAMES: Cluster Fishhook Cactus, Clustered Fishhook, Clustered Pincushion, Slender Pincushion, Thornber Clustered Pincushion Cactus, Thornber Nipple Cactus, Thornber's Nipple Cactus, Thornber Pincushion. DESCRIPTION: Terrestrial perennial stem-succulent shrub (erect stem 2 to 12 inches in height and ½ to 2 inches in diameter forming clumps of up to 50 to 100 stems); the stem is green; the hooked central spine is reddish-brown; the radial spines are cream or straw; the flowers (5/8 to 3/4 inch in diameter) are pale lavender or lavender with rose-pink midstripes; the stigma lobes are magenta or red; flowering generally takes place between April and August and possibly in October; the ripe, fleshy red fruits (3/8 to 5/8 inch in length and 1/8 to 5/16 inch in diameter) are red. HABITAT: Within the range of this species it has been reported from bajadas, flats; sandy and silty valley floors, and along washes growing in dry sandy ground, loam ground and silty ground usually amongst and/or under small shrubs, occurring from 600 to 3,000 feet in elevation in the desertscrub ecological formation. NOTES: This plant may be an attractive component of a restored native habitat, it is very attractive in both flower and fruit. This is a PERIPHERAL POPULATION. *Mammillaria thornberi* is native to southwest-central and southern North America. *5, 6, 12 (Page 155 & 157-159), 18 (genus), 27 (Page 180, color photograph: Plate # 100, Page 115), 43 (071010), 45 (color photograph), 46 (recorded as *Mammillaria fasciculata* Engelm., Page 578), 48 (genus), 63 (071010), 77 (color photograph #65), 85 (071010 - color presentation, unable to access species information), **HR***

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

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

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*

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

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

COMMON NAMES: Abrojo, Cactus Apple, Cow-tongue Cactus (for var. *linguiformis*), Cow-tongue Prickly-pear (for var. *linguiformis*), Desert Pricklypear, Desert Pricklypear Cactus, Discus Prickly-pear, Engelmann Prickly Pear, Engelmann Pricklypear, Engelmann's Prickly-pear, Few-spine Marble-fruit Prickly-pear, Flaming Pricklypear, Joconostle, Nopal, Prickly Pear, Prickly Pear Cactus, Tuna, Vela de Coyote. DESCRIPTION: Terrestrial perennial stem-succulent shrub (forms clumps 1 to 8 feet in height and 40 inches to 10 feet or more in width, one plant was reported as being 12 inches in height and 55 inches in width, plants were reported as being 40 inches in height and width, one plant was reported as being 40 inches in height and 6½ feet in width, one plant was reported as being 4 feet in height and 6 feet in width); the paddle-shaped stems (6 to 16 inches in length and 4 to 12 inches in width, except in var. *linguiformis* where the stems are 6 inches to 4 feet in length and 4 to 16 inches in width) are blue-gray, blue-green, green, dark green or yellow-green; the spines are dark brown, brown-red, rust, white with red tips, yellow or pale yellow-brown aging to gray; the glochids are light brown, golden, red-brown or yellow aging to blackish or gray; the flowers (2¼ to 3½ in diameter) may be lemon-yellow, pink, pink-red, red-magenta, red-pink, reddish-rose, rose-red, salmon, whitish, yellow or yellow-orange turning to orange, orange-yellow or pink-orange with age; the anthers are yellow; the stigmas are green, lime green or yellow-green; flowering generally takes place between early March and late June with the individual flowers lasting one or two days (additional records: two for mid-February, one for mid-July, one for mid-August, one for late August, one for early September, two for mid-September, one for late October and one for late December); the mature fruits (also known as tunas are 1½ to 3½ in length and ¾ to 1½ inches in diameter) are maroon, purple, dark red, red-maroon, red-purple or wine-red. HABITAT: Within the range of this species it has been reported from mountains; mountaintops; sandy mountainsides; rocky mesas; bedrock, bouldery and rocky mesas; canyons; canyon bottoms; talus slopes; rocky ledges; ridges; rocky ridgetops; ridgelines; foothills; rocky-sandy-loamy and rocky and rocky-sandy-loamy hills; bouldery, rocky and gravelly hillsides; bouldery, rocky, gravelly-sandy and sandy slopes; gravelly-sandy bajadas; rocky outcrops; amongst boulders and rocks; lava beds; rocky, gravelly and sandy flats; rocky valleys; along roadsides; along gravelly-humusy arroyos; gullies; along streams; along streambeds; along creeks; creekbeds; along washes; along and in drainage ways; banks of creeks and rivers; benches; shelves; terraces; loamy bottomlands; sandy floodplains; riparian areas, and disturbed areas growing in dry bouldery, rocky, rocky-sandy, shaley, stony, gravelly, gravelly-sandy and sandy ground; rocky-sandy loam, gravelly loam and loam ground; silty ground, and gravelly humus ground, occurring from sea level 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. 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, 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. This plant provides cover for many desert animals. *Opuntia engelmannii* is native to south-central and southern North America. *5, 6, 26, 28, 43 (063009), 45 (color photograph), 46 (Page 583), 48 (genus), 63 (012310 - color presentation), 77, **85** (012310 - color presentation), 91 (recorded *Opuntia phaeacantha* var. *discata* (Griffiths) Benson & Walkington together with *Opuntia phaeacantha* var. *major* Engelmann, "Both species are sympatric throughout much of their range and often can be found together."), 115 (color presentation), 119, 127*

***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), **WTK** (September 4, 2005)*

***Opuntia engelmannii* J.F. Salm-Reifferscheid-Dyck ex G. Engelmann var. *linguiformis* (D. Griffiths) B.D. Parfitt & D.J. Pinkava: Cactus Apple**

SYNONYMY: *Opuntia lindheimeri* G. Engelmann var. *linguiformis* (D. Griffiths) L.D. Benson. COMMON NAMES: Cactus Apple, Cow Tongue Prickly Pear, Cow's Tongue, Cow's Tongue Prickly Pear, Cow's Tongue Pricklypear, Cow's-tongue Prickly-pear, Cow's-tongue Pricklypear, Lengua de Vaca, Prickly Pear. DESCRIPTION: Terrestrial perennial stem-succulent shrub (4 to 10 feet in height and 4 to 8 feet in width); the paddle-shaped stems (6 inches to 4 feet in length and 4 to 16 inches in width) are light green; the spines are yellow aging to blackish; the flowers are yellow; flowering generally takes place between April and May; the mature fruits are purple or red. HABITAT: Within the range of this species it has been reported from hillsides; slopes; bajadas; gravelly flats; along washes, and floodplains growing in dry gravelly ground, occurring from 300 to 2,600 feet in elevation in the scrub and desertscrub ecological formations. NOTES: EXOTIC Invasive Plant. 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. *Opuntia engelmannii* var. *linguiformis* is native to southwest-central (central Texas) North America. *5, 6, 16 (recorded as *Opuntia lindheimeri* Engelm. var. *linguiformis* (Griffiths) L. Benson), 26 (species), 43 (070109), 45 (species, color photograph), 46 (species, Page 583), 48 (genus), 63 (012310), 77 (recorded as *Opuntia lindheimeri* Engelm. var. *linguiformis* (Griffiths) L. Benson), 85 (012310 - color presentation), 127 (species), **HR***

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 leptocaulis (see *Cylindropuntia leptocaulis*)

Opuntia lindheimeri var. *linguiformis* (see *Opuntia engelmannii* var. *linguiformis*)

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*

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 santa-rita* (D. Griffiths & R.F. Hare) J.N. Rose: Santa Rita Pricklypear**

SYNONYMY: *Opuntia violacea* G. Engelmann var. *santa-rita* (D. Griffiths & R.F. Hare) L.D. Benson. COMMON NAMES: Blue Blade, Blue-blade, Dollar Cactus, Duraznilla, Nopal Morado, Purple Prickly Pear, Purple Pricklypear, Red Blade Pricklypear, Santa Rita Cactus, Santa-rita Cactus, Santa Rita Prickly Pear, Santa Rita Pricklypear. DESCRIPTION: Terrestrial perennial stem-succulent shrub or tree (erect stems 2 to 6½ feet in height); the paddle-shaped stems (4 to 8 inches in length) may be azure-purple (warmer months), bluish-green, gray-green with a red tinge on the edge, green, greenish-blue, pink, red-purple, reddish-purple (cooler months), rose or pale violet-purple; the glochids are golden, tan or yellow aging to brown or reddish-brown; the spines are golden, pale yellow or pale yellow-gray aging to reddish-brown; the flowers (3 to 3½ inches in diameter) are lemon-yellow, orange-yellow, pale yellow or yellow; the anthers are pale yellow or yellow; the stigma lobes are light chartreuse, light green, green or light yellow; flowering generally takes place between early March and early June (additional record: one for early January and one for early August); the ripe fruits (1 to 1½ inches in length and ¾ inch in diameter) are maroon, purple, purplish or reddish aging to gray. HABITAT: Within the range of this species it has been reported from mountains; mesas; canyons; canyon bottoms; ridges; grassy rolling hills; rocky hillsides; rocky and gravelly-sandy-loamy slopes; bajadas; rocky outcrops; sandy dunes; gravelly and sandy plains; flats; valley floors; along roadsides; creekbeds, and disturbed areas growing in dry rocky, gravelly and sandy ground and gravelly-sandy loam ground, occurring from 2,000 to 5,600 feet in elevation in the woodland, grassland and desertscrub ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. *Opuntia santa-rita* is native to southwest-central and southern North America. *5, 6, 12 (Page 92 & 95-96), 26 (recorded as *Opuntia violacea* var. *santa-rita*, color photograph), 27 (recorded as *Opuntia violacea* Engelmann var. *santa-rita* (Griffiths & Hare) L. Benson, Page 58, color photograph: Plates 34 & 34A - *Opuntia violacea* var. *santa-rita*, Pages 100-101), 28 (color photograph), 43 (071810 - *Opuntia violacea* G. Engelmann in Emory var. *santa-rita* (Griffiths & Hare) L.D. Benson), 45 (color photograph), 46 (Page 582), 48 (genus), 58, 63 (071810), 77, **85** (080110 - color presentation including habitat), 91, 115 (color presentation)*

Opuntia spinosior (see *Cylindropuntia spinosior*)

Opuntia versicolor (see *Cylindropuntia versicolor*)

Opuntia violacea var. *santa-rita* (see *Opuntia santa-rita*)

***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)*

Capparaceae (Capparidaceae): The Caper Family

***Koeberlinia spinosa* J.G. Zuccarini: Crown of Thorns**

COMMON NAMES: Abrojo, All-thorn, Allthorn, Corona de Cristo, Crown of Thorns, Crown-of-thorns, Crucifixion-thorn, Junco, Spiny Allthorn. DESCRIPTION: Terrestrial perennial shrub or tree (2 to 15 feet in height, one plant was described as being 40 inches in height and 6½ feet in width, one plant was described as being 5 feet in height and 10 feet in width, one plant was described as being 6½ feet in height and 13 feet in width); the bark is dark green or yellow-green aging scaly and gray; the branches and twigs are dark green or yellow-green; the flowers (¼ inch in length) are cream, creamy-white, greenish-white, greenish-yellow, white, white tinged with green, pale yellow, yellow, yellowish or yellowish-white; flowering generally takes place between late February and early October (additional record: one for late December), March and June; the berries (¼ inch in diameter) are black or purplish-black and shiny. HABITAT: Within the range of this species it has been reported from mountains; gravelly and sandy mesas; rocky canyons; ridges; rocky foothills; hills; rocky and rocky-gravelly hillsides; rocky and gravelly slopes; amongst boulders; sand dunes; cobbly-clayey alluvial fans; bajadas, gravelly, sandy and clayey plains; gravelly flats; clayey-loamy valley floors; gravelly-pebbly-silty and loamy valley bottoms; sandy coastal flats; along gravelly and gravelly-clayey roadsides; along and in arroyos; rocky bottoms of ravines; springs; along and in gravelly-clayey and sandy washes; sandy-clayey playas; cienegas; silty swales; (sandy) banks of rivers and washes; along (cobbly-clayey) edges of arroyos and washes; margins of drainage ways; benches; terraces; floodplains; mesquite bosques; sandy riparian areas, and disturbed areas growing in dry bouldery, rocky, rocky-gravelly, gravelly and sandy ground; clayey loam and loam ground; cobbly clay, gravelly clay, sandy clay and clay ground, and gravelly-pebbly 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 may be an attractive component of a restored native habitat. *Koeberlinia spinosa* is native to southwest-central and southern North America. *5, 6, 13, 16, 43 (012410), 46 (placed in The Koeberliniaceae: The Junco Family, Page 558), 53, 63 (012410), 77, **85** (012410 - color presentation), 91*

Caryophyllaceae: The Pink Family

Herniaria cinerea (see *Herniaria hirsuta* subsp. *cinerea*)

***Herniaria hirsuta* C. Linnaeus subsp. *cinerea* (A.P. de Candolle) A.X. Coutinho: Hairy Rupturewort**

SYNONYMY: *Herniaria cinerea* A.P. de Candolle. COMMON NAMES: Burstwort, Hairy Rupturewort. DESCRIPTION: Terrestrial annual forb/herb (prostrate 2 to 8 inches in length); the minute flowers are greenish; flowering generally takes place between mid-March and mid-July (additional records: one for mid-January and one for mid-October). HABITAT: Within the range of this species it has been reported from mountains; gravelly, gravelly-sandy and sandy mesas; rocky canyons; bouldery-gravelly-sandy and rocky-sandy canyon bottoms; rocky hills; stony-loamy hilltops; rocky hillsides; rocky-sandy and gravelly slopes; bajadas; rocky outcrops; plains; gravelly, gravelly-sandy and clayey flats; sandy-silty valley floors; along roadsides; along arroyos; bottoms of arroyos; in sand along creeks; riverbeds; along gravelly and sandy washes; drainage ways; along edges of rivers; shores of lakes; floodplains; edges of stock tanks; riparian areas, and disturbed areas growing in moist and dry bouldery-gravelly-sandy, rocky, rocky-sandy, cobbly, gravelly, gravelly-sandy and sandy ground; stony loam

ground; bouldery clay and clay ground, and sandy silty ground, occurring from 100 to 6,100 feet in elevation in the woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: EXOTIC Plant. *Herniaria hirsuta* subsp. *cinerea* is native to central and southern Europe; western, central and southern Asia, and northern Africa. *5, 6, 16 (*Herniaria cinerea* DC.), 43 (012610 - *Herniaria hirsuta* C. Linnaeus var. *cinerea* (DC.) Loret & Barrandon), 46 (*Herniaria cinerea* DC., Page 300), 63 (012610), 77 (*Herniaria cinerea* DC.), **85** (012610)*

***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, **HR***

***Atriplex elegans* (C.H. Moquin-Tandon) D.N. Dietrich: Wheelscale Saltbush**

COMMON NAMES: Chamiso Cenizo, Fasciculata Saltbush, Salton Fasciculata Saltbush, Wheelscale, Wheelscale Orach, Wheelscale Saltbush, White-scale Saltbush. DESCRIPTION: Terrestrial annual or perennial forb/herb (2 inches to 3 feet in height, plants (smooth and round) were observed that were 8 inches in height and width); the foliage is gray-blue or green; the small flowers are greenish; flowering generally takes place between early March and mid-October; the fruits (bracteols are 1/8 inch in diameter) are grayish, greenish or green-yellow. HABITAT: Within the range of this species it has been

reported from mountains; mesas; rocky ledges; foothills; rocky hills; rocky hillsides; rocky and clayey-loamy slopes; rocky outcrops; alluvial fans; sand dunes; sandy plains; gravelly, sandy and clayey flats; basins; along sandy and clayey valley floors; rutted roadbeds; along gravelly and sandy roadsides; draws; sandy riverbeds; along and in gravelly washes; along and in drainages; clayey dry lakebeds; playas; depressions; (clayey) banks of rivers; edges of dry lakes; gravelly-sand bars; benches; along clayey bottomlands; sandy-loamy floodplains; margins of stock tanks; along canals; canal banks; ditches; silty edges of ditches; gravelly and sandy riparian areas; waste places, and disturbed areas growing in dry desert pavement; rocky, stony, gravelly, gravelly-sandy and sandy ground; gravelly clay and clay ground; clay loam and sandy loam ground, and silty ground, occurring from sea level to 5,400 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 and/or spice crop. Wheelscale Saltbush is a host plant of the Beet Leafhopper which transmits the Curly Top Virus to Sugarbeets. *Atriplex elegans* is native to southwest-central and southern North America. *5, 6, 16, 43 (071309), 46 (Page 258), 63 (012810), 68, **85** (012810 - color presentation of dried material), 127*

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

***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, **WTK** (September 4, 2005)*

Convolvulaceae: The Morning-glory Family

***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 - color presentation of dried material), 86 (note under *Ipomoea cristulata*), 101 (color photograph)*

***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)*

Ipomoea desertorum (see *Ipomoea hederacea*)

***Ipomoea hederacea* N.J. von Jacquin: Ivyleaf Morning-glory**

SYNONYMY: *Ipomoea desertorum* H.D. House, *Ipomoea hirsutula* auct. non J.F. von Jacquin f., *Ipomoea nil* auct. non (C. Linnaeus) A.W. Roth. COMMON NAMES: Bi:bhiag (Tohono O'odham), Blue Morning-glory, Desert Morning-glory, Entireleaf Morningglory, Ivy-leaf Morning-glory, Ivyleaf Morning-glory, Ivyleaf Morningglory, Mexican Morningglory, Morning Glory, Trompillo Morado, Woolly Morning Glory, Woolly Morningglory. DESCRIPTION: Terrestrial annual forb/herb or vine (twining stems 16 inches to 8 feet in length); the flowers (to 2 inches in diameter) may be pale blue, blue, blue-purple, blue with white throat, lavender, mauve-blue, purple, purplish, violet, white & purple or whitish; flowering generally takes place between mid-August and mid-December (additional records: one for late June and one for mid-July). HABITAT: Within the range of this species it has been reported from mountains; mesas; rocky canyons; rocky and sandy canyon bottoms; bouldery bases of cliffs; gravelly ridgetops; foothills; hills; rocky hilltops; rocky hillsides; rocky, gravelly, gravelly-loamy and sandy-clayey slopes; bajadas; amongst boulders; plains; gravelly, sandy, sandy clayey and sandy-silty flats; valley floors; sandy, sandy-silty and loamy valley bottoms; along rocky and sandy-loamy roadsides; stony arroyos; rocky-sandy bottoms of arroyos; gulches; along streams; streambeds; sandy riverbeds; along and in gravelly, gravelly-silty and gravelly-sandy-silty washes; drainages; cienegas;(silty) banks of creeks, rivers and drainage ways; benches; terraces; sandy floodplains; mesquite bosques; ditches; ditch banks; riparian areas, and disturbed areas growing in moist and dry bouldery, rocky, rocky-sandy, stony, gravelly, gravelly-sandy and sandy ground; gravelly loam, sandy loam and loam ground; sandy clay ground, and gravelly silty, gravelly-sandy-silty, 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. NOTES: EXOTIC Invasive Plant. Two records stated that the flowers close by 11:00/11:30 AM. *Ipomoea hederacea* is native to southern North America, Central America and northwestern South America. *5, 6, 18 (genus), 28 (note under *Ipomoea purpurea*), 43 (070409), 46 (*Ipomoea hirsutula* Jacq f. (*Ipomoea desertorum* House), Page 678), 48 (genus), 63 (013110 - color presentation), 68, 77, **85** (013110 - color presentation), 101 (color photograph), 115 (color presentation), 134*

Ipomoea hirsutula auct. non N.J. von Jacquin f. (see *Ipomoea hederacea*)

Ipomoea nil auct. non (C. Linnaeus) A.W. Roth (see *Ipomoea hederacea*)

Cuscutaceae: The Dodder Family

***Cuscuta tuberculata* T.S. Brandegee: Tubercle Dodder**

COMMON NAMES: Dodder, Tubercle Dodder, Tuber Dodder, Umbrella Dodder. DESCRIPTION: Terrestrial perennial parasitic forb/herb or vine (clambering, trailing or twining stems); the leafless stems are orange or orange-yellow, yellow or yellow-orange; the small flowers are white to almost colorless; the anthers are yellow; flowering generally takes place between early August and late October (additional records: one for mid-March, two for late November and one for early December); the fruits are orange. HABITAT: Reported as growing on *Allionia* spp., *Amaranthus* spp., *Baccharis* spp., *Bebbia* spp., *Boerhavia* spp., *Euphorbia* spp., *Tidestroemia lanuginosa*, *Zizyphus* spp. and other hosts, occurring from sea level to 3,800 feet in elevation in the scrub, grassland, desertscrub and wetland ecological formations. NOTES: The Tubercle Dodder is a parasitic plant. *Cuscuta tuberculata* is native to southwest-central and southern North America. *5, 6, 43 (052310 - *Cuscuta tuberculata* T.S. Brandegee), 46 (Page 671), 63 (052310), 68 (genus), 77, 80 (Species of the genus *Cuscuta* are considered to be Rarely

Poisonous and Suspected Poisonous Range Plants. "This parasitic, annual vine has been suspected of causing digestive disturbances and diarrhea in horses and cattle."), 85 (052310 - color presentation of dried material)*

Euphorbiaceae: The Spurge Family

***Argythamnia neomexicana* J. Müller Argoviensis: New Mexico Silverbush**

SYNONYMY: *Ditaxis neomexicana* (J. Müller Argoviensis) A.A. Heller. COMMON NAMES: Common Ditaxis, Common Silverbush, Ditaxis, New Mexico Ditaxis, New Mexico Silverbush, New Mexico Wild Mercury, Silverbush. DESCRIPTION: Terrestrial annual or perennial forb/herb (2 to 32 inches in height, clumps described as being 4 inches in height and 12 inches in width were reported); the leaves are gray-green or green; the small flowers are cream, cream-yellow, green, white, whitish, white-pale yellow, white-yellowish, white with a yellow center or yellowish; flowering generally takes place between early January and late December. HABITAT: Within the range of this species it has been reported from rocky mountains; rocky and gravelly mesas; rocky-loamy canyons; bouldery canyon walls; canyon bottoms; talus slopes; rocky ridges; rocky ridgetops; foothills; rocky, rocky-sandy, cindery and gravelly-sandy hills; rocky and rocky-sandy hillsides; cinder cones; rocky, rocky-loamy, gravelly-sandy, sandy and sandy-silty slopes; bouldery-rocky-cobbly and rocky alluvial fans; gravelly, gravelly-sandy and sandy bajadas; rocky outcrops; amongst boulders and rocks; sand dunes; sandy plains; rocky, gravelly, sandy, clayey and silty flats; gravelly-sandy and sandy valley floors; coastal sand dunes; coastal terraces; coastal flats; bouldery-cobbly coastal beaches; along clayey roadsides; within rocky and sandy arroyos; along rocky and sandy bottoms of arroyos; rivulets; along creeks; along and in creekbeds, riverbeds; along and in bouldery, rocky, gravelly-sandy, gravelly-sandy-silty, sandy and silty washes; sandy drainage ways; depressions; banks of arroyos and washes; (sandy) edges of arroyos and washes; along (sandy) margins of washes; mudflats; beaches; along rocky benches; rocky terraces; sandy floodplains; ditches; gravelly, gravelly-sandy and sandy riparian areas, and disturbed areas growing in dry desert pavement; bedrock, bouldery, bouldery-rocky-cobbly, bouldery-cobbly, rocky, rocky-sandy, cindery, gravelly, gravelly-sandy and sandy ground; rocky loam, gravelly-sandy loam and clayey loam ground; clay ground, and gravelly-sandy silty, sandy silty and silty ground, occurring from sea level to 5,000 feet in elevation in the woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTE: *Argythamnia neomexicana* is native to southwest-central and southern North America. *5, 6, 15, 16, 43 (020210), 46 (recorded as *Ditaxis neomexicana* (Müll.Arg,) Heller, Page 506), 58, 63 (020210), 77 (recorded as *Ditaxis neomexicana* (Müll.Arg,) Heller), **85** (020210 - color presentation)*

Bernardia incana (see *Bernardia myricifolia*)

***Bernardia myricifolia* (Scheele) S. Watson: Mouse's Eye**

SYNONYMY: *Bernardia incana* C.V. Morton. COMMON NAMES: Hoary Myrtlecroton, Mouse's Eye, Mouse-eye, Western Myrtle Croton. DESCRIPTION: Terrestrial perennial deciduous shrub (3 to 7 feet in height); the leaves are green; flowering generally takes place between April and October. HABITAT: Within the range of this species it has been reported from mountains; rocky canyons; bases of cliffs; crevices; buttes; rocky slopes; bajadas; along drainages, and along edges of washes growing in dry rocky ground, occurring from 1,500 to 5,000 feet in elevation in the grassland and desertscrub ecological formations. NOTE: *Bernardia myricifolia* is native to southwest-central and southern North America. *5, 6, 13, 43 (070710 - *Bernardia myricifolia* Benth. ex Hook. f.), 46 (recorded as *Bernardia incana*, Page 506), 63 (070510), 77, **85** (070510 - color presentation, unable to access species information)*

***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 capitellata* (G. Engelmann) C.F. Millspaugh: Head Sandmat**

SYNONYMY: *Euphorbia capitellata* G. Engelmann. COMMON NAMES: Galondrina, Golondrinia, Head Euphorbia, Head Sandmat, Head Spurge, Koapaim (Yaqui), Spurge. DESCRIPTION: Terrestrial perennial forb/herb (prostrate to ascending stems 3 to 8 inches in height); the leaves are green; the flower-like cups have brown-maroon or red glands and white petaloid appendages; flowering generally takes place between mid-February and late October (additional records: one for early January, one for mid-November, two for late 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; bouldery and clayey mesas; rocky canyons; gravelly-sandy canyon bottoms; rocky-sandy rims of craters; rocky ridgetops; rocky ridgelines; foothills; rocky and cobbly-gravelly-loamy hills; rocky hilltops; bouldery and rocky hillsides; rocky, gravelly and sandy slopes; bajadas; boulder fields; cobbly plains; rocky, gravelly, sandy and clayey flats; along rocky roadbeds; along rocky, rocky-clayey, gravelly, sandy-clayey roadsides; sandy arroyos; gravelly bottoms of arroyos; gravelly-silty bottoms of draws; gullies; along and in stony streambeds; along creeks; sandy creekbeds; riverbeds; along and in rocky, gravelly and sandy washes; drainages; banks of arroyos and lakes; (sandy) edges of poolbeds, ponds; bays, lagoons and marshes; along margins of pools; floodplains; fencelines; dry stock tank (charco) bottoms; gravelly-sandy riparian areas, and disturbed areas growing in wet and dry desert pavement; bouldery, rocky, stony, cobbly, gravelly, gravelly-sandy and sandy ground; cobbly-gravelly loam and gravelly loam ground; bouldery clay, rocky clay, sandy clay and clay ground, and bouldery-silty and gravelly silty ground, occurring from sea level to 7,700 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: The stems have a milky sap. *Chamaesyce capitellata* is native to southwest-central and southern North America. *5, 6, 15, 16 (recorded as *Euphorbia capitellata*

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 (020310), 46 (recorded as *Euphorbia capitellata* Engelm., Page 518), 58, 63 (020310), 68 (see: Poisonous Properties of Spurges, Page 202), 77 (recorded as *Euphorbia capitellata* 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** (020310 - 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 florida* (G. Engelmann) C.F. Millspaugh: Chiricahua Mountain Sandmat**

SYNONYMY: *Euphorbia florida* G. Engelmann. COMMON NAMES: Chiricahua Mountain Sandmat, Florida Spurge, Golondrina, Spurge. DESCRIPTION: Terrestrial annual forb/herb (ascending stems 1 to 18 inches in height); the stems are pink-tan; the leaves are green; the flower-like cups have green glands (centers) and white (aging rose), white-pink or white with pinkish tips petaloid appendages; flowering generally takes place between mid-July and early November (additional records: two for early January, one for late June and two for mid-December). HABITAT: Within the range of this species it has been reported from mountains; mesas; rocky canyons; canyon walls; sandy canyon bottoms; chasms; sandy ridgetops; rocky foothills; rocky and sandy hills; rocky hillsides; rocky, rocky-gravelly, rocky-sandy, gravelly-loamy and sandy-loamy slopes; bajadas; dunes; plains; gravelly and sandy flats; basins; valley floors; coastal dunes; along rocky-sandy, gravelly-clayey and sandy roadsides; arroyos; along and in streambeds; along and in gravelly and sandy washes; gravelly-clayey depressions; along (sandy) banks of arroyos, rivers and washes; bottomlands; floodplains; edges of stock tanks; sandy riparian areas, and disturbed areas growing in wet, moist and dry rocky, rocky-gravelly, rocky-sandy, gravelly and sandy ground; gravelly loam, gravelly-clayey loam and sandy loam ground, and gravelly clay ground, occurring from sea level to 5,000 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: The stems have a milky sap. *Chamaesyce florida* is native to southwest-central and southern North America. *5, 6, 15, 16 (recorded as *Euphorbia florida* 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 (020310), 46 (recorded as *Euphorbia florida* Engelm., Page 518), 58, 63 (020310), 68 (see: Poisonous Properties of Spurges, Page 202), 77 (recorded as *Euphorbia florida* 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** (020310 - 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 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 micromera* (P.E. Boissier ex G. Engelmann) E.O. Wooton & P.C. Standley: Sonoran Sandmat**

SYNONYMY: *Euphorbia micromera* P.E. Boissier ex G. Engelmann. COMMON NAMES: Desert Spurge, Golondrina, Littleleaf Spurge, Pitseed Euphorbia, Sonoran Sandmat, Spurge. DESCRIPTION: Terrestrial annual forb/herb (mat-forming, prostrate and sprawling stems 3 to 9 inches in length); the stems are flesh colored; the leaves are gray-green or dull pinkish-gray green; the inconspicuous flower-like cups have green or greenish-red perianths and magenta, pink, red or dark red glands without (or with minute) petaloid appendages; flowering generally takes place between early August and late November (additional records: one for late January and two for early April, one for late April, one for early May, one for late June, two for early July, one for mid-December and one for late December). HABITAT: Within the range of this species it has been reported from mountains; mountaintops; mesas; rocky canyons; pockets of sandy soil in granitic hills; ridges; rocky foothills; bouldery and rocky hills; hilltops; rocky hillsides; bouldery, bouldery-rocky-gravelly, rocky, rocky-gravelly, gravelly, sandy, sandy-loamy and sandy-silty slopes; rocky-gravelly, gravelly-sandy and sandy alluvial fans; gravelly and sandy bajadas; sand dunes; gravelly outwash fans; prairies; plains; gravelly and sandy flats; basins; valley floors; valley bottoms; rocky-gravelly-loamy, rocky-sandy, gravelly and gravelly-sandy roadsides; arroyos; along sandy bottoms of arroyos; gulches; seeps; along streams; along gravelly-sandy creeks; creekbeds; along rivers; sandy riverbeds; along and in rocky, rocky-sandy, gravelly, gravelly-sandy and sandy washes; along drainages; silty lakebeds; playas; along banks of rivers; (gravelly) edges of washes and lakebeds; (rocky-sandy) shores of lakes; mudflats; sandy-clayey bars; sandy beaches; sandy benches; terraces; sandy and silty floodplains; margins of stock tanks; ditch banks; sandy riparian areas, and disturbed areas growing in moist and dry desert pavement; bouldery, bouldery-rocky-gravelly, rocky, rocky-gravelly, rocky-sandy, cindery, cindery-sandy, gravelly, gravelly-sandy and sandy ground; rocky-gravelly loam ground; sandy clay ground, and sandy silty and silty ground, occurring from sea level to 6,100 feet in elevation in the woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: The stems have a milky sap. *Chamaesyce micromera* is native to

southwest-central and southern North America. *5, 6, 15, 16 (recorded as *Euphorbia micromera* Boiss.), 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 - *Chamaesyce micromera* (Boiss.) Wooton & Standl., *Euphorbia micromera* Boiss.), 46 (recorded as *Euphorbia micromera* Boiss., Page 520), 63 (020410 -), 68 (recorded as *Euphorbia micromera* Boiss., see: Poisonous Properties of Spurges, Page 202), 77 (recorded as *Euphorbia micromera* Boiss.), 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 of dried materials), 86 ("Most members of the family (Euphorbiaceae) are poisonous, and their milky sap will irritate the membranes of the eyes and mouth.")*

***Chamaesyce pediculifera* (G. Engelmann) J.N. Rose & P.C. Standley: Carrizo Mountain Sandmat**

SYNONYMY: *Euphorbia pediculifera* G. Engelmann. COMMON NAMES: Carrizo Mountain Sandmat, Carrizo Mountain Spurge, Golondrina, Louse Spurge, Spurge. DESCRIPTION: Terrestrial perennial forb/herb (prostrate to ascending stems 4 to 16 inches in height); the stems are red or reddish; the leaves are gray-green or green; the flower-like cups have dark red-purple glands with white petaloid appendages; flowering generally takes place between early January and late December; the white seeds are ringed with 4 to 5 ridges. HABITAT: Within the range of this species it has been reported from mountains; cliff sides; talus slopes; rocky canyons; bouldery, rocky and gravelly canyon bottoms; rocky gorges; crevices in rocks; rocky ledges; ridge crests; cinder cones; rims of cinder cones; rocky foothills; rocky and rocky-sandy hills; rocky and gravelly hillsides; bluffs; rocky slopes; sandy bajadas; amongst boulders, rocks and cobbles; boulder fields; plains; gravelly, sandy and silty flats; valley floors; sandy coastal beaches; railroad right-of-ways; along gravelly and sandy roadsides; rocky arroyos; along gravelly and sandy bottoms of arroyos; gravelly-sandy-loamy draws; rocky bottoms of ravines; along streams; along creeks; creekbeds; along rivers; riverbeds; along and in rocky, stony, gravelly, gravelly-sandy and sandy washes; drainages; rocky drainage ways; playas; banks of washes; along (cobbly and sandy) edges of washes; (sandy) margins of washes; mudflats; sand bars; sandy beaches; benches; sandy strands; bottomlands; sandy floodplains; mesquite bosques; dry bottoms of charcos (stock tanks); mesquite bosques; sandy riparian areas, and disturbed areas growing in wet, moist and dry desert pavement; bouldery, rocky, rocky-sandy, stony, cobbly, gravelly, gravelly-sandy and sandy ground; gravelly-sandy loam and sandy loam ground; rocky clay and clay ground, and bouldery silty and silty ground, occurring from sea level to 4,800 feet in elevation in the woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: The stems have a milky sap. *Chamaesyce pediculifera* is native to southwest-central and southern North America. *5, 6, 15, 16 (recorded as *Euphorbia pediculifera* 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), 46 (recorded as *Euphorbia pediculifera* Engelm., Page 519), 58, 63 (020510), 68 (see: Poisonous Properties of Spurges, Page 202), 77 (recorded as *Euphorbia pediculifera* 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.")*

Chamaesyce pediculifera var. *pediculifera* (see *Chamaesyce pediculifera*)

***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.")*

Ditaxis neomexicana (see *Argythamnia neomexicana*)

Euphorbia arizonica (see *Chamaesyce arizonica*)

Euphorbia capitellata (see *Chamaesyce capitellata*)

***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 florida (see *Chamaesyce florida*)

Euphorbia hyssopifolia (see *Chamaesyce hyssopifolia*)

Euphorbia melanadenia (see *Chamaesyce melanadenia*)

Euphorbia micromera (see *Chamaesyce micromera*)

Euphorbia pediculifera (see *Chamaesyce pediculifera*)

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, **WTK** (September 4, 2005)*

***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 angustissima* (P. Miller) C.E. Kuntze: Prairie Acacia**

SYNONYMY: *Acaciella angustissima* (P. Miller) N.L. Britton & J.N. Rose. COMMON NAMES: Barbus de Chivo, Cantemo, Dai (Ocurahui, Sierra Surotato, Sinaloa, Mexico), Fern Acacia, Guajillo, Palo de Pulque (Hispanic), Prairie Acacia, Siraku K'amataraku (Purépecha), Texas Prairie Acacia, Timbe (Hispanic), Timben (Hispanic), Timbre (Hispanic), Tu Ntoo (N. Mixteco), White Ball Acacia, White-ball Acacia, Whiteball Acacia. DESCRIPTION: Terrestrial perennial deciduous forb/herb

or subshrub (6 inches to 10 feet, or a small tree 6½ to 26½ feet in height); the bark is light brown, gray or green-white with white stripes; the leaflets are bluish-green or dark green; the ball-shaped flowers (to ½ inch in diameter forming in clusters) may be cream, cream-white, pink, white, white-cream, white tinged with lavender or pink, or pale yellow; flowering generally takes place between early May and early January (additional records: one for late January, one for late February and two for late March); the fruits (seedpods 1¼ to 3 inches in length and ¼ to ½ inch in width) are dark reddish-brown. HABITAT: Within the range of this species it has been reported from mountains; mountaintops; rocky mesas; plateaus; rocky cliffs; rocky canyons; bouldery and rocky canyon bottoms; rocky talus; along crevices in boulders; ledges; along rocky, rocky-sandy and gravelly-clayey ridges; along ridgetops; ridgelines; clearings in woodlands; clayey-loamy meadows; rocky and rocky-sandy foothills; rocky and stony hills; rocky, rocky-gravelly-loamy, gravelly-sandy-loamy and sandy-loamy hillsides; bouldery-rocky-sandy, rocky, rocky-gravelly, rocky-sandy-clayey, rocky-clayey-loamy and gravelly slopes; bouldery bajadas; piedmonts; rocky outcrops; amongst boulders and rocks; stabilized sand dunes; rocky and clayey flats; silty valley floors; coastal flats; along rocky, gravelly-loamy and gravelly-clayey-loamy roadsides; rocky draws; ravines; along streams; gravelly creeks; along and in rocky-sandy and sandy washes; along watercourses; within rocky drainage ways; depressions; (gravelly-loamy) banks of washes; (sandy) edges of streams and washes; sandy-loamy benches; rocky terraces; bottomlands; floodplains; bosques; along ditches; riparian areas, and disturbed areas growing in damp and dry bouldery, bouldery-rocky-sandy, rocky, rocky-stony-sandy, rocky-gravelly, rocky-sandy, shaley, stony, gravelly and sandy ground; rocky-gravelly loam, rocky-clayey loam, gravelly loam, gravelly-sandy loam, gravelly-sandy-clayey loam, gravelly-clayey loam, sandy loam, clayey loam and loam ground; rocky-sandy clay, gravelly clay and clay ground, and silty ground, occurring from 100 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, the leaves are fernlike. Quail feed on the seeds of this plant. *Acacia angustissima* is native to south-central and southern North America and Central America. *5, 6, 13, 28 (color photograph), 30, 43 (070709), 46 (Pages 398-399), 48, 58, 63 (020610 - color presentation), 77, **85** (020610 - color presentation), 91, 115 (color presentation)*

***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, **WTK** (September 4, 2005)*

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

***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), **WTK** (September 4, 2005)*

Acaciella angustissima (see *Acacia angustissima*)

***Astragalus allochrous* A. Gray var. *playanus* (W. Jones) D. Isely: Halfmoon Milkvetch**

SYNONYMY: *Astragalus wootoni* (alternate spelling: *A. wootonii*) E.P. Sheldon, *Astragalus wootoni* E.P. Sheldon var. *typicus* R.C. Barneby. COMMON NAMES: Crazyweed, Loco, Halfmoon Milkvetch, Loco Milk Vetch, Loco Weed, Locoweed, Poisonvetch, Rattleweed, Western Loco, Wooton Loco, Wooton's Milk-vetch. DESCRIPTION: Terrestrial annual or biennial forb/herb (12 to 16 inches in length)the stems may be reddish; ; the leaflets are gray or gray-green; the flowers are lavender-white, pink-lavender, purple, purplish & white, reddish, red-violet, reddish-violet, rose, violet or whitish; flowering generally takes place between late February and mid-June (additional records: one for early January, August flowering has also been reported). HABITAT: Within the range of this species it has been reported from mountains, mesas, gravelly-sandy canyons; canyon bottoms; rocky-sandy ridges; cindery flanks of cinder cones; sandy foothills; hills; rocky and gravelly-clayey hillsides; bouldery-sandy-silty, rocky, cobbly-sandy, cindery and gravelly slopes, rocky outcrops; sandy bajadas; gravelly-sandy pediments; plains, gravelly and sandy flats, basin bottoms; sandy valley floors; along railroad right-of-ways; along rocky, stony, gravelly, gravelly-sandy, gravelly-sandy-loamy, sandy and sandy-loamy roadsides; within sandy arroyos; sandy draws; seeps; along streams; sandy streambeds; along creeks; along rivers; riverbeds; along and in rocky and sandy washes; within drainage ways; (sandy) edges of arroyos; channel bars; terraces; sandy bottomlands; lowlands; sandy floodplains; mesquite bosques; along canals; bouldery riparian areas; waste places, and disturbed areas growing in moist and dry bouldery, rocky, rocky-sandy, shaley, stony, cobbly-sandy, cindery, gravelly, gravelly-sandy and sandy ground; gravelly loam, gravelly-sandy loam and sandy loam ground; gravelly clay, sandy clay and clay ground, and bouldery-sandy silty and bouldery silty ground, occurring from 1,300 to 8,700 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: The species, *Astragalus allochrous*, 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 as a ceremonial item. *Astragalus allochrous* var. *playanus* is native to southwest-central and southern North America. *5, 6, 16 (*Astragalus wootonii* Sheldon), 43 (020810), 46 (*Astragalus wootoni* Sheldon, Page 463 and *Astragalus wootoni* Sheldon var. *typicus* Barneby, Page 463), 58, 63 (020810), 68, 77, 80 (The species is listed as a Major Poisonous Range Plant. "Poisonings by *Astragalus* and *Oxytropis* are similar and are of three types. Some species cause typical loco poisoning. Others pick up poisonous minerals, such as selenium, and cause mineral poisoning. A third type of poisoning causes respiratory problems, in addition to other loco symptoms, and death by asphyxiation. The toxic principle of typical loco poisoning has never been specifically isolated, though an alkaloid-like substance given the name of "locoine" has been proven to cause typical symptoms. ... Animals ordinarily will not eat loco unless feed is scarce, but animals forced to eat the plants become addicted and will eat the loco plants even when good forage is available." See text for additional information.), **85** (020810 - color presentation), 127 (species)*

Astragalus wootoni (see *Astragalus allochrous* var. *playanus*)

Astragalus wootonii (see *Astragalus allochrous* var. *playanus*)

Astragalus wootoni var. *typicus* (see *Astragalus allochrous* var. *playanus*)

***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*

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

Calliandra schottii (see *Zapoteca formosa* subsp. *schottii*)

Cassia covesii (see *Senna covesii*)

Cercidium floridum (see *Parkinsonia florida*)

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

Cercidium microphyllum (see *Parkinsonia microphylla*)

***Coursetia glandulosa* A. Gray: Rosary Babybonnets**

SYNONYMY: *Coursetia microphylla* A. Gray. COMMON NAMES: Arí (Hispanic), Baby Bonnets, Chino, Chipile, Chipilillo, Coursetia, Cousamo, Lac Bush, Rosary Babybonnets, Samo (Tarahumara), Samo Prieto, Samota, Samotum (Samodum or úsapdum - usap is the word used for the sap of this plant, Pima Bajo), Sámu (Hispanic), Tepechipile, Zamota (Hispanic). DESCRIPTION: Terrestrial perennial (winter deciduous in Arizona) shrub (3 to 20 feet in height); the bark on the slender branches is light gray, grayish or gray; the leaves are grayish-green; the flowers may be cream & yellow, lavender & cream, lemon-yellow, pink, white, white-yellow, pale yellow, yellowish or yellow & white often tinged with lavender, pink, purple or red; flowering generally takes place between early December and late May (additional records: one for late June and one for mid-November); the mature seed pods (1 to 2 inches in length) are brown. HABITAT: Within the range of this species it has been reported from mountains; rocky mountainsides; rocky canyons; rocky sides of canyons; bouldery and rocky canyon bottoms; bases of cliffs; ridges; foothills; rocky hills; rocky hilltops; rocky and gravelly hillsides; bedrock and rocky slopes; gravelly alluvial fans; bajadas; rock outcrops; amongst boulders and rocks; sandy-loamy plains; flats; basins; sandy valley floors; coastal flats; roadsides; rocky arroyos; rocky and sandy bottoms of arroyos; along bottoms of ravines; springs; along rocky streams; along and in rocky, gravelly-sandy, sandy and sandy-loam washes; drainages; (rocky) edges of streambeds and washes; (rocky) margins of arroyos, and riparian areas growing in dry bouldery, rocky, rocky-sandy, gravelly, gravelly-sandy and sandy ground and sandy loam ground, occurring from sea level to 4,300 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 sealant crop (the transparent yellowish-brown gum was mixed with adobe to make jars of syrup air tight). An orange-colored lac may be observed on the stems of the plant that is produced by the feeding of an insect in the genus *Tachardiella*. The Broad-billed Hummingbird (*Cynanthis latirostris*) has been observed visiting the flowers. *Coursetia glandulosa* is native to southwest-central and southern North America. *5, 6, 10, 13, 15, 28 (, recorded as *Coursetia microphylla*, color photograph), 30, 43 (020910), 46 (recorded as *Coursetia microphylla* Gray, Page 443), 63 (020910 - color presentation of seeds), 77 (color photograph #33), **85** (020910 - color presentation), 91, 115 (color presentation), 127*

Coursetia microphylla (see *Coursetia glandulosa*)

***Dalea neomexicana* (A. Gray) V.L. Cory (var. *neomexicana* is the variety reported as occurring in Arizona): Downy Prairie Clover**

COMMON NAMES: Downy Prairie Clover, New Mexico Dalea, New Mexican Indigo Pea. DESCRIPTION: Terrestrial perennial forb/herb (2 to 12 inches in height); the leaves are blue-green; the flowers may be lavender, lavender & dull lavender, pink, purple, purple & white, white or white tinged with red-violet; flowering generally takes place between mid-February and late November (Kearney and Peebles in Arizona Flora describes the flowering period as being December to May); the mature fruits are fuzzy and white. HABITAT: Within the range of this species it has been reported from mountains; canyons; ridges; rocky and gravelly hills; gravelly-clayey-loamy and sandy hillsides; rocky bases of mountains and hills; sandy slopes; bajadas; valley floors; along rocky, gravelly and gravelly-loamy roadsides; bottoms of arroyos; along creekbeds; sandy washes; drainages; floodplains, and disturbed areas growing in dry rocky, gravelly and sandy ground; gravelly loam and gravelly-clayey loam ground, and silty ground, occurring from 400 to 5,300 feet in elevation in the grassland and desertscrub ecological formations. NOTE: *Dalea neomexicana* is native to southwest-central and southern North America. *5, 6, 18 (genus), 43 (020910), 46 (Pages 436-437), 63 (020910 - color presentation), 77, **85** (020910 - color presentation)*

Dalea parryi (see *Marina parryi*)

***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 draws; 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)*

***Desmanthus covillei* (N.L. Britton & J.N. Rose) I.L. Wiggins *ex* B.L. Turner: Coville's Bundleflower**

COMMON NAMES: Bundleflower, Coville Bundleflower, Coville's Bundleflower, Hiitepoa (Yaqui). DESCRIPTION: Terrestrial perennial drought deciduous forb/herb or subshrub (13 inches to 8 feet in height); the leaves are green; the flowers are cream, white, yellow, yellowish-green, yellowish-white or yellowish & white; flowering generally takes place between late July and late October (additional records: one for mid-January, one for mid-February, one for late March, one for mid-November and one for late November). HABITAT: Within the range of this species it has been reported from mountains; mesas; rocky canyons; canyonsides; rocky, rocky-sandy and sandy canyon bottoms; rocky hills; rocky peaks (cerros); bouldery and rocky hillsides; rocky, rocky-clayey and cobbly slopes; bajadas; amongst boulders and rocks; plains; flats; valley bottoms; coastal plains; gravelly roadsides; arroyos; waterholes; sloughs; edges of ponds; rocky-(sandy) margins of watercourses; benches; riparian areas, and disturbed areas growing in wet and dry bouldery, rocky, rocky-sandy, cobbly, gravelly, pebbly, gravelly, gravelly-sandy and sandy ground and rocky clay ground, occurring from sea level to 3,900 feet in elevation in the scrub, desertscrub and wetland ecological formations. NOTE: This plant is sometimes described as being a small rounded shrub with dense foliage. Maso (Yaqui name for the White-tailed Deer) reportedly browse this plant. *Desmanthus covillei* is native to southwest-central and southern North America. *5, 6, 8, 43 (021010 - *Desmanthus covillei* (N.L. Britton & J.N. Rose) I.L. Wiggins in B.L. Turner), 46 (genus - no species record, Page 401), 63 (021010), 77, **85** (021010 - color presentation of dried material), 91*

***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)*

***Lupinus concinnus* J.G. Agardh: Bajada Lupine**

COMMON NAMES: Annual Lupine, Bajada Lupine, Bluebonnet, Elegant Lupine, Lupine, Scarlet Lupine. DESCRIPTION: Terrestrial annual forb/herb (3 to 18 inches in height); the woolly herbage is grayish or gray-green; the flowers may be blue, blue-magenta, blue-purple, blue &white, blue & light yellow, deep blue-purple & white, cream & purple, cream & rose-purple, pale lavender, dark lavender, lavender-pink, lavender-purple, lavender-rose, lavender & white, magenta-lavender, pink, pinkish-blue, pink-lavender, pink-purple & white-cream, pink-purple &white tinged with lavender, pink & white, light purple & yellow, purple, purplish, purple-lavender, purple-magenta, purple-magenta & white, purple-pink, purple & white, purple & yellow, red-purple, reddish-purple, violet, white rimed with pink, yellow & pink or yellowish-purplish; flowering generally takes place between late February and late June. HABITAT: Within the range of this species it has been reported from mountains; rocky mountainsides; gravelly, sandy and sandy-clayey-loamy mesas; rocky canyons; rocky and sandy canyon bottoms; chasms; bases of cliffs; clayey ridges; sandy ridgetops; ridgelines; openings in forests; sandy

foothills; rocky hills; sandy hillsides; along bouldery, rocky, rocky-gravelly-sandy, gravelly, clayey-loamy and clayey slopes; rocky-sandy alluvial fans; bajadas; amongst boulders and rocks; blow-sand deposits; sandy banks; sandy and sandy-silty plains; gravelly and sandy flats; basins; sandy-silty valley floors; along gravelly, gravelly-sandy and sandy roadsides; within arroyos; gulches; around streams; rocky streambeds; along creeks; along and in gravelly-sandy and gravelly-silty creekbeds; along rivers; sandy riverbeds; along and in rocky-sandy, gravelly, gravelly-sandy and sandy washes; within rocky drainage ways; (sandy) banks of arroyos, creeks, rivers and washes; along (cobbly) edges of rivers and washes; along margins of washes; gravelly and sandy benches; sandy terraces; gravelly and loamy bottomlands; rocky-sandy, cobbly-sandy, gravelly and sandy floodplains; along ditches; along gravelly-clayey-loamy banks of ditches; rocky-sandy, gravelly-sandy and sandy riparian areas; recently burned areas in woodlands, and disturbed areas growing in dry bouldery, rocky, rocky-gravelly-sandy, rocky-sandy, cobbly, cobbly-sandy, gravelly, gravelly-sandy and sandy ground; gravelly-sandy loam, gravelly-clayey loam, sandy loam, sandy-clayey loam, clayey loam and loam ground; rocky clay, cobbly clay, loamy clay and clay ground, and gravelly silty and sandy silty ground, occurring from 200 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. *Lupinus concinnus* is native to southwest-central and southern North America. *5, 6, 16, 18 (genus), 28 (color photograph), 43 (021110), 46 (Page 417), 48 (genus), 58, 63 (021110 - color presentation), 77 (color photograph #80), 80 (Some, but not all, species of the genus *Lupinus* are considered to be Secondary Poisonous Range Plants. "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), 115 (color presentation)*

***Marina parryi* (J. Torrey & A. Gray) R.C. Barneby: Parry's False Prairie-clover**

SYNONYMY: *Dalea parryi* J. Torrey & A. Gray. COMMON NAMES: Parry Dalea, Parry Indigo Pea, Parry Marina, Parry False Prairie-clover, Parry's False Prairie-clover, Parry's False Prairieclover, Parry's Indigobush, Silk Dalea. DESCRIPTION: Terrestrial perennial forb/herb or subshrub (8 to 50 inches in height, one plant was described as being 16 inches in height with a crown 16 inches in width, plants were described as being 30 inches in height with a crown 40 inches in width); the reddish-purple stems are more or less woody; the leaves are gray-green or green; the flowers are blue, blue-violet, blue & white, dark blue-indigo, indigo, indigo-blue, indigo & blue-purple, deep indigo, deep indigo-violet, magenta-violet, purple, purplish, purple-blue, purple-indigo, purple & white, violet or yellow; flowering generally takes place between late December and early June and again from late August to early December. HABITAT: Within the range of this species it has been reported from mountains; rocky mountainsides; rocky canyons; rocky canyon sides; rocky, gravelly and gravelly-sandy canyon bottoms; rocky talus; rocky ridgetops; foothills; hills; hilltops; rocky, rocky-sandy and sandy hillsides; along bouldery, rocky, stony, gravelly, gravelly-loamy, sandy and sandy-silty slopes; rocky and sandy alluvial fans; bajadas; rocky outcrops; amongst rocks; sand dunes; gravelly-sandy outwash fans; gravelly-sandy-loamy and sandy plains; rocky, gravelly, gravelly-sandy and sandy flats; basins; sandy valley floors; beach dunes; coastal shores; along gravelly and silty-clayey roadsides; along and in rocky, gravelly-sandy-loamy and sandy arroyos; along sandy-silty bottoms of arroyos; gulches; rocky gullies; silty springs; along streams; streambeds; creekbeds; along and in rocky, gravelly and sandy washes; within drainage ways; silty depressions; along (sandy) banks of arroyos, creeks and lakes; (gravelly-sandy and sandy) edges of washes and tinajas; mudflats; gravel and sand bars; sandy riparian areas, and disturbed areas growing in dry desert pavement; rocky, rocky-sandy, stony, gravelly, gravelly-sandy and sandy ground; gravelly-loam, gravelly-sandy loam and loam ground; silty clay ground, and silty ground,

occurring from sea level to 4,700 feet in the woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. *Marina parryi* is native to southwest-central and southern North America. *5, 6, 15, 16, 28 (recorded as *Dalea parryi*, color photograph), 43 (021210), 46 (recorded as *Dalea parryi* Torr. & Gray, Page 436), 63 (021210 - color presentation), 77, **85** (021210 - color presentation), 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*

***Nissolia schottii* (J. Torrey) A. Gray: Schott's Yellowhood**

COMMON NAMES: Schott Yellowhood, Schott's Yellowhood. DESCRIPTION: Terrestrial perennial forb/herb or vine (twining stems 9 to 16 feet in length); the flowers are orange-yellow or yellow; flowering generally takes place between mid-July and early October (additional records: one for mid-March, one for late March and one for late May, flowering ending as late as November has been reported). HABITAT: Within the range of this species it has been reported from mountains; flanks of mountains; rocky canyons; rocky-sandy canyon bottoms; ledges; ridges; ridgetops; foothills; stony and gravelly hills; rocky hillsides; bedrock, bouldery, rocky and gravelly slopes; bottoms of slopes; bases of boulders; cobbly plains; gravelly-sandy flats; basins; coastal plains; along roadsides; arroyos; bottoms of

arroyos; along rocky draws; along streams; along and in washes; (gravelly) banks of arroyos; rocky benches, and rocky and gravelly riparian areas growing in dry bouldery, rocky, rocky-sandy, stony, cobbly, gravelly, gravelly-sandy and sandy ground, occurring from sea level to 5,000 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This woody vine may be an attractive component of a restored native habitat, and it is often found climbing over or up through shrubs and small trees. The stems, leaves and flowers are browsed by quail and White-tailed Deer (*Odocoileus virginianus couesi*). *Nissolia schottii* is native to southwest-central and southern North America. *5, 6, 15, 16, 43 (021310 - *Nissolia schottii* A. Gray), 46 (Page 472), 58, 63 (021310 - color photograph of seedpod), 77, **85** (021310 - color presentation of dried material)*

***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** (September 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*

***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** (September 4, 2005)*

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** (September 4, 2005)*

***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)*

***Sphinctospermum constrictum* (S. Watson) J.N. Rose: Hourglass Peaseed**

COMMON NAME: Hourglass Peaseed, Tight Sphincter Seed. DESCRIPTION: Terrestrial annual forb/herb (6 to 9 inches in height); the stems are delicate; the inconspicuous flowers are light blue, cream, lavender, pale purple or purple; flowering generally takes place between mid-August and early October (flowering beginning as early as July has been reported); the seeds are shaped like an hourglass. HABITAT: Within the range of this species it has been reported from mountains; canyons; rocky hills; rocky hilltops; rocky hillsides; rocky slopes; rocky outcrops; grassy flats; cobbly roadbeds; roadsides; along sandy washes; floodplains, and sandy riparian areas growing in dry rocky, cobbly and sandy ground, occurring from 100 to 5,600 feet in elevation in the forest, scrub, grassland, desertscrub and wetland ecological formations. NOTE: *Sphinctospermum constrictum* is native to southwestern and southern North America. *5, 6, 16, 43 (021710), 46 (Page 444), 63 (021710 - color presentation of seed), 77, **85** (021710 - color presentation)*

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)*

***Vicia ludoviciana* T. Nuttall subsp. *ludoviciana*: Louisiana Vetch**

SYNONYMY: *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

(sprawling or twining stems 4 inches to 3 feet in height/length); the flowers are pale blue, pale blue & white, blue, bluish-purple, bluish-white, blue & white, cream, cream & purple, light lavender, lavender, lavender-white, pink, pinkish; pinkish-purple, pinkish, pinkish-white, pale purple, purplish-blue, sky blue, violet, violet & white, white, white & blue-lavender or white-lavender; flowering generally takes place between early March and late May (additional records: one 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; rock cliffs; canyons; bouldery, rocky and gravelly-sandy canyon bottoms; talus slopes; bases of cliffs; crevices in lava flows; grassy bluffs; buttes; knolls; ledges; rocky ridgetops; foothills; rocky hills; bouldery, rocky, rocky-gravelly and rocky-clayey hillsides; rocky escarpments; rocky, rocky-gravelly, rocky-gravelly-loamy, rocky-loamy, rocky-clayey, stony, gravelly, gravelly-loamy, sandy, loamy and clayey slopes; rocky outcrops; amongst boulders and rocks; sandy lava flows; lava fields; gravelly-sandy prairies; loamy and clayey flats; basins; valley floors; railroad right-of-ways; along rocky-gravelly-loamy, rocky-loamy, rocky-sandy, gravelly, sandy-loamy and clayey-loamy roadsides; within rocky and sandy arroyos; gullies; seeps; along sandy streams; along and in streambeds; along creeks; along rivers; along sandy-loamy riverbeds; along and in rocky, rocky-gravelly, rocky-loamy, gravelly-loamy and sandy washes; within sandy drainage ways; in rocks around ponds; swampy areas; sandy-silty and silty depressions; banks of streams and washes; edges of washes; bottomlands; loamy floodplains; mesquite bosques; 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, gravelly loam, sandy loam, clayey loam and loam ground; rocky clay and clay ground, and sandy 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: *Vicia ludoviciana* subsp. *ludoviciana* is native to south-central and southern North America. *5, 6, 15, 43 (021810), 46 (*Vicia exigua* Nutt.), 48 (genus), 58 (reported as *Vicia ludoviciana* Nutt.), 63 (021810 - color presentation of seed), 77 (reported as *Vicia ludoviciana* Nutt.), 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)*

***Zapoteca formosa* (K.S. Kunth) H.M. Hernández subsp. *schottii* (J. Torrey ex S. Watson) H.M. Hernández: Schott's Stickpea**

SYNONYMY: *Calliandra schottii* J. Torrey ex S. Watson. COMMON NAMES: Schott Calliandra, Schott Stickpea, Schott's Stickpea. DESCRIPTION: Terrestrial perennial deciduous (drought and cold) subshrub (erect stems 20 inches to 10 feet in height); the stems are straw-colored; the flowers (3/8 inch in diameter) are pinkish, white with pink tips, whitish or yellowish; the anthers are yellow; flowering generally takes place between late May and late August (flowering records: one for late May, one for late June and one for late August, flowering in April has also been reported, and flowering as late as September and October has also been reported). HABITAT: Within the range of this species it has been reported from mountains; rocky canyons; canyon bottoms; foothills; rocky hilltops; rocky hillsides; rocky slopes; amongst boulders; rocky draws, and along streams growing in dry rocky ground, occurring from 800 to 5,200 feet in elevation in the woodland, grassland and desertscrub ecological formations. NOTE: *Zapoteca formosa* subsp. *schottii* is native to southwest-central and southern North America. *5, 6, 13 (recorded as *Calliandra schottii* Torrey), 43 (083010), 46 (recorded as *Calliandra schottii* Torr., Page 397), 63 (083010 - color presentation of seed and pod), 77 (recorded as *Calliandra schottii* Torr. subsp. *schottii* (Torr. ex S. Wats.) H. Hern.), **85** (083010 - color presentation of dried material), 91*

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, **WTK** (September 4, 2005)*

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

Geraniaceae: The Geranium Family

***Erodium cicutarium* (C. Linnaeus) C.L. L'Héritier de Brutelle ex W. Aiton (subsp. *cicutarium* is the subspecies reported as occurring in Arizona): Redstem Stork's Bill**

COMMON NAMES: Afilaree, Agujitas (Hispanic), Alfilaree, Alfilaria, Alfilerilla, Alfirerillo (Hispanic), Arete (Hispanic), Clocks, Common Stork's Bill, Cranesbill, Cutleaf Filaree, Filaree, Heron-bill, Heronbill, Heron's-bill, Pikuku Jasi (Purépecha), Pin-clover, Pinclover, Pingrass, Purple Filaree, Red-stem Filaree, Redstem Filaree, Redstem Stork's Bill, Redstem Stork's-bill, Storksbill, Semuchi (Hispanic), Storksbill. DESCRIPTION: Terrestrial annual or biennial forb/herb (prostrate to 1 foot in height/length); the flowers may be blue, blue-violet, fuchsia, lavender, lavender-pink, lilac, magenta,

magenta-lavender, magenta-rose, pink, pink-lavender, pink-magenta, pink-purple, pinkish-violet, purple, purple-pink, rose-lavender or violet; flowering generally takes place between late December and early August (additional records: one for late August, one for early September, two for late September, five for early October, one for mid-October and one for early November). HABITAT: Within the range of this species it has been reported from rocky mountains; bouldery mountainsides; gravelly, gravelly-sandy and sandy mesas; plateaus; along and in rocky canyons; bouldery-gravelly-sandy canyon bottoms; clayey-cindery talus slopes; buttes; knolls; rocky ledges; bouldery and gravelly ridges; ridgetops; meadows; cinder cones; rocky and sandy foothills; bouldery and rocky hills; rocky-gravelly hilltops; bouldery, rocky, rocky-gravelly and gravelly hillsides; bouldery, rocky, rocky-pebbly-clayey-loamy, rocky-loamy, rocky-loamy-clayey, rocky-clayey, stony, cindery, gravelly, gravelly-sandy, gravelly-loamy, gravelly-clayey, sandy, sandy-clayey-loamy, loamy and clayey slopes; rocky alluvial fans; sandy bases of alluvial fans; rocky and gravelly bajadas; rocky outcrops; amongst rocks; lava flows; sand and sandy-clayey dunes; steppes; prairies; plains; gravelly, gravelly-sandy, sandy and loamy flats; rocky basins; valley floors; valley bottoms; coastal plains; along cindery railroad right-of-ways; rocky roadbeds; along rocky, gravelly, gravelly-sandy-clayey-loamy and sandy roadsides; along rocky-sandy arroyos; along bottoms of arroyos; gravelly draws; gulches; ravines; seeps; springs; along streams; streambeds; along creeks; along sandy creekbeds; sandy riverbeds; along and in rocky, rocky-sandy, gravelly, gravelly-sandy and sandy washes; along and in sandy and silty drainages; in rocks around ponds; silty lakebeds; gravelly depressions; swales; banks of rivers, ponds and lakes; (rocky, sandy and muddy) edges of springs and washes, salt marshes and washes; shores of lakes; rocky-sandy and stony loamy benches; rocky terraces; sandy and loamy bottomlands; sandy floodplains, mesquite bosques; margins of stock tanks; along ditches; recently burned areas; riparian areas; waste places, and disturbed areas growing in moist, damp and dry bouldery, bouldery-gravelly-sandy, rocky, rocky-gravelly, rocky-sandy, stony, cindery, gravelly, gravelly-sandy and sandy ground; rocky-pebbly-clayey loam, rocky loam, stony loam, gravelly loam, gravelly-sandy loam, gravelly-sandy-clayey loam, sandy loam, sandy-clayey loam, clayey loam, silty-clayey loam and loam ground, and rocky clay, rocky-loamy clay, gravelly clay, sandy clay and clay ground, occurring from sea level to 9,400 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 for food, as fodder, for protection (dried and powdered plant parts were mixed with watermelon seeds during storage and planting to prevent disease), as a drug or medication and as a ceremonial item. The fruits are collected by Harvester Ants. *Erodium cicutarium* is native to northern, central, eastern and southern Europe; northern, western, central and southern Asia, and northern Africa. *5, 6, 15, 16, 22 (color photograph), 28 (color photograph), 30, 43 (021910 - *Erodium cicutarium* (L.) L'Hér. *ex* Aiton), 46 (Page 486), 58, 63 (021910 - color presentation), 77, 80 (This species is listed as a Secondary Poisonous Range Plant. "Filaree is a valuable forage plant that furnishes good forage in both the green and dry state. However, plants occasionally develop high concentrations of nitrate that may cause loss of livestock. In Arizona, there have been several instances of heavy death loss in cattle showing typical symptoms of nitrate poisoning that have been associated with high nitrate content in Filaree plants. ... Danger is highest during the flush period of growth. ... Control of Filaree is not generally desirable because of its forage value, therefore, animals may need to be moved to less dangerous pastures during the critical period." See text for additional information.), 85 (021910 - C.H. Bowen reported the following in a collection record dated May 13, 1920: "This plant is a native of the Mediterranean region having spread from there over large portions of Europe, Asia, Africa and North and South America. It is believed to have been introduced into the western hemisphere by the early Spanish explorers either in Mexico or Central America and later in California from whence it has spread over considerable areas principally in California, Nevada, Utah, Arizona and New Mexico. It seems to thrive best between elevations of 1500 and 4500 feet and where abundant is often considered to double the spring carrying capacity of the range. Relished by all classes of stock especially by sheep.", color presentation), 86 (color photograph), 101 (color photograph), 115 (color presentation), 127, **HR***

Hydrophyllaceae: The Waterleaf Family

***Nama hispidum* A. Gray: Bristly Nama**

SYNONYMY: *Nama hispidum* A. Gray var. *mentzelii* A. Brand, *Nama hispidum* A. Gray var. *revolutum* W.L. Jepson, *Nama hispidum* A. Gray var. *spathulatum* (J. Torrey) C.L. Hitchcock. COMMON NAMES: Bristly Nama, Hispid Nama, Hohr-oohit (Seri), Morada, Purple Mat, Purple Roll-leaf, Rough Nama, Sand Bells, Sandbells. DESCRIPTION: Terrestrial annual forb/herb (2 inches to 1 foot in height and up to 16 inches in width, plants were reported that were 3½ inches in height and 7 inches in width, plants were reported that were 3 inches in height and 9½ inches in width, plants were reported that were 4 inches in height and width, plants were reported that were 4 inches in height and 8 inches in width,, one plant was reported to be 6 inches in height and 3½ inches in width, one plant was reported to be 10 inches in height and 12 inches in width); the leaves are pale green or white; the flowers may be blue, blue-purple, dark blue, pale lavender, lavender, lavender-pink, magenta, pink-purple, pinkish-lavender, pinkish-magenta, pinkish-purple, purple, purple-magenta; purple-white, red-purple, rose, rose-magenta, violet, violet-blue or white; flowering generally takes place between late January and early November (additional records: two for mid-December). HABITAT: Within the range of this species it has been reported from mountains; cobbly-gravelly-loamy mountainsides; gravelly-sandy-loamy and sandy mesas; plateaus; canyons; sandy canyon bottoms; talus slopes; knolls; sandy foothills; sandy hills; rocky-sandy hilltops; escarpments; bedrock, rocky, sandy and sandy-clayey-loamy slopes; gravelly and sandy alluvial fans; sandy bajadas; lava flows; lava beds; sand hills; sand dunes; sand hummocks; sandy-clayey prairies; sandy plains; gravelly, gravelly-loamy, sandy and sandy-clayey-loamy flats; sandy valley floors; coastal plains; beach dunes; along gravelly, gravelly-sandy, gravelly-loamy, gravelly-sandy-loamy, sandy, sandy-loamy and clayey roadsides; rocky, sandy and sandy-loamy arroyos; sandy bottoms of arroyos; rocky, gravelly and sandy draws; sandy bottoms of draws; ravines; along streams; along sandy streambeds; along creeks; along sandy rivers; rocky-cobbly-sandy and sandy riverbeds; along and in rocky-sandy, gravelly, gravelly-sandy, gravelly-sandy-silty, sandy and clayey washes; sandy-silty playas; swales; along (sandy and silty) banks of streams, rivers and washes; along (gravelly-sandy) edges of streams and playas; (rocky-sandy) shores of lakes; sandy beaches; benches; terraces, sandy bottomlands; lowlands; cobbly, cobbly-silty, sandy, clayey and silty floodplains; margins of stock tanks; canal walls; along ditches; ditch banks; sandy riparian areas, and disturbed areas growing in dry desert pavement; rocky, rocky-cobbly-sandy, rocky-gravelly, rocky-sandy, cobbly, gravelly, gravelly-sandy and sandy ground; cobbly-gravelly loam, gravelly loam, gravelly-sandy loam, gravelly-sandy-clayey loam, sandy loam, sandy-clayey loam and loam ground; sandy clay, silty clay and clay ground; cobbly silty, gravelly-sandy silty, sandy silty and silty ground, and silty powdery ground, occurring from sea level to 6,800 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. 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. *Nama hispidum* is native to southwest-central and southern North America. *5, 6, 15, 16, 43 (022110 - *Nama hispida* A. Gray, *Nama hispida* A. Gray var. *mentzelii* Brand, *Nama hispidum* A. Gray var. *revoluta* Jepson and *Nama hispida* A. Gray var. *spathulata* (Torr.) C.L. Hitchc.), 46 (Page 706), 58, 63 (022110 - color presentation), 77, **85** (022210 - color presentation), 115 (color presentation), 127*

Nama hispidum var. *mentzelii* (see *Nama hispidum*)

Nama hispidum var. *revolutum* (see *Nama hispidum*)

Nama hispidum var. *spathulatum* (see *Nama hispidum*)

***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*

***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* C. Linnaeus: Ratany**

COMMON NAMES: Ratany *43 (062710 - *Krameria* Loefl.), 46 (Pages 403-404), 63 (062710 - color presentation), 85 (062710 - color presentation), **HR***

***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*

Lamiaceae (Labiatae): The Mint Family

***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)*

***Teucrium cubense* N.J. von Jacquin (var. *densum* is the variety reported as occurring in Arizona): Small Coastal Germander**

COMMON NAMES: Coast Germander, Combleaf Germander, Germander, Small Coast Germander, Small Coastal Germander. DESCRIPTION: Terrestrial annual or perennial forb/herb (6 to 28 inches in height); the flowers are pale blue, pale bluish, pale lavender, lavender, violet & white or white; flowering generally takes place between early March and mid-May (additional records: one for late February, one for late June, one for late July, one for early August, two for mid-September, two for early October, one for mid-October, two for late October, one for mid-November and two for early December). HABITAT: Within the range of this species it has been reported from sand dunes; sandy and sandy-silty flats; sandy-clayey basins; valley floors; sandy-silty valley bottoms; along sandy roadsides; arroyos; along draws; within gullies; seeps; along streams; streambeds; along creeks; in sand along rivers; sandy, sandy-silty, clayey-loamy and silty riverbeds; along and in gravelly-sandy and sandy washes; around vernal pools; beds of vernal pools; playas; sloughs, banks of rivers and washes; edges of washes and poolbeds; margins of pools and poolbeds; bottomlands; floodplains; mesquite bosques; muddy-clayey margins of stock tanks (charcos, repressos); silted-in reservoirs; along canals; along ditches; sandy-silty riparian areas, and disturbed areas growing in muddy and wet, moist, damp and dry gravelly-sandy and sandy ground; clayey loam soils; rocky-silty clay, sandy-clay and clay ground, and 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: *Teucrium cubense* is native to southwest-central and southern North America. *5, 6, 16, 43 (022810), 46 (Page 733), 63 (022810 - color presentation), 77, **85** (022810)*

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 affinis* E.L. Greene: Yellowcomet**

COMMON NAMES: Blazing Star, Pega Pega, Stickleaf, Stickleaf Blazing Star, Triangle-seed, Yellowcomet. DESCRIPTION: Terrestrial annual forb/herb (6 to 20 inches in height); the flowers are orange-yellow, pale yellow or yellow; flowering generally takes place between mid-February and mid-May (flowering beginning as early as January and ending as late as June has also been reported). HABITAT: Within the range of this species it has been reported from mountains; gravelly mesas; stony canyons; talus slopes; bases of cliffs; knolls; rocky ledges; foothills; sandy hills; rocky and sandy-loamy hillsides; bases of hills; rocky and gravelly slopes; rocky-shaley outcrops; amongst rocks; bases of rocks; lava fields; berm-like sand dunes; sandy plains; sandy and sandy-clayey flats; sandy valley floors; coastal dunes; along gravelly-sandy, sandy and clayey roadsides; along and in gravelly-sandy and sandy washes; banks of streams and washes; edges of washes; loamy benches; terraces; floodplains; silty stock tanks

(charcos); recently burned areas of chaparral, and disturbed areas growing in dry desert pavement; rocky, rocky-shaley, rocky-sandy, stony, gravelly, gravelly-sandy and sandy ground; gravelly-silty-clayey loam ground, and sandy clay and clay ground, occurring from sea level to 4,500 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. *Mentzelia affinis* is native to southwest-central and southern North America. *5, 6, 18 (genus), 43 (072010), 46 (Page 565), 48 (genus), 63 (072010), 77, **85** (080710 - color presentation), 127*

***Mentzelia multiflora* (T. Nuttall) A. Gray: Adonis Blazingstar**

COMMON NAMES: Adonis Blazing Star, Adonis Blazing-star, Adonis Blazingstar, Adonis Stickleaf, Blazing Star, Blazingstar, Desert Blazingstar, Desert Mentzelia, Desert Stickleaf, Manyflowered Mentzelia, Many Flowered Stickleaf, Stickleaf. DESCRIPTION: Terrestrial biennial or perennial forb/herb (6 to 40 inches in height, one plant was described as being 6 inches in height with a crown 9 inches in width, plants were described as being 8 inches in height and 4 inches in width); the stems are gray-green, white or whitish; the leaves are gray-green, green, silvery-white or yellow-green; the flowers are cream, lemon-yellow, orange-yellow, white-yellow, pale yellow, yellow or yellow-white; flowering generally takes place between late February and mid-December (additional records: one for mid-January and one for late January). HABITAT: Within the range of this species it has been reported from mountains; mountainsides; cindery flanks of mountains; rocky-gravelly, gravelly and sandy mesas; plateaus; cliffs; rocky walls; rocky, rocky-sandy, shaley and sandy canyons; rocky gorges; canyon sides; sandy canyon bottoms; cindery and chalky talus slopes; bases of cliffs; crevices in rocks; rocky and sandy bluffs; shaley-clayey and clayey knolls; along rocky ridges; meadows; cinder cones; sandy crater floors; gravelly foothills; rocky, cindery, sandy and clayey hills; hilltops; rocky, gravelly and clayey hillsides; sandy escarpments; rocky, rocky-gravelly, rocky-sandy, rocky-silty-clayey, shaley, shaley-gravelly, cindery, gravelly, gravelly-loamy, sandy, sandy-loamy and clayey slopes; alluvial fans; bajadas; rocky outcrops; sandy lava flows; sand hills; sand and gypsum dunes; sand hummocks; rocky-sandy and sandy steppes; sandy, sandy-clayey and clayey prairies; sandy plains; cindery, gravelly, gravelly-sandy, gravelly-loamy, sandy, clayey and silty flats; sandy-silty basins; sandy and clayey valley floors; along railroad right-of-ways; along rocky, cindery, gravelly, gravelly-sandy, gravelly-sandy-loamy, gravelly-loamy, gravelly-clayey, sandy, sandy-loamy, sandy-clayey and clayey roadsides; stony arroyos; rocky and sandy bottoms of arroyos; within draws; gravelly gulches; within ravines; springs; along streams; along and in rocky and sandy streambeds; along and in creeks; rocky-sandy creekbeds; along rivers; rocky, rocky-sandy and sandy riverbeds; along and in rocky-sandy, gravelly, gravelly-sandy, gravelly-sandy-silty and sandy washes; within rocky drainages; along drainage ways; along (gravelly, sandy, sandy-silty and clayey) banks of streams, creeks, rivers and washes; (sandy) edges of washes; along (sandy) shores of rivers; gravel and sand bars; sandy benches; terraces; rocky, rocky-sandy and sandy bottomlands; gravelly-sandy-silty and sandy floodplains; mesquite bosques; along canals; sandy-loamy ditches; gravelly, gravelly-sandy, gravelly-sandy-silty, sandy and sandy humus riparian areas, and disturbed areas growing in dry bouldery-rocky-gravelly, rocky, rocky-gravelly, rocky-sandy, shaley, shaley-gravelly, stony, cindery, gravelly, gravelly-sandy and sandy ground; gravelly loam, gravelly-sandy loam, sandy loam, silty loam and loam ground; bouldery-gravelly-sandy clay, rocky-silty clay, gravelly clay, sandy clay, silty clay and clay ground; gravelly-sandy silty, sandy silty, powdery silty and silty ground; sandy humusy ground, and chalky ground, occurring from 100 to 9,100 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 commodity used as a ceremonial item. *Mentzelia multiflora* is native to southwest-central and southern North America. *5, 6, 16, 18 (genus), 43 (072209), 46 (recorded as *Mentzelia pumila* (Nutt.) Torr. & Gray, Page 566; *Mentzelia pumila* (Nutt.) Torr. & Gray var. *integra* Jones, Page 566 and

Mentzelia pumila (Nutt.) Torr. & Gray var. *multiflora* (Nut.) Urban & Gilg, Page 566), 48 (genus), 63 (030210 - color presentation), **85** (030210 - color presentation), 115 (color presentation), 127*

Mentzelia pumila (see footnote 46 under *Mentzelia multiflora*)

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** (September 4, 2005)*

Malvaceae: The Mallow Family

Abutilon crispum (see *Herissantia crispa*)

***Abutilon incanum* (J.H. Link) R. Sweet: Pelotazo**

SYNONYMY: *Abutilon incanum* (J.H. Link) R. Sweet subsp. *incanum* (J.H. Link) R. Sweet, *Abutilon incanum* (J.H. Link) R. Sweet subsp. *pringlei* (B.P. Hochreutiner) R.S. Felger & R.T. Lowe, *Abutilon pringlei* B.P. Hochreutiner. COMMON NAMES: Hoary Abutilon, Hoary Indian Mallow, Indian Mallow, Pelotazo (Spanish), Pelotazo Chico, Pringle Abutilon, Pringle's Abutilon, Pringle Indian Mallow, Shrubby Indian Mallow, Tronadora. DESCRIPTION: Terrestrial perennial evergreen forb/herb or subshrub (8 inches to 7 feet, sometimes up to 13 feet, in height, one plant was reported to be 8 inches in height with a crown 8 inches in width, one plant was reported to be 12 inches in height with a crown 16 inches in width, one plant was reported to be 30 inches in height with a crown 30 inches in width); the stems are gray, the leaves are grayish or gray-green; the flowers may be cream, cream & red, lavender,

pale orange, orange, orange-red, orange-yellow, orange-yellowish, peach & maroon, light pink, pink, dark red, salmon, white, white & pink, yellow-orange, yellowish-pink, yellow, yellow-gold or yellow-salmon sometimes with dark crimson, maroon, deep maroon, purple, red dark red centers (basal spots); 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 bouldery and rocky mountains; mountaintops; bases and lower slopes of mountains; rocky crags; rocky mesas; rocky crags; rocky cliffs; rocky canyons; along bouldery, bouldery-sandy and rocky canyon bottoms; rocky and clayey-loamy talus slopes; crevices in rocks; buttes; knolls; ridgetops; rocky ridgelines; foothills; rocky and stony hills; rocky and gravelly hillsides; bouldery-rocky-sandy, rocky, rocky-sandy, gravelly and gravelly-sandy slopes; volcanic plugs; rocky outcrops; amongst boulders; gravelly plains; gravelly and sandy flats; basins; valley floors; coastal plains; gravelly roadsides; along rocky arroyos; rocky bottoms of arroyos; around seeping streams; along and in rocky streambeds; along and in gravelly, sandy and clayey-loamy washes; within drainages; swales; banks of lakes; beaches; benches; mesquite bosques; riparian areas, and disturbed areas growing in wet and dry bouldery, bouldery-rocky-sandy, bouldery-sandy, rocky, rocky-sandy, stony, gravelly, pebbly, gravelly, gravelly-sandy and sandy ground; gravelly-sandy loam and clayey loam ground, and rocky clay and clay 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. 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. *Abutilon incanum* is native to southwest-central and southern North America and possibly to the North-central Pacific Islands (Hawaii). *5, 6, 13, 15, 16 (recorded as *Abutilon incanum* (Link.) Sweet subsp. *pringlei* (Hochr.) Felger & Lowe), 18 (genus), 28 (color photograph), 43 (030410 - *Abutilon incanum* subsp. *pringlei* (Hochr.) Felger), 46 (recorded as *Abutilon pringlei* Hochr., Page 539 and *Abutilon incanum* (Link) Sweet, Page 539), 63 (030410 - color presentation), 77 (recorded as *Abutilon incanum* (Link.) Sweet ssp. *pringlei* (Hochr.) Felger & Lowe), **85** (030410 - color presentation), 91, 115 (color presentation), 127*

Abutilon incanum subsp. *incanum* (see *Abutilon incanum*)

Abutilon incanum subsp. *pringlei* (see *Abutilon incanum*)

***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)*

Abutilon pringlei (see *Abutilon incanum*)

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)*

***Hibiscus coulteri* W.H. Harvey ex A. Gray: Desert Rosemallow**

COMMON NAMES: Coulter Hibiscus, Desert Hibiscus, Desert Rose Mallow, Desert Rose-mallow, Desert Rosemallow, Pelotazo. DESCRIPTION: Terrestrial perennial subshrub or shrub (3 inches to 7 feet in height; one plant was reported to be 18 inches in height with a crown 6 inches in width); the foliage may be green, dark green with reddish margins or green-purple; the flowers are pale lemon, lemon, lemon-yellow, peach, yellow, yellowish-purple or white-pink with or without a blackish, purplish or red basal spot (area at base of the petal); flowering generally takes place between early March and late May and between late July and late December (additional records: one for mid-January, one for mid-February and one for early July, it has been reported that flowering may take place throughout the year; however, the flower buds may be killed by frost). HABITAT: Within the range of this species it has been reported from mountains; rocky mountainsides; bouldery, bouldery-gravelly-loamy and rocky canyons; canyon walls; rocky canyon bottoms; bases of cliffs; crevices in rocks; ridges; rocky ridgetops; foothills; rocky hills; rocky hillsides; along bedrock, rocky, rocky-clayey-loamy, gravelly and gravelly-loamy slopes; gravelly bajadas; rocky outcrops; amongst boulders; flats; along rocky and sandy arroyos; gulches; gullies; ravines; along rocky, gravelly, sandy and humus-loamy washes; within bouldery and cobbly drainages; banks of lakes, and riparian areas growing in dry bouldery, rocky, cobbly, gravelly and sandy ground and bouldery-gravelly loam, rocky-clayey loam, gravelly loam and humusy loam ground, occurring from 400 to 5,000 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. *Hibiscus coulteri* is native to southwest-central and southern North America. *5, 6, 13, 16, 28 (color photograph), 43 (030510 - *Hibiscus coulteri* Harv. ex A. Gray), 46 (Page 553), 48 (genus), 63 (030510), 58, 77, **85** (030510 - color presentation), 86 (color photograph), 115 (color presentation), **WTK** (September 4, 2005)*

***Hibiscus denudatus* G. Bentham: Paleface**

SYNONYMY: *Hibiscus denudatus* G. Bentham var. *involucellatus* A. Gray. COMMON NAMES: Naked Hibiscus, Pale Face, Paleface, Pale Face Mallow, Paleface Rosemallow, Rock Hibiscus, xKwáa (Seri). DESCRIPTION: Terrestrial perennial subshrub (10 to 56 inches in height); the leaves are pale green or yellowish-green; the flowers (to 2 inches in diameter) may be blue, blue-pink, bluish-purple, creamy white, pale lavender, lavender, lavender-blue-pink, lavender-pink, orangish, light pink, pink, pink-lavender, pink-violet, pink-white, pale purple, purple, violet, white aging lavender, whitish or whitish-pink sometimes with a maroon, red, red-burgundy, reddish or rose basal spot (colored spot at the base of the petal); the stigmas may be red-burgundy; the anthers may be red-burgundy; flowering generally takes place between early February and late May and between late July and late December. HABITAT: Within the range of this species it has been reported from rocky mountains; mountaintops; rocky mountainsides; mesas; rock cliffs; rocky and clayey canyons; walls of canyons; bouldery and gravelly canyon bottoms; talus slopes; crevices in rocks; buttes; rocky ridgetops; foothills; rocky hills; rocky hillsides; bedrock, bouldery, bouldery-sandy, rocky, rocky-sandy and gravelly slopes; alluvial fans; gravelly bajadas; rocky and rocky-shaley outcrops; amongst boulders and rocks; rocky coves; lava flows; plains; rocky, gravelly, sandy and silty flats; rocky and sandy valley floors; coastal sand dunes; coastlines; coastal beaches; roadbeds; along sandy roadsides; arroyos; bottoms of arroyos; draws; gullies; within rocky ravines; springs; along and in bouldery, rocky, gravelly-sandy and sandy washes; rocky drainages; rocky bowls;

(sandy) edges of washes; margins of arroyos, and gravelly-sandy riparian areas growing in dry rocky desert pavement; bouldery, bouldery-sandy, rocky, rocky-shaley, rocky-gravelly, rocky-sandy, gravelly, gravelly-sandy and sandy ground; clay ground, and silty ground, occurring from sea level 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. This plant is browsed by rabbits. *Hibiscus denudatus* is native to southwest-central and southern North America. *5, 6, 13 (color photograph, Plate M.1.), 15, 16, 28 (color photograph), 43 (030510), 46 (Page 553), 48 (genus), 63 (030510 - color presentation), 77 (color photograph #39), **85** (020510 - color presentation), 86 (color photograph), 115 (color presentation)*

Hibiscus denudatus var. *involucellatus* (see *Hibiscus denudatus*)

***Malvastrum bicuspidatum* (S. Watson) J.N. Rose: Shrubby False Mallow**

COMMON NAMES: Malva Peluda, Mexican Shrub Mallow, Shrubby False Mallow, Tachi. DESCRIPTION: Terrestrial perennial subshrub (20 inches to 7 feet in height); the flowers are orange, orange-yellow or yellow; flowering generally takes place between early March and mid-October (additional records: one for early 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 canyons; canyon bottoms; bases of cliffs; rocky hillsides; rocky slopes; amongst rocks; bases of rocks; clayey coastal plains; rocky-loamy flats; arroyos; rocky benches, and disturbed areas growing in dry rocky ground; rocky loam ground, and clay ground, occurring from sea level to 6,000 feet in elevation in the forest, woodland, scrub, grassland and desertscrub ecological formations. NOTE: *Malvastrum bicuspidatum* is native to southwest-central and southern North America. *5, 6, 13, 43 (072110), 46 (Page 548), 63 (072110), 77, **85** (072110 - color presentation of dried material)*

***Rhynchosida physocalyx* (A. Gray) P.A. Fryxell: Buffpetal**

SYNONYMY: *Sida physocalyx* A. Gray. COMMON NAMES: Buffpetal, Spearleaf Sida, Tuberous Rhynchosida, Tuberous Sida. DESCRIPTION: Terrestrial perennial forb/herb or subshrub (ascending, sprawling or trailing stems 4 inches to 3 feet in height/length); the flowers (¾ inch in width) are cream, cream-yellow, light orange, orange, orange-yellow, peach, pale yellow, yellow or yellow-orange; flowering generally takes place between late March and late October (additional record: one for mid-November, 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; mesas; canyons; meadows; foothills; hills; rocky hillsides; sandy-loamy slopes; gravelly alluvial fans; gravelly bajadas; clayey flats; valley floors; along gravelly-sandy-clayey-loamy roadsides; ravines; along creeks; along and in sandy washes; drainages; along watercourses; banks of washes; edges of washes; benches; terraces; sandy-clayey floodplains; mesquite bosques; clayey catch basins; levees; stock tanks; riparian areas, and disturbed areas often reported as growing under shrubs or trees in dry rocky, gravelly and sandy ground; gravelly-sandy-clayey loam and sandy loam ground, and sandy clay and clay ground, occurring from 100 to 5,400 feet in elevation in the grassland, desertscrub and wetland ecological formations. NOTE: *Rhynchosida physocalyx* is native to southwest-central and southern North America and South America. *5, 6, 15, 16, 43 (0305100, 46 (*Sida physocalyx* Gray, Page 550), 58, 63 (030510), 68 (*Sida physocalyx* Gray), 77 (*Sida physocalyx* Gray), **85** (030610 - color presentation), 115 (color presentation)*

***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 physocalyx (see *Rhynchosida physocalyx*)

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 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)*

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, **WTK** (September 4, 2005)*

***Boerhavia coccinea* P. Miller: Scarlet Spiderling**

COMMON NAMES: Hierba de la Hormiga (Spanish), Hierba del Cancer (Spanish), Hogweed, Indian Boerhaavia, Mata Pavo (Spanish), Red Spiderling, Scarlet Spiderling, Tostón (Spanish), Wine-flower, Yerba de Puerco (Spanish). DESCRIPTION: Terrestrial perennial forb/herb (prostrate or ascending with stems to 12 to 40 inches in height and sprawling, spreading or trailing to 8 feet in length); the stems are pale green; the leaves are dark green tinged with purple; the tiny flowers may be blood-red, blue, magenta, maroon, maroon-red, ochre-yellow, pink, pink-magenta, pink-purple, purple, purple-maroon, purple-red, dark red, red, red-maroon, red-purple, red-violet, dark red, dark reddish-purple, rose-pink, violet-red, white, wine-red or yellow; the stigma is pale green or lavender; flowering generally takes place between mid-March and mid-November (additional record: one for late December). HABITAT: Within the range of this species it has been reported from mountains; mesas; rocky cliffs; rocky canyons; rocky-sandy and gravelly-sandy canyon bottoms; talus; bases of cliffs; crevices in rocks; rocky-sandy bluffs; foothills; rocky and rocky-clayey hillsides; bedrock, bouldery, bouldery-gravelly-sandy, rocky, gravelly and sandy-loamy slopes; gravelly alluvial fans; gravelly bajadas; amongst boulders and rocks; sandy-loamy plains; gravelly, sandy-silty and clayey flats; valley floors; valley bottoms; roadbeds; along rocky, gravelly, gravelly-sandy, gravelly-sandy-loamy, gravelly loam and sandy roadsides; within stony and sandy arroyos; along bottoms of arroyos; gulches; seeps; around seeping streams; along streams; along streambeds; along creeks; along cobbly-sandy and sandy creekbeds; along rivers; bouldery-cobbly-sandy and rocky-cobbly riverbeds; along and in gravelly, gravelly-sandy and sandy washes; sandy

drainages; watercourses; (rocky) banks of streams; edges of washes; gravel bars; beaches; sandy benches; sandy terraces; bottomlands; sandy and sandy-loam floodplains; mesquite bosques; around stock tanks; ditch banks; bouldery-cobbly-sandy, gravelly and gravelly-sandy riparian areas; waste places, and disturbed areas growing in dry desert pavement; bouldery-cobbly-sandy, bouldery-gravelly-sandy, rocky, rocky-cobbly, rocky-sandy, stony, cobbly-sandy, gravelly, gravelly-sandy and sandy ground; gravelly loam, gravelly-sandy loam, sandy loam, sandy-clayey loam and loam ground; rocky clay, gravelly clay and clay soils, and sandy-silty ground, occurring from sea level to 7,000 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTE: *Boerhavia coccinea* is native to south-central and southern North America; Central America and coastal islands in the Caribbean Sea; northern and western South America; Australia; southern Asia, and Africa. *5, 6, 15, 16, 28 (color photograph), 43 (072409), 46 (Note alternate spelling: *Boerhaavia*, Page 276), 58, 63 (031110 - color presentation), 68, 77 (color photograph #42), **85** (031110 - color presentation), 115 (color presentation)*

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; sandy-silty depressions; edges of pools; 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)*

***Boerhavia wrightii* A. Gray: Largebract Spiderling**

COMMON NAMES: Creeping Stickstem, Fourwing Spiderling, Large-bract Spiderling, Large-bracted Boerhaavia, Spiderling, Largebract Mochi, Spiderling, Wright's Boerhavia, Wright Spiderling. DESCRIPTION: Terrestrial annual forb/herb (8 to 32 inches in height); the leaves are green edges with purple; the tiny flowers are cream-white, pale lavender, lavender, light pink, pink, pale purple, purple, rose or white; flowering generally takes place between late July and early December (additional record: one for late April). HABITAT: Within the range of this species it has been reported from bouldery and rocky mountains; rocky-gravelly mountaintops; mesas; rocky cliffs; rocky canyons; gravelly canyon bottoms; bluffs; sandy foothills; rocky and rocky-gravelly hills; rocky hillsides; bouldery, rocky, gravelly-sandy, gravelly-sandy-loamy, sandy-silty and silty slopes; alluvial fans; rocky and gravelly-sandy bajadas; amongst boulders; sandy plains; rocky-sandy and sandy flats; rocky, gravelly-sandy and sandy valley floors; along rocky-sandy and gravelly roadsides; rocky arroyos; draws; along creeks; along and in rocky, stony, gravelly, gravelly-pebbly, gravelly-sandy, sandy and silty washes; drainages; silty swales; along (sandy) banks of rivers and washes; edges of washes; margins of arroyos; gravel bars; terraces; loamy bottomlands; clayey lowlands; sandy floodplains; rocky-gravelly riparian areas, and disturbed areas growing in dry rocky desert pavement; bouldery, rocky, rocky-gravelly, rocky-sandy, stony, gravelly, gravelly-pebbly, gravelly-sandy and sandy ground; gravelly loam, gravelly-sandy loam and loam ground; clay ground, and sandy silty and silty ground, occurring from 1,100 to 6,300 feet in elevation in the woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTE: *Boerhavia wrightii* is native to southwest-central and southern North America. *5, 6, 16, 43 (031210), 46 (Note alternate spelling: *Boerhaavia*, Page 276), 63 (031210), 77, **85** (031210 - color presentation of dried material)*

Commicarpus scandens (see *Boerhavia scandens*)

***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*

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)*

Papaveraceae: The Poppy Family

***Argemone gracilenta* E.L. Greene: Sonoran Pricklypoppy**

COMMON NAMES: Cardo, Chicalote; Crested Pricklepoppy, Crested Prickly Poppy, Prickle-poppy, Prickly Poppy, Sonoran Pricklypoppy. DESCRIPTION: Terrestrial perennial forb/herb (1 to 6 feet in height); the flowers are white with a yellow center; flowering generally takes place between late February and mid-June (additional records: one for late January, three for early August, two for late August, one for early September, one for mid-September, one for late September, one for early October, one for mid-November and three for late November). HABITAT: Within the range of this species it has been reported from mountains; mesas; sandy canyon bottoms; shaley talus slopes; bouldery-rocky-sandy hills; gravelly-sandy slopes; lava fields; sandy dunes; plains; flats; valley floors; along rocky-clayey, gravelly and sandy roadsides; along arroyos; bottoms of arroyos; creekbeds; sandy riverbeds; along and in gravelly-sandy and sandy washes; sandy drainage ways; silty playas; sandy bottomlands; floodplains; mesquite bosques; sandy riparian areas, and disturbed areas growing in dry bouldery-rocky-sandy, rocky, shaley, gravelly, gravelly-sandy and sandy ground; rocky-sandy loam, gravelly loam and clayey loam ground; rocky clay and clay ground, and silty ground, occurring from sea level to 4,500 feet in elevation in the grassland and desertscrub ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. *Argemone gracilenta* is native to southwest-central and southern North America. *5, 6, 18 (genus), 46 (Supplement Page 1050), 48 (genus), 63 (031610), 68 (genus), 77, 80 (Species of the genus *Argemone* are considered to be Rarely Poisonous and Suspected Poisonous Range Plants, "These distasteful, spiny, perennial forbs contain alkaloids that could prove toxic if eaten in sufficient amounts."), **85** (031610 - color presentation)*

***Argemone pleiacantha* E.L. Greene: Southwestern Pricklypoppy**

COMMON NAMES: Bluestem Pricklepoppy, Chicalote, Chicolote, Cowboys' Fried Egg, Prickly Poppy, Southwestern Pricklypoppy, Thistle Poppy. DESCRIPTION: Terrestrial perennial forb/herb (5 inches to 4 feet in height); the leaves and stems are blue-green, gray or grayish-green; the flowers (4 to 6 inches in width) are white with a bright orange center; flowering generally takes place between mid-April and mid-October. HABITAT: Within the range of this species it has been reported from mountains; mesas; canyons; bases of cliffs; meadows; foothills; hills; rocky hillsides; gravelly, gravelly-clayey-loamy and sandy slopes; gravelly prairies; gravelly plains; gravelly and gravelly-loamy flats; basins; valley floors; railroad right-of-ways; along cindery, gravelly and gravelly-sandy-clayey-loamy roadsides; along arroyos; seeps; along and in gravelly-sandy creekbeds; along gravelly washes; drainages; drainage ways; along (sandy) banks of rivers; edges of washes; terraces; sandy bottomlands; sandy floodplains; mesquite bosques; ditches; gravelly and sandy riparian areas; waste places, and disturbed areas growing in dry rocky, cindery, gravelly, gravelly-sandy and sandy ground; gravelly-sandy-clayey loam, gravelly loam, gravelly-clay loam and loam ground, and silty ground, occurring from 1,700 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, the flowers are reported to be fragrant. The seeds are eaten by Morning Doves (*Zenaida macroura*). *Argemone pleiacantha* is native to southwest-central and southern North America. *5, 6, 18 (genus), 28 (color photograph), 43 (072509), 46 (*Argemone pleiacantha* E.L. Greene subsp. *ambigua* G.B. Ownbey, Supplement Page 1050 and *Argemone pleiacantha* E.L. Greene subsp. *pleiacantha*, Supplement Page 1050), 48 (gen.), 63 (031610 - color presentation), 68 (genus), 80 (Species of the genus *Argemone* are considered to be Rarely Poisonous and Suspected Poisonous Range Plants, "These distasteful, spiny, perennial forbs contain alkaloids that could prove toxic if eaten in sufficient amounts."), 85 (031610 - color presentation), 115 (color presentation), **HR***

Pedaliaceae (Martyniaceae): The Sesame Family

Martynia althaeifolia (see *Proboscidea althaeifolia*)

Martynia arenaria (see *Proboscidea althaeifolia*)

***Proboscidea althaeifolia* (G. Bentham) J. Decaisne: Desert Unicorn-plant**

SYNONYMY: *Martynia althaeifolia* G. Bentham, *Martynia arenaria* G. Engelmann, *Proboscidea arenaria* (G. Engelmann) J. Decaisne. COMMON NAMES: Ban Ihugga (Tohono O'odham), Cuernitos, Desert Devil's-claw, Desert Unicorn-plant, Devil's Claw, Devils Claw, Devil's-horn, Devil'shorn, Devilshorn, Golden Devil'sclaw, Elephant Tusks, Gato, Guernito, Red Devil's Claw, Roundbrack Devil's Claw, Sand Devil's Claw, Straighttube Devilsclaw, Torito, Una de Gato, Unicorn Plant. DESCRIPTION: Terrestrial perennial forb/herb (7 to 12 inches in height and up to 3 to 6½ feet in width); the leaves are dark green; the flowers may be copper-yellow, golden, dirty orange, golden-yellow, orange-yellow, yellow or yellow-orange with brown-purple, maroon, orange, orange-brown, purple or red markings; flowering generally takes place between late June and mid-November (additional records: one for mid-January, one for late February, one for mid-March, one for early May, one for late May, four for early June , two for mid-December and one for late December). HABITAT: Within the range of this species it has been reported from sandy mesas; cliffs; canyons; canyonsides; canyon bottoms; buttes; stony and sandy foothills; hillsides; escarpments; gravelly and sandy slopes; alluvial fans; gravelly-sandy and sandy bajadas; rocky outcrops; sand hills; sand dunes; sandy hummocks; gravelly and sandy plains; gravelly and sandy flats; sandy valley floors; coastal dunes; along sandy roadsides; arroyos; bottoms of ravines; gravelly-sandy riverbeds; along and in gravelly and sandy washes; drainages; sandy depressions; (sandy) banks of washes; (sandy) margins of washes; sandy beaches; benches; sandy strands; terraces; loamy bottomlands; sandy floodplains; sandy low spots; sandy ditches, and disturbed areas growing in dry rocky, stony, gravelly, gravelly-sandy and sandy ground and gravelly loam, gravelly-sandy loam, sandy loam and loam ground, occurring from sea level to 4,600 feet (one record for 8,005 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 flowers are 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 food and/or fiber crop; it was also noted as having been used as a tool, and/or as a drug or medication. *Proboscidea althaeifolia* is native to southwest-central and southern North America. *5, 6, 15, 16, 43 (031710 - *Proboscidea althaeifolia* Decne., *Proboscidea arenaria* Decne.), 46 (alternate spelling recorded as *Proboscidea altheaefolia*, Page 796), 58, 63 (031710 - color presentation), 77, 85 (031710 - color presentation), 86 (color photograph), 115 (color presentation), 127, **WTK** (September 4, 2005)*

Proboscidea altheaefolia (see footnote 46 under *Proboscidea althaeifolia*)

Proboscidea arenaria (see *Proboscidea althaeifolia*)

Polemoniaceae: The Phlox Family

***Eriastrum diffusum* (A. Gray) H.L. Mason: Miniature Woollystar**

COMMON NAMES: Blue Star, Diffuse Eriastrum, Diffuse Woolstar, Miniature Starflower, Miniature Wool Star, Miniature Woollystar, Miniature Woolstar, Woollystar, Starflower. DESCRIPTION: Terrestrial annual forb/herb (1½ to 14 inches in height); the stems are reddish-brown; the foliage is grayish-green; the flowers may be pale blue, light blue & yellow, blue, blue-lavender, cream, pale

lavender, lavender, purple, purple-blue, pale violet, violet or white; flowering generally takes place between mid-February and mid-July (additional record: one for mid-August). HABITAT: Within the range of this species it has been reported from mountains; sandy mesas; cliffs; rocky canyons; rocky-gravelly-sandy and sandy canyon bottoms; buttes; rocky knolls, rocky ledges; sandy ridges; rocky-sandy and gravelly ridgetops; sandy clearings in woodlands; sandy foothills; bouldery, rocky and sandy hills; hilltops; rocky hillsides; bedrock, rocky, rocky-sandy, rocky-sandy-loamy, gravelly-sandy and sandy slopes; rocky-sandy alluvial fans; gravelly bajadas; rocky outcrops; sand hills; sandy dunes; plains; stony, gravelly, gravelly-sandy-clayey and sandy flats; basins; valley floors; valley bottoms; along stony, gravelly-sandy-clayey-loamy, gravelly-clayey, sandy and clayey roadsides; sandy arroyos; gulches; springs; along creeks; along rivers; sandy riverbeds; along and in rocky, stony-gravelly, gravelly, gravelly-sandy and sandy washes; rocky-sandy and gravelly drainages; along and in rocky-sandy, gravelly and gravelly-sandy drainage ways; sandy-silty playas; banks of creeks, rivers, riverbeds and washes; among clumps of grasses at the sandy edges of arroyos; channel bars; benches; shelves; terraces; bottomlands; sandy floodplains; silty-loamy stock tanks; along canals; sandy riparian areas, and disturbed areas growing in dry desert pavement; bouldery, rocky, rocky-gravelly-sandy, rocky-sandy, stony, stony-gravelly, gravelly, gravelly-sandy and sandy ground; rocky-sandy loam, gravelly-sandy loam, gravelly-sandy-clayey loam, gravelly-silty-clayey loam, clayey loam and silty loam ground; rocky clay, gravelly-sandy clay and gravelly clay ground, and sandy silty ground, occurring from 400 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. *Eriastrum diffusum* is native to southwest-central and southern North America. *5, 6, 15, 16, 28 (color photograph), 43 (072609), 46 (Page 685), 58, 63 (031810 - color presentation), 77 (color photograph #49), **85** (031810 - color presentation), 115 (color presentation)*

Gilia bigelovii (see *Linanthus bigelovii*)

***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 ophthalmoides subsp. *australis* (see *Gilia flavocincta* subsp. *australis*)

***Gilia stellata* A.A. Heller: Star Gilia**

COMMON NAMES: Gilia, Star Gilia, Star Gily-flower. DESCRIPTION: Terrestrial annual forb/herb (3 to 28 inches in height); the flowers may be blue, blue-yellow, blue-lavender, blue-pink-lavender, blue-white, cream, lavender, lavender-pink, lavender with dark purple stripes, lavender-pink, lavender-yellow, magenta, pink, pink-lavender, purple, purple-lavender, purplish-blue, pale violet, yellow, white, white-lavender or whitish-purplish; flowering generally takes place between late January and early June. HABITAT: Within the range of this species it has been reported from mountains; rocky mountainsides; mesas; rocky cliffs; along rocky canyons; gravelly-sandy and sandy canyon bottoms; gorges; talus slopes; bases of cliffs; cobbly knoll; sandy ridges; ridgetops; foothills; rocky hills; sandy hilltops; rocky and gravelly hillsides; bouldery, rocky; cobbly-sandy-loamy, gravelly, gravelly-sandy-clayey, sandy, sandy-loamy and clayey slopes; alluvial fans; gravelly and gravelly-sandy bajadas; rocky and shaley outcrops; amongst boulders; sand hills; breaks; plains; gravelly and sandy flats; basins; valley floors; valley bottoms; rocky, gravelly and sandy roadsides; sandy arroyos; ravines; springs; along streams; streambeds; along creeks; sandy creekbeds; along and in bedrock, rocky, rocky-sandy, gravelly, gravelly-sandy, sandy and sandy-clayey-loamy washes; along and in gravelly and gravelly-sandy drainage ways; around pools; (sandy) banks of rivers and washes; along (rocky-sandy) edges of washes; margins of rivers and washes; shores of lakes; sand bars; gravelly and sandy benches; terraces; loamy floodplains; gravelly-sandy riparian areas, and disturbed areas growing in dry desert pavement; bouldery, rocky, rocky-sandy, shaley, cobbly, gravelly, gravelly-sandy and sandy ground; cobbly-sandy loam, sandy loam, sandy-clayey loam, clayey loam, silty loam and loam ground; gravelly-sandy clay and clay ground, and gravelly-sandy silty ground, occurring from 700 to 5,000 feet in elevation in the woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTE: *Gilia stellata* is native to southwest-central and southern North America. *5, 6, 16, 18 (genus), 43 (031910), 46 (Supplement Page 1066), 63 (031910 - color presentation), 77, **85** (031910 - color presentation of dried material)*

***Linanthus bigelovii* (A. Gray) E.L. Greene: Bigelow's Linanthus**

SYNONYMY: *Gilia bigelovii* A. Gray. COMMON NAMES: Bigelow Desert Trumpet, Bigelow Gilia, Bigelow Linanthus, Bigelow's Deserttrumpets, Bigelow's Linanthus. DESCRIPTION: Terrestrial annual forb/herb (2 inches to 1 foot in height); the flowers may be bluish, cream, cream-white, lavender-blue, mahogany-tinged cream, cream-white, lavender-blue, white, white-blue-lavender, white-lavender or white-pink; flowering generally takes place between early February and late May. HABITAT: Within the range of this species it has been reported from mountains; rocky mountainsides; gravelly and sandy mesas; plateaus; cliffs; rocky canyons; canyon bottoms; ledges; ridgetops; rocky-sandy meadows; along gravelly cinder cones; rocky foothills; rocky hills; rocky hillsides; along cinder cones; bouldery-gravelly, bouldery-sandy, rocky, rocky-gravelly, shaley, cobbly, gravelly, gravelly-loamy, and sandy slopes; rocky-sandy alluvial fans; gravelly bajadas; rocky outcrops; amongst boulders, rocks and gravels; lava flows; lava fields; sand dunes; cobbly and gravelly-loamy breaks; benchlands; rocky-sandy plains; rocky, gravelly and sandy flats; basins; cindery and sandy valley floors; valley bottoms; along gravelly, gravelly-sandy and sandy roadsides; draws; gulches; around seeping streams; along streams; along creeks; along and in rocky, rocky-sandy, gravelly, gravelly-sandy and sandy washes; within sandy drainages; bouldery, rocky-sandy and gravelly-sandy benches; sandy terraces; loamy bottomlands; sandy riparian areas, and disturbed areas growing in dry bouldery, bouldery-gravelly, bouldery-sandy, rocky, rocky-gravelly, rocky-sandy, shaley, cobbly, cindery, gravelly, gravelly-sandy and sandy ground; gravelly loam, gravelly-clayey loam and loam ground, and gravelly-sandy silty ground, occurring from 200 to 6,100 feet in elevation in the woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTE: *Linanthus bigelovii* is native to southwest-central and southern North America. *5, 6, 15, 16, 43 (032010 - *Linanthus bigelovii* E.L. Greene), 46 (Page 687), 63 (032010), 77, **85** (031020 - color presentation)*

Polygalaceae: The Milkwort Family

***Polygala macradenia* A. Gray: Glandleaf Milkwort**

COMMON NAMES: Glandleaf Milkwort, Milkwort, Purple Milkwort. DESCRIPTION: Terrestrial perennial subshrub (4 to 12 inches in height, one plant was described as being 10 inches in height and 12 inches in width); the foliage is green or green-gray; the flowers may be blue, blue-purple, pink-purple, light purple, purple, purple-greenish-yellow, purple-rose, purple & white, purple & yellow & white, purplish, reddish, white or white tipped with pink & green; flowering generally takes place between late February and early June and again between early August and late November (additional records: one for mid-January, two for late June and one for early July). HABITAT: Within the range of this species it has been reported from mountains; bouldery and rocky mountaintops; rocky mountainsides; cliffs; cobbly canyons; rocky and clayey canyon bottoms; crevices in rocks; bluffs; ridges; foothills; rocky and rocky-clayey hills; rocky hilltops; rocky, rocky-gravelly-loamy, rocky-clayey and gravelly hillsides; bedrock, rocky, rocky-clayey and gravelly slopes; bajadas; amongst boulders and rocks; gravelly flats; basins; arroyos; springs; rocky washes; rocky-gravelly drainages; benches, and shelves growing in dry desert pavement; bouldery, rocky, rocky-gravelly, cobbly and gravelly ground; rocky-gravelly loam ground, and rocky clay and clay ground, occurring from 1,500 to 4,700 feet in elevation in the scrub, grassland and desertscrub ecological formations. NOTES: This plant is reportedly grazed by Desert Bighorn Sheep (*Ovis canadensis* subsp. *mexicana*). *Polygala macradenia* is native to southwest-central and southern North America. *5, 6, 15, 16, 18 (genus), 43 (032110), 46 (Page 499), 63 (032110), 77, **85** (032110 - color presentation of dried material)*

Polygonaceae: The Buckwheat Family

***Chorizanthe* R. Brown ex G. Bentham: Spineflower**

COMMON NAME: Spineflower. *43 (062710), 46 (Pages 229-230), 63 (062710 - color presentation), **HR***

***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* J. Torrey var. *deflexum*: Flatcrown Buckwheat**

SYNONYMY: *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, pink, pink-white, rose-white or white; 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; mountainsides; gravelly mesas; plateaus; rocky cliffs; bouldery canyons; rocky and sandy canyon bottoms; shaley talus slopes; bluffs; rocky sides of buttes; rocky ridges; ridgelines; rocky foothills; talus hills; rocky and gravelly hillsides; rocky, rocky-sandy, shaley, cindery, gravelly, gravelly-loamy, sandy and clayey slopes; rocky-gravelly bajadas; amongst boulders; sand dunes; cobbly and sandy debris fans; gravelly, sandy and sandy-silty flats; basins; valley bottoms; roadbeds; along gravelly, gravelly-loamy and sandy roadsides; sandy arroyos; sandy draws; gullies; gravelly ravines; around seeping streams; along creeks; along gravelly-sandy creekbeds; along rivers; gravelly riverbeds; along and in bouldery, rocky-sandy, rocky-loamy, gravelly, gravelly-sandy, sandy and sandy-clayey washes; drainages; depressions; swales; banks of rivers; sand bars; sandy bottomlands; banks of reservoirs; along canal banks; along ditches; sandy riparian areas; waste places, and disturbed areas growing in dry desert pavement; bouldery, rocky, rocky-gravelly, rocky-sandy, shaley, cobbly, cindery, gravelly, gravelly-sandy and sandy ground; rocky loam, gravelly loam and gravelly-clayey loam ground; sandy clay and clay ground, and sandy silty 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* var. *deflexum* is native to southwest-central and southern North America. *5, 6, 15 (*Eriogonum deflexum* Torrey var. *turbinatum* (Small) Reveal), 18 (genus), 43 (032310 - *Eriogonum deflexum* var. *turbinatum* (Small) Reveal), 46 (*Eriogonum clutei* Rydb. and *Eriogonum deflexum* Torr., Page 239), 48 (genus), 58 (*Eriogonum deflexum* Torrey var. *turbinatum* (Small) Reveal), 63 (032310), 68, **85** (032310 - color presentation of dried material)*

Eriogonum deflexum var. *turbinatum* (see *Eriogonum deflexum* var. *deflexum*)

***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*

Eriogonum wrightii subsp. *glomerulum* (see *Eriogonum wrightii* var. *wrightii*)

***Eriogonum wrightii* J. Torrey ex G. Bentham var. *wrightii*: Bastardsage**

SYNONYMY: *Eriogonum wrightii* J. Torrey ex G. Bentham subsp. *glomerulum* S. Stokes. COMMON NAMES: Bastardsage, Buckwheat Brush, Wild Buckwheat, Wright Buckwheat, Wright Buckwheat Brush, Wright's Bastard-sage. DESCRIPTION: Terrestrial perennial subshrub (4 to 30 inches in height with a crown 4 inches to 6 feet in width); the leaves are gray-green; the flowers are cream-white, pale lavender, pink, pinkish, tan-cream or white; flowering generally takes place between late June and late December (additional records: one for mid-January, one for mid-February, one for late March and one for early June). HABITAT: Within the range of this species it has been reported from mountains; sandy mesas; rocky rims of canyons; rocky canyons; along canyon bottoms; bases of cliffs; crevices in boulders and rocks; rocky knolls; ledges; rocky ridges; hills, rocky hillsides; bedrock, rocky, rocky-gravelly, gravelly and gravelly-loamy slopes; alluvial fans; amongst boulders; sandy lava flows; rocky banks; embankments; sandy prairies; sandy flats; glens; valley floors; along sandy-loamy roadsides; within sandy ravines; along creekbeds; , and within rocky washes growing in dry rocky, rocky-gravelly, gravelly and sandy ground; gravelly-sandy loam, sandy loam, sandy-clayey loam and loam ground, and clay ground, occurring from 900 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. The species, *Eriogonum wrightii*, 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* var. *wrightii* is native to southwest-central and southern North America. *5, 6, 13, 15, 18, 43 (072310 - *Eriogonum wrightii* subsp. *glomerulum* S. Stokes), 46 (Page 241, about the species: "... according to Nichol, the most important deer-browse plant in the state."), 48 (genus), 63 (072310), 77, **85** (072310 - color presentation of dried material), 127 (species)*

Portulacaceae: The Purselane Family

***Phemeranthus aurantiacus* (G. Engelmann) R.W. Kiger: Orange Flameflower**

SYNONYMY: *Talinum angustissimum* (A. Gray) E.O. Wooton & P.C. Standley, *Talinum aurantiacum* G. Engelmann. COMMON NAMES: Flame Flower, Orange Flame Flower, Orange Flameflower, Talinum, Yellow Flame Flower. DESCRIPTION: Terrestrial perennial forb/herb or subshrub (6 to 20 inches in height); the flowers (to 1 inch in width) may be apricot-orange, orange, orange-yellow, peach-orange, pinkish, pinkish-orange, reddish, reddish-orange, rosy-pink, pale yellow, pale yellow-orange, yellow or yellow-orange; flowering generally takes place between late June and late September (additional record: one for early June; flowering beginning as early as April and ending as late as November has been reported). HABITAT: Within the range of this species it has been reported from mountains; mesas; plateaus; canyons; cobbly canyon bottoms; pockets of soil on cliffs; bluffs; ledges; along shaley ridges; ridgetops; meadows; foothills; gravelly-loamy and sandy hills; rocky hilltops; rocky, rocky-gravelly-loamy, rocky-clayey and gravelly hillsides; rocky, rocky-gravelly, stony, cobbly-clayey rocky-sandy, gravelly and sandy slopes; sandy bajadas; rocky outcrops; amongst boulders and rocks; sandy lava flows; dunes; prairies; sandy-loamy plains; gravelly-sandy flats; valley floors; sandy-silty valley bottoms; along gravelly-sandy, gravelly-sandy-loamy, gravelly-sandy-clayey-loamy and gravelly-loamy roadsides; arroyos; draws; ravines; streambeds; along creeks; along washes; along edges of lakes and playas; benches; terraces; sandy-loamy lowlands; floodplains, and disturbed areas in bouldery, rocky, rocky-gravelly, rocky-sandy, shaley, stony, gravelly, gravelly-sandy and sandy soils; rocky-gravelly loam, gravelly loam, gravelly-sandy loam and sandy loam soils; rocky clay, cobbly clay and clay soils, and sandy silty soils, 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. Kearney and Peebles' reported in Arizona Flora that *Talinum aurantiacum* Engelm. is "Arizona's largest flowered and showiest species. Indians in Arizona cooked and ate the roots, which often become very large and more or less woody." This plant could be investigated to determine its value as a home garden or commercial food crop. *Phemeranthus aurantiacus* is native to southwest-central and southern North America. *5, 6, 15 (*Talinum aurantiacum* Engelm.), 43 (072709), 46 (*Talinum angustissimum* (Gray) Woot. & Standl., Page 287, *Talinum aurantiacum* Engelm., Page 287), 58 (*Talinum aurantiacum* Engelm.), 63 (032510), 77 (*Talinum aurantiacum* Engelm., color photograph #51 labeled *Talinum aurantiacum*), **85** (032610 - color presentation), 86 (color photograph, *Talinum aurantiacum*), 115 (color presentation)*

***Portulaca suffrutescens* G. Engelmann: Shrubby Purslane**

COMMON NAME: Shrubby Purslane. DESCRIPTION: Terrestrial perennial forb/herb or subshrub (3 to 12 inches in height); the stems may be pink; the flowers (½ to 1¼ inch in diameter) may be brick red, bronze, brown-orange, copper, copper-orange, pale orange, orange, dull orange-copper, orange-yellow, pale pink-orange, peach, pink-purple, purple, purple & red-orange, red, reddish-purple, salmon or salmon-pink; flowering generally takes place between early July and late October. HABITAT: Within the range of this species it has been reported from mountains; mesas; canyons; rocky-sandy-loamy canyon bottoms; talus; rocky knolls; ridges; ridgetops; rocky hills; hillsides; rocky, stony and gravelly slopes; alluvial fans; sandy bajadas; rocky outcrops; amongst rocks; plains; gravelly flats; sandy-silty valleys;

along rocky, gravelly-sandy-loamy and gravelly-sandy-clayey-loamy roadsides; gravelly-sandy and sandy bottoms of arroyos; springs; in gravelly or sandy soils along streams; along sandy washes; drainages; (silty) banks of streams; creeks and pools; benches; terraces; sandy bottomlands; floodplains; sandy riparian areas, and waste places growing in dry rocky, stony, gravelly, gravelly-sandy and sandy ground; rocky-gravelly loam, rocky-sandy loam, rocky-clayey loam, gravelly-sandy loam and gravelly-sandy-clayey-loamy ground; clay soils, and sandy-silty and silty ground, occurring from 2,900 to 6,900 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. *Portulaca suffrutescens* is native to southwest-central and southern North America. *5, 6, 15, 43 (072709), 46, 58, 63 (072709), 77, **85** (072709), 115 (color presentation)*

***Portulaca umbraticola* K.S. Kunth: Wingpod Purslane**

COMMON NAMES: Crownpod Purslane, Purslane, Wing-pod Purslane, Wingpod Purslane. DESCRIPTION: Terrestrial annual forb/ herb (prostrate, sub-erect and erect stems 2 inches to 1 foot in height/length); the stems may be green or reddish; the succulent leaves are green; the flowers (to 2 inches in diameter) may be orange, yellow (the petals may be tipped with copper, orange, red or red-orange), red or yellow-orange; flowering generally takes place between early August and mid-October (additional record: one for mid-December). HABITAT: Within the range of this species it has been reported from mountains; mountainsides; mesas; canyons; talus slopes; crevices in rocks; rocky buttes; rocky ridgetops; meadows; foothills; hills; hillsides; rocky, rocky-sandy, rocky-loamy, stony and gravelly slopes; rocky outcrops; amongst boulders; cobbly plains; gravelly flats; valleys; roadsides; gravelly and sandy bottoms of arroyos; draws; along streams; streambeds along creeks; along rivers; along and in rocky, gravelly and sandy washes; drainages; tinajas; in sandy soils around marshes; (sandy) edges of washes; margins of cienegas; floodplains; sandy lowlands; mesquite bosques; sandy riparian areas, and disturbed areas growing in dry bouldery, rocky, rocky-gravelly, cobbly, gravelly and sandy ground and rocky loam ground, occurring from sea level to 6,000 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTE: *Portulaca umbraticola* is native to south-central and southern North America; Central America, and South America. *5, 6, 43 (072709), 46 (*P.u.* subsp. *coronata* recorded as *Portulaca coronata* Small and Supplement Page 1049), 63 (072709 - color presentation), **85** (072809 - color presentation of dried material), 115 (color presentation), 128*

Talinum angustissimum (see *Phemeranthus aurantiacus*)

Talinum aurantiacum (see *Phemeranthus aurantiacus*)

Ranunculaceae: The Buttercup Family

***Myosurus cupulatus* S. Watson: Arizona Mousetail**

COMMON NAME: Arizona Mousetail. DESCRIPTION: Terrestrial annual forb/herb (1¼ to 6¼ inches in height); the foliage is yellow-green; the flowers may be greenish, pale lavender, lavender, dark lavender, white or whitish-green; the anthers are pale blue, flowering generally takes place between late February and early May (additional record: one for late June). HABITAT: Within the range of this species it has been reported from mountains; rocky mountaintops; cliffs, canyons; along canyon bottoms; bases of cliffs; crevices in rocks; rocky ledges; rocky ridgetops; foothills; rocky hills; rocky and rocky-sandy hillsides; rocky, rocky-gravelly-loamy, rocky loamy and gravelly slopes; bedrock outcrops; amongst rocks; areas beneath boulders; bases of rocks; rocky basins; along rocky and sandy roadsides; bedrock arroyos; along draws; gulches; rocky ravines; seeps; springs; along streams; rocky and sandy streambeds; along creeks; creekbeds; along rivers; riverbeds; along and in rocky-gravelly and sandy washes; drainages; shallow depressions; in oak leaf litter on rocky banks of ravines; bottomlands; floodplains; edges of stock tanks; riparian areas, and disturbed areas growing in soggy and wet, moist, damp and dry

bouldery, rocky, rocky-gravelly, rocky-sandy, cindery, gravelly, gravelly-sandy and sandy ground; rocky loam, rocky-gravelly loam, rocky-sandy loam and gravelly loam ground; rocky clay ground, and humusy ground often in shaded areas, occurring from 1,100 to 7,100 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. *Myosurus cupulatus* is native to southwest-central and southern North America. *5, 6, 15, 43 (071510), 46 (Page 313), 63 (071510), 77, **85** (071510 - color presentation of dried material), 127*

Resedaceae: The Mignonette Family

***Oligomeris linifolia* (M.H. Vahl) J.F. Macbride: Lineleaf Whitepuff**

COMMON NAMES: Cambess, Desert Cambess, Linearleaf Cambess, Lineleaf Whitepuff, Linear-leaved Cambess, Oligomeris, Slender-leaf Cambess, Xamassa (Seri). DESCRIPTION: Terrestrial annual forb/herb (4 to 15 inches in height, one plant was reported to be 15 inches in height and width); the stems may be orange; the leaves are green, and turn red before dying; the tiny flowers are cream, greenish or white; flowering generally takes place between late December and early June (additional record: one for late June). HABITAT: Within the range of this species it has been reported from mountains; mesas; plateaus; cliffs; canyons; canyon sides; canyon bottoms; gravelly talus; rocky bases of cliffs; sandy-clayey bluffs; sandy knolls; ledges; rocky ridges; ridgelines; rocky foothills; gravelly-loamy hills; rocky hillsides; rocky, rocky-sandy, sandy and silty slopes; rocky and rocky-sandy and silty-clayey alluvial fans; gravelly bajadas; amongst rocks; crater walls; crater floors; sandy lava flows; sand dunes; gravelly-loamy and sandy plains; rocky, gravelly, gravelly-sandy, sandy and silty flats; basins; sandy valley floors; beach dunes; sandy-silty coastal plains; sandy coastlines, along gravelly-sandy-loamy and sandy roadsides; rocky-gravelly draws; along rocky gullies; seeps; springs; around seeping streams; in clay around springs; along streams; sandy riverbeds; along and in gravelly, gravelly-sandy and sandy washes; sandy and silty lakebeds; clayey and silty playas; silty depressions; gravelly banks of rivers, washes and drainages; (cobbly and sandy) edges of lakes and playas; lake shores; mudflats; channel bars; sandy beaches; benches; gravelly terraces; clayey bottomlands; sandy floodplains; along sandy-clayey canals; canal banks; along ditches; gravelly-sandy riparian areas; waste places, and disturbed areas growing in dry desert pavement; rocky, rocky-gravelly, rocky-sandy, shaley, cobbly, gravelly, gravelly-sandy and sandy ground; gravelly loam and gravelly-sandy loam ground; sandy clay, silty clay and clay ground, and 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. NOTES: The stems and leaves are semi-succulent. *Oligomeris linifolia* is native to southwest-central and southern North America; Asia, and Africa. *5, 6, 16, 43 (042210 - *Oligomeris linifolia* J.F. Macbr.), 46 (Page 358), 63 (042210), 77, **85** (042210 - color presentation of dried material)*

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: Lotebush**

COMMON NAMES: Abrojo, Bachata, Barbachatas, Bluebush, Buchthorn, Chaparral, Chaparro Prieto, Clepe, Garrapata, Garumbullo, Gray-leafed Abrojo, Gray-leaved Abrojo, Gray-thorn, Graythorn, Greythorn, Gumdrop Tree, Lotebush, Lotebrush, Oschuvapat (Pima), Palo Blanco, Southwestern Condalia, Texas Buckthorn, White Crucillo, Whitethorn. 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 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 10 feet in height with a crown 13 feet in width, one plant was reported to be 13 feet in height with a crown 13 feet in width, one plant was reported to be 13 feet in height with a crown 20 feet in width); the stems may be bluish, brown, gray, gray-green, green or whitish with the twigs ending in stout thorns; the leaves are gray-green, pale green, green or yellow-green; the inconspicuous flowers are cream, light green, green, greenish-white, greenish-yellow, yellow-green, white or whitish-green; flowering generally takes place between mid-May and late November (additional records: one for mid-January, one for late January, one for early March, two for mid-March, three for late March, two for mid-April and one for late April); the ripe fruits are black, blue, dark blue or purple. HABITAT: Within range of this species it has been reported from mountains; gravelly mesas; rocky cliffs; rocky and gravelly canyons; sandy-clayey canyonsides; along canyon bottoms; scree; talus slopes; bases of cliffs; crevices in rocks; buttes; gravelly-clayey-loamy ridges; rocky ridgetops; ridgelines; foothills; rocky, cobbly and cobbly-gravelly-loamy hills; hilltops; rocky hillsides; bedrock, rocky, rocky-gravelly-sandy, rocky-sandy, gravelly, gravelly-loamy and gravelly-clayey-loamy slopes; rocky alluvial fans; gravelly bajadas; rocky outcrops; amongst boulders, rocks and gravels; sandy dunes; breaks; prairies; gravelly, gravelly-silty, sandy-silty and silty plains; rocky, gravelly and sandy-loamy flats; basin bottoms; rocky valley floors; along gravelly, gravelly-sandy-clayey-loamy, gravelly-loamy and sandy-clayey-loamy roadsides; gravelly-sandy and sandy arroyos; along rocky and sandy bottoms of arroyos; draws; gulches; ravines; bouldery bottoms of ravines; seeps; in clay around springs; along streams; along rocky streambeds; along creeks; along gravelly-sandy creekbeds; in gravels along rivers; along gravelly and gravelly-sandy rivers; riverbeds; along and in rocky, sandy and sandy-clayey washes; along drainages; marshes; swales; along (bouldery-sandy, rocky, gravelly-sandy and sandy) banks of streams, creeks, rivers and washes; (gravelly-sandy) edges of arroyos and creeks; margins of springs; beaches; sandy benches; terraces; bottomlands; floodplains; mesquite bosques; thickets of Soapberry (*Sapindus saponaria*); along fencerows; along canals; gravelly-sandy and sandy riparian areas, and disturbed areas growing in dry desert pavement; bouldery, bouldery-sandy, rocky, rocky-gravelly, rocky-gravelly-sandy, rocky-sandy, cobbly, gravelly, gravelly-sandy and sandy ground; cobbly-gravelly loam, gravelly loam, gravelly-sandy-clayey loam, gravelly-clayey loam, sandy loam and sandy-clayey loam ground; sandy clay and clay ground, and gravelly 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: 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 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 heartwood may be red-brown and may be honey-scented. 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* is native to southwest-central and southern North America. *5, 6, 13 (color photograph), 28 (color photograph), 43 (042210), 46 (recorded as *Condalia lycioides* (Gray) Weberb., Page 530), 63 (042210), **85** (042310 - color presentation), 91, 127*

***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** (September 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*)

Scrophulariaceae: The Figwort Family

***Maurandella antirrhiniflora* (F.W. von Humboldt & A.J. Bonpland ex C.L. von Willdenow) W.H. Rothmaler: Roving Sailor**

SYNONYMY: *Maurandya antirrhiniflora* F.W. von Humboldt & A.J. Bonpland ex C.L. von Willdenow. COMMON NAMES: Blue Snapdragon Vine, Climbing Snapdragon, Little Snapdragon Vine, Roving Sailor, Snapdragon Maurandya, Snapdragon Vine, Twining Snapdragon, Vine Blue Snapdragon, Violet Twining, Violet Twining Snapdragon. DESCRIPTION: Terrestrial perennial forb/herb or vine (climbing or twining stems 1 to 8 feet in length, one plant was described as being a climbing vine 3 feet by 2 feet); the arrowhead-shaped leaves are a bright green; the flowers are blue, blue-lavender, blue-purple, blue-violet, blue & white, lavender, lavender-white, lilac, magenta, magenta-lilac, magenta-pink, magenta-purple, maroon-pink, pink, pink-fuchsia, pink-purple, light purple, purple, dark purple, purple-blue, purple-lilac, purple-pink, purple-red, purple-rose, purple & white, purple & yellow, pale purplish, bright red, reddish-lavender, reddish-pink, reddish-purple, red-rose, rose, rose-pink, rose-purple, rose-red, pale violet or white; flowering generally takes place between late March and early November (additional records: one for late February and one for early March); the fruit is cup-shaped. HABITAT: Within the range of this species it has been reported from mountains; bouldery and gravelly mesas; cliffs; rims of canyons; bouldery, rocky and gravelly-loamy canyons; along canyon walls; bouldery, rocky and cobbly canyon bottoms; gorges; bases of cliffs; gravelly talus slopes; crevices in rocks; rock walls; rocky ledges; rocky-gravelly meadows; cinder cones; foothills; rocky hills; rocky hillsides; bedrock, bouldery, rocky, rocky-gravelly, rocky-gravelly-sandy-loamy, rocky-sandy, stony, cindery, gravelly, gravelly-sandy, gravelly-loamy, sandy and sandy-clayey-loamy slopes; bajadas; rocky outcrops; amongst boulders, rocks and pebbles; rocky alcoves; debris fans; sandy lava flows; flats; valley floors; along gravelly-loamy roadsides; within arroyos; clayey bottoms of arroyos; draws; gulches; seeps; rocky springs; along streams; along and in rocky and gravelly streambeds; along creeks; rocky creekbeds; along rivers; riverbeds; along and in rocky, shaley, gravelly and sandy washes; drainages; drainage ways; watercourses; along sandy waterfalls; in shallow pools; along (rocky and sandy) banks of arroyos, streams, creeks, rivers and washes; edges of washes and lakes; along margins of arroyos and washes; (pebbly) shores of lakes; gravel bars; benches; shaley and sandy terraces; floodplains, and bouldery riparian areas growing in wet, moist and dry bouldery, rocky, rocky-gravelly, rocky-sandy, shaley, stony, cobbly, cobbly-gravelly, cindery, gravelly, gravelly-sandy, pebbly and sandy ground; rocky-gravelly-sandy loam, gravelly loam, sandy-clayey loam and clayey loam ground; clay ground, and silty ground often observed growing in the shade under and in shrubs and trees and amongst rocks, occurring from 1,200 to 8,800 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. The vines will die back to the ground in the winter months. *Maurandella antirrhiniflora* is native to southwest-central and southern North America. *5, 6, 15, 16, 28 (recorded as *Maurandya antirrhiniflora*, color photograph), 43 (042710), 46 (recorded as *Maurandya antirrhiniflora* Humb. & Bonpl., Page 767), 58, 63 (042710 - color presentation), 77 (recorded as *Maurandya antirrhiniflora*, color photograph #93), **85** (042710 - color presentation including habitat), 86 (recorded as *Maurandya antirrhiniflora*, color photograph), 115 (color presentation)*

Maurandya antirrhiniflora (see *Maurandella antirrhiniflora*)

***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*

***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)*

***Veronica peregrina* C. Linnaeus (subsp. *xalapensis* (K.S. Kunth) F.W. Pennell is the subspecies reported as occurring in Arizona): Neckweed**

SYNONYMY: (for *V.p.* subsp. *xalapensis*: *Veronica peregrina* C. Linnaeus var. *xalapensis* (K.S. Kunth) F.W. Pennell). COMMON NAMES: American Speedwell, Hairy Purslane Speedwell, Jalapa Speedwell, Mushikusa (transcribed Japanese), Necklace Speedwell, Necklace Weed, Neckweed, Purselane Speedwell, Veronica-de-xalapa (Portuguese, for *V.p.* subsp. *xalapensis*), Wandering Speedwell, Wen Mu Cao (transcribed Chinese). DESCRIPTION: Aquatic or terrestrial annual forb/herb (4 to 14 inches in height); the leaves are yellow-green; the tiny flowers may be blue, pink-white, purple, purple-blue, white, white-blue or white-light pink; flowering generally takes place between early February and early October (additional record: one for early November); the heart-shaped fruits are reddish. HABITAT: Within the range of this species it has been reported from mountains; mesas; plateaus; along bouldery and rocky canyons; bedrock and bouldery canyon bottoms; bluffs; ledges; ridges; clayey and silty meadows; bouldery hills; bouldery and rocky hillsides; bouldery, gravelly-sandy, sandy and silty slopes; rocky-sandy-loamy and gravelly-sandy alluvial fans; bouldery outcrops; amongst rocks; clayey-loamy prairies; plains; loamy flats; sandy hollows; valley floors; muddy valley bottoms; coastal plains; along gravelly and gravelly-sandy roadsides; within bedrock arroyos; draws; bottoms of draws; gulches; ravines; muddy seeps; springs; in clay along rocky-silty streams; along and in bouldery-sandy and sandy

streambeds; along creeks; along rocky-sandy, cobbly, gravelly-sandy and sandy creekbeds; along rivers; sandy riverbeds; along and in rocky, rocky-clayey, rocky-silty, gravelly and sandy washes; rocky-sandy and rocky-silty drainages; in drainage ways; waterholes; around and in clayey and clayey-loamy pools; silty-clayey poolbeds; in rocks around silty ponds; pondbeds; in lakes; lakebeds; playas; around and in lagoons; boggy areas; silty marshes; loamy-clayey depressions; within clayey "tobosa" swales; along (muddy, sandy, sandy-silty and loamy) banks of streams, creeks, rivers, pools and lakes; along (muddy) edges of streams, rivers, washes, pools, ponds and lakes; along (clayey) margins of streamlets, streams, pools, ponds and lakes; along (mucky and muddy) shores of ponds and lakes; gravelly-silty-loamy mudflats; sand bars; benches; sandy terraces; bottomlands; silty-clayey floodplains; dams; below dikes; in silty-clayey stock tanks; sandy, silty and muddy edges of stock tanks (charcos, repressos); edges of reservoirs; along ditches; silty trenches; rocky, cobbly, gravelly-sandy, sandy and sandy-clayey riparian areas; waste places, and disturbed areas growing in shallow water; mucky and muddy, and wet, soggy, moist, damp and dry bouldery, bouldery-sandy, rocky, rocky-sandy, cobbly, gravelly, gravelly-sandy and sandy ground; rocky-sandy loam, gravelly loam, gravelly-clayey loam, gravelly-silty loam, clayey loam and loam ground; rocky clay, sandy clay, loamy clay, silty clay and clay ground, and rocky silty, sandy silty and silty ground, occurring from 100 to 9,800 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTE: *Veronica peregrina* is native to northwestern, northern, central and southern North America; Central America and coastal Islands in the Caribbean Sea, and eastern, western and southern South America. *5, 6, 18 (genus), 43 (042810 - *Veronica peregrina* var. *xalapensis* Kunth), 46 (Page 785), 63 (042810 - color presentation), **85** (042910 - color presentation), 101 (color photograph)*

Veronica peregrina var. *xalapensis* (see *Veronica peregrina* subsp. *xalapensis*)

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, **WTK** (September 4, 2005)*

Solanaceae: The Potato Family

Datura meteloides (see *Datura wrightii*)

***Datura wrightii* E.A. von Regel: Sacred Thorn-apple**

SYNONYMY: *Datura meteloides* auct. non M.F. Dunal p.p. COMMON NAMES: Angel's Trumpet, Devil's Weed, Giant Jimson, Hairy Thorn-apple, Indian Apple, Indian-apple, Jimson Weed, Jimsonweed, Moon Flower, Moon Lily, Pricklyburr, Sacred Datura, Sacred Thorn-apple, Sacred Thornapple, Southwestern Thorn Apple, Thorn Apple, Thorn-apple, Thornapple, Tolache, Tolguacha, Western Jimson. DESCRIPTION: Terrestrial annual or perennial forb/herb or subshrub (16 inches to 5 feet in height sometimes spreading to 6 feet in width, one plant was described as being 16 inches in height and 20 inches in width, one plant was described as being 18 inches in height and 2 feet in width, two plants were described as being 20 inches in height and 20 inches in width, one plant was described as being 20 inches in height and 4 feet in width); the leaves are dark green, gray-green or purplish; the flowers (2½ to 5½ inches in length and 6 to 10 inches in diameter) may be creamy-white, greenish-white, pale ivory, pale lavender, light purple, purple, white or white tinged with lavender, pink-lavender, rose-purple or violet; flowering generally takes place between mid-March and mid-November (additional record: one for mid-February); the round and thorny fruits (1¼ to 2 inches in diameter) are green or whitish-green drying to brown. HABITAT: Within the range of this species it has been reported from mountains; mountaintops; sandy mesas; rocky canyons; chasms; sandy canyon bottoms; bases of cliffs; talus slopes; crevices in boulders and rocks; rocky ridges; foothills; rolling hills; rocky hillsides; bouldery, rocky, gravelly-loamy and sandy-silty slopes; rocky-sandy-loamy alluvial fans; alluvial fans; bajadas; boulder and rock outcrops; amongst rocks; plains; bouldery and sandy flats; sandy valley floors; sandy coastal beaches; coastal strands; along rocky, gravelly-sandy and sandy roadsides; along bedrock and sandy arroyos; along sandy draws; gulches; muddy springs; clayey streams; gravelly-sandy and sandy streambeds; along and in rocky-sandy and gravelly-sandy creeks; sandy creekbeds; along rivers; sandy riverbeds; along and in gravelly and sandy washes; within sandy drainage ways; silty lakebeds; freshwater and saltwater marshes; clayey-loamy swales; (sandy) banks of arroyos, washes and rivers; edges of rivers;

along margins of riverbeds; gravel bars; sandy benches; gravelly and sandy shelves; sandy terraces; sandy bottomlands; along sandy floodplains; fencelines; along and in ditches; canal banks; sandy riparian areas; sandy waste places, and disturbed areas growing in dry bouldery, rocky, rocky-gravelly, rocky-sandy, gravelly, gravelly-sandy and sandy soils; rocky-sandy loam, gravelly loam and clayey loam soils; rocky clay soils; clay soils, and sandy silty and silty soils, occurring from sea level 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; it was noted as having been used as a drug, medication or narcotic. This plant is extremely poisonous. The flowers are very large (to 6 inches in length and 4 inches in width) and trumpet-shaped. *Datura wrightii* is native to south-central and southern North America. *5, 6, 28 (recorded as *Datura meteloides*, "All parts of the plant extremely poisonous if ingested"), color photograph, 43 (072909), 46 (recorded as *Datura meteloides* DC., Page 760), 58, 63 (043010 - color presentation), 77, 80 (This plant is listed as a Secondary Poisonous Range Plant. "Toxicity results from the high content of several solanaceous alkaloids. Poisoning of both livestock and humans can occur from the ingestion of any part of the plant, including the seeds. ... It is rare when any livestock purposely consume any of the daturas. The ill-scented herbage makes the plants highly distasteful, and livestock literally have to be forced to eat it because of the lack of other forage."), 85 (043010 - color presentation), 86 (color photograph), 115 (color presentation), 127, **HR***

***Lycium* C. Linnaeus: Desert-thorn**

COMMON NAMES: Desert-thorn, Lycium, Thornbush, Wolfberry. *43 (052010), 46 (Pages 749-752), 63 (040207), **HR***

***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), **HR***

***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*)

Physalis lobata (see *Quincula lobata*)

Physalis lobata var. *albiflora* (see *Quincula lobata*)

***Quincula lobata* (J. Torrey) C.S. Rafinesque-Schmaltz: Chinese Lantern**

SYNONYMY: *Physalis lobata* J. Torrey, *Physalis lobata* J. Torrey var. *albiflora* U.T. Waterfall. COMMON NAMES: Chinese Lantern, Chinese-lantern, Ground Cherry, Physalis (Portuguese), Purple Quincula, Purple Ground Cherry, Purple Ground-cherry, Purple Groundcherry, Purpleflower Groundcherry. DESCRIPTION: Terrestrial perennial forb/herb (6 to 16 inches in height); the leaves are green or dark green; the flowers may be blue, blue-violet, dark lavender, magenta, pink-white, pale purple, purple, dark purple, rose-pink, light violet or violet; the anthers are yellow; flowering generally takes place between mid-February and early June and again between mid-July and late November (flowering probably continues from mid-June through early July but no flowering records were located for this time period). HABITAT: Within the range of this species it has been reported from mountains; mesas; gravelly cliffs; canyons; ridges; foothills; clayey hills; rocky hillsides; rocky slopes; alluvial fans; sandy bajadas; clayey banks; prairies; sandy plains; gravelly, sandy, sandy-clayey, clayey and silty flats; valley floors; along rocky, gravelly, gravelly-loamy, sandy and sandy-loamy roadsides; springs; along and in gravelly, gravelly-sandy-silty and sandy washes; drainages; lakebeds; sandy, clayey and silty playas; edges of playas; mudflats; bottomlands; lowlands; sandy-clayey floodplains; mesquite bosques; stock tanks; riparian areas, and disturbed areas growing in moist and dry desert pavement; rocky, gravelly, gravelly-sandy and sandy ground; gravelly loam, sandy loam and clayey loam ground; sandy clay and clay ground, and rocky silty, gravelly-sandy silty and silty ground, occurring from 400 to 6,400 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 a toy or in games and as a drug or medication. *Quincula lobata* is native to southwest-central and southern North America. *5, 6, 15, 16, 28 (color photograph, *Physalis lobata*), 43 (050510 - *Quincula lobata* Raf., *Physalis lobata* f. var. *albiflora* Waterf.), 46 (*Physalis lobata* Torr., Page 754), 63 (050510 - color presentation), 77 (*Physalis lobata* Torr.), 80 (Species of the genus *Physalis* are listed as being 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** (050510 - color presentation of dried material), 86 (color photograph, *Physalis lobata*), 115 (color presentation), 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*

Sterculiaceae: The Cacao Family

***Ayenia microphylla* A. Gray: Dense Ayenia**

COMMON NAMES: Ayenia, Dense Ayenia, Littleleaf Ayenia, Shrubby Ayenia. DESCRIPTION: Terrestrial perennial subshrub or shrub (8 inches to 5 feet in height); flowering generally takes place between mid-July and mid-September (additional records: one for mid-April, two for late April, two for early May and one for early December). HABITAT: Within the range of this species it has been reported from mountains; mesas; canyons; bases of cliffs; sandy ledges; foothills; rocky hills; hilltops; rocky hillsides; bedrock and rocky slopes; amongst boulders and rocks; plains; gravelly flats; basins; along roadsides; arroyos, and washes growing in dry bouldery, rocky and gravelly ground, occurring from 500 to 5,100 feet in elevation in the desertscrub ecological formation in the scrub, grassland and desertscrub ecological formation. NOTE: *Ayenia microphylla* is native to southwest-central and southern North America. *5, 6, 15, 16, 43 (050710), 46 (Page 555), 63 (050710), 77, **85** (050710 - color presentation of dried material)*

***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)*

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)*

Celtis pallida (see *Celtis ehrenbergiana*)

Celtis pallida var. *pallida* (see footnote 85 under *Celtis ehrenbergiana*)

Celtis tala var. *pallida* (see *Celtis ehrenbergiana*)

Verbenaceae: The Verbena Family

***Aloysia wrightii* (A. Gray) A.A. Heller: Wright's Beebrush**

SYNONYMY: *Lippia wrightii* A. Gray. COMMON NAMES: Altamisa, Bee Brush, Beebrush, Lemon Verbena, Mexican Oregano (a common name which is also applied to *Aloysia lycioides* which is the Mexican Oregano of commerce), Mintbush Lippia, Oreganillo, Vara Dulce, Wild Lemon Verbena, Wright Aloysia, Wright Beebrush, Wright's Beebrush, Wright Aloysia, Wright Lippia. DESCRIPTION: Terrestrial perennial drought-deciduous or semi-evergreen shrub (20 inches to 6½ feet in height and about the same in width); the small flowers, located in dense elongate spikes (¾ to 2¾ inches in length and ½ inch in width) are cream-white or white; flowering generally takes place between early March and early May and between mid-July and mid-December (additional record: one for early January). HABITAT: Within the range of this species it has been reported from mountains; rocky and clayey mesas; cliffs; rims of gorges; bedrock, bouldery-sandy, rocky, gravelly and gravelly-loamy canyons; along rocky canyon bottoms; gorges; rocky and gravelly bases of cliffs; talus slopes; crevices in rocks; buttes; rocky ledges; ridges; rocky ridgetops; clearings in woodlands; rocky foothills; rocky hills; rocky and rocky-clayey hillsides; bedrock, bouldery, rocky, rocky-gravelly-loamy, rocky-sandy-clayey-loamy, stony, gravelly and gravelly-sandy-loamy slopes; bajadas; rocky outcrops; amongst rocks; sandy lava flows; lava beds; debris fans; breaks; plains; rocky flats; basins; rocky valley floors; along roadsides; along rocky arroyos; bottoms of arroyos; within rocky draws; within ravines; along streams; creekbeds; along rivers; along and in bouldery, rocky, cobbly, gravelly and sandy washes; within drainages; marshy areas; (rocky) banks of rivers and washes; edges of arroyos and washes; (rocky) margins of arroyos; (rocky-sandy) shores of lakes; gravel bars; terraces; floodplains; along ditches, and riparian areas growing in damp and dry rocky desert pavement; bouldery, bouldery-rocky, bouldery-sandy, rocky, rocky-gravelly, rocky-sandy, cobbly, cindery-sandy, gravelly and sandy ground; rocky-gravelly loam, rocky-sandy-clayey loam, gravelly loam and gravelly-sandy loam ground, and rocky clay and clay 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, and has been suggested for use as an informal hedge; in herb gardens, and natural landscapes. 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 drug or medication. The Wright Beebrush may live to be more than 72 years of age. is native to southwest-central and southern North America. *5, 6, 13 (*Lippia wrightii* A. Gray), 15, 16, 18, 43 (050910 - *Aloysia wrightii* A. Heller), 46 (Page 729), 58, 63 (050910 - color presentation), 77, **85** (050910 - color presentation), 91, 127*

***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***

Lippia wrightii (see *Aloysia wrightii*)

Verbena gooddingii (see *Glandularia gooddingii*)

Verbena gooddingii var. *nepetifolia* (see *Glandularia gooddingii*)

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 Whitethorn Acacia and Foothill Paloverde, 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*

Phoradendron californicum var. *distans* (see *Phoradendron californicum*)

Zygophyllaceae: The Creosote-bush Family

Fagonia californica subsp. *laevis* (see *Fagonia laevis*)

Fagonia californica subsp. *longipes* (see *Fagonia laevis*)

***Fagonia laevis* P.C. Standley: California Fagonbush**

SYNONYMY: *Fagonia californica* G. Bentham subsp. *laevis* (P.C. Standley) I.L. Wiggins, *Fagonia californica* G. Bentham subsp. *longipes* (P.C. Standley) R.S. Felger, *Fagonia longipes* P.C. Standley. COMMON NAMES: California Fagonbush, California Fagonia, Smooth-stemmed Fagonia. DESCRIPTION: Terrestrial perennial subshrub or shrub (4 inches to 2 feet in height, plants reported to be 4 to 6 inches in height had a crown 8 to 10 inches in width, one plant was described as being 12 inches in height with a crown 18 inches in width); the leaves are dark green; the flowers lavender, lavender-pink, magenta, pink, purple, purple-pink or reddish-lavender; flowering generally takes place between mid-January and late May and late September to early December (additional records: two for mid-June and two for late July). HABITAT: Within the range of this species it has been reported from mountains; rocky mountainsides; rocky and sandy mesas; cliffs; canyons; bases of cliffs; crevices in rocks; buttes; craters; rocky hills; rocky hillsides; rocky and gravelly slopes; bajadas; rocky outcrops; amongst boulders and rocks; flats; valley floors; roadsides; arroyos; rocky and gravelly arroyo bottoms; along and in gravelly-sandy and sandy washes; banks of washes; benches, and sandy floodplains growing in dry desert pavement; bouldery, rocky, rocky-sandy, stony, gravelly, gravelly-sandy and sandy ground; stony-clayey loam and gravelly-sandy loam ground, and alkaline clay ground, occurring from sea level to 3,200 feet in elevation in the desertscrub ecological formation. NOTE: *Fagonia laevis* is native to southwest-central and southern North America. *5, 6, 13, 28 (color photograph), 43 (070810), 46 (recorded as *Fagonia californica* Benth., Page 490), 63 (070810 - color presentation), 77, 85 (070810 - color presentation of dried material, unable to access species information), 86 (recorded as *Fagonia californica*, color photograph)*

Fagonia longipes (see *Fagonia laevis*)

***Kallstroemia californica* (S. Watson) A.M. Vail: California Caltrop**

SYNONYMY: *Kallstroemia brachystylis* A.M. Vail, *Kallstroemia californica* (S. Watson) A.M. Vail var. *brachystylis* (A.M. Vail) T.H. Kearney & R.H. Peebles. COMMON NAMES: California Caltrop, California Carpetweed, Little Summer Poppy, Mal de Ojo. DESCRIPTION: Terrestrial annual forb/herb (sprawling prostrate, decumbent and/or ascending stems 2 to 8 inches in height and 2 inches to 5 feet in length); the stems may be light pink or reddish; the leaves are gray-green; the flowers (¼ to ½

inch in diameter) may be pale orange, orange, dull orange, orange-yellow, yellow or yellow-orange; flowering generally takes place between early July and mid-November (additional records: one for early February, one for mid-April, one for early June and one for late December). HABITAT: Within the range of this species it has been reported from mountains; mesas; rocky and sandy canyons; canyon bottoms; bases of cliffs; pockets of sand; meadows; hills; rocky hillsides; rocky, rocky-gravelly, gravelly-sandy, sandy and sandy-silty slopes; gravelly and sandy bajadas; amongst rocks; bedrock foothills; sand hills; sand dunes; sandy plains; gravelly, sandy and silty flats; basins; sandy and silty valley floors; coastal dunes; coastal shores; along rocky-gravelly, gravelly, gravelly-loamy, sandy and sandy-loamy roadsides; arroyos; along streams; along streambeds; along rivers; along and in rocky, sandy and silty washes; along drainages; sandy playas; sandy-silty depressions; silty swales; along (sandy) banks of rivers and washes; along edges of washes; along margins of washes; mudflats; sandy beaches; sandy benches; clayey bottomlands; along sandy floodplains; mesquite bosques; along fencelines; around stock tanks; silty ditches; riparian areas; waste places, and disturbed areas growing in moist and dry desert pavement; rocky, rocky-gravelly, gravelly, gravelly-sandy and sandy ground; gravelly loam, sandy loam, sandy-clayey loam, clayey loam and loam ground; silty clay and clay ground, and 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 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. *Kallstroemia californica* is native to southwest-central and southern North America. *5, 6, 15, 43 (051710 - *Kallstroemia californica* Vail), 46 (Page 492), 58, 63 (051510), 68, 77 (color photograph #100), 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 of dried material), 86 (note under *Kallstroemia grandiflora*), 127*

Kallstroemia californica var. *brachystylis* (see *Kallstroemia californica*)

***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), **WTK** (September 4, 2005)*

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* is the variety reported as occurring in Arizona): Creosote Bush**

SYNONYMY: (for *L.t.* var. *tridentata*: *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, Chihuahuan Creosote, Coville Creosotebush, Creosote Bush, Creosote-bush, Creosotebush, Gobernadora (Spanish), Greasewood (erroneously called), Guamis, Hediondilla (Spanish - for Little Bad Smeller), Kreosotstrauch (German), Shea Goi (Pima), Spreading Creosote, Z'xat (Seri). DESCRIPTION: Terrestrial perennial evergreen shrub (20 inches to 13 feet in height and about the same in width, plants were observed and described as being 13 inches in height and 10 inches in width, one plant was observed and described as being 40 inches in height and 2 feet in width, plants were observed and described as being 40 inches in height and 50 inches in width, one plant was observed and described as being 4 feet in height and 5 feet in width, plants were observed and described as being 4 feet in height and 3 feet in width, one plant was observed and described as being 6 feet in height and 8 feet 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, rocky-gravelly, rocky-clayey-loamy, gravelly and sandy mesas; plateaus; rocky cliffs; rims of canyons; rocky, sandy and clayey canyons; rocky canyon bottoms; rocky talus slopes; sandy pockets of soil; sandy buttes; along rocky ridges; bedrock, bouldery-cobbly and rocky foothills; amongst bouldery, rocky, rocky-sandy, gravelly and sandy hills; hilltops; rocky and sandy hillsides; bedrock, rocky, rocky-sandy, rocky-clayey-loamy, stony-gravelly-sandy, gravelly, gravelly-sandy, sandy and sandy-silty slopes; rocky alluvial fans; stony-gravelly-sandy, gravelly, sandy and sandy-silty bajadas; pediments; rocky outcrops; amongst boulders and rocks; lava fields; sandy lava beds; sand dunes; breaks; rocky-gravelly, gravelly and sandy plains; rocky, rocky-sandy, cindery-gravelly, gravelly, gravelly-sandy, sandy, sandy-clayey and clayey-silty flats; basins; sandy valley floors; along rocky-sandy, stony, gravelly, gravelly-loamy and sandy roadsides; stony-gravelly-sandy arroyos; along sandy bottoms of arroyos; springs; rocky streambeds; creekbeds; along rivers; sandy riverbeds; along and in rocky, gravelly, gravelly-sandy and sandy washes; drainages; along (sandy) banks of streams, creeks, rivers and washes; (sandy) edges of washes, lakes and swales; margins of washes; (rocky and rocky-sandy) shores of rivers and lakes; gravel and sand bars; benches; shelves; gravelly, sandy and sandy-silty terraces; floodplains; mesquite bosques; around margins of charcos; in gravelly-sand and sandy-clay along canals; gravelly and gravelly-sandy riparian areas, and disturbed areas growing in dry rocky desert pavement; bouldery, bouldery-cobbly, rocky, rocky-gravelly, rocky-sandy, stony, stony-gravelly-sandy, cindery-gravelly, gravelly, gravelly-sandy and sandy ground; rocky-clayey loam, gravelly loam and clayey loam ground; sandy clay and clay ground, and rocky-sandy silty, sandy silty, clayey silty and silty ground, occurring from below 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, it was noted as having been used as a building material (L.t. var. *tridentata*), as tools, in the making of brooms, brushes and musical instruments (L.t. var. *tridentata*), as a drug or medication and

in body art (L.t. var. *tridentata*). 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* is native to southwest-central and southern North America. *5, 6, 13 (color photograph), 18, 26 (recorded as *Larrea tridentata*, color photograph), 28, (recorded as *Larrea tridentata*, color photograph), 43 (051710 - *Larrea tridentata* Coville, *Larrea divaricata* Cav. subsp. *tridentata* (Sessé & Moc. ex DC.) Felger), 46 ("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 (color photograph), 107, 115 (color presentation), 127*

***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** (September 4, 2005)*

LISTING OF ANIMALS

STRICTLY ENFORCED LAWS PROTECT MANY OF ARIZONA'S NATIVE ANIMALS FROM COLLECTION AND FROM BEING DISTURBED OR KILLED

Operation GAME THIEF: 602-942-3000

Kingdom Animalia: The Animal Kingdom
Subkingdom Metazoa: The Multicellular Animals
Section Deuterostomia: The Deuterostomes
Phylum Chordata: The Chordates
Subphylum Vertebrata: The Vertebrates

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 of species), 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*)

Vulpes velox (see Note under *Vulpes macrotis* subsp. *arispus*)

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 (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), **ADS** (Sunday, April 13, 2008, Section A, Pages 1 and 10, includes a map of recent sightings)*

***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 (see *Panthera onca*)

Felis onca subsp. *arizonensis* (see *Panthera onca* subsp. *arizonensis*)

Felis pardalis (see *Leopardus pardalis*)

Felis pardalis subsp *sonoriensis* (see *Leopardus pardalis* subsp *sonoriensis*)

Felis rufus (see *Lynx rufus*)

Felis rufus subsp. *baileyi* (see *Lynx rufus* subsp. *baileyi*)

***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, recorded as

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 (see *Chaetodipus baileyi*)

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 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)*

***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 (recorded as *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)*

***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)*

Mustelidae: The Weasel and Allies Family

***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 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* and *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, *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, recorded as *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 (*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: *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)*

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FOOTNOTES and REFERENCES
for the Species Distribution Listings compiled for Arizona

(1) General Mapping:

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www.delorme.com

National Geographic Arizona Seamless USGS Topographic Maps. Maps created with TOPO! R C 2002 National Geographic.

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(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.

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(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

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(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.

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http://nmnhp.unm.edu/bisonm/bisonquery.php

for Invertebrate Animals:

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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
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(6) Growth Habits of Plants:

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(AHS) Arizona Historical Society

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(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)

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