Le Jardin de Mère Nature dans une Petite Planète

(Mother Nature's Garden on a Small Planet)

a SPECIES DISTRIBUTION LISTING for

TOWNSHIP 12 SOUTH, RANGE 08 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 east southeast toward the Waterman Mountains.
William T. Kendall, July 4, 2005

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

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

MAJOR CONTRIBUTORS AND SOURCES OF INFORMATION

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

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

Van Devender, T.R. and R.K., Phelps, V., Thayer, D. and ASDM Docents, Paper - 15 April, 2 Oct., 23 Dec. 1986; 11 April 1987; Waterman Mountains: limestone ridges and lower slopes; 2400-2700 ft. elev.; T12S, R8E Sec. 32+33; 32D20'30-35"N; 111D 26-27' W. *138*

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.

CONTENTS

TOWNSHIP NOTES

LOCATION: This township is located in north-central Pima County in south-central Arizona. A portion of the Tohono O'Odham Indian Reservation is located in the south half of this township. A portion of the Tohono O'Odham Indian Reservation boundary lines run along the west and south side of the north half and the east side of the south half of this township. The historic site of the mining community of Silver Bell is located in this township. Portions of this township are located within the Ironwood Forest National Monument.

Historic Ranching Activities: General ranching activities included the placement of stock tanks.

Historic Mining Activities: General mining activities included barrow pits, gravel pits, mining, quarrying and prospecting. Named mines include the Silver Bell Mine.

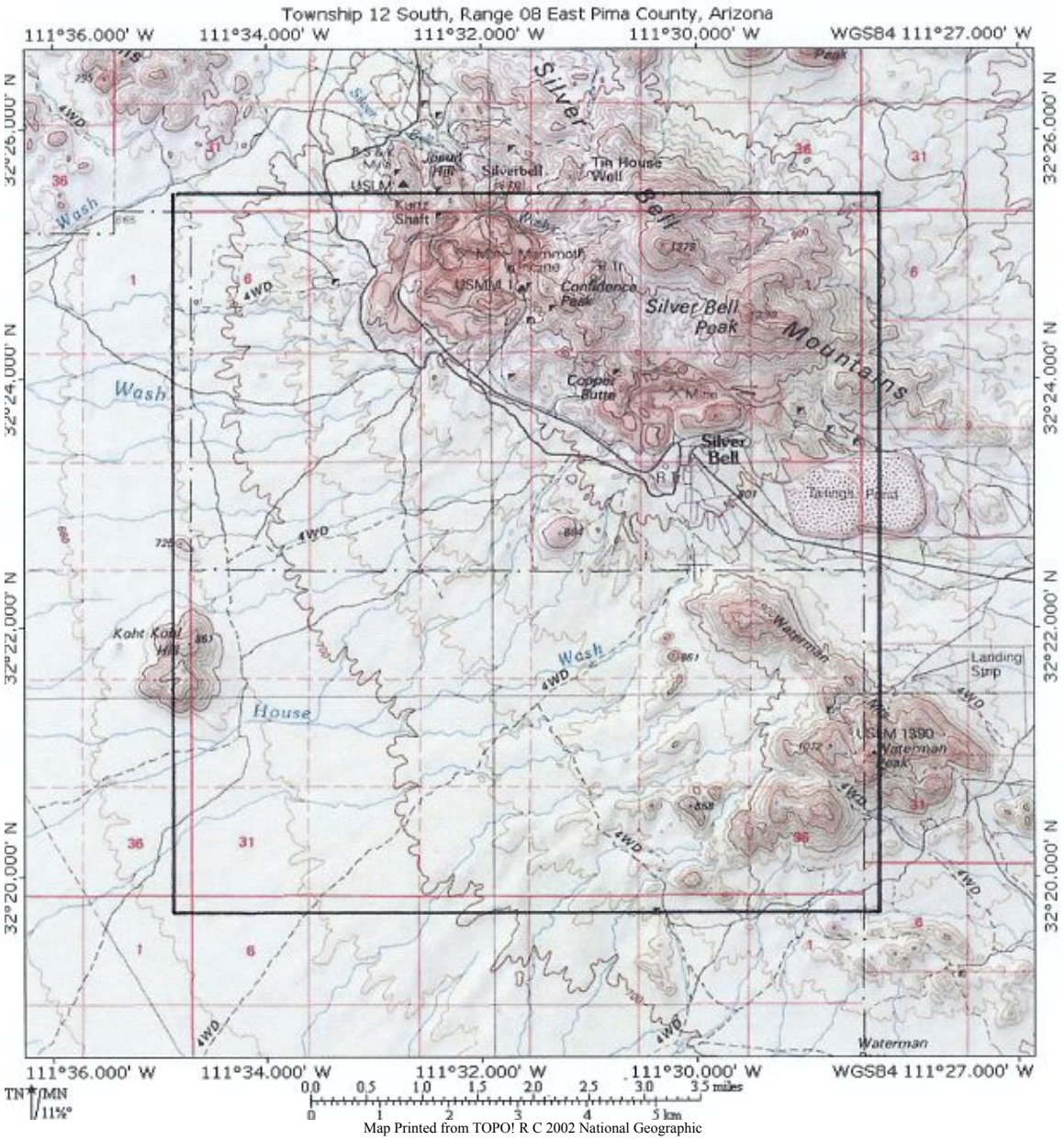
LANDMARKS: The southern portion of the Silver Bell Mountains is located in the northeast half of the north half of this township. The western portion of the Waterman Mountains is located in the east half of the southeast quarter of this township. Named peaks and ridges in the township include: Confidence Peak, North Butte, Copper Butte, Koht Kohl Hill (eastern portion), Portland Ridge, Silver Bell Peak (4,261 feet), Union Hill and Wild Hog Mountain. Named washes include the Cocio Wash, House Wash and Mammoth Wash.

ELEVATION: Elevations range from approximately 2,179 feet at the southwest corner to 4,267 feet at Silver Bell Peak in the Silver Bell Mountains (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 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: This township is located within 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’)
Velvet Mesquite (*Prosopis velutina* - 2’ to 56’)

Organ Pipe Cactus (*Stenocereus thurberi* - 5’ to 40’)
Blue Paloverde (*Parkinsonia florida* - 40” to 40’)
Desert Ironwood (*Olneya tesota* - 10’ to 33’)
Ocotillo (*Fouquieria splendens* - 5’ to 33’)
Foothill Paloverde (*Parkinsonia microphylla* - 40” to 26’)
Elephant Tree (*Bursera microphylla* - 2½’ to 26’)
Catclaw Acacia (*Acacia greggii* var. *greggii* - 40” to 25’)
Desert Hackberry (*Celtis ehrenbergiana* - 3’ to 20’)
Whitethorn Acacia (*Acacia constricta* - 1’ to 20’)
Emory Crucifixion Thorn (*Castela emoryi* - 3’ to 16½’)
Chain-fruit Cholla (*Cylindropuntia fulgida* var. *fulgida* - 3’ to 15’)
Desert Lavender (*Hyptis emoryi* - 8” to 15’)
Greythorn (*Ziziphus obtusifolia* var. *canescens* - 3’ to 13’)
Creosote Bush (*Larrea tridentata* var. *tridentata* - 20” to 13’)
Jojoba (*Simmondsia chinensis* - 8” to 13’)
Pencil Cholla (*Cylindropuntia arbuscula* - 20” to 12’)
Fishhook Barrel Cactus (*Ferocactus wislizeni* - 1’ to 11’)
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’)
Anderson Lycium (*Lycium andersonii* - 1’ to 10’)
Le Conte Barrel Cactus (*Ferocactus cylindraceus* var. *lecontei* - 10” to 10’)
Arizona Yucca (*Yucca* x *schottii* (pro sp.) [*baccata* x *elata*] - trunkless to 10’) - do not confuse this species with the Schott or Mountain Yucca (*Yucca schottii* now considered to be *Yucca madrensis*)
Ragged Rockflower (*Crossosoma bigelovii* - 20” to 8’)
Desert Pricklypear Cactus (*Opuntia engelmannii* var. *engelmannii* - 20” to 8’)

Vines and Climbers

Slender Janusia (*Janusia gracilis* - 16” to 10’)
Little Snapdragon Vine (*Maurandella antirrhiniflora* - 1’ to 8’)

Shrubs (2 to 7 feet maximum height)

Major Cholla (*Cylindropuntia acanthocarpa* var. *major* - 32” 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”)
Allthorn (*Koeberlinia spinosa* var. *spinosa* - 3’ to 6’)
Desert Christmas Cactus (*Cylindropuntia leptocaulis* - 1’ to 6’)
White Brittlebush (*Encelia farinosa* - 1’ to 6’)
American Threefold (*Trixis californica* - 10” to 6’)
Black-spined Pricklypear Cactus (*Opuntia macrocentra* var. *macrocentra* - 2’ to 5’)
Coulter Brickellbush (*Brickellia coulteri* - 1’ to 5’)

Rough Jointfir (*Ephedra aspera* - 1’ to 5’)
White Rantany (*Krameria grayi* - 8” to 5’)
Fairyduster (*Calliandra eriophylla* - 4” to 5’)
Triangleleaf Bursage (*Ambrosia deltoidea* - 1’ to 4’)
Mariola (*Parthenium incanum* - 1’ to 4’)
Arizona Rosemallow (*Hibiscus biseptus* - 18” to 40”)
Arizona Cockroach Plant (*Haplophyton crooksii* - 7” to 40”)
Eastern Mojave Buckwheat (*Eriogonum fasciculatum* var. *polifolium* - 4” to 40”)
Arizona Wrightwort (*Carlowrightia arizonica* - 2” to 40”)
Range Ratany (*Krameria erecta* - 2” to 40”)
Desert Agave (*Agave deserti* subsp. *simplex* - 12” to 28”)

Grasses

Spidergrass (*Aristida ternipes* - 10” to 79”)
Tanglehead (*Heteropogon contortus* - 8” to 60”)
Whiplash Pappusgrass (*Pappophorum vaginatum* - 16” to 52”)
Sideoats Grama (*Bouteloua curtipendula* - 3” to 52”)
Arizona Cottontop (*Digitaria californica* - 12” to 48”)
Plains Bristlegrass (*Setaria vulpiseta* - 12” to 48”)
Sand Dropseed (*Sporobolus cryptandrus* - 12” to 48”)
Bush Muhly (*Muhlenbergia porteri* - 10” to 44”)
Blue Threeawn (*Aristida purpurea* var. *nealleyi* - 6” to 40”)
Littleseed Muhly (*Muhlenbergia microsperma* - 4” to 40”)
Sixweeks Threeawn (*Aristida adscensionis* - 1¼” to 40”)
Slender Grama (*Bouteloua repens* - 4” to 32”)
Slim Tridens (*Tridens muticus* - 3” to 32”)
Sixweeks Fescue (*Vulpia octoflora* - 2” to 24”)
Spike Pappusgrass (*Enneapogon desvauxii* - 4” to 20”)
Bigelow Bluegrass (*Poa bigelovii* - 2” to 20”)
Red Grama (*Bouteloua trifida* var. *trifida* - 2” to 16”)
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’)
Parry Penstemon (*Penstemon parryi* - 2’ to 5’)
Brownfoot (*Acourtia wrightii* - 1’ to 5’)
Rock Hibiscus (*Hibiscus denudatus* - 10” to 56”)
Parry False Prairie-clover (*Marina parryi* - 8” to 50”)
Bladdermallow (*Herissantia crispa* - 8” to 4’)
Tall Mountain Larkspur (*Delphinium scaposum* - 6” to 4’)
Yellow Menodora (*Menodora scabra* - 6” to 4’)
Longflowered Tubetongue (*Justicia longii* - 8” to 40”)
Distant Phacelia (*Phacelia distans* - 3” to 40”)
Lacy Tansyaster (*Machaeranthera pinnatifida* - 4” to 36”)
Desert Senna (*Senna covesii* - 10” to 32”)
Arizona Monardella (*Monardella arizonica* - 6” to 32”)
Whitestem Paperflower (*Psilostrophe cooperi* - 4” to 32”)

Covena (*Dichelostemma capitatum* subsp. *pauciflorum* - 16” to 30”)
Nichol Hedgehog Cactus (*Echinocereus nicholii* - 8” to 28”)
Hairyseed Bahia (*Bahia absinthifolia* - 10” to 24”)
Wavy Scaly Cloakfern (*Astrolepis sinuata* subsp. *sinuata* - 4” to 24”)
Desert Mariposa Lily (*Calochortus kennedyi* - 4” to 24”)
New Mexico Plumeseed (*Rafinesquia neomexicana* - 4” to 24”)
Chia (*Salvia columbariae* var. *columbariae* - 4” to 24”)
Golden Dogweed (*Thymophylla pentachaeta* var. *pentachaeta* - 4” to 24”)
Flatcrown Buckwheat (*Eriogonum deflexum* var. *deflexum* - 2” to 24”)
Texas Stork’s Bill (*Erodium texanum* - 2” to 24”)
Desert Windflower (*Anemone tuberosa* var. *tuberosa* - 4” to 20”)
Desert Zinnia (*Zinnia acerosa* - 3” to 20”)
Cleftleaf Wildheliotrope (*Phacelia crenulata* - 3” to 18”)
Bundle Hedgehog Cactus (*Echinocereus fasciculatus* - 2” to 18”)
Villous Lipfern (*Cheilanthes villosa* - 3” to 14”)
Star Cloakfern (*Notholaena standleyi* - 2” to 13”)
Largeflower Onion (*Allium macropetalum* - 3” to 12”)
Cochise Scaly Cloakfern (*Astrolepis cochisensis* subsp. *cochisensis* - 3” to 12”)
Graham Pincushion Cactus (*Mammillaria grahamii* - 1” to 12”)
Mohave Desertstar (*Monoptilon bellioides* - 1” to 12”)
Woolly Crinklemat (*Tiquilia canescens* - 4” to 8”)
Jones’ False Cloak Fern (*Argyrochosma jonesii* - 2” to 5”)
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 with 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), **138***

Division Pteridophyta: The Ferns

CLASS FILICOPSIDA: The FERNS

***Argyrochosma jonesii* (W.R. Maxon) M.D. Windham: Jones' False Cloak Fern**

SYNONYMY: *Cheilanthes jonesii* (W.R. Maxon) P.A. Munz, *Notholaena jonesii* W.R. Maxon, *Pellaea jonesii* (W.R. Maxon) C.V. Morton. COMMON NAMES: Jones' Cloak Fern, Jones' False Cloak Fern, Jone's Lipfern, Jones Lipfern. DESCRIPTION: Terrestrial perennial evergreen forb/herb (fronds are 2 to 5 inches in length); the leaf blades are dark blue-green with dark brown to reddish-brown stipes; sporulation generally takes place spring through fall. HABITAT: Within the range of this species it has been reported from cliffs; rock walls; ledges; rocky slopes, and crevices growing in dry rocky ground, occurring from 1,900 to 6,300 feet in elevation. NOTES: This plant may be an attractive component of a restored native habitat. *Argyrochosma jonesii* is native to southwest-central and southern North America. *5, 6, 43 (062910), 46 (*Pellaea jonesii* (Maxon) Morton Page 37), 51 (recorded as *Notholaena jonesii*, color photograph), 63 (062910), 85 (062910 - color presentation of dried material, unable to access species information), 122, **138** (recorded as *Notholaena jonesii*)

***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, **138** (recorded as *Notholaena cochisensis*)*

***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; 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, **138** (recorded as *Notholaena sinuata*)*

Cheilanthes jonesii (see *Argyrochosma jonesii*)

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

Cheilanthes standleyi (see *Notholaena standleyi*)

***Cheilanthes villosa* G.E. Davenport ex W.R. Maxon: Villous Lipfern**

COMMON NAMES: Hairy Lipfern, Villous Lip Fern, Villous Lipfern. DESCRIPTION: Terrestrial perennial evergreen forb/herb (fronds are 3 to 14 inches in length), the leaf blades are green with dark brown or purplish-black stipes; sporulation generally takes place from summer through fall. HABITAT: Within the range of this species it has been reported from mountains; rocky cliffs; canyons; talus slopes; crevices in boulders and rocks; rock ledges; rocky ridges; rocky hillsides; rocky slopes; rocky outcrops; amongst boulders and rocks; bases of boulders, and rock niches growing in dry bouldery, rocky and stony ground, occurring from 1,300 to 7,300 feet in elevation in the forest, woodland, scrub, grassland and desertscrub ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. *Cheilanthes villosa* is native to southwest-central and southern North America. *5, 6, 15, 43 (062910 - *Cheilanthes villosa* Davenp.), 46 (Page 39), 51 (color photograph), 63 (062910 - color presentation), **85** (062910 - color presentation of dried material), **138***

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

Notholaena jonesii (see *Argyrochosma jonesii*)

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

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

***Notholaena standleyi* W.R. Maxon: Star Cloak Fern**

SYNONYMY: *Cheilanthes standleyi* (W.R. Maxon) J.T. Mickel. COMMON NAMES: Cloak-fern, Standley Cloak Fern, Standley's Cloak Fern, Star Cloak Fern. DESCRIPTION: Terrestrial perennial evergreen forb/herb (fronds are 2 to 13 inches in length with the star-shaped laminae being 1 to 4 inches in width, a clump up to 8 inches in width was reported); the leaf blades are a shiny dark green above (with a cream-white, gold, silvery-yellow, yellow or yellow-green waxy-looking glandular exudate below) with brown or reddish-brown stipes; sporulation takes place between late spring and fall. HABITAT: Within the range of this species it has been reported from mountains; rocky mountaintops; rocky mountainsides; rocky cliffs; bouldery and rocky canyons; canyon walls; bouldery canyon bottoms; rocky gorges; along bases of cliffs; along crevices in boulders and rocks; buttes; bouldery-gravelly knobs; rocky knolls; rocky and sandy ledges; under ledges; rocky ridges; foothills; hills; rocky hilltops; rocky hillsides; bouldery, bouldery-gravelly, rocky, rocky-sandy-clayey-loamy, rocky-loamy-silty, sandy-loamy and loamy slopes; bajadas; boulder and rocky outcrops; amongst boulders and rocks; bases of boulders and rocks; sandy lava flows; bouldery lava beds; shaded pockets; along rocky arroyos; within rocky draws; gulches; rocky ravines; creekbeds; in bouldery-sandy and sandy washes; drainages; rocky banks of washes, and riparian areas growing in dry bouldery, bouldery-gravelly, bouldery-sandy, rocky and sandy ground; rocky-sandy-clayey loam, gravelly loam, sandy loam, silty loam and loam ground, and rocky-loamy silty ground, occurring from 900 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, it is commonly found growing in clumps. *Notholaena standleyi* is native to southwest-central and southern North America. *5, 6, 15, 16, 28 (color photograph), 43 (081109), 46 (Page 42), 51 (color photograph), 58, 63 (081109 - color presentation), 85 (081109 - color presentation), 115 (color presentation), **138***

Pellaea jonesii (see *Argyrochosma jonesii*)

Superdivision Spermatophyta: The Seed Plants

Division Gnetophyta: The Gnetophytes

CLASS GNETOPSIDA: The GNETOPS

Ephedraceae: The Mormon-tea Family

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

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

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

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

COMMON NAMES: Gray Ephedra, Mormon Tea, Mormon-tea, Nevada Ephedra, Nevada Jointfir. DESCRIPTION: Terrestrial perennial subshrub or shrub (1 to 5 feet in height and about the same in width); the bark is gray; the young twigs are pale green aging to yellow; the production of strobili (female and male cones) takes place from late winter to mid-spring with the cones generally opening from March through May . HABITAT: Within the range of this species it has been reported from mountains; canyons; ridgetops; foothills; rocky hills; gravelly hillsides; rocky slopes; sandy flats; valley floors; along gravelly washes; terraces; floodplains and disturbed areas growing in dry rocky, rocky-sandy, gravelly and sandy ground and rocky loam ground, occurring from 900 to 7,100 feet in elevation in the woodland, scrub, grassland and desertscrub ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. This plant was reported to have been utilized by native peoples of North America and could be investigated to determine its value as a home garden or commercial food and/or beverage crop; it was also noted as having been used as a fuel, as a tool (the wood reportedly provided the best charcoal for tattooing and as a drug or medication. The Nevada Jointfir is browsed by Mule Deer (*Odocoileus hemionus*), Pronghorn (*Antilocapra americana*) and Rocky Mountain Bighorn Sheep (*Ovis canadensis*), and the seeds are food for small mammals and birds. *Ephedra nevadensis* is native to southwest-central and southern North America. *5, 6, 13, 18, 43 (062910), 46 (Page 61), 48 (genus), 63 (062910 - color presentation), 85 (062910 - color presentation, unable to access species information), 127, **138***

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

Division Magnoliophyta: The Flowering Plants

CLASS LILIOPSIDA: The MONOCOTS

Agavaceae: The Century-plant Family

***Agave deserti* G. Engelmann (subsp. *simplex* H.S. Gentry is the subspecies reported as occurring in Arizona): Desert Agave**

COMMON NAMES: Agave, Amul, Desert Agave, Desert Century Plant, Single-rosette Desert Agave, Mescal. DESCRIPTION: Terrestrial perennial evergreen leaf-succulent forb/herb, subshrub or shrub (12 to 28 inches in height and 16 to 44 inches in diameter with a flowering stem reaching 8 to 23 feet in height); the rosettes are bluish-green, gray, gray-green or green; the flowers are pale greenish-

yellow or light yellow opening fully to a bright yellow; the anthers are yellow; the stigmas are pale yellow; flowering generally takes place between early May and early July (additional records: one for late February, one for early March, one for early August and one for late October). HABITAT: Within the range of this species it has been reported from mountains; canyons; rock ledges; ridges; hills; rocky hillsides; rocky and gravelly slopes; rocky and gravelly bajadas; rocky outcrops; plains; sandy flats; arroyos, along drainage ways in rocky, gravelly, gravelly-sandy and sandy soils, occurring from 500 to 5,000 feet elevation in the woodland, scrub, grassland and desertscrub ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. This plant was reported to have been utilized by native peoples of North America and could be investigated to determine its value as a home garden or commercial food and/or fiber crop; it was also noted as having been used as a fuel, as tools, dyes, as ceremonial items and as a cash crop. Peripheral populations have been observed growing in the shade of Foothill Paloverdes. This is a PERIPHERAL POPULATION. *Agave deserti* is native to southwest-central and southern North America. *5, 6, 13, 17, 43 (062910), 45 (color photograph), 46 (Page 194), 48 (genus), 63 (062910 - color presentation including habitat), **85** (062910 - unable to access species information), 91, 127*

***Agave deserti* G. Engelmann subsp. *simplex* H.S. Gentry: Desert Agave**

COMMON NAMES: Agave, Amul, Desert Agave, Desert Century Plant, Simple Desert Agave, Single-rosette Desert Agave, Mescal. DESCRIPTION: Terrestrial perennial evergreen leaf-succulent forb/herb, subshrub or shrub (12 to 28 inches in height and 16 to 44 inches in diameter with a flowering stem reaching 7 to 23 feet in height); the rosettes are bluish-green, gray, gray-green, green or light green-glaucous white; the flowers are pale greenish-yellowing opening fully to a bright yellow; the anthers are yellow; the stigmas are pale yellow; flowering generally takes place between May and October. HABITAT: Within the range of this species it has been reported from mountains; canyons; rock ledges; ridges; hills; rocky and gravelly slopes; rocky and gravelly bajadas; rocky outcrops; plains; sandy flats; arroyos, and along drainage ways growing in dry rocky, gravelly, gravelly-sandy and sandy ground, occurring from 500 to 5,000 feet elevation in the woodland, scrub, grassland and desertscrub ecological formation. NOTES: This plant may be an attractive component of a restored native habitat. The species, *Agave deserti*, 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 fuel, as tools, dyes, as ceremonial items and as a cash crop. Peripheral populations in the desert have been observed growing in the shade of Foothill Paloverdes. This is a PERIPHERAL POPULATION. *Agave deserti* subsp. *simplex* is native to southwest-central and southern North America. *5, 6, 13, 17, 43 (062910), 45 (color photograph), 46 (species, Page 194), 48 (genus), 63 (062910 - subsp. *simplex* H.S. Gentry is the subspecies reported as occurring in Arizona), 85 (062910 - color presentation including habitat, unable to access species information), 91, 127 (species), **HR***

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

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

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

SYNONYMY: *Yucca arizonica* S.A. McKelvey, *Yucca baccata* J. Torrey var. *brevifolia* (H.W. Schott ex J. Torrey) L.D. Benson & R.A. Darrow, *Yucca thornberi* S.A. McKelvey. COMMON NAMES: Arizona Yucca, Banana Yucca, Blue Yucca, Datil, Palma Criolla, Schott's Yucca, Spanish Dagger, Thornber Yucca. DESCRIPTION: Terrestrial perennial evergreen leaf-succulent forb/herb, subshrub, shrub or tree (cespitose without trunks to 10 feet in height with a flowering stalk 13 inches to 5 feet in height); the leaves are blue-green, gray-green, green, dark green, dark olive-green, yellow-green (older leaves), dark yellow-green or yellowish-green; the flowers are cream, cream-white, green-creamish-yellow & cream-white with maroon-purple markings, greenish-cream lightly flushed with maroon in center, greenish-yellow-cream or white; the anthers are white or yellow; flowering generally takes place

between early March and early June (additional records: one for early February, one for late August, one for late September and one for early October). HABITAT: Within the range of this species it has been reported from mountains; mountainsides; mesas; canyons; canyon bottoms; bases of cliffs; bluffs; knolls; ridges; ridgetops; foothills; hills; rocky hillsides; rocky slopes; bajadas; plains; gravelly flats; valley floors; arroyos; draws; along and in washes; along margins of washes, and benches growing in dry rocky, gravelly and sandy ground and gravelly loam ground, occurring from 1,900 to 6,400 feet in elevation in the woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. Do not confuse this plant with the Mountain Yucca, *Yucca schottii* auct non G. Engelmann [misapplied] which is now considered to be *Yucca madrensis* H.S. Gentry. *Yucca* x *schottii* is native to southwest-central and southern North America. *5, 6, 13 (color photograph, recorded as *Yucca baccata* Torrey var. *brevifolia* (Schott) Benson & Darrow), 15 (color photograph on back cover of *Yucca thornberi* in habitat), 26 (genus), 43 (052610 - *Yucca baccata* Torr. in Emory var. *brevifolia* L.D. Benson & R.A. Darrow), 45 (color photograph, recorded as *Yucca arizonica*), 46 (recorded as *Yucca arizonica* McKelvey, Page 187 and *Yucca thornberi* McKelvey, Page 187), 48 (genus), 58, 63 (052610 - color presentation), 77, 85 (052710), 91 (recorded as *Yucca arizonica* McKelvey), **HR** (recorded as *Yucca baccata* var. *brevifolia*)*

Yucca thornberi (see *Yucca* x *schottii* (pro sp.) [*baccata* x *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, **HR***

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

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

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

***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), **HR***

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

Poaceae (Gramineae): The Grass Family

Andropogon contortus (see *Heteropogon contortus*)

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

COMMON NAMES: Annual Bristle Grass, Flechilla (Spanish), Plumilla (Spanish), Six Weeks Three Awn Grass, Six-weeks Threeawn, Six-weeks Three-awn, Six-weeks Three-awn Grass, Sixweeks Threeawn, Three-awn, Zacate Cola de Zorra, Zacate Tres Barbas. DESCRIPTION: Terrestrial annual tufted graminoid (erect culms 1¼ to 40 inches in height); the color of the foliage has been described as being bright green, purple or yellow curing to straw; the florets may be purple or red-purple; flowering generally takes place between early August and late June; the seed heads may be purple. HABITAT: Within the range of this species it has been reported from rocky mountains; mountainsides; bedrock, rocky-sandy-loamy, gravelly-sandy-clayey and sandy mesas; plateaus; rocky canyons; rocky and sandy canyon bottoms; rocky gorges; talus slopes; crevices in rocks; shallow pockets of soil; buttes; rocky ledges; rocky ridges; rocky ridgetops; meadows; foothills; rocky and sandy hills; rocky-gravelly hilltops; rocky hillsides; escarpments; sandy bases of escarpments; bouldery, bouldery-sandy, rocky, rocky-gravelly, rocky-clayey, stony, stony-clayey, gravelly, gravelly-sandy, gravelly-loamy, gravelly-clayey-loamy, sandy, sandy-clayey-loamy and sandy-silty slopes; rocky alluvial fans; gravelly-sandy bajadas; rocky outcrops; amongst boulders and rocks; sandy lava flows; sand hills; sandy dunes; sandy-loamy prairies; gravelly-sandy, sandy and clayey-loamy plains; rocky-sandy, sandy, sandy-loamy and sandy-clayey-loamy flats; valley bottoms; along rocky railroad right-of-ways; along roadbeds; along rocky, rocky-gravelly, rocky-sandy, rocky-clayey-loamy, gravelly, gravelly-sandy, gravelly-loamy and sandy-loamy roadsides; along sandy arroyos; rocky draws; ravines; silty springs; along streams; along creeks; creekbeds; along rivers; sandy riverbeds; along and in rocky, rocky-sandy, cobbly-pebbly-sandy, gravelly, gravelly-sandy and sandy washes; drainages; within rocky drainage ways; silty depressions; swales; banks of draws; along rocky edges of washes; along margins of washes; mudflats; sandy benches; shelves; terraces; bottomlands; floodplains; ditches; gravelly-sandy riparian areas; sandy waste places, and disturbed areas growing in dry desert pavement; bouldery, bouldery-sandy, rocky, rocky-gravelly, rocky-pebbly, rocky-sandy, stony, cobbly-pebbly-sandy, gravelly, gravelly-sandy and sandy ground; rocky loam, rocky-gravelly loam, rocky-sandy loam, rocky-clayey loam, gravelly loam, gravelly-clayey loam, sandy loam, sandy-clayey loam, clayey loam and silty loam ground; rocky clay, stony clay, gravelly clay, gravelly-sandy clay and clay ground, and gravelly-sandy silty, sandy silty and silty ground, occurring from sea level to 12,700 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. This plant may be confused with *Aristida purpurea* var. *parishii*. *Aristida adscensionis* is native to south-central and southern North America; Central America; South America, and other tropic, sub-tropic and warm-temperate regions of the world. *5, 6, 15, 16, 33 (Page 242), 43 (080109), 46 (Page 120), 58, 63 (081709 - color presentation), 77, 85 (081709 - color presentation of dried material), 105, **138***

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

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

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

SYNONYMY: *Aristida glauca* (C.G. Nees von Esenbeck) W.G. Walpers, *Aristida purpurea* T. Nuttall var. *glauca* (C.G. Nees von Esenbeck) A.H. Holmgren & N.H. Holmgren. COMMON NAMES: Blue Threeawn, Nealley Three-awn, Nealley's Threeawn, Reverchon Three-awn, Reverchon Threeawn, Tres Barbas, Tres Barbas Purpurea. DESCRIPTION: Terrestrial perennial tufted graminoid (a bunchgrass (clumpgrass) 6 to 40 inches in height with clumps being reported that were up to 4 to 12 inches in width at the base); the inflorescence is purple; the awns are purple; flowering generally takes place between early January and mid-August; however, flowering may occur throughout the year under favorable conditions (additional records: two for mid-September and two for late November). HABITAT: Within the range of this species it has been reported from mountains; mesas; plateaus; chutes; rocky canyons; rocky canyonsides; along bouldery-rocky-cobbly, rocky and gravelly-sandy canyon bottoms; scree; talus slopes; rocky bases of cliffs; crevices in boulders and rocks; knolls; ledges; gravelly-sandy-clayey ridges; ridgetops; foothills; clayey hills; rocky and rocky-gravelly hillsides; bedrock, bouldery, rocky, rocky-cobbly, rocky-sandy, rocky-sandy-loamy, shaley, gravelly, gravelly-sandy, gravelly-sandy-clayey, sandy and loamy slopes; alluvial fans; rocky, rocky-gravelly and gravelly bajadas; rocky outcrops; amongst boulders and rocks; sandy lava flows; sand dunes; plains; sandy flats; rocky valley floors; along gravelly-loamy and sandy roadsides; along and in rocky, gravelly and sandy arroyos; along draws; rocky gullies; rocky-gravelly ravines; springs; along and in creekbeds; riverbeds; along and in rocky, rocky-sandy, gravelly and sandy washes; within drainages; bouldery-rocky drainage ways; sandy lakebeds; rocky banks; edges of washes; mudflats; gravel bars; sandy beaches; sandy benches; gravelly terraces; floodplains; along ditches; riparian areas, and disturbed areas growing in dry rocky desert pavement; bouldery, bouldery-rocky, bouldery-rocky-cobbly, rocky, rocky-cobbly, rocky-gravelly, rocky-sandy, gravelly, gravelly-sandy and sandy ground; rocky-sandy loam, rocky-clayey loam, cobbly-gravelly loam, gravelly loam, gravelly-sandy loam, sandy loam, sandy-clayey loam and loam ground; rocky-sandy clay, gravelly-sandy clay and clay ground, and sandy silty ground, occurring from 800 to 8,900 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat, it reportedly has a "feathery" appearance. *Aristida purpurea* var. *nealleyi* is native to southwest-central and southern North America. *5, 6, 15 (recorded as *Aristida glauca* (Nees) Walp.), 16 (recorded as *Aristida purpurea* Nutt. var. *glauca* (Nees) A. Holmgren & N. Holmgren), 33 (recorded as *Aristida glauca* (Nees) Walp., Page 243), 43 (081809), 46 (recorded as *Aristida glauca* (Nees) Walp., Page 120), 48 (species), 63 (081809), 77, 85 (092709 - color presentation of dried material), 105 (species), **138** (recorded as *Aristida glauca*)*

***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), **138***

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

COMMON NAMES: Avenilla (Hispanic), Banderilla (Hispanic), Banderita (Hispanic), Grama-azul (Portuguese), Grama del Cerro (Hispanic), Navajita Banderilla (Spanish), Qm-u-se'-a (Havasupai), Side Oats Grama, Side-oats Grama, Sideoats Grama, Side-oats Grama Grass, Side-oats Grama-grass, Sideoats Grama Grass, Tall Grama, Tall Grama Grass, Uitsaku Juatarhu (Purépecha). DESCRIPTION: Terrestrial perennial usually tufted graminoid (a bunchgrass (clumpgrass) with erect culms 3 to 52 inches in height and up to 2 feet in width at the base, one plant was reported to be 12 to 16 inches in height and 16 inches in width at the base, one plant was reported to be 28 inches in height and 4 inches in width at the base); the foliage is bluish-green or purple-green curing to reddish-brown or straw; the flowers are bright purple; the anthers are orange, purple, red, yellow or dark yellow; flowering generally takes place between late April and mid-November (additional records: one for early April, one for early December); the mature fruits are red-brown. HABITAT: Within the range of this species it has been reported from mountains; mountaintops; bouldery, pebbly-sandy and clayey-loamy mesas; plateaus; cliffs; rocky and sandy canyon rims; along rocky canyons; along canyon walls; along sandy canyon bottoms; rocky gorges; sandy bases of cliffs; sandy crevices in rocks; buttes; rocky and sandy ledges; rocky ridges; openings in forests and woodlands; meadows; rocky and clayey-loamy foothills; rocky and rocky-gravelly hills; sandy hilltops; rocky hillsides; sandy bases of escarpments; along bouldery-rocky-sandy, rocky, rocky-gravelly, rocky-sandy, shaley, gravelly, gravelly-sandy, gravelly-loamy, sandy, sandy-loamy, sandy-clayey-loamy, loamy, clayey-loamy and clayey slopes; bajadas; rocky outcrops; amongst boulders, rocks and cobbles; sandy lava flows; sand hills; sand dunes; prairies; sandy plains; shale barrens; sandy and clayey flats; sandy valley floors; along gravelly and sandy roadsides; along and in bedrock arroyos; along draws; along ravines; seeps; along springs; around streams; along streambeds; along creeks; rocky creekbeds; along rivers; along and in rocky, rocky-gravelly and sandy washes; within drainage ways; marshes; in low swales with Desert Willow; along banks of draws, streams, rivers and washes; along rocky edges of ravines, springs and washes; shores of lakes; gravel bars; benches; rock shelves; gravelly terraces; sandy floodplains; mesquite bosques; along fencelines; rocky riparian areas, and disturbed areas growing in dry rocky desert pavement; bouldery-rocky-sandy, bouldery-cobbly-sandy, rocky, rocky-gravelly, rocky-sandy, shaley, cobbly, cindery-gravelly, gravelly, gravelly-sandy, pebbly-sandy and sandy ground; rocky-clayey loam, gravelly loam, gravelly-clayey loam, sandy loam, sandy-clayey loam, clayey loam, silty loam, silty-clayey loam and loam ground; gravelly clay, sandy clay, silty clay and clay ground, and rocky silty and sandy silty ground, occurring from 300 to 9,800 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. This plant was reported to have been utilized by native peoples of North America and could be investigated to determine its value as a home garden or commercial fiber or fodder crop; it was also noted as having been used as a decoration. Sideoats Grama may be useful in controlling erosion. Stems may occur singly or in small clusters from creeping rhizomes (var. *curtipendula*), or form into large clumps from a common root crown (var. *caespitosa*). In areas where it occurs naturally, consider including Sideoats Grama seed in reseeding mixtures. This plant is a larval food plant for the Orange Skipperling (*Copaeodes aurantiacus*). *Bouteloua curtipendula* is native to central and southern North America; Central America, and South America. *5, 6, 15, 16, 18, 30, 33 (Page 143, "One of the most important range grasses in the Southwest, highly palatable and a vigorous grower."), 43 (092909), 46 (Page 129), 48, 58, 63 (092909 - color presentation), 77, 82, **85** (093009 - color presentation of dried material), 105 ("This is one of our most important range grasses. ... It cures well and maintains a fairly high feeding value throughout the year. ... Sideoats is a normal component of most Arizona

grassland ranges, and these ranges are not in excellent condition without an abundance of the grass. It lengthens the grazing season and increases forage production, in addition to providing variety in the feed."), 106 (061407), 127, **138***

Bouteloua filiformis (see *Bouteloua repens*)

***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 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), **138***

Brachiaria arizonica (see *Urochloa arizonica*)

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

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

SYNONYMY: *Bromus madritensis* C. Linnaeus subsp. *rubens* (C. Linnaeus) Duvin [orthographic error]. COMMON NAMES: Bromo, Bromo Rojo, Foxtail Brome, Foxtail Chess, Red Brome. DESCRIPTION: Terrestrial annual graminoid (3 inches to 2 feet in height); the foliage is light green curing to a light straw yellow; the spikelets (flowers) may be purple, red-brown, reddish or reddish-purple; the awns are reddish; flowering generally takes place between late January and early June (additional records: one for late June, one for early July and one for late August); the seedheads are red, reddish-brown or purplish. HABITAT: Within the range of this species it has been reported from mountains; rocky mountainsides; sandy-silty mesas; cliffs; rocky-pebbly cliffsides; rocky and stony canyons; rocky and clayey canyon bottoms; talus; bases of cliffs; pockets of sandy soil in bedrock, boulders and rocks; bluffs; buttes; rocky and rocky-stony ledges; rocky promontories; along rocky and silty-loamy ridges; ridgetops; sandy meadows; sandy edges of meadows; cinder cones; rocky foothills; bouldery, rocky, sandy, loamy and silty-loamy hills; sandy-clayey and clayey hilltops; rocky and clayey hillsides; bedrock, bouldery, bouldery-rocky, rocky, rocky-sandy, rocky-clayey, rocky-clayey-loamy, rocky-loamy, cobbly-sandy-loamy, cindery, gravelly, gravelly-sandy, gravelly-clayey, sandy and loamy slopes; rocky alluvial fans; rocky, gravelly and sandy bajadas; rocky outcrops; amongst boulders and rocks; sand dunes; plains; rocky, rocky-sandy-clayey, cindery, gravelly and loamy flats; cindery valley floors; valley bottoms; coastal bluffs; coastal flats; along railroad right-of-ways; along gravelly roadbeds; along sandy-loamy roadsides; within rocky arroyos; draws; along rocky gullies; rocky and gravelly ravines; seeps; springs; around seeping streams; rocky-sandy streambeds; along and in creeks; rocky creekbeds; along rivers; riverbeds; along and in rocky, stony-gravelly, gravelly, gravelly-sandy and sandy washes; within rocky and sandy drainages; rocky and sandy drainage ways; pondbeds; gravelly-clayey soils around lakes; sandy, sandy-silty and silty lakebeds; saltwater marshlands; depressions; swales; gravelly-sandy, sandy and loamy banks of streams, rivers and washes; along sandy edges of washes, lakes and freshwater and saltwater marshes; margins of washes; beaches; sandy benches; rocky-silty, gravelly and sandy terraces; sandy, sandy-loamy and loamy bottomlands; rocky, sandy and loamy floodplains; mesquite bosques; stock tanks; around reservoirs; canal banks; recently burned areas of scrub; bouldery and sandy riparian areas; sandy waste places, and disturbed areas growing in wet, moist, damp or dry desert pavement; bouldery, bouldery-rocky, rocky, rocky-pebbly, rocky-sandy, shaley, stony, stony-gravelly, cindery, gravelly, gravelly-sandy and sandy ground; rocky loam, rocky-clayey loam, cobbly-sandy loam, sandy loam, clayey loam and loam ground; rocky-sandy clay, rocky clay, gravelly clay, sandy clay and clay ground, and rocky silty, gravelly silty, sandy silty and silty ground, occurring from sea level to 8,000 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: EXOTIC Invasive Plant which poses a significant threat to our native biotic communities. *Bromus rubens* is native to southern Europe; middle and western Asia, and northern Africa. *5, 6, 15, 16, 22 (color photograph), 33 (Page 50), 43 (100309 - no record for *Bromus madritensis* subsp.

rubens), 46 (Page 78), 58, 63 (100409 - color presentation), 68, 77, 80 (The Ergot Fungus (*Claviceps* sp.) is listed as a Secondary Poisonous Range Plant. Species of the genus *Bromus* can be hosts of the Ergot Fungus. "Ergot contains poisonous alkaloids and other compounds that may cause chronic poisoning (gangrenous ergotism) in the extremities when consumed in small amounts, or convulsive poisoning when large amounts are eaten. Animals may be poisoned by feeding on mature, infected grain or hay. Livestock, especially cattle, and humans are susceptible. ... Pastures causing ergot poisoning should be mowed or the animals removed. Mildly poisoned animals will usually recover if removed from the infested pastures, kept quiet, and supplied with good feed and water. In Arizona, some losses may be expected on rangelands during wet years, but most losses have occurred from grazing pastures of Dallas Grass (*Paspalum dilatatum*)." See text for additional information.), 85 (100409 - color presentation of dried material), 105, **HR***

***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, **138***

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

SYNONYMY: *Trichachne californica* (G. Bentham) M.A. Chase. COMMON NAMES: Arizona Cotton Grass, Arizona Cottongrass, Arizona Cottontop, California Cottontop, Cotton Grass, Cottongrass, Cotton-top, Cottontop, Punta Blanca (Spanish), Zacate Punta Blanca. DESCRIPTION: Terrestrial perennial graminoid (a bunchgrass (clumpgrass) with erect culms 1 to 4 feet in height); the foliage may be dark bluish-green, gray-green, green or yellow-green curing to gray or straw; spikelets (flowers) are purplish-pink, flowering generally takes place between early August and early December (additional records: one for early May and one for early July); the cottony seedheads are covered by silky hairs. HABITAT: Within the range of this species it has been reported from rocky mountains; mountaintops; sandy-loamy mesas; shaded rocky cliffs; rocky and gravelly-loamy canyons; rocky canyon walls; canyon bottoms; bouldery and rocky talus slopes; bases of cliffs; crevices in rocks; rock buttes; knobs; ledges; rocky ridges; foothills; bouldery and rocky hills; rocky hillsides; bouldery escarpments; bouldery, bouldery-rocky, rocky, rocky-gravelly, gravelly and clayey-loamy slopes; alluvial fans; bajadas; bouldery outcrops; amongst boulders and rocks; silty plains; rocky and gravelly flats; hollows; valley floors; along gravelly and sandy roadsides; arroyos; rocky draws; gulches; ravines; springs; along creeks; riverbeds; along and in sandy and silty-clayey washes; within drainage ways; marshes; along the rocky and sandy banks of arroyos, streams and washes; gravel bars; along benches; terraces; clayey bottomlands; sandy floodplains; ditches; sandy riparian areas, and disturbed areas growing in dry rocky desert pavement; bouldery, bouldery-rocky, bouldery-rocky-sandy, rocky, rocky-gravelly, rocky-sandy, shaley, stony, cobbly, gravelly, pebbly-sandy and sandy ground; rocky-clayey loam, gravelly loam, gravelly-sandy loam, sandy-clayey, clayey loam and loam ground; gravelly clay, silty clay and clay ground, and sandy silty and silty ground, occurring from 200 to 7,000 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. *Digitaria californica* is native to southwest-central and southern North America; Central America, and western and southern South America. *5, 6, 15, 16, 33 (recorded as *Trichachne californica* (Benth.) Chase, Page 296), 43 (100609), 46 (recorded as *Trichachne californica* (Benth.) Chase, Page 132), 48, 58, 63 (100609 - color presentation), 77, 85 (100609 - color presentation), 105 (recorded as *Trichachne californica* (Benth.) Chase), **138***

***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), **138***

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

SYNONYMY: *Eragrostis megastachya* (G.L. Koeler) J.H. Link. COMMON NAMES: Amoresco (Hispanic), Candy Grass, Candy-grass, Candygrass, Éragrostide Fétide, Graminha (Portuguese), Großes Liebesgras (German), Gray Love Grass, Lovegrass, Stink Grass, Stinkgrass, Stinking Lovegrass, Strong-scented Lovegrass, Strongscented Lovegrass, Watergrass, Zacate Apestoso (Hispanic), Zacate Apestoso (Hispanic), Zacate Borreguero (Hispanic), Zacate de Amor Hediondo (Hispanic), Zacate Esteparo (Hispanic). DESCRIPTION: Terrestrial annual tufted graminoid (a bunchgrass with prostrate to erect culms 3 to 36 inches in height); the foliage is gray-green or light green; the spikelets (flowers) are greenish, white or whitish with green veins turning tawny with age, the anthers are yellow; flowering generally takes place between late July and late October (additional records: one for mid-March, one for late March, one for mid-May, one for late May, one for early June, three for early July, one for mid-November, one for late November and one for mid-December). HABITAT: Within the range of this species it has been reported from mountains; sandy mesas; gravelly and sandy canyons; sandy canyon bottoms; sandy bases of cliffs; bluffs; knolls; ledges; sandy meadows; bouldery foothills; rocky hills; rocky and gravelly hillsides; rocky, rocky-gravelly, gravelly, gravelly-sandy-loamy, gravelly-loamy, sandy-loamy, sandy-clayey, loamy, clayey-loamy and clayey slopes; rocky outcrops; amongst rocks; coves; plains; sandy and sandy-silty flats; valley floors; valley bottoms; along gravelly, gravelly-loamy and sandy roadsides; arroyos; bottoms of arroyos; draws; gulches; gullies; gravelly-sandy seeps; springs; along streams; along and in cobbly-sandy streambeds; along creeks; creekbeds; sandy riverbeds; along and in gravelly, sandy and silty-clayey washes; within drainage ways; clayey lakebeds; cienegas; marshes; bedrock depressions; silty swales; along rocky-sandy, sandy and sandy-loamy banks of creeks, rivers, washes and drainages; sandy edges of streams, ponds, lakes and marshes; sand bars; sandy benches; gravelly-loamy terraces; loamy bottomlands; sandy and clayey floodplains; sandy mesquite bosques; around and in stock tanks (charcos, repressos); sandy ditches; sandy riparian areas; waste places, and disturbed areas growing in wet, moist, damp and dry bouldery, rocky, rocky-gravelly, stony, cobbly-sandy, gravelly, gravelly-sandy and sandy ground; rocky-clayey loam, gravelly loam, gravelly-sandy loam, sandy loam, clayey loam, clayey-humusy loam and loam ground; sandy clay, silty clay and clay ground, and sandy silty and silty ground, occurring from sea level to 8,000 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: EXOTIC Invasive Plant. *Eragrostis cilianensis* is native to middle, eastern and southern Europe; western, eastern and southern Asia, and Africa. *5, 6, 15, 16, 30, 33 (recorded as *Eragrostis megastachya* (Koel.) Link, Pages 82-83), 43 (101009), 46 (Page 86), 58, 63 (101009 - color presentation of seed), 68, 77, 80 (This plant is listed as a Rarely Poisonous and Suspected Poisonous Range Plant. "This annual grass was reported to cause poisoning in horses when fed in large quantities over a long period of time."), 85 (101009 - color presentation of sried material), 101 (color photograph), 105 (recorded as *Eragrostis megastachya* (Koel.) Link), **138***

Eragrostis megastachya (see *Eragrostis cilianensis*)

Erioneuron pulchellum (see *Dasyochloa pulchella*)

***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."), **138***

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

***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), **138***

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

COMMON NAMES: Liendrilla Chica (Hispanic), Liendrilla Fina y Liendrilla Chica (Hispanic), Little-seed Muhly, Littleseed Muhly. DESCRIPTION: Terrestrial annual graminoid (spreading or erect culms 4 to 40 inches in height/length); the foliage may be purplish turning red with age; the inflorescence is tinged with purple; the spikelets (flowers) are dark pink or purplish with purplish anthers; flowering generally takes place between late January and mid-June (additional records: one for early January, one for early September, one for mid-September, one for late September, one for mid-October, one for late October, one for early November, three for mid-November, three for mid-December and two for late December); the caryopsis (fruit) is reddish-brown. HABITAT: Within the range of this species it has been reported from mountains; mountaintops; rocky mountainsides; mesas; rocky cliffs; bouldery, bouldery-rocky-sandy, rocky and sandy canyons; rocky canyon walls; rocky, rocky-silty, sandy and sandy-loamy canyon bottoms; scree; talus slopes; along bases of cliffs; crevices in rocks; bluffs; buttes; rocky ledges, rocky and cobbly-sandy-loamy ridges; clayey ridgetops; margins of meadows; foothills; rocky and rocky-sandy hills; rocky, rocky-cobbly, rocky-gravelly and gravelly hillsides; bouldery, bouldery-sandy, bouldery-loamy, rocky, rocky-gravelly, rocky-sandy, rocky-loamy-clayey, rocky-clayey, gravelly, sandy, loamy, loamy-clayey and clayey slopes; bajadas; bouldery and rocky outcrops; amongst boulders and rocks; lava bluffs; lava slopes; along lava slides; dunes; sandy plains; bouldery, rocky-sandy, gravelly and sandy flats; rocky-gravelly coastal slopes; coastal plains; sandy coastal flats; gravelly valley floors; along railroad right-of-ways; bouldery-gravelly-loamy and sandy roadsides; arroyos; in the shade of mesquite trees in the bottoms of arroyos; gulches; rocky-sandy ravines; springs; along streams in the partial shade of Mexican Blue Oaks; rocky and rocky-sandy streambeds; along creeks; along rivers; along and in rocky, rocky-silty, gravelly, gravelly-sandy and sandy washes; silty-clayey drainages; drainage ways; gravelly-sandy tinajas; depressions; along rocky, gravelly-sandy and sandy banks of arroyos, streams, washes and drainages; edges of gullies; margins of riverbeds; benches; bottomlands; sandy floodplains; mesquite bosques; around stock tanks (charcos); rocky margins of reservoirs; along and in ditches; sandy riparian areas and disturbed areas growing in wet, moist and dry gravelly desert pavement; bouldery, bouldery-rocky-sandy, bouldery-sandy, rocky, rocky-cobbly, rocky-gravelly, rocky-sandy, gravelly, gravelly-sandy and sandy ground; bouldery loam, bouldery-gravelly loam, rocky-clayey loam, cobbly-sandy loam, gravelly loam, sandy loam and loam ground; rocky clay, rocky-loamy clay, loamy clay, silty clay and clay ground, and rocky silty ground, occurring from sea level to 8,000 feet in elevation in the woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. This grass sometimes forms dense mound-like colonies. *Muhlenbergia microsperma* is native to southwest-central and southern North America; North-central Pacific Islands; Central America, and northern and western South America. *5, 6, 15, 16, 30, 33 (Pages 195-196), 43 (101609), 46 (Page 109), 63 (101609 - color presentation), 77, **85** (101709 - color presentation of dried material)*

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

COMMON NAMES: Bakú (Tarahumara), Bush-grass, Bush Muhly, Hoe Grass, Hoegrass, Liendrilla Amacollada (Hispanic), Mesquite Grass, Mesquitegrass, Porter's Muhlenbergia, Telaraña (Hispanic), Zacate Aparejo (Hispanic). DESCRIPTION: Terrestrial perennial tufted graminoid (a bunchgrass with geniculate culms 10 to 44 inches in height/length and 18 inches to 10 feet in width, several plants were described as being 3 feet in height and 10 feet in width); the stems are dull green; the leaves are green, purplish-green or yellow-green curing to buff; the panicles (compound inflorescences)

are usually purple; the spikelets (flowers) are green becoming purple when mature; anthers are purple to yellow; flowering generally takes place between late February and late October (additional records: one for late November and one for early December); the caryopsis (fruit) is yellowish-brown the aggregate of which covers the plants in a misty shroud. HABITAT: Within the range of this species it has been reported from mountains; rocky and stony-sandy mountainsides; mesas; rocky cliffs; bouldery and rocky canyons; rocky canyonsides; rocky-sandy and gravelly canyon bottoms; gorges; talus slopes; crevices in rocks; buttes; along sandy-silty and silty ledges; rocky ridge tops; foothills; rocky and sandy hills; bouldery-sandy and rocky hillsides; rocky escarpments; along bouldery, bouldery-rocky, rocky, rocky-loamy, gravelly, gravelly-loamy, sandy and sandy-loamy slopes; bajadas; rocky outcrops; amongst boulders and rocks; alcoves; sandy lava flows; lava fields; sand dunes; dune-like areas of fine blow-sand deposits; gravelly plains; rocky, gravelly-sandy, sandy and sandy loamy flats; open sandy ground amongst Ephedra and Larrea; basins; sandy valley floors; valley bottoms; along rocky, rocky-gravelly, gravelly, gravelly-loamy and sandy roadsides; rocky arroyos; clefts in rocky hillsides; within draws; gulches; ravines; springs; bouldery streambeds; along rivers; along and in rocky, rocky-gravelly, rocky-sandy, gravelly, gravelly-sandy and sandy washes; along drainages; bouldery-cobbly and rocky drainage ways; around ponds; gravelly-sandy banks; margins of washes; sandy-silty and silty benches; gravelly terraces; sandy floodplains; sandy mesquite bosques; riparian areas, and disturbed areas often growing in the protection of shrubs and trees in damp and dry rocky desert pavement; bouldery, bouldery-rocky, bouldery-cobbly, bouldery-sandy, rocky, rocky-gravelly, rocky-sandy, stony-sandy, cindery, gravelly, gravelly-sandy and sandy ground; rocky loam, rocky-clayey loam, cobbly-sandy loam, gravelly loam, sandy loam, clayey loam and loam ground; gravelly clay, sandy clay and clay ground, and cobbly-sandy silty, sandy silty and silty ground, occurring from 700 to 7,500 feet in elevation in the woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. In areas where it occurs naturally, consider including Bush Muhly seed in reseeding mixtures. According to the USDA Forest Service Fire Effects Information System, Bush Muhly germinates best when temperatures are at 86 degrees Fahrenheit (30 degrees Centigrade). When re-vegetating desert washes consider planting Bush Muhly along with Whitethorn Acacia (*Acacia constricta*), Catclaw Acacia (*Acacia greggii* var. *greggii*), Limberbush (*Jatropha cardiophylla*), Triangleleaf Bursage (*Ambrosia deltoidea*) and White Bursage (*Ambrosia dumosa*). Bush Muhly is browsed by the Desert Bighorn Sheep (*Ovis canadensis* subsp. *mexicana*). *Muhlenbergia porteri* is native to southwest-central and southern North America. *5, 6, 15, 16, 30, 33 ("Bush Muhly originally existed in extensive stands on the open range lands of southern Arizona but now occurs for the most part in the protection of shrubs and subshrubs and is seldom locally abundant. It is highly palatable and well liked by livestock despite the wiry culms.", Pages 201-202), 43 (101709), 46 (Page 111), 48, 58, 63 (101709 - color presentation), 77, 85 (101709 - color presentation), 105 ("This was formerly one of the most abundant and important grasses of southern Arizona, but is found now largely as individual plants under the protection of shrubs. ... Where possible this grass should be allowed to set a full crop of seed during the summer growing season at least every second or third year. Deferment of grazing during July and August every year is recommended on run-down ranges."), **138***

Panicum arizonicum (see *Urochloa arizonica*)

Panicum capillare var. *hirticaule* (see *Panicum hirticaule* var. *hirticaule*)

Panicum capillare var. *pampinosum* (see *Panicum hirticaule* var. *hirticaule*)

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

SYNONYMY: *Panicum capillare* C. Linnaeus var. *hirticaule* (J.S. Presl) F.W. Gould, *Panicum capillare* C. Linnaeus var. *pampinosum* (A.S. Hitchcock & M.A. Chase) F.W. Gould, *Panicum pampinosum* A.S. Hitchcock & M.A. Chase, *Panicum sonorum* W.J. Beal. COMMON NAMES: Chiri Chiri (Spanish), Mexican Panicgrass, Roughstalk Witchgrass, Sauhui (Spanish), Sonora Panic, Sowi

Millet, Triguillo (Spanish), Witchgrass, Zacate de Año (Spanish), Zacate Peludo Perdis (Spanish). DESCRIPTION: Terrestrial annual graminoid (erect-spreading culms 2 to 40 inches in height); flowering generally takes place between mid-August and mid-October (flowering beginning as early as July has been reported). HABITAT: Within the range of this species it has been reported from mountains; sandy mesas; canyons; gravelly, gravelly-sandy and sandy canyon bottoms; rocky ledges; openings in woodlands; meadows; rocky hills; rocky, rocky-clayey and gravelly hillsides; rocky and gravelly slopes; bajadas; amongst boulders; dunes; sandy plains; clayey flats; basins; valley floors; along rocky-loamy roadsides; sandy draws; along seeps; along streams; streambeds; along and in oases; gravelly, gravelly-sandy, sandy and silty washes; within sandy drainage ways; sandy-silty depressions; clayey-loamy and silty swales; along margins of washes; along gravelly-sandy floodplains; mesquite bosques; ditches; sandy riparian areas, and disturbed areas growing in wet, moist and dry bouldery, rocky, gravelly, gravelly-sandy and sandy ground; rocky loam, gravelly loam and clay loam ground; rocky clay and gravelly clay and clay ground, and sandy silty and silty ground, occurring from sea level to 6,800 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: The species, *Panicum hirticaule*, 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* var. *hirticaule* is native to southwest-central and southern North America; Central America, and South America. *5, 6, 30 (species), 33 (recorded as *Panicum capillare* L. var. *hirticaule* (Presl) Gould, Page 283; *Panicum capillare* L. var. *pampinsonum* (Hitchc. & Chase) Gould, Page 284, and *Panicum sonorum* Beal, Page 282), 43 (101809), 46 (recorded as *Panicum pampinsonum* (A.S. Hitchcock & M.A. Chase, Page 136), 63 (101809 - *Panicum hirticaule* J. Presl var. *hirticaule*), 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 - *Panicum hirticaule* var. *hirticaule* J. Presl), 127, **138***

Panicum pampinsonum (see *Panicum hirticaule* var. *hirticaule*)

Panicum sonorum (see *Panicum hirticaule* var. *hirticaule*)

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.), **138***

***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), **138***

***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), **138***

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; along and in gravelly washes; within drainages; drainage ways; depressions; gravelly-sandy banks of streambeds, sandy riverbeds; 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.), **138** (recorded as *Setaria macrostachya*)*

***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, **HR***

Trichachne californica (see *Digitaria californica*)

***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*

Tridens pulchellus (see *Dasyochloa pulchella*)

Triodia pulchella (see *Dasyochloa pulchella*)

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

SYNONYMY: *Brachiaria arizonica* (F.L. Scribner & E.D. Merrill) S.T. Blake, *Panicum arizonicum* F.L. Scribner & E.D. Merrill. COMMON NAMES: Arizona Panicgrass, Arizona Panicum, Arizona Signal Grass, Arizona Signalgrass, Piojillo de Arizona. DESCRIPTION: Terrestrial annual graminoid (6 to 26 inches in height); the flowers are purple; flowering generally takes place between early August and early November (flowering beginning as early as June has been reported). HABITAT: Within the range of this species it has been reported from mountains; mesas; canyons; canyon bottoms; chasms; rocky talus; meadows; foothills; rocky hills; rocky and rocky-clayey hillsides; bouldery, rocky, rocky-gravelly, rocky-sandy, stony and gravelly slopes; alluvial fans; gravelly bajadas; rocky banks; rock outcrops; amongst boulders; bases of rocks; sand dunes; sandy flats; coastal dunes; along roadsides; arroyos; bottoms of arroyos; sandy draws; along rocky ravines; seeps; rivulets; along and in gravelly-sandy streambeds; along and in rocky, gravelly and sandy washes; drainages; within clayey drainage ways; rocky-sandy and sandy banks of washes; shores of lakes; benches; terraces; sandy floodplains; mesquite bosques; margins of stock tanks; ditches; riparian areas, and disturbed areas growing in dry bouldery, bouldery-gravelly, rocky, rocky-gravelly, rocky-sandy, stony, gravelly and sandy ground;

gravelly loam and gravelly-clayey loam ground, and rocky clay, sandy clay and clay ground, occurring from 300 to 6,600 feet in elevation in the woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTE: *Urochloa arizonica* is native to southwest-central and southern North America. *5, 6, 15 (recorded as *Brachiaria arizonica* (Scribn. & Merr.) S.T. Blake), 16 (recorded as *Panicum arizonicum* Scribn. & Merr.), 33 (*Panicum arizonicum* Scribn. & Merr., Page 281), 43 (102609), 46 (recorded as *Panicum arizonicum* Scribn. & Merr., Page 135), 58 (recorded as *Brachiaria arizonica* (Scribn. & Merr.) S.T. Blake), 63 (102609), 68, 77 (recorded as *Brachiaria arizonica* (Scribn. & Merr.) S.T. Blake), **85** (102609 - color presentation of dried material)*

***Vulpia octoflora* (T. Walter) P.A. Rydberg: Sixweeks Fescue**

COMMON NAME: Common Sixweeks Grass, Eight-flower Six-weeks Grass, Eight-flower Sixweeks Grass, Eight-flowered Fescue, Pullout Grass, Six-weeks Fescue, Sixweeks Fescue, Six-weeks Grass, Sixweeks Grass. DESCRIPTION: Terrestrial annual graminoid (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 (additional record: one for mid-November). HABITAT: Within the range of this species it has been reported from mountains; rocky mountaintops; rocky mountainsides; pebbly-sandy-silty, sandy and clayey-loamy mesas; plateaus; rocky-sandy rims of craters; rocky cliffs; rocky canyons; bouldery, rocky, gravelly and sandy canyon bottoms; talus slopes; sandy bases of cliffs; crevices in boulders and rocks; pockets of soil on outcrops; rocky ledges; along rocky, gravelly and silty-loamy ridges; ridgetops; ridgelines; rocky-sandy and sandy meadows; rocky foothills; rocky, cobbly-sandy-loamy, stony-clayey and silty-loamy hills; rocky hilltops; rocky, rocky-gravelly, gravelly and gravelly-loamy hillsides; rocky, rocky-cobbly, rocky-gravelly-loamy, rocky-sandy, gravelly, gravelly-loamy, sandy, sandy-loamy, sandy-clayey, loamy and clayey slopes; rocky, rocky-sandy, rocky-sandy-loamy, gravelly-sandy and sandy alluvial fans; gravelly bajadas; bouldery and rocky outcrops; amongst boulders and rocks; lava flows; sand hills; sand dunes; sandy steppes; sandy prairies; sandy plains; stony, gravelly and sandy flats; basins; stony-clayey hollows; sandy-loamy valley floors, valley bottoms; coastal plains; coastal beaches; sandy coastal shorelines; along rocky, gravelly, gravelly-sandy, gravelly-loamy and sandy roadsides; along gravelly and sandy-loamy arroyos; bottoms of arroyos; draws; gulches; gullies; ravines; sandy bottoms of ravines; springs; humusy-loamy soils along streams; sandy streambeds; along creeks; rocky-sandy creekbeds; along rivers; sandy riverbeds; along and in rocky-sandy, stony-gravelly, gravelly-sandy, sandy and sandy-loamy washes; drainages; within sandy drainage ways; around lakes; swales; along gravelly-loamy and sandy banks of streambeds, creeks, rivers and washes; sandy edges of washes; margins of pools and cienegas; sandy shorelines of rivers; gravel, gravelly-sand and sand bars; sandy beaches; cobbly-sandy-loamy benches; gravelly, gravelly-sandy and sandy terraces; sandy and loamy bottomlands; floodplains; stock tanks (charcos); ditches; sandy riparian areas; waste places, and disturbed areas growing in moist, damp and dry bouldery, rocky, rocky-cobbly, rocky-gravelly, rocky-sandy, stony, stony-gravelly, gravelly, gravelly-sandy and sandy ground; rocky-gravelly loam, rocky-clayey loam, cobbly loam, cobbly-sandy loam, gravelly loam, gravelly-sandy loam, gravelly-clayey loam, sandy loam, clayey loam, silty loam, humusy loam and loam ground; stony clay, sandy clay and clay ground; rocky silty, pebbly-sandy silty and silty ground, and chalky ground, occurring from sea level to 10,600 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* is native to central and southern North America. *5, 6, 15, 16, 33 (recorded as *Festuca octoflora* Walt., Page 55), 43 (102709), 46 (recorded as *Festuca octoflora*

Walt., Page 80), 58, 63 (102709 - color presentation), 85 (102709 - color presentation of dried material), **138***

CLASS MAGNOLIOPSIDA: The DICOTS

Acanthaceae: The Acanthus Family

***Carlowrightia arizonica* A. Gray: Arizona Wrightwort**

COMMON NAMES: Arizona Carlowrightia, Arizona Wrightwort, Chuparosa, Desert Honeysuckle, Hummingbird Bush, Lemilla, Rama de Toro, Wrightwort. DESCRIPTION: Terrestrial perennial subshrub or shrub (2 to 40 inches in height); the foliage is gray, pale green or green; the flowers are cream, lavender, white or white with maroon or purple, reddish and yellow markings, or yellow reportedly opening shortly after sunrise and close late in the afternoon; based on few flowering records examined, flowering is scattered and generally taking place between mid-February and late May (flowering records: two for early January, five for mid-February, four for late February, three for mid-March, three for late March, four for early April, six for mid-April, six for late April, four for early May, nine for mid-May, one for late May, one for mid-August, one for mid-September, one for early October, three for mid-October, three for late October, one for mid-November and one for mid-December). HABITAT: Within the range of this species it has been range reported from mountains; cliffs; rocky canyons; along canyon walls; along rocky and gravelly canyon bottoms; crevices in rocks; buttes; along rocky ledges; foothills; rocky hills; bouldery, rocky and gravelly hillsides; rocky, rocky, stony and gravelly slopes; bajadas; rocky outcrops; amongst boulders and rocks; plains; loamy valley bottoms; along gravelly roadsides; along and in arroyos; gulches; riverbeds; along and in gravelly, sandy and clayey-loamy washes; along and in bedrock drainages; in drainage ways; along margins of washes; benches; loamy bottomlands; around stock tanks, and riparian areas growing in dry bouldery, rocky, stony, gravelly and sandy ground and clayey loam and loam ground, occurring from sea level to 5,900 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. The Arizona Wrightwort is browsed by Bighorn Sheep (*Ovis canadensis* subsp. *mexicana*). *Carlowrightia arizonica* is native to southwest-central and southern North America. *5, 6, 15, 16, 43 (103009), 46 (Page 800), 58, 63 (103009), 77 (color photograph #2), 85 (103009 - color presentation of dried material), 115 (color presentation), **138***

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

SYNONYMY: *Siphonoglossa longiflora* (J. Torrey) A. Gray. COMMON NAMES: Longflower Tube Tongue, Long-flowered Justicia, Longflowered Tube Tongue, Longflowered Tubetongue, Siphonoglossa, Tubetongue, White Needle Flower. DESCRIPTION: Terrestrial perennial forb/herb or subshrub (8 to 40 inches in height, one plant was described as being 12 inches in height with a crown 12 inches in width, one plant was described as being 16 inches in height with a crown 16 inches in width); the foliage is gray-green or dark green; the flowers are white or light yellow; based on few records examined, flowering generally takes place between mid-April and early November (additional records: one for early February and one for mid-March); the green fruits turn dark brown when mature. HABITAT: Within the range of this species it has been reported from mountains; crevices in cliffs; canyons; canyon bottoms; bases of cliffs; rocky foothills; gravelly hills; bouldery-rocky, rocky and rocky-sandy hillsides; rocky slopes; rocky outcrops; amongst boulders and rocks; basins; arroyos; bottoms of arroyos; ravines; springs; along washes; within rocky and rocky-gravelly drainages; within drainage ways; along rocky banks of washes; margins of washes, and bouldery-sandy riparian areas growing in dry

bouldery, bouldery-rocky, bouldery-sandy, rocky, rocky-gravelly, rocky-sandy, gravelly, gravelly-sandy and sandy ground, occurring from 1,200 to 4,900 feet in elevation in the scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat, the tubular flowers open in the evening and are reported to be slightly fragrant. This plant is browsed by wildlife. *Justicia longii* is native to southwest-central and southern North America. *5, 6, 15 (recorded as *Siphonoglossa longiflora* (Torr.) Gray), 16 (recorded as *Siphonoglossa longiflora* (Torr.) Gray), 28 (recorded as *Siphonoglossa longiflora*, color photograph), 43 (103009), 46 (recorded as *Siphonoglossa longiflora* (Torr.) Gray, Page 802), 58 (recorded as *Siphonoglossa longiflora* (Torr.) Gray), 63 (103009), 77 (recorded as *Siphonoglossa longiflora*, color photograph #58), **85** (103009 - color presentation of dried material), 115 (color presentation)*

Siphonoglossa longiflora (see *Justicia longii*)

Amaranthaceae: The Amaranth Family

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), **138***

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*)

Apiaceae (Umbelliferae): The Carrot Family

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

COMMON NAMES: American Bowlesia, Bowlesia, Hairy Bowlesia, Hoary Bowlesia, Miner's Lettuce. DESCRIPTION: Terrestrial annual forb/herb (creeping prostrate stems to 2 inches in height and 2 to 24 inches in length); the foliage is pale green or green; the inconspicuous flowers are greenish-white, pink, purple, white, white-green or yellowish-green; flowering generally takes place between late January and late May (additional records: one for mid-June and one for early July). HABITAT: Within the range of this species it has been reported from mountains; mountainsides; mesas; plateaus; rocky canyons; rocky canyon bottoms; bases of cliffs; crevices in rocks; buttes; rocky ledges; rocky ridgetops; meadows; foothills; bouldery hills; clayey hilltops; bouldery hillsides; bouldery, rocky, gravelly, gravelly-sandy and clayey slopes; gravelly bajadas; rocky outcrops; amongst boulders and rocks; lava fields; plains; rocky and gravelly flats; basins; valley floors; along roadsides; draws; along gullies; ravines; seeps; along streams; along creeks; around creekbeds; along rivers; riverbeds; along and in rocky-sandy, gravelly, gravelly-sandy, sandy and sandy-clayey washes; within rocky-clayey drainages; along and in drainage ways; swampy areas; swales; along rocky and gravelly-sandy banks of arroyos, creeks, rivers and washes; sandy benches; loamy bottomlands; floodplains; lowlands; bottoms of tanks; ditches; ditch banks; rocky and sandy riparian areas; waste places, and disturbed areas growing in wet, moist, damp and dry bouldery, rocky, rocky-sandy, gravelly, gravelly-sandy and sandy ground; gravelly-clayey loam, sandy loam, humusy loam and loam ground; rocky clay, sandy clay and clay ground, and gravelly-sandy silty ground often in the shade of boulders, rocks, trees, shrubs and other vegetation, occurring from sea level to 5,200 feet in elevation in the woodland, scrub, grassland, desertscrub and wetland ecological formation. NOTE: *Bowlesia incana* is native to southwest-central and southern North America, and South America. *5, 6, 15, 16, 43 (110209), 46 (Page 609), 58, 63 (110209 - color presentation), 68, 77, 85 (110309 - color presentation), 106 (110209), 115 (color presentation), **138***

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

COMMON NAMES: American Carrot, American Wild Carrot, Rattlesnake Carrot, Rattlesnake Weed (California), Rattlesnake-weed, Rattlesnakeweed, Seedticks, Southwest Wild Carrot, Southwestern Carrot, Wild Carrot, Zanahoria Silvestre. DESCRIPTION: Terrestrial annual forb/herb (1 to 40 inches in height); the flowers may be cream, greenish-white, purplish, white or light yellow; flowering generally takes place between early March and late June (additional record: one for early September); the seed heads are reddish. HABITAT: Within the range of this species it has been reported from bouldery and rocky mountains; rocky, rocky-sandy and sandy-clayey mesas; plateaus; rocky and stony canyons; rocky and sandy-loamy canyon bottoms; rocky talus slopes; bases of cliffs; bluffs; rocky knobs; clayey-loamy and silty-loamy ridges; bouldery ridgetops; rocky foothills; bouldery, rocky, rocky-clayey and clayey hills; bouldery hilltops; rocky, rocky-clayey and loamy hillsides; bouldery, bouldery-gravelly, rocky, rocky-gravelly-loamy, rocky-clayey, gravelly, sandy, loamy, clayey and clayey-loamy slopes; rocky-sandy-loamy alluvial fan; bajadas; bouldery and rocky outcrops; amongst rocks; along shaded bases of rocks; sandy plains; cobbly-sandy-loamy, cobbly-sandy-loamy-clayey, gravelly and sandy flats; basins; clayey valley bottoms; coastal marshes; gravelly edges of railroadbeds; along rocky, gravelly and sandy roadsides; along bouldery arroyos; silty draws; gullies; around springs; moist sandy soil along streams; sandy streambeds; along rivers; riverbeds; along and in rocky, rocky-clayey, gravelly, gravelly-sandy and sandy washes; drainages; along and in drainage ways; clayey freshwater marshes; clayey depressions; gravelly-sandy and sandy banks of arroyos, streams and rivers; clayey edges of creeks and salt marshes;

margins of washes; mudflats; along sandy benches; sandy terraces; sandy bottomlands; floodplains; canals; gravelly-sandy and sandy riparian areas, and disturbed areas growing in moist, damp and dry bouldery, bouldery-gravelly, rocky, rocky-sandy, stony, gravelly, gravelly-sandy and sandy ground; rocky-gravelly loam, rocky-sandy loam, cobbly-sandy loam, gravelly loam, gravelly-clayey loam, sandy loam, clay loam, silty loam and loam ground; rocky clay, cobbly-sandy-loamy clay and clay ground, and silty ground, occurring from sea level to 5,500 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant was reported to have been utilized by native peoples of North America and could be investigated to determine its value as a home garden or commercial food crop; it was also noted as having been used as a drug or medication and as a talisman in gambling (a good luck charm). *Daucus pusillus* is native to northwest-central, south-central and southern North America and central and southern South America. *5, 6, 16, 28 (color photograph), 43 (110309), 46 (Page 612), 58, 63 (110309 - color presentation), 77, 85 (110409 - color presentation), 115 (color presentation), 127, **138***

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

COMMON NAMES: Beggar's Lice, Bristly-fruit Scaleseed, Bristly Scaleseed, Scale Seed, Scaleseed, Wild Carrot. DESCRIPTION: Terrestrial annual forb/herb (2 to 8 inches in height); the minute flowers are cream, greenish-white, white or yellow-white; flowering generally takes place between mid-February and late April (additional records: one for late May and one for mid-July). HABITAT: Within the range of this species it has been reported from mountains; mesas; sandy canyons; along canyon bottoms; foothills; rocky hills; hillsides; rocky, rocky-gravelly-loamy, gravelly, gravelly-sandy and gravelly-loamy slopes; rocky-sandy alluvial fans; gravelly bajadas; amongst rocks; gravelly and sandy flats; valley floors; valley bottoms; gravelly railroad right-of-ways; stony, gravelly and sandy roadsides; sandy and silty-loamy draws; bottoms of draws; springs; moist clayey soils along streams; along creeks; along rivers; riverbeds; along and in gravelly and sandy washes; gravelly-sandy drainage ways; banks of arroyos; channel bars; benches; sandy floodplains; reservoirs; gravelly-sandy riparian areas, and disturbed areas growing in wet, moist, damp and dry rocky, rocky-sandy, stony, gravelly, gravelly-sandy and sandy ground and rocky-gravelly loam, gravelly loam and silty loam ground, occurring from 100 to 6,000 feet in elevation in the woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTE: *Spermolepis echinata* is native to south-central and southern North America. *5, 6, 15, 16, 43 (110509 - no record), 46 (Page 610), 58, 63 (110509), 77, 85 (110509 - color presentation), **138***

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), **138**, 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 (*Gonolobus parvifolius* Torr., Page 665), 63 (110809), 77, 85 (110809 - color presentation), **138***

Metastelma arizonicum (see *Cynanchum arizonicum*)

Asteraceae (Compositae): The Aster Family

***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 (*Perezia wrightii* Gray, Page 957), 58, 63 (110909 - color presentation), 77, **85** (110909 - color presentation), 115 (color presentation), 127*

***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, **138***

***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), **138***

***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), 46 (recorded as *Franseria deltoidea* Torr., Page 896), 63 (111009 - color presentation), 77 (color photograph #68), 85 (111009 - color presentation), 91, 115 (color presentation), **138**, **WTK** (July 4, 2005)*

***Bahia absinthifolia* G. Bentham: Hairyseed Bahia**

COMMON NAMES: Bahia, Hairyseed Bahia. DESCRIPTION: Terrestrial perennial forb/herb (10 inches to 2 feet in height, plants were observed that were 12 to 18 inches in height and width); the herbage may be gray, gray-green, light green, silvery-gray-green or white woolly; the disk flowers are orange, orange-yellow or yellow; the ray flowers are yellow; flowering generally takes place between mid-March and mid-November). HABITAT: Within the range of this species it has been reported from mountains; sandy mesas; sandy-loamy plateaus; cliff faces; canyons; talus; shaley ridges; foothills; clayey hills; rocky hillsides; bouldery escarpments; rocky, rocky-gravelly, gravelly, clayey and silty-clayey

slopes; alluvial fans; gravelly and sandy bajadas; rocky outcrops; sand dunes; plains; gravelly and sandy flats; basins; rocky and sandy valley floors; along rocky and sandy roadsides; within arroyos; clayey bottoms of arroyos; draws; gullies; within gravelly and sandy washes; swales; banks of ravines; terraces; floodplains; lowlands, and disturbed areas growing in dry rocky desert pavement; bouldery, rocky, rocky-gravelly, shaley, gravelly and sandy ground; sandy loam ground; silty clay and clay ground, and sandy silty ground, occurring from 1,800 to 8,800 feet, in elevation in the woodland, grassland and desertscrub ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. *Bahia absinthifolia* is native to southwest-central and southern North America. *5, 6, 16, 28 (color photograph), 43 (111309), 46 (Page 925), 63 (111309 - color presentation), 77 (color photograph #16), 85 (111309 - color presentation), 115 (color presentation)*

***Brickellia baccharidea* A. Gray: Resinleaf Brickellbush**

COMMON NAMES: Baccharis-leaf Brickellia, Baccharisleaf Brickellbush, Brickell-bush, Brickellbush, Resinleaf Brickellbush. DESCRIPTION: Terrestrial perennial subshrub or shrub (to 3 feet in height); flowering generally takes place between September and November. HABITAT: Within the range of this species it has been reported from crevices in boulders and rocky slopes growing in dry bouldery and rocky ground, occurring from 500 to 5,500 feet in elevation in the grassland and desertscrub ecological formations. NOTE: *Brickellia baccharidea* is native to southwest-central and southern North America. *5, 6, 13, 15, 43 (063010), 46 (Page 849), 48 (genus), 58, 63 (063010), 77, 85 (063010 - color presentation of dried material, unable to access to species information), **138***

***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 picture), 43 (111409), 46 (Page 849), 48 (genus), 58, 63 (111409), 77, 85 (111409 - color presentation), 115 (color presentation), **138***

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

***Chaenactis carphoclinia* A. Gray (var. *carphoclinia* is the variety reported as occurring in Arizona): Pebble Pincushion**

SYNONYMY: (for *C.c.* var. *carphoclinia*: *Chaenactis carphoclinia* A. Gray var. *attenuata* (A. Gray) M.E. Jones). COMMON NAMES: Broadleaved Chaenactis, False Yarrow, Pebble False-yarrow, Pebble Pincushion, Pincushion Flower. DESCRIPTION: Terrestrial annual forb/herb (2 to below 28

inches in height); the disk flowers are cream or white; flowering generally takes place between late January and mid-June (additional records: one for early January and two for late December). HABITAT: Within the range of this species it has been reported from mountains; rocky-sandy mountainsides; mesas; sandy plateaus; rocky canyons; canyon bottoms; talus slopes; ridges; cindery cinder cones; foothills; rocky and gravelly hills; rocky, rocky-sandy, shaley and gravelly hillsides; rocky, rocky-sandy, shaley and gravelly slopes; rocky alluvial fans; gravelly bajadas; amongst rocks and gravels; lava flows; sandy lava beds; plains; rocky, rocky-sandy and sandy flats; along gravelly and sandy roadsides; along and in rocky-sandy, gravelly, gravelly-sandy and sandy washes; within drainages; silty depressions; clayey lakebeds; silty playas; rocky and gravelly banks of creeks, rivers and washes; edges of washes; sandy margins of washes; mudflats; gravelly terraces; floodplains; canal banks; riparian areas, and disturbed areas growing in moist and dry desert pavement; rocky, rocky-gravelly, rocky-sandy, shaley, cindery, gravelly, gravelly-sandy and sandy ground; gravelly-sandy loam ground; clay ground, and sandy-silty and silty ground, occurring from sea level to 5,000 feet in elevation in the desertscrub and wetland ecological formation. NOTE: *Chaenactis carphoclinia* is native to southwest-central and southern North America. *5, 6, 43 (111609), 46 (Page 922), 63 (111609), 77, 85 (111709 - color presentation)*

Chaenactis carphoclinia var. *attenuata* (see *Chaenactis carphoclinia* var. *carphoclinia*)

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, **138**, **HR**, **WTK** (July 4, 2005)*

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

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

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

***Erigeron* C. Linnaeus: Fleabane**

COMMON NAME: Fleabane. *43 (063010), 46 (Pages 874-881), 63 (063010 - color presentation of plant in habitat), **138** (recorded as *Erigeron* sp.)*

Franseria ambrosioides (see Ambrosia ambrosioides)

Franseria confertiflora (see *Ambrosia confertiflora*)

Franseria deltoidea (see *Ambrosia deltoidea*)

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

COMMON NAMES: Cutleaf Goldenweed, Cutleaf Ironplant, Ironplant, Lacy Tansy-aster, Lacy Tansyaster, Pinnate Machaeranthera, Spiny Daisy, Spiny Goldenweed, Spiny Haplopappus, Tansyaster, Yellow Spiny Daisy. DESCRIPTION: Terrestrial perennial forb/herb or subshrub (4 to 36 inches in height); the color of the leaves has been described as being bluish, gray-green or green; the disk flowers may be brown, brownish, golden-yellow, orange, yellow or yellow-orange; the ray flowers are golden-yellow or yellow; flowering generally takes place between mid-January and late December. HABITAT: Within the range of this species it has been reported from mountains; rocky mountaintops; rocky mountainsides; rocky mesas; plateaus; rock cliffs; rocky and rocky-sandy rims of canyons and craters; rocky, shaley and sandy canyons; canyon walls; bouldery-gravelly-sandy and sandy canyon bottoms; talus slopes; bases of cliffs; rocky clefts; crevices in bedrock, boulders, rocks and cracks in soil; ledges; rocky and chalky ridges; bouldery ridgetops; crater walls; foothills; rocky and sandy hills; bouldery and rocky hillsides; bouldery, rocky and gravelly slopes; gravelly, gravelly-sandy and sandy bajadas; rock outcrops; amongst boulders and rocks; alcoves; along lava flows; lava fields; prairies; sandy plains; gravelly, sandy and clayey flats; valley floors; along rocky, rocky-loamy, gravelly and gravelly-loamy roadsides; arroyos; sandy-silty draws; gullies; along streams; streambeds; along creeks; creekbeds; along rivers; along and in rocky, gravelly and sandy washes; along and in cobbly drainages; banks of creeks and rivers; mudflats; sand bars; along rocky beaches; gravelly and sandy benches; rocky and gravelly-sandy terraces; rocky terrace alcoves; bottomlands; floodplains; mesquite bosques; dry bottoms of stock tanks (charcos); sandy

riparian areas, and disturbed areas growing in dry bouldery, bouldery-gravelly-sandy, rocky, rocky-gravelly, rocky-sandy, cobbly, cindery, gravelly, gravelly-sandy, sandy and chalky ground; rocky loam, gravelly loam, gravelly-clayey loam and sandy loam ground; sandy clay and clay ground, and sandy silty ground, occurring from sea level to 8,900 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. *Machaeranthera pinnatifida* is native to central and southern North America. *5, 6, 16, 43 (062109), 46 (recorded as *Aplopappus spinulosus* (Pursh) DC., Page 860; *Aplopappus spinulosus* (Pursh) DC. subsp. *typicus* H.M. Hall, Page 860; *Aplopappus spinulosus* (Pursh) DC. var. *gooddingii* (A. Nels.) Blake, Page 860, and *Aplopappus spinulosus* (Pursh) DC. var. *turbinellus* (Rydb.) Blake, Page 860), 63 (120609 - color presentation), 80 (Species of the genus *Machaeranthera* (*Aster* sp.) are listed as a Rarely Poisonous and Suspected Poisonous Range Plant. "Species of this genus are secondary or facultative selenium absorbers and can be dangerous to livestock."), 85 (120609 - color presentation), 86 (recorded as *Haplopappus spinulosus*, color photograph), **138***

***Malacothrix clevelandii* A. Gray: Cleveland's Desertdandelion**

COMMON NAMES: Annual Malacothrix, Cleveland's Desertdandelion, Cleveland's Desertdandelion, Cleveland Yellow Saucers, Yellow Saucers. DESCRIPTION: Terrestrial annual forb/herb (2 to 22 inches in height); the flowers are cream, cream-white, cream-yellow, bright lemon-yellow, white, pale yellow or yellow; flowering generally takes place between mid-March and early July. HABITAT: Within the range of this species it has been reported from mountains; mountaintops; canyons; sandy canyon bottoms; gravelly bases of cliffs; rocky ledges; ridges; ridgetops; ridgelines; hills; rocky hillsides; rocky and sandy slopes; bajadas; rocky outcrops; amongst gravels; gravelly flats; along bottoms of arroyos; along streams; along creeks; along and in sandy washes; drainage ways; banks of washes; sandy edges of washes, margins of cienegas; floodplains; shaley and sandy riparian areas recently burned areas in chaparral, and disturbed areas growing in moist and dry rocky, shaley, gravelly and sandy ground, occurring from 1,200 to 6,700 feet in elevation in the woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTE: *Malacothrix clevelandii* is native to southwest-central and southern (Baja California) North America. *5, 6, 15, 16, 43 (120709 - no record of species), 46 (Page 963), 58, 63 (120709), 77, 85 (120709 - color presentation), 115 (color presentation), **138***

***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)*

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

COMMON NAMES: Desert Daisy, Desert Star, Desertstar, Mohave Desert Star, Mohave Desertstar, Mojave Desertstar, Rock Daisy. DESCRIPTION: Terrestrial annual forb/herb (1 to 12 inches in height, plants may be up to 10 inches in width, plants ¾ inch in height and 5 inches in width were reported); the leaves are grayish-green; the disk flowers are golden or yellow; the ray flowers may be blue, blue-lavender-white, lavender, pink, purplish-lavender, white, white-lavender or white tinged with pink, pink-purple, purple or rose; flowering generally takes place between mid-January and mid-June. HABITAT: Within the range of this species it has been reported from mountains; stony and sandy mesas;

rocky canyons; foothills; rocky, gravelly and sandy hills; rocky, rocky-cobbly and gravelly hillsides; rocky, rocky-gravelly-sandy, rocky-sandy, stony-sandy, cobbly-gravelly, cobbly-gravelly-sandy, gravelly-sandy, sandy and clayey slopes; rocky alluvial fans; gravelly-sandy and sandy bajadas; bouldery outcrops; amongst rocks; lava flows; lava fields; sand dunes; gravelly plains; rocky, gravelly and sandy flats; valley floors; coastal sand dunes; sandy roadsides; gullies; creekbeds; along and in stony-sandy, gravelly, gravelly-sandy and sandy washes; stony drainage ways; playas; gravelly and sandy banks of drainage ways, silty depressions; shores of lakes; gravel bars; gravelly and sandy benches; terraces; canal banks, and gravelly-sandy riparian areas growing in dry desert pavement; bouldery, rocky, rocky-cobbly, rocky-gravelly-sandy, rocky-sandy, stony, stony-sandy, cobbly-gravelly, cobbly-gravelly-sandy, gravelly, gravelly-sandy and sandy ground; gravelly-sandy loam and sandy loam ground, and clay ground, occurring from sea level to 4,000 feet in elevation in the desertscrub and wetland ecological formations. NOTES: This small winter annual may be an attractive component of a restored native habitat, the flowers are about ¾ inch in width. *Monoptilon bellioides* is native to southwest-central and southern North America. *5, 6, 16, 28 (color photograph), 43 (120809 - *Monoptilon bellioides* H.M. Hall), 46 (Page 868), 63 (120809 - color presentation), 77 (color photograph #21), **85** (120909 - color presentation), 86 (color photograph), 115 (color presentation), **138***

***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, **138***

Perezia wrightii (see *Acourtia wrightii*)

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

COMMON NAMES: Deerweed, Hierba del Venado (Herb of the Deer), Odora, Poreleaf, Slender Poreleaf. DESCRIPTION: Terrestrial perennial subshrub (4 to 48 inches in height, one plant was described as being 8 inches in height and 12 inches in width, one plant was described as being 16 inches

in height and 20 inches in width), the foliage is bluish, blue-gray, gray, gray-green, green or purple-gray; the disk flowers (no ray flowers) may be cream, cream-maroon, cream-purple, cream-white, flesh, grayish-white, maroon, maroon-cream, pinkish, pinkish-white, purple, purplish-white, white, whitish, white tinged with purple, yellow or yellow-white; flowering generally takes place between mid-February and late December (additional records: one for early January and one for mid-January). HABITAT: Within the range of this species it has been reported from mountains; rocky mountainsides; rocky-gravelly and gravelly mesas; cliffs; bouldery and rocky and stony canyons; rocky and sandy canyon bottoms; scree; talus slopes; bouldery bases of cliffs; crevices in boulders and rocks; ledges; rocky ridges; ridgetops; meadows; foothills; rocky and rocky-sandy hills; along bouldery hilltops; rocky hillsides; bouldery, rocky, rocky-gravelly, rocky-loamy, rocky-clayey, gravelly and sandy slopes; alluvial fans; rocky and gravelly bajadas; rocky outcrops; amongst boulders and rocks; sandy lava beds; sand dunes; sandy hummocks; sandy plains; rocky-sandy, gravelly and sandy flats; basins; valley floors; sandy coastal dune ridges; along gravelly roadsides; sandy arroyos; rocky arroyo walls; rocky arroyo bottoms; draws; along gullies; around springs; along streams; along creeks; sandy creekbeds; along rivers; rocky riverbeds; along and in rocky, rocky-clayey, gravelly, gravelly-sandy and sandy washes; within drainage ways; rocky, cobbly and sandy banks of arroyos, rivers and washes; rocky edges of arroyos; along shores; beaches; gravelly terraces; floodplains; riparian areas, and recently burned areas of chaparral growing in wet and dry desert pavement; bouldery, bouldery-gravelly, rocky, rocky-gravelly, shaley, cobbly, cindery, gravelly, gravelly-sandy and sandy ground; rocky loam and rocky-gravelly loam ground, and rocky clay and clay ground, occurring from sea level to 6,100 feet in elevation in the woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: Deerweed emits a pungent odor when bruised. This plant was reported to have been utilized by native peoples of North America crop; it was noted as having been used as a drug or medication. Deer browse this plant. *Porophyllum gracile* is native to southwest-central and southern North America. *5, 6, 13, 15, 16, 28 (color photograph), 43 (121109), 46 (Pages 933-934), 58, 63 (121109 - color presentation), 77, **85** (121209 - color presentation), 115 (color presentation), 127*

***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), **138***

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

COMMON NAMES: Desert Chickory, Desert Chicory, Desert-chicory, Desert Dandelion, Goatsbeard, Mexican Plumeseed, New Mexico Plumeseed, New Mexico Plumseed, Plumeseed. DESCRIPTION: Terrestrial annual forb/herb (4 to 24 inches in height); the foliage is bluish-gray-green; the ray flowers (flowering head 2 inches in width) are cream, cream-white, white, white with lavender or pink stripes, yellow or yellow-cream; flowering generally takes place between early January and late May (additional record: one for mid-July). HABITAT: Within the range of this species it has been reported from mountains; mountainsides; sandy-silty mesas, along rocky cliffs; rocky canyons; sandy and sandy-loamy canyon bottoms; bases of cliffs; knobs; ridges; ridgetops; foothills; rolling hills; rocky and sandy hillsides; rocky escarpment; bouldery-sandy-clayey, rocky, rocky-gravelly-loamy, rocky-sandy, rocky-silty-clayey, rocky-powdery, stony, cobbly-gravelly-sandy, cobbly-sandy loam, gravelly, gravelly-sandy, gravelly-loamy, gravelly-clayey-loamy, sandy, sandy-loamy and silty slopes; alluvial fans; rocky-sandy and gravelly bajadas; amongst rocks; lava fields; sand dunes; blow-sand deposits; bouldery-pebbly and sandy plains; rocky, gravelly, sandy, sandy-loamy, sandy-silty silty flats; gravelly and sandy valley floors; coastlines; along rocky-sandy, gravelly, gravelly-sandy-clayey-loamy and sandy roadsides; rocky and sandy arroyos; along gullies; along and in rocky, gravelly, gravelly-sandy and sandy washes; drainages; cobbly drainage ways; silty lakebeds; sandy and silty depressions; alkaline sinks; gravelly-sandy and sandy banks of washes; sandy edges of washes and lakes; margins of washes; shores of lakes; gravelly-sandy benches; terraces; floodplains; ditches; sandy riparian areas and disturbed areas growing in dry desert pavement; bouldery-pebbly, rocky, rocky-sandy, stony, cobbly, cobbly-gravelly-sandy, cindery, gravelly, gravelly-sandy and sandy ground; rocky-gravelly loam, cobbly-sandy loam, gravelly loam, gravelly-sandy-clayey loam, gravelly-clayey loam and sandy loam ground; bouldery-sandy clay, rocky-silty clay, silty clay and clay ground; sandy silty and silty ground, and rocky powdery ground, occurring from sea level to 5,800 feet in elevation in the scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. It is often found growing up through the crowns of and supported by Triangleleaf Bursage (*Ambrosia deltoidea*) and other small low shrubs. *Rafinesquia neomexicana* is native to southwest-central and southern North America. *5, 6, 16, 28 (color photograph), 43 (121209), 46 (Page 961), 58, 63 (121209 - color presentation), 77 (color photograph #22), 85 (121209 - color presentation), 86 (color photograph), 115 (color presentation), **138***

***Stephanomeria pauciflora* (J. Torrey) A. Nelson: Brownplume Wirelettuce**

SYNONYMY: *Stephanomeria pauciflora* (J. Torrey) A. Nelson var. *parishii* (W.L. Jepson) P.A. Munz, *Stephanomeria pauciflora* (J. Torrey) A. Nelson var. *pauciflora*. COMMON NAMES: Brownplume Wirelettuce, Desert Straw, Fewflower Wirelettuce, Skeleton Plant, Small-flowered Wirelettuce, Wire Lettuce. DESCRIPTION: Terrestrial perennial forb/herb or subshrub (4 inches to 5 feet in height with some plants described as being up to 4 feet in width, plants were reported that were 10 inches in height and 14 inches in width, plants were reported that were 20 inches in height and 28 inches in width); the foliage is blue-green, gray-green, pale green or green; the flowers may be bluish-white, cream, pale & dark gray, pale lavender, pale lavender-pink, lavender, lavender-pink, orange, pale pink, pink fading to tan-brown, pinkish, pink-lavender, pink-purple, pink-violet, pink-white, pale purple, purple, rose, pale red-lavender, tan, violet, white, dull white, off-white or white-pink; flowering generally takes between early March and late December (additional records: on for mid-January and one for early February). HABITAT: Within the range of this species it has been reported from mountains; cindery mountainsides; clayey-loamy mesas; rock cliffs; rocky, sandy and sandy-loamy canyons; crevices in canyon walls; rocky, gravelly-sandy and sandy canyon bottoms; talus; crevices in rocks; knolls; rocky

ridges; bouldery ridgetops; rocky ridgelines; rocky foothills; bouldery, rocky and clay hills; hilltops; rocky and gravelly hillsides; bouldery, rocky, rocky-gravelly-loamy, cobbly, cindery, gravelly, gravelly-loamy, sandy, sandy-silty and loamy slopes; gravelly bajadas; rocky outcrops; amongst rocks; tops of cinder cones; stony mounds; sand hills; sand dunes; rocky-gravelly and sandy outwash fans; sandy prairies; stony, gravelly-sandy, sandy and clayey plains; rocky-sandy, gravelly, gravelly-loamy and sandy-silty flats; valley floors; gravelly valley bottoms; coastal sand dunes; railroad right-of-ways; along gravelly, gravelly-sandy, gravelly-loamy, gravelly-clayey-loamy, sandy, sandy-silty and silty roadsides; sandy and clayey-loamy arroyos; gravelly-silty draws; gulches; within ravines; around springs; seeping streams; along streams; along creeks; sandy creekbeds; bouldery-cobbly-sandy and sandy riverbeds; along and in rocky-sandy, cobbly-sandy, gravelly, gravelly-sandy and sandy washes; along drainages; along drainage ways; around ponds; gravelly banks of rivers and washes; sandy edges of arroyos and washes; around fringes of playas; along margins of arroyos and washes; gravel bars, rocky beaches; gravelly and sandy benches; rocky and sandy terraces; rocky-sandy bottomlands; floodplains; stock tanks; ditch banks; rocky-sandy, sandy and clayey-loamy riparian areas, and disturbed areas growing in moist, damp and dry desert pavement; bouldery, bouldery-cobbly-sandy, rocky, rocky-gravelly, rocky-sandy, stony, cobbly, cobbly-sandy, cindery, gravelly, gravelly-sandy and sandy ground; rocky-gravelly loam, rocky loam, gravelly loam, gravelly-sandy loam, gravelly-sandy-clayey loam, gravelly-clayey loam, sandy-clayey loam, sandy-clayey and clayey loam and loam ground; clayey ground, and gravelly silty, gravelly-sandy silty, sandy silty and silty ground, occurring from sea level to 8,600 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant has a milky 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 food (candy) crop; it was also noted as having been used as a ceremonial item and as a drug or medication. *Stephanomeria pauciflora* is native to southwest-central and southern North America. *5, 6, 15, 16, 28 (color photograph), 43 (121909), 46 (Page 960), 58, 63 (121909 - color presentation), 77 (color photograph #70), 85 (121909 - color presentation), 115 (color presentation), 127, **138***

Stephanomeria pauciflora var. *parishii* (see *Stephanomeria pauciflora*)

Stephanomeria pauciflora var. *pauciflora* (see *Stephanomeria pauciflora*)

***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), **138** (recorded as *Dyssodia pentachaeta*)*

***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), **138**, **WTK** (July 4, 2005)*

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

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

SYNONYMY: *Zinnia pumila* A. Gray. COMMON NAMES: Desert Zinnia, Spinyleaf Zinnia, White Zinnia, Wild Zinnia. DESCRIPTION: Terrestrial perennial forb/herb or subshrub (3 to 20 inches in height and to 2 feet in width); the leaves are gray or gray-green; the disk flowers are green-yellow, yellow or yellow-orange; the ray flowers are cream, cream-white, white, white-cream, yellow or yellow-white; flowering generally takes place between early March and early November (additional records: three for early December). HABITAT: Within the range of this species it has been reported from mountains; sandy mesas; sandy-loamy plateaus; canyons; rocky ridges; rocky ridgetops; foothills; rocky hills; rocky and gravelly hillsides; bouldery, rocky, rocky-gravelly-sandy, gravelly-sandy, sandy and loamy slopes; gravelly, gravelly-sandy, sandy and clayey bajadas; rocky outcrops; sand hills; sand dunes; rocky-gravelly-sandy, rocky-sandy, gravelly and gravelly-sandy-clayey flats; rocky valley floors; gravelly-silty and gravelly-silty-loamy valley bottoms; along gravelly-sandy-clayey-loamy roadsides; arroyos; sandy bottoms of arroyos; washes; sandy drainages; along ponds; edges of swales; gravelly-sandy banks of washes; sandy benches; terraces; floodplains; riparian areas, and disturbed areas growing in damp and dry

desert pavement; bouldery, rocky, rocky-gravelly-sandy, rocky-sandy, gravelly, gravelly-sandy and sandy ground; gravelly loam, gravelly-silty loam, gravelly-sandy-clayey loam, sandy loam and loam ground; gravelly-sandy clay and clay soils, gravelly silty ground, and chalky ground, occurring from 1,500 to 6,000 feet in elevation in the woodland, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. This plant was reported to have been utilized by native peoples of North America; it was noted as having been used as a drug or medication. *Zinnia acerosa* is native to southwest-central and southern North America. *5, 6, 13, 15, 16, 18, 28 (color photograph), 43 (062609 - *Zinnia acerosa* A. Gray, Page 897), 46 (recorded as *Zinnia pumila* Gray), 48 (genus), 58, 63 (122509 - color presentation), 77 (color photograph #71), 85 (122509 - color presentation), 115 (color presentation), 127, **138***

Zinnia pumila (see *Zinnia acerosa*)

Boraginaceae: The Borage Family

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

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

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

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

SYNONYMY: *Amsinckia echinata* A. Gray, *Amsinckia intermedia* F.E. von Fischer & C.A. Meyer, *Amsinckia intermedia* F.E. von Fischer & C.A. Meyer var. *echinata* (A. Gray) I.L. Wiggins. COMMON NAMES: Coast Buckthorn, Coast Fiddleneck, Common Fiddleneck, Devil's Lettuce, Fiddle Neck, Fiddleneck, Finger Weed, Kurttukeltalemmikki, Menzies Fiddleneck, Ranchers Fireweed, Sacoto Gordo, Tarweed, Yellow Burnweed, Yellow Burweed, Yellow Burrweed, Yellow Forget Me Not, Yellow Tarweed. DESCRIPTION: Terrestrial annual forb/herb (2 inches to 4 feet in height); the flowers are golden-yellow, orange, orange-yellow, yellow or yellow-orange; flowering generally takes place between late January and late May (additional records: one for mid-June, one for late June and one for late November). HABITAT: Within the range of this species it has been reported from mountains; rocky mountainsides; sandy mesas; plateaus; silty canyons; rocky canyon bottoms; bases of cliffs; clayey ridges; ridgetops; meadows; foothills; rocky and silty hills; clayey hilltops; bouldery and rocky hillsides; bouldery, rocky, rocky-loamy-clayey, shaley-clayey-loamy, cobbly-sandy-loamy, gravelly-loamy and clayey slopes; rocky-sandy alluvial fans; bajadas; amongst boulders and rocks; boulderfields; along boulders; sand dunes; sand sheets; gravelly, gravelly-sandy, sandy and clayey flats; basins; rocky valley floors; coastal terraces; along roadsides; along arroyos; along bottoms of arroyos; draws; seeps; in clay around springs; along streams; along creeks; along creekbeds; along rivers; riverbeds; along and in rocky-sandy, gravelly-sandy, sandy and sandy-loamy washes; within sandy drainages; sandy drainage ways; marshes; clayey-loamy depressions; swales; sandy banks of streams; edges of washes; margins of washes; mudflats; benches; rocky and gravelly and sandy terraces; loamy bottomlands; silty floodplains; silty impoundments; edges of stock tanks; edges of ditches; riparian areas; recently burned areas of oak woodland and chaparral, and disturbed areas growing in moist and dry bouldery, rocky, rocky-sandy, gravelly, gravelly-sandy and sandy ground; shaley-clayey loam, cobbly-sandy loam, gravelly loam, sandy loam, clayey loam and loam ground; rocky-loamy clay and clay ground, and gravelly-silty and silty ground, occurring from sea level to 5,500 feet in elevation in the woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTE: *Amsinckia menziesii* var. *intermedia* is native to west-central and southern North America. *5, 6, 15 (reported as *Amsinckia intermedia* Fisch. & Mey.), 16 (reported as *Amsinckia intermedia* Fisch. & Mey.), 28 (reported as *Amsinckia intermedia*, color photograph), 43

(122609 - no record for var. *intermedia*), 46 (reported as *Amsinckia intermedia* Fisch. & Meyer, Page 723), 58 (reported as *Amsinckia intermedia* Fisch. & Meyer), 63 (122609 - color presentation), 68 ("The mature seeds have been demonstrated to cause hepatic cirrhosis, known as "hard liver disease" of cattle and swine, and the "walking disease" of horses. Sheep are either immune or highly resistant to the poison. The disease is common in the Pacific Northwest, but not in Arizona. This plant also may cause nitrate poisoning."), 77 (reported as *Amsinckia intermedia* F. & M., color photograph labeled *Amsinckia intermedia* #7), 80 (This plant (*Amsinckia intermedia* and others) is listed as a Rarely Poisonous and Suspected Poisonous Range Plant. "Cattle, horses and swine may be poisoned by an unknown liver toxin from eating large amounts of the seeds of this desert annual. Also plants may cause nitrate poisoning."), 85 (122709 - color presentation), 101, 115 (color presentation), **138** (recorded as *Amsinckia intermedia*)*

***Cryptantha* J.G. Lehmann ex G. Don: Cryptantha**

COMMON NAMES: Cryptantha. *43 (063010), 46 (Pages 714-721), 63 (063010 - color presentation), 115 (color presentation), **138** (recorded as *Cryptantha* sp.)*

***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), **138***

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

SYNONYMY: *Lappula redowski* auct. non (J.W. Hornemann) E.L. Greene, *Lappula redowskii* (J.W. Hornemann) E.L. Greene var. *desertorum* (E.L. Greene) I.M. Johnston, *Lappula redowskii* (J.W. Hornemann) E.L. Greene var. *occidentalis* (S. Watson) P.A. Rydberg, *Lappula redowskii* (J.W. Hornemann) E.L. Greene var. *redowskii*. COMMON NAMES: Beggar's Tick, Bluebur, Flat-spine Sheepburr, Flatspine Stickseed, Redowski Stickseed, Stickseed, Western Stickseed, Western Sticktight.

DESCRIPTION: Terrestrial annual or biennial forb/herb (6 to 32 inches in height); the foliage is gray-green; the flowers may be pale blue, pale blue-white, blue, light pink, purple, sky blue, white or yellow; flowering generally takes place between mid-February and early August (additional records: five for mid-January, one for late August, one for early September and one for late September). HABITAT: Within the range of this species it has been reported from mountains; mountaintops; sandy mesas; along rocky, gravelly-loamy and sandy canyons; sandy canyon bottoms; bouldery-gravelly-sandy gorges; talus; bases of cliffs; bedrock knolls; sandy ridges; rocky ridgetops; around and in rocky and gravelly-sandy meadows; foothills; rocky, gravelly and gravelly-sandy hills; hilltops; hillsides; rocky, shaley, cobbly-loamy, cindery, gravelly, gravelly-sandy, sandy, sandy-clayey, loamy, clayey and silty slopes; bajadas; rocky outcrops; amongst rocks; sheltered rock coves; lava flows; breaks; steppes; rocky, gravelly, sandy and sandy-loamy flats; basins; loamy valley floors; in roadbeds; along gravelly and gravelly-loamy roadsides; rocky and sandy arroyos; bottoms of arroyos; rocky draws; gulches; ravines; springs; along creeks; along rivers; sandy riverbeds; along and in rocky, gravelly, gravelly-sandy-silty and sandy washes; within gravelly drainages; in rocks around ponds; clayey swales; along banks of arroyos, streams and rivers; mudflats; sandy benches; cobbly-loamy and loamy bottomlands; floodplains; along fencelines; edges of stock tanks; ditches; gravelly-sandy-loamy and sandy riparian areas; waste places, and disturbed areas growing in wet, moist and dry bouldery-gravelly-sandy, rocky, shaley, cindery, gravelly, gravelly-sandy and sandy ground; rocky-gravelly-sandy-clayey loam, cobbly loam, gravelly loam, gravelly-sandy loam, sandy loam, clayey loam and loam ground; rocky clay, sandy clay, silty clay and clay ground; gravelly-sandy silty and silty ground, and gravelly-sandy chalky ground, occurring from 700 to 10,500 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant was reported to have been utilized by native peoples of North America and could be investigated to determine its value as a home garden or commercial fodder crop; it was also noted as having been used as a drug or medication. *Lappula occidentalis* var. *occidentalis* is native to northwestern, northern and west-central North America. *5, 6, 15 (recorded as *Lappula redowskii* (Hornem.) Greene var. *redowskii*), 16 (recorded as *Lappula redowskii* (Hornem.) Greene var. *redowskii*), 43 (010110 - *Lappula redowskii* Greene var. *desertorum* (Greene) I.M. Johnst., *Lappula redowskii* (Hornem.) Greene var. *occidentalis* Á. Löve & D. Löve), 46 (recorded as *Lappula redowskii* (Hornem.) Greene, Page 713), 58 (*Lappula redowskii* (Hornem.) Greene), 63 (010110 - color presentation), 77 (recorded as *Lappula redowskii* (Hornem.) Greene), 85 (010210), 101 (color photograph), 115 (color presentation of species), 127, **138** (recorded as *Lappula redowskii*)*

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

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

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

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

Pectocarya platycarpa **(P.A. Munz & I.M. Johnston) P.A. Munz & I.M. Johnston: Broadfruit Combseed**

COMMON NAMES: Broadfruit Combseed, Broad Nut Comb-bur, Broadnut Combbur, Broadnut Combseed, Broad-nutted Comb Bur, Broad-wing Comb-bur, Stickweed. DESCRIPTION: Terrestrial annual forb/herb (prostrate or 2 to 10 inches in height); the flowers are white; flowering generally takes place between early February and late May (additional record: one for late June). HABITAT: Within the range of this species it has been reported from mountains; rocky mountainsides; pebbly-sandy-silty mesas; canyons; sandy canyon bottoms; talus slopes; ridges; foothills; rocky, gravelly and sandy hills; sandy hillsides; rocky, rocky-powdery, cobbly-gravelly-sandy, cobbly-sandy, gravelly, gravelly-sandy and sandy slopes; rocky alluvial fans; gravelly and gravelly-sandy bajadas; amongst boulders and rocks; rocky-sandy lava fields; sand dunes; sand sheets; blow-sand deposits; plains; rocky, gravelly, gravelly-

sandy and sandy flats; gravelly and sandy valley floors; along gravelly roadsides; along streams; along creeks; creekbeds; along rivers; along and in rocky-gravelly, rocky-gravelly-sandy, rocky-sandy, gravelly, gravelly-sandy and sandy washes; sandy drainages; silty depressions; gravelly-sandy and sandy banks of washes; rocky and silty-clayey edges of washes and lakebeds; margins of washes; mudflats; beaches; gravelly benches; shelves; terraces; sandy and loamy bottomlands; sandy and silty floodplains; gravelly-sandy riparian areas, and disturbed areas growing in dry desert pavement; bouldery, bouldery-gravelly, rocky, rocky-cobbly, rocky-gravelly, rocky-gravelly-sandy, rocky-sandy, stony-sandy, cobbly-gravelly-sandy, cobbly-sandy, gravelly, gravelly-sandy and sandy ground; gravelly loam, gravelly-sandy loam, sandy loam, sandy-clayey loam and loam ground; silty clay ground; pebbly-sandy silty and silty ground, and rocky powdery ground, occurring from sea level to 7,800 feet in elevation in the woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTE: *Pectocarya platycarpa* is native to southwest-central and southern North America. *5, 6, 15, 16, 43 (010210), 46 (Page 712), 58 63 (010210), 77, 85 (010210 - color presentation of dried material), **138***

***Tiquilia canescens* (A.P. de Candolle) A.T. Richardson: Woody Crinklemat**

COMMON NAMES: Crinkle Mats, Gray Coldenia, Hierba de la Virgin, Oreja del Perro, Ratear Coldenia, Shrubby Coldenia, Woody Crinklemat. DESCRIPTION: Terrestrial perennial subshrub (generally 4 to 8 inches in height; however, plants up to 2 feet in height were reported, plants 4 inches in height and width were reported); the leaves are gray, grayish or gray-green; the flowers may be pale lavender, lavender, lavender-pink, lavender-whitish, light pink, pink, light pink-lavender, pale purple, purple, rose-lilac, violet or white with a yellow floral tube; flowering generally takes place between late March and mid-June (additional records: one for early March, two for early July, one for late July, two for early August, one for mid-August, one for early September, two for mid-September, one for late September and one for early October). HABITAT: Within the range of this species it has been reported from mountains; rocky mountainsides; mesas; cliffs; escarpments; bouldery and rocky and gravelly canyons; canyon bottoms; gorges; talus slopes; crevices in rocks; gravelly-sandy bluffs; buttes; rocky ledges; along rocky and chalky ridges; openings in forests; rocky and gravelly-sandy hills; rocky hillsides; along bouldery, rocky, rocky-gravelly, gravelly, gravelly-shaley and gravelly-sandy slopes; gravelly and gravelly-sandy bajadas; shaley and rocky outcrops; amongst boulders and rocks; sand dunes; sandy plains; rocky, gravelly and sandy flats; valley floors; roadbeds; rocky-gravelly-loamy, gravelly and gravelly-loamy roadsides; arroyos; gullies; rocky ravines; along and in stony, gravelly, gravelly-sandy and sandy washes; gravelly terraces; floodplains; along fence lines; waste places; sandy riparian areas, and disturbed areas growing in dry desert pavement; bouldery, rocky, rocky-shaley, rocky-gravelly, rocky-sandy, stony, shaley-gravelly, stony, gravelly, gravelly-sandy and sandy ground; rocky-gravelly loam, gravelly loam and gravelly-sandy loam ground; rocky clay, shaley clay and clay ground, and chalky ground, occurring from 100 to 7,600 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. This plant is browsed by Desert Bighorn Sheep (*Ovis canadensis* subsp. *mexicana*). *Tiquilia canescens* is native to southwest-central and southern North America. *5, 6, 15, 16, 28 (color photograph), 43 (010310), 46 (*Coldenia canescens* DC. including the typical plant and variety *pulchella* Johnst., Page 709), 63 (010310), 77, 85 (010310 - color presentation), 115 (color presentation), **138***

Brassicaceae (Cruciferae): The Mustard Family

Arabis eremophila (see *Arabis perennans*)

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

SYNONYMY: *Arabis eremophila* E.L. Greene, *Boechera perennans* (S. Watson) W.A. Weber. COMMON NAMES: Perennial Rockcress, Rock Cress, Stiff-arm Rock Cress, Stiffarm Rock Cress. DESCRIPTION: Terrestrial perennial forb/herb or subshrub (8 to 40 inches in height, plants 8 to 12

inches in height and 6 to 17 inches in width were reported); the leaves are gray-green; the flowers may be pale blue-lavender, bluish-purple, cream, lavender, pink, pink-lavender, pinkish-purple, dull mauve, pale purple, purple, purple-magenta, purplish-pink, purplish-rose, reddish-violet, rose-magenta, violet-lavender, white & lavender or white-purple; flowering generally takes place between early February and early July (additional records: one for early January, one for mid-January, one for early August, one for early October and one for early December). HABITAT: Within the range of this species it has been reported from mountains; along mountaintops; rocky mountainsides; sandy mesas; sandy plateaus; rocky cliffs; rock faces; bouldery, rocky and rocky-sandy canyons; rocky and shaley-sandy canyon walls; bedrock, rocky, gravelly-sandy and sandy canyon bottoms; talus slopes; along sandy bases of cliffs; crevices in rocks; bluffs; rocky knobs; summits of laccoliths; rocky ledges; sandy ridges; ridgetops; rocky openings in woodlands; meadows; rocky-gravelly foothills; rocky hills; bouldery and rocky hillsides; sandy bases of escarpments; bedrock, bouldery, bouldery-gravelly, bouldery-sandy, rocky, rocky-shaley, rocky-gravelly, rocky-sandy, rocky-loamy, cobbly-sandy, cobbly-loamy, cindery, gravelly, gravelly-silty, sandy, sandy-loamy and loamy slopes; bajadas; rocky outcrops; amongst boulders and rocks; bases of boulders; lava flows; rocky mounds; flats; basins; along sandy valley floors; along roadbeds; along gravelly roadsides; rocky walls of arroyos; along draws; gulches; bouldery-sandy and rocky ravines; springs; along streams; gravelly streambeds; along creeks; along rivers; along and in rocky, rocky-gravelly, gravelly and sandy washes; within drainages; bouldery-cobbly drainage ways; marshes; rocky banks of gullies, streams and washes; rocky-loamy and gravelly edges of arroyos, streams and washes; gravelly terraces; rocky and gravelly-sandy riparian areas, and disturbed areas growing in moist and dry bouldery, bouldery-cobbly, bouldery-gravelly, bouldery-sandy, rocky, rocky-shaley, rocky-gravelly, rocky-sandy, shaley, shaley-sandy, cobbly-sandy, cindery, gravelly, gravelly-sandy and sandy ground; rocky loam, rocky-sandy loam, cobbly loam, gravelly-clayey loam, sandy loam, clayey loam and loam ground; sandy clay and clay ground, and gravelly silty and silty ground, occurring from 600 to 9,500 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant was reported to have been utilized by native peoples of North America; it was noted as having been used as a drug or medication. *Arabis perennans* is native to southwest-central and southern North America. *5, 6, 15, 16, 28 (color photograph), 43 (010310), 46 (Page 353), 58, 63 (010310 - color presentation), 77, **85** (010410 - color presentation), 115 (color presentation), 127*

Boechera perennans (see *Arabis perennans*)

Caulanthus lasiophyllus (see *Guillenia lasiophylla*)

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

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

***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 (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, **138***

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

COMMON NAMES: Gasa, Spring Whitlow-grass, Wedge-leaf Draba, Wedgeleaf Draba, Wedge-leaf Whitlow-grass, Wedgeleaf Whitlow Grass, Wedge-leaved Whitlow-grass, Whitlow-grass, Whitlow-grass, Whitlow-wort. DESCRIPTION: Terrestrial annual forb/herb (1½ to 5 inches in height); the leaves are gray-green; the flowers are cream, white or yellow; flowering generally takes place between early January and late April (additional records: one for mid-May, one for late May, one for mid-July, one for

mid-September, one for early December and one for late December). HABITAT: Within the range of this species it has been reported from mountains; mesas; plateaus; cliffs; soil pockets on shaded cliff walls; rocky canyons; rocky-sandy, sandy and loamy canyon bottoms; sandy talus slopes; bases of cliffs; rocky and stony ledges; ridges; rocky and clayey hills; rocky hillsides; along bouldery-gravelly, rocky, rocky-clayey-loamy, cindery, gravelly, gravelly-sandy, gravelly-loamy and sandy slopes; gravelly bajadas; rocky outcrops; amongst boulders and rocks; lava flows; rocky, stony-gravelly-clayey, gravelly and sandy flats; along roadsides; along arroyos; seeps, springs; arroyos; sandy bottoms of arroyos; gulches; along streams; sandy streambeds; along creekbeds; along rivers; sandy riverbeds; along and in bedrock, rocky, rocky-sandy, gravelly, gravelly-sandy, sandy and silty washes; along drainage ways; gravelly-sandy bowls; sandy, sandy-silty and silty banks of washes; along sandy shorelines of rivers; gravelly and silty sand-bars; bouldery-sandy beaches; cobbly benches; sandy and loamy bottomlands; shelves; 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), **138***

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

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

lasiophyllus), 16 (*Caulanthus lasiophyllus* (Hook. & Arn.) Payson), 43 (010910), 46 (*Thelypodium lasiophyllum* (Hook. & Arn.) Greene, Page 330), 63 (010910 - color presentation), 77 (*Caulanthus lasiophyllus* (H.&A.) Payson), 80 (*Thelypodium lasiophyllum* is listed as a Rarely Poisonous and Suspected Poisonous Range Plant. "This annual mustard has been reported to accumulate toxic levels of nitrate."), **85** (010910 - color presentation of dried material), 115 (color presentation), **138** (recorded as *Caulanthus lasiophyllus*)*

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

COMMON NAMES: Hairy-pod Pepperwort, Hairypod Pepperweed, Hispidcress, Pepper Grass, Peppergrass, Pepperweed, Sand Peppergrass, Shaggyfruit Pepperweed. DESCRIPTION: Terrestrial annual or biennial forb/herb (4 to 15 inches in height); the flowers are cream, green, greenish-yellow, white or yellow-green; flowering generally takes place between late December and late June (additional records: one for late August and one for mid-September). HABITAT: Within the range of this species it has been reported from mountains; mesas; plateaus; along rocky and shaley canyons; rocky, gravelly and sandy canyon bottoms; talus slopes; bases of cliffs; buttes; rocky and sandy ledges; sandy ridges; rocky ridgetops; foothills; bouldery and rocky-sandy hills; hilltops; rocky hillsides; rocky, rocky-sandy, cobbly-gravelly-sandy, gravelly, sandy and sandy-loamy slopes; rocky, rocky-sandy and gravelly alluvial fans; gravelly, gravelly-sandy and sandy bajadas; rocky outcrops; amongst boulders and rocks; lava flows; lava beds; sand dunes; sand sheets; sand flats; along rocky-sandy and sandy outwash fans; gravelly-sandy-loamy and sandy-loamy plains; rocky, gravelly, sandy, sandy-loamy and silty flats; sandy basins; sandy and clayey valley floors; coastal bluffs; coastal dunes; coastal plains; tidal shores; along sandy roadsides; along and in arroyos; bottoms of arroyos; rocky chutes; around seeping streams; along creeks; sandy creekbeds; along rivers; sandy riverbeds; along and in bedrock, rocky, rocky-sandy, shaley, gravelly, gravelly-sandy and sandy washes; rocky-sandy drainages; along drainage ways; silty playas; silty depressions; raised areas in saltmarshes; along muddy, gravelly-sandy and sandy banks of rivers and washes; stony-sandy and sandy edges of arroyos, washes and lakebeds; around margins of washes and marshes; shores of lakes; mudflats; gravel and sand bars; sandy beaches; bouldery benches; gravelly terraces; sandy, loamy and clayey bottomlands; lowlands; sandy and silty floodplains; along gravelly-sandy and sandy edges of stock tanks; canal banks; gravelly and sandy riparian areas; recently burned areas in woodlands and desertscrub, and disturbed areas growing in moist and dry desert pavement; bouldery, rocky, rocky-sandy, stony-sandy, shaley, gravelly, gravelly-sandy and sandy ground; rocky loam, gravelly-sandy loam, gravelly-clayey loam, sandy loam and loam ground; silty clay and clay ground, and gravelly-sandy silty, sandy-silty and silty ground, occurring from sea level to 7,400 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant was reported to have been utilized by native peoples of North America and could be investigated to determine its value as a home garden or commercial food crop; it was also noted as having been used as a drug or medication. *Lepidium lasiocarpum* is native to southwest-central and southern North America. *5, 6, 15, 16, 43 (011010), 46 (Page 334), 63 (011010 - color presentation), 68, 77, 85 (011010 - color presentation), 127, **138***

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

COMMON NAMES: London Rocket, Londonrocket, Pamita, Pamiton, Rocket Mustard, Tumble Mustard. DESCRIPTION: Terrestrial annual forb/herb (8 inches to 5 feet in height, plants 8 inches in height and 6 inches in width were reported); the flowers are golden-yellow, white, pale yellow or yellow; the anthers are cream; flowering generally takes place between mid-December and mid-June (additional records: one for early July, one for late July, one for early August, one for mid-August, two for late August, one for mid-September, one for late September, one for early October, one for mid-October, one for early November, one for mid-November and four for late November). HABITAT: Within the range of this species it has been reported from mountains; sandy mesas; plateaus; canyons; along bouldery-gravelly-sandy and sandy canyon bottoms; rocky buttes; rock ledges; ridges; ridgetops; clayey meadows; foothills; rocky hills; rocky hillsides; bouldery, rocky, rocky-sandy, gravelly-sandy, sandy and sandy-

loamy slopes; rocky alluvial fans; bajadas; rocky outcrops; amongst boulders and rocks; sandy lava flows; sand dunes; berms; plains; rocky, gravelly, sandy and sandy-silty flats; basins; valley floors; loamy valley bottoms; railroad right-of-ways; gravelly-sandy roadbeds; gravelly, sandy and clayey roadsides; within rocky arroyos; along bottoms of arroyos; bottoms of ravines; seeps; springs; along streams; streambeds; along creeks; bouldery-rocky and rocky creekbeds; along rivers; rocky and rocky-cobbly-sandy riverbeds; along and in rocky, rocky-sandy, gravelly, gravelly-sandy, sandy and sandy-loamy washes; within sandy drainage ways; silty lakebeds; bogs; sandy-loamy and silty depressions; along cobbly-sandy, gravelly-sandy and sandy banks of streams, rivers and washes; rocky edges of springs, streams, creeks, washes and ponds; margins of washes; sandy beaches; sandy benches; terraces; sandy and loamy bottomlands; floodplains; mesquite bosques; margins of stock tanks; canal edges and walls; along ditches; riparian areas; waste places; recently burned areas of woodland and desertscrub, and disturbed areas growing in muddy and wet, moist, damp and dry bouldery, bouldery-gravelly-sandy, rocky, rocky-cobbly; rocky-cobbly-sandy, rocky-sandy, cobbly-sandy, gravelly, gravelly-sandy and sandy ground; rocky-clayey loam, gravelly-sandy loam, sandy loam and loam ground; sandy clay and clay ground, and sandy silty ground, occurring from sea level to 10,300 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: EXOTIC Invasive Plant that poses a significant threat to our native biotic communities. This plant was reported to have been utilized by native peoples of North America; it was noted as having been used food, beverage and as a drug or medication. *Sisymbrium irio* is native to middle and southern Europe; western, central, eastern and southern Asia, and northern Africa. *5, 6, 15, 16, 22, 28 (color photograph), 43 (011410), 46 (Page 336), 58, 63 (011410 - color presentation), 68, 77, 85 (011510 - color presentation), 101 (color photograph), 115 (color presentation), 127, **HR***

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

***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), **138***

Thelypodium lasiophyllum (see *Guillenia lasiophylla*)

Burseraceae: The Frankincense Family

***Bursera microphylla* A. Gray: Elephant Tree**

COMMON NAMES: Copal, Elephant Bursera, Elephant Tree, Elephant-tree, Hop (Seri), Little Leaf Elephant Tree, Littleleaf Elephant Tree, Small-leaf Elephant Tree, Small-leaf Elephant-tree, Torote, Torote Colorado, Xoop (Seri). DESCRIPTION: Terrestrial perennial semisucculent deciduous shrub or tree (2½ to 26 feet in height); the trunk is thick and short with crooked rapidly tapering branches; the branches are gray to reddish-gray, exfoliating gray, yellow or yellow-brown papery bark; the leaf-bearing twigs are cherry-red, maroon or reddish-brown; the leaves are green; the inconspicuous flowers are cream-white, cream-yellow or yellowish; the anthers are light yellowish-cream; flowering generally takes place between late June and early July; the fruits are reddish-brown. HABITAT: Within the range of this species it has been reported from mountains; rocky mountainsides; rocky canyons; canyon bottoms; cliffs; cracks on cliff faces; rocky ledges; ridge crests; foothills; rocky hills, rocky and rocky-gravelly hillsides; rocky slopes; bajadas; bouldery and rocky outcrops; amongst rocks; sand dunes; gravelly and sandy plains; flats; coastal plains; shell mantled beach ridges; rocky arroyos; rocky ravines; along and in washes; banks of washes; sandy strands; bottoms of tanks; floodplains, and riparian areas growing in dry bouldery, rocky, rocky-gravelly, gravelly, gravelly-sandy and sandy soils and sandy loam soils, occurring from sea level to 3,300 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; it was noted as having been used as a fibers (splint whisps used in making baskets), as a drug or medication, and the sap was occasionally used for good luck. This plant is frost sensitive. The common name "Elephant Tree" was given to this plant because of the resemblance of the stout, tapering branches to an elephant's trunk. The leaves have an odor, similar to that of citrus, when crushed. The fruits are reportedly eaten by Gray Vireos and other birds. *Bursera microphylla* is native to southwest-central and southern North America. *5, 6, 13, 28 (color photograph), 43 (063010), 45, 46 (Page 496), 48, 52 (color photograph), 53, 63 (063010), **85** (063010 - color presentation, unable to access species information), 91, 127, **138**, **HR** (recorded as a possible hybrid with *B. fagaroides*), MBJ (plants exhibiting the characteristics of this population are found only in one population in the United States and two populations in Mexico) *

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, **138**, **HR**, **WTK** (July 4, 2005)*

Cereus giganteus (see *Carnegiea gigantea*)

Cereus thurberi (see *Stenocereus thurberi*)

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

SYNONYMY: *Opuntia acanthocarpa* G. Engelmann & J. Bigelow, *Opuntia acanthocarpa* G. Engelmann & J. Bigelow var. *acanthocarpa*. COMMON NAMES: Buck-horn Cholla. DESCRIPTION: Terrestrial perennial stem-succulent shrub (40 inches to 10 feet in height, one plant was described as being 32 inches in height and 40 inches in width, one plant was described as being 4 feet in height and 40 inches in width, one plant was described as being 4 feet in height and width, one plant was described as being 78 inches in height and 10 feet in width); the stems are bluish-gray-green or green; the spines are brown, dark brown, golden-yellow, reddish-brown or tan turning gray with age; the glochids are yellow; the flowers (1 to 1¼ inches in diameter) are bronze, green-yellow, yellow or yellow-green sometimes

tinged with brown-orange or reddish-orange; the anthers are yellow; based on just a few flowering records located flowering generally takes place between late March and late May (flowering records: one for late March, seven for mid-May and one for late May); the mature spiny, dry fruits (1¼ inches in length and 5/8 to3/4 inch in diameter) are brown or tan. HABITAT: Within the range of this species it has been reported from mountains; mountaintops; canyons; rocky hillsides; rocky and sandy slopes; along drainages, and mesquite bosques growing in dry rocky, gravelly and sandy ground, occurring from 1,300 to 4,700 feet in elevation in the woodland and desertscrub ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. This plant (*Opuntia acanthocarpa*) was reported to have been utilized by native peoples of North America and could be investigated to determine its value as a home garden or commercial food crop. *Cylindropuntia acanthocarpa* var. *acanthocarpa* is native to southwest-central North America. *12 (recorded as *Opuntia acanthocarpa* Engelm. & Bigelow var. *acanthocarpa*, Pages 35 & 37), 26 (genus, recorded as *Opuntia*), 27 (recorded as *Cylindropuntia acanthocarpa* (Engelmann & Bigelow) F.M. Knuth, Page 17), 28 (species, color photograph of *Opuntia acanthocarpa*), 43 (011710 - *Cylindropuntia acanthocarpa* (Engelm. & J.M. Bigelow) F.M. Knuth, *Opuntia acanthocarpa* Engelm. & J.M. Bigelow), 45 (color photograph of species), 46 (recorded as *Opuntia acanthocarpa* Engelm. & Bigel., Page 585), 48 (genus, recorded as *Opuntia*), 53 (recorded as *Opuntia acanthocarpa* Engelm. & Bigel.), 63 (011810 - color presentation), 85 (011810), 115 (color presentation of species), 119 (recorded as *Opuntia acanthocarpa* Engelm.), 127, **138** (recorded as *Opuntia acanthocarpa*)*

***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, **HR**, **WTK** (July 4, 2005)*

***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, **138** (recorded as *Opuntia bigelovii*), **HR***

Opuntia bigelovii (see *Cylindropuntia bigelovii*)

***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, **138** (recorded as *Opuntia fulgida*), **WTK** (July 4, 2005)*

***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, **138** (recorded as *Opuntia leptocaulis*), **WTK** (July 4, 2005)*

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

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

spinosior (Engelm.) Toumey), 26 (genus, recorded as *Opuntia*), 27 (Page 14, color photograph: Plate 12, Page 96), 28 (color photograph), 43 (063009), 45 (color photographs), 46 (recorded as *Opuntia spinosior* (Engelm. & Bigel.) Toumey, Page 585), 48 (genus, recorded as *Opuntia*), 53, 58 (recorded as *Opuntia spinosior* (Engelm.) Toumey), 63 (011910 - color presentation), 77 (recorded as *Opuntia spinosior* (Engelm.) Toumey), 85 (012010 - color presentation), 115 (color presentation), 119, 127, **138** (recorded as *Opuntia spinosior*)*

***Echinocactus horizonthalonius* C. Lemaire: Devilshead**

COMMON NAMES: Arizona's Turk's-head (*E.h.* var. *nicholii*), Bisnaga Manca Caballo, Bisnaga Meloncillo, Blue Barrel, Blue Barrel Cactus, Devil-head Cactus, Devil's Head, Eagle-claw Cactus, Eagle's Claw, Horse Crippler, Mancacaballo (Spanish), Mancamula (Spanish), Manco Mula, Melon Cactus, Meloncillo, Nichol Echinocactus, Nichol Turk's Head Cactus, Nichol Turk's-head Cactus, Nichol Turkshead, Nichol Woolly-headed Cactus, Nichol's Echinocactus, Nichol's Turk's-head Cactus (*E.h.* var. *nicholii*), Turk's Head, Turk's-head (*E.h.* var. *nicholii*), Silverbell Cactus, Visnaga (Spanish), Viznaga Meloncillo (Spanish). DESCRIPTION: Terrestrial perennial stem-succulent shrub (4 to 16 inches in height and 4 to 8 inches in diameter); the stems may be ashy-green, blue-green, bluish-green, pale gray-green, gray-green or purplish; the central spines may be ashy-white, black, pale gray, gray, pinkish-gray or purplish with red or red & yellow; the stigma lobes are pink; the flowers (2 to 2¾ inches in diameter) are light pink, pink, pink (magenta), dark pink or bright purple; flowering generally takes place between late April and mid-July (flowering ending as late as September and into November has been reported); the semi-dry fruits (1 inch in length and ½ inch in diameter) are pink or red drying to brown with white woolly hairs. HABITAT: Within the range of this species it has been reported from mountains; ridges; hills; slopes; gravelly bajadas; alluvial plains; flats; valley floors, and terraces growing in dry gravelly soils, occurring from 2,000 to 3,600 feet in elevation in the woodland and desertscrub ecological formations. NOTES: This is a PERIPHERAL POPULATION. *Echinocactus horizonthalonius* is native to southwest-central and southern North America. *5, 6, 8, 9, 12 (Pages 173-175), 18 (genus), 27 (Page 116, color photograph: Plate 57, Page 105), 28 (color photograph), 43 (063010), 45 (color photograph), 46 (Page 573), 63 (063010 - color presentation), 85 (070110 - color presentation, unable to access species information), 91, **138***

***Echinocactus horizonthalonius* C. Lemaire var. *nicholii* L.D. Benson: Nichol's Echinocactus**

COMMON NAMES: Arizona's Turk's-head, Bisnaga Manca Caballo, Bisnaga Meloncillo, Blue Barrel, Devil's Head, Eagle's Claw, Eagle's Claw Cactus, Horse Crippler, Manco Mula, Meloncillo, Nichol Echinocactus, Nichol Echinocactus, Nichol Turk's Head Cactus, Nichol Turk's-head Cactus, Nichol Turkshead, Nichol Woolly-headed Cactus, Nichol's Echinocactus, Nichol's Turk's-head Cactus, Nichol Turk's Head Cactus, Nichol Turk's-head Cactus, Nichol Turkshead, Nichol Woolly-headed Cactus, Turk's Head, Turk's-head. DESCRIPTION: Terrestrial perennial stem-succulent shrub (4 to 20 inches in height and 5 to 8 inches in diameter); the stems are blue-green, bluish-green or gray-green; the central spines may be black, gray or dark gray with red; the flowers (2 to 2¾ inches in diameter) are light pink, pink, pink (magenta), dark pink or bright purple; flowering generally takes place between May and June (flowering ending as late as September has been reported); the dry fruits (1 inch in length and ½ inch in diameter) are pink or red drying to brown and covered with white woolly hairs. HABITAT: Within the range of this species it has been reported from mountains; ridges; hills; slopes; gravelly bajadas; alluvial plains; flats; valley floors, and terraces growing in dry gravelly soils, occurring from 2,000 to 3,600 feet in elevation in the woodland and desertscrub ecological formations. NOTES: These very slow-growing plants may only be 2 inches in height after ten to thirty-two years with plants possibly living to be 85 to 95 years of age. This is a PERIPHERAL POPULATION. *Echinocactus horizonthalonius* var. *nicholii* is native to southwest-central and southern North America. *5, 6, 8, 9, 12 (Page 175), 18 (genus), 27 (species, Page 116, color photograph: Plate 57, Page 105), 28 (species, color photograph of species), 43 (063010 - *Echinocactus horizonthalonius* var. *nicholii* L. Benson in L. Benson), 45 (color photograph), 46

(species, Page 573), 63 (063010), **85** (070110 - color presentation, unable to access species information), 91, **HR***

Echinocactus wislizeni (see *Ferocactus wislizeni*)

***Echinocereus engelmannii* (C.C. Parry ex G. Engelmann) C. Lemaire var. *acicularis* L. Benson: Engelmann's Hedgehog Cactus**

COMMON NAMES: Engelmann's Hedgehog Cactus, Needle-spine Hedgehog, Needle-spined Hedgehog Cactus, Strawberry Hedgehog Cactus. DESCRIPTION: Terrestrial perennial stem-succulent shrub (stems 6 to 15 inches in height and 1½ to 2½ inches in diameter in clusters of 5 to 25, or as many as 50 or more stems); the stems (6 to 8 inches in height and 1½ to 2½ inches in diameter, stems up to 24 inches in length were reported) are green; the long needle-like spines are pink or yellow; the flowers (2¼ to 2½ inches in diameter) are magenta or purple; flowering generally takes place between early March to early May (additional records: one for mid-June and one for mid-July); the ripe fruits (1½ inches in length) are purple or red. HABITAT: Within the range of this species it has been reported from mountains; sandy mountainsides; mesas; canyons; ledges; rocky ridges; rocky hills; rocky; gravelly and sandy hillsides; rocky slopes; gravelly-sandy and sandy bajadas; amongst rocks; on boulders and rocks; amongst rocks; sand dunes; plains; desert flats; basins; valley floors, and along and in sandy washes growing in dry bouldery, rocky, gravelly, gravelly-sandy and sandy ground, occurring from 700 to 3,700 feet in elevation in the desertscrub ecological formation. NOTES: This plant may be an attractive component of a restored native habitat. The species, *Echinocereus 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 crop. The fruits may be eaten by birds and rodents. *Echinocereus engelmannii* var. *acicularis* is native to southwest-central and southern North America. *5, 6, 12 (Pages 138-139 & 140, color photograph), 18 (species), 27 (recorded as *Echinocereus engelmannii* Parry var. *acicularis* L. Benson, Page 86, color photograph: Plates 54 & 54A, Page 105), 28 (species, color photograph of species), 43 (070210 - *Echinocereus engelmannii* (Parry ex Engelm.) Rümpler in C.F. Först. var. *acicularis* L.D. Benson in L.D. Benson), 45 (species, color photograph of species), 46 (species, Page 571), 48 (genus), 63 (070210), 85 (070210 - color presentation, unable to access species information), 119 (species, recorded as *Echinocereus engelmannii* (Parry) Rümpler), 127 (species), **HR***

Echinocereus engelmannii var. *nicholii* (see *Echinocereus nicholii*)

***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. 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 (stems 2 to 18 inches in height and 1½ to 3 inches in width either single or in clusters of up to 30 stems, one plant was reported to have 150 stems); the stems are green or dark green; the spines often with zones of differing colors including black, gray, grayish-black-purplish, reddish-brown, whitish or yellowish turning gray with age; the flowers (2 to 3 inches in diameter) are cerise, lavender-pink, pale magenta, magenta, magenta-maroon, magenta-pink, magenta-purple, magenta-red, pink, pink-purple, purple, reddish-purple, rose-pink or white; the anthers are yellow; the stigma lobes are green, dark green or olive green; flowering generally takes place between late March and late June (additional records: one for early October, one for mid-October, one for late October, two for early November and one for early December); the mature fruits (¾ to 1¼ inches in length and ½ to 1 inch in diameter) are orange-red or bright red.

HABITAT: Within the range of this species it has been reported from mountains; mesas; cliffs; canyons; canyonsides; bases of cliffs; buttes; knolls; ledges; ridges; along rocky and stony ridgetops; foothills; rocky, gravelly and sandy hills; rocky hilltops; rocky and sandy hillsides; rocky, stony and gravelly slopes; bajadas; rocky outcrops; amongst rocks and gravels, plains; gravelly flats; valley floors; along cobbly creeks; along and in washes; rocky and sandy banks, and floodplains growing in dry rocky, rocky-gravelly, stony, cobbly, gravelly and sandy ground, occurring from 1,800 to 6,300 feet in elevation in the woodland, scrub, grassland and desertscrub ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. The species, *Echinocereus fendleri*, was reported to have been utilized by native peoples of North America and could be investigated to determine its value as a home garden or commercial food crop. The fruits are eaten by birds and other animals. *Echinocereus fasciculatus* is native to southwest-central and southern North America. *5, 6, 8, 12 (color photograph - recorded as *Echinocereus fasciculatus* (Engelm.) L. Benson var. *fasciculatus*, Pages 132-135), 15 (recorded as *Echinocereus fasciculatus* (Engelm.) L. Benson var. *fasciculatus*), 16 (recorded as *Echinocereus fasciculatus* (Engelm.) L. Benson), 27 (Page 81, color photograph: Plate 50, Page 104), 43 (012110), 45 (color photograph), 46 (recorded as *Echinocereus fendleri* (Engelm.) Rümpler var. *robustus* (Peebles) L. Benson, Page 572 and *Echinocereus fendleri* (Engelm.) Rümpler var. *robustus* (Peebles) L. Benson, Page 572), 48 (genus), 58 (recorded as *Echinocereus fasciculatus* (Engelm.) L. Benson var. *fasciculatus*), 63 (012110), 77 (recorded as *Echinocereus fasciculatus* (Engelm.) L. Benson, color photograph #64), **85** (012110 - color presentation), 115 (color presentation), 119 (species, recorded as *Echinocereus fendleri* (Engelm.) Rümpler), 127, **138**, **WTK** (July 4, 2005)*

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

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

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

***Echinocereus nicholii* (L.D. Benson) B.D. Parfitt: Nichol's Hedgehog Cactus**

SYNONYMY: *Echinocereus engelmannii* (C.C. Parry ex G. Engelmann) C. Lemaire var. *nicholii* L. Benson. COMMON NAMES: Golden Hedgehog, Golden Hedgehog Cactus, Nichol Hedgehog, Nichol Hedgehog Cactus, Nichol's Hedgehog, Nichol's Hedgehog Cactus. DESCRIPTION: Terrestrial perennial stem-succulent shrub (erect to ascending stems 8 to 28 inches in height and 1½ to 3½ inches in diameter (one stem of approximately 5 feet in length was observed "running" along the ground) in clusters (clumps) of 10 to 30 stems); the stems are light green; the spines are golden-yellow, straw, pale translucent yellow, yellow or nearly white turning black or gray with age; the flowers (1½ to 2½ inches in diameter) are light lavender, lavender, pink or rose-pink; the anthers are yellow; flowering generally takes place between late March and mid-April (additional records: one for mid-June); the fleshy green fruits (1½ inches in length) turn bronze or red-brown with maturity and exposure to sun. HABITAT: Within the range of this species it has been reported from mountains; canyon rims; rocky canyons; ridges; along ridgetops and ridgelines; hills; rocky slopes; bajadas; rocky outcrops, and rocky, gravelly and sandy flats growing in dry rocky, gravelly and sandy ground, occurring from 900 to 3,500 feet elevation in the desertscrub ecological formation. NOTES: This plant may be an attractive component of a restored native habitat. *Echinocereus nicholii* is native to southwest-central and southern North America. *5, 6, 12 (recorded as *Echinocereus engelmannii* (Parry) Lemaire var. *nicholii* L. Benson, Page 139 & 140), 27 (recorded as *Echinocereus engelmannii* Parry var. *nicholii* L. Benson, Page 89, color photograph: Plate 55, Page 105), 43 (070210 - *Echinocereus engelmannii* var. *nicholii* L.D. Benson), 45 (color photograph), 46 (recorded as *Echinocereus engelmannii* (Parry) Rümpler var. *nicholii* L. Benson, Page 571), 48 (genus), 63 (070207 - color presentation), **85** (100707 - color presentation including habitat, unable to access species information), **138** (recorded as *Echinocereus engelmannii* var. *nicholii*), **WTK** (July 4, 2005)*

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

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

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

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

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

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

SYNONYMY: *Ferocactus acanthodes* (C. Lemaire) N.L. Britton & J.N. Rose, *Ferocactus acanthodes* (C. Lemaire) N.L. Britton & J.N. Rose var. *acanthodes*. COMMON NAMES: Barrel Cactus, Bisnaga, Biznaga, California Barrel Cactus, California fire Barrel, Compass Barrel Cactus, Compass Plant, Desert Barrel Cactus, Spiny Barrel, Mountain Barrel Cactus. DESCRIPTION: Terrestrial perennial

stem-succulent shrub (8 inches to 10 feet in height and 8 inches to 2 feet in width); the stem is green; the spines are golden with reddish tints, gray, pink, red, yellow or white; the flowers are yellow or yellow with a magenta or pink mid-stripe; flowering generally takes place between late April and late June (additional records: one for early January, one for early April, one for mid-July, one for late July, one for early August and one for late September); the ripe, fleshy scaly fruits are yellow. HABITAT: Within the range of this species it has been reported from mountains; canyon walls; buttes; ridges; hills; rocky and gravelly hillsides; gravelly-sandy-loamy slopes; sandy alluvial fans; bajadas; sand dunes; plains; gravelly and sandy flats; valley floors; sandy watersheds, and wash margins growing in dry rocky, gravelly and sandy ground and gravelly-sandy loam ground, occurring from 200 to 3,000 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. *cylindraceus* is native to southwest-central and southern North America. *5, 6, 8, 12 (recorded as *Ferocactus acanthodes* (Lemaire) Britton & Rose, Pages 164-167 and *Ferocactus acanthodes* (Lemaire) Britton & Rose var. *acanthodes*, Page 165/167), 18 (species), 26 (genus, color photograph of genus), 27 (*Ferocactus acanthodes* (Lemaire) Britton & Rose, Page 121, color photographs: Plates 61 and 61A Pages 106-107), 43 (052210), 45 (recorded as *Ferocactus acanthodes*, color photograph), 46 (recorded as *Ferocactus acanthodes* (Lemaire) Britton & Rose, Page 573), 63 (052210 - color presentation), 85 (052210 - color presentation including habitat), 86 (recorded as *Ferocactus acanthodes*, color photograph), 91, **138** (recorded as *Ferocactus acanthodes*)*

***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 (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 (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, **138**, **WTK** (July 4, 2005)*

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

Lemaireocereus thurberi (see *Stenocereus thurberi*)

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 (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, **138** (recorded as *Mammillaria microcarpa*) **HR**, **WTK** (July 4, 2005)*

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

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

Mammillaria microcarpa (see *Mammillaria grahamii*)

Mammillaria oliviae (see *Mammillaria grahamii*)

Neomammillaria microcarpa (see *Mammillaria grahamii*)

Neomammillaria milleri (see *Mammillaria grahamii*)

Neomammillaria oliviae (see *Mammillaria grahamii*)

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

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

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, **138** (recorded as *Opuntia chlorotica*)*

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

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

SYNONYMY: *Opuntia discata* D. Griffiths, *Opuntia phaeacantha* G. Engelmann var. *discata* (D. Griffiths) L.D. Benson & D.L. Walkington. COMMON NAMES: Abrojo, Cactus Apple, Desert Pricklypear Cactus, Engelmann Prickly Pear, Engelmann's Prickly-pear, Engelmann Pricklypear, Flaming Pricklypear, Joconostle, Nopal, Prickly Pear, Vela de Coyote. DESCRIPTION: Terrestrial perennial stem-succulent shrub (forms clumps 20 inches to 8 feet in height and 20 inches to 10 feet or more in width, one

plant was reported as being 20 inches in height and 8¼ feet in width, one plant was reported as being 3 feet in height and 4½ feet in width, one plant was reported as being 3 feet in height and 6 to 12 feet in width, one plant was reported as being 3 feet in height and 8 feet in width, one plant was reported as being 40 inches in height and 79 inches in width, one plant was reported to be 40 inches in height and 10 feet in width); the paddle-shaped stems (8 to 16 inches in length and 6½ to 12 inches in width) are bluish-green, gray-green, green, dark green or yellow-green; the spines are brown-red, chalky-white, pale straw or pale yellow-brown usually with red or red-brown bases aging to black or gray; the glochids are yellow; the flowers (2¼ to 3½ in diameter) may be lemon-yellow, pink, pink-red, red-pink, rose-red, salmon, tannish-yellow, yellow, light yellow-orange, yellow-orange or yellow-peach turning to orange, orange-yellow or pink-orange with age; the anthers are yellow; the stigma lobes are lime green; flowering generally takes place between mid-March and late June (additional records: one for early January, two for mid-February, one for mid-July, two for mid-August, one for early September, six for mid-September, three for early October and one for late December); the mature fruits (also known as tunas are 2½ to 3¼ in length and 1¼ inches in diameter) are magenta-rose, purple, red or reddish-purple. HABITAT: Within the range of this species it has been reported from mountains; mountaintops; sandy mountainsides; bedrock mesas; edges of cliffs; canyons; canyon bottoms; talus slopes; ledges; ridges; rocky ridgetops; rocky hills; bouldery, rocky and gravelly hillsides; bouldery, rocky, rocky-gravelly and sandy slopes; bajadas; rocky outcrops; amongst boulders and rocks; lava beds; breaks; steppes; plains; rocky, gravelly and sandy and silty flats; basins; valley floors; along roadsides; along and in gravelly and gravelly-humusy arroyos; gullies; along streams; along creeks; creekbeds; along and in washes; along and in gravelly-sandy drainages; banks of rivers; benches; shelves; terraces; sandy floodplains; amongst mesquites; ditches, and gravelly-sandy and sandy riparian areas growing in dry bouldery, rocky, rocky-gravelly, rocky-sandy, shaley, gravelly, gravelly-sandy and sandy ground; clayey ground; silty ground, and gravelly humusy ground, occurring from 1,000 to 7,500 feet in elevation in the woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. The species, *Opuntia engelmannii*, was reported to have been utilized by native peoples of North America and could be investigated to determine its value as a home garden or commercial food, beverage, cooking agent or paint crop; it was also noted as having been used as a tool, as a lubricant (var. *engelmannii*) and as a drug or medication. The flowers open around 8 AM and remaining open for one or two days, and may live to be 30 or more years of age. The juicy fruits (tunas) with edible pulp are fed on by many browsing animals, including Black Bear (*Ursus americanus amblyceps*), Coyote (*Canis latrans mearnsi*), Javelina (*Peccari tajacu sonoriensis*) and Desert Tortoise (*Gopherus agassizi*) among others, and birds. The plant provides cover for many desert animals. *Opuntia engelmannii* var. *engelmannii* is native to southwest-central and southern North America. *5, 6, 12 (recorded as *Opuntia phaeacantha* Engelm. var. *discata* (Griffiths) Benson & Walkington "This is the largest and, in especially southern Arizona, one of the best-known native prickly pears of the Southwestern Deserts of the United States. It is variable in habit of growth, shape and size of joints, and size and distribution of spines. It is almost always found growing with var. *major*, which has longer brown spines restricted largely to the upper part of the narrower joint. Almost everywhere there are intergrading forms with many character recombinations. Var. *discata* is rarely stable but apparently a fringe-population extreme tied in closely with the more abundant and wide-ranging var. *major*.", Pages 99 & 101-103, color photograph), 15 (recorded as *Opuntia phaeacantha* Engelm. var. *discata* (Griffiths) Benson & Walkington), 16 (recorded as *Opuntia phaeacantha* Engelmann var. *discata* (Griffiths) L. Benson - "Rocky slopes and gravelly flats; common; intergrading with *O. p.* var. *major*."), 26 (species), 27 (recorded as *Opuntia phaeacantha* Engelmann var. *discata* (Griffiths) L. Benson, Pages 53 & 99-100, color photographs: Plates 30 & 30A, Pages 99 & 100), 28 (color photograph), 43 (063009), 45 (species, color photograph), 46 (species, Page 583), 48 (genus), 58 (recorded as *Opuntia phaeacantha* Engelm. var. *discata* (Griffiths) Benson & Walk.), 63 (0123110 - color presentation), 77 (recorded as *Opuntia phaeacantha* var. *discata* (Griffiths) Benson & Walkington, color photograph #14 labeled as *Opuntia phaeacantha*), 85 (012310 - color presentation), 91 (recorded together with *Opuntia engelmannii* Salm-Dyck. *Opuntia phaeacantha* var. *discata* (Griffiths) Benson & Walkington / *Opuntia phaeacantha* var.

major Engelmann: “Both species are sympatric throughout much of their range and often can be found together.”), 115 (color presentation of the species), 119 (recorded as *Opuntia discata* Griffiths), 127 (variety *engelmannii* and species), **WTK** (July 4, 2005)*

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

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

Opuntia gilvescens (see *Opuntia phaeacantha*)

Opuntia leptocaulis (see *Cylindropuntia leptocaulis*)

***Opuntia macrocentra* G. Engelmann var. *macrocentra*: Purple Pricklypear**

SYNONYMY: *Opuntia violacea* G. Engelmann ex B.D. Jackson var. *macrocentra* (G. Engelmann) L.D. Benson; *Opuntia violacea* G. Engelmann ex B.D. Jackson var. *violacea*. COMMON NAMES: Black-spined Pricklypear, Duranzilla, Long-spined Pricklypear, Purple Pricklypear. DESCRIPTION: Terrestrial perennial stem-succulent shrub or tree (forms clumps to 2 to 5 feet in height and about as tall as wide); the stems (4 to 8 inches in length and 3 to 5 inches in width) are light blue, blue-green tinged with red, dark purple or red; the spines are black to reddish-brown; the flowers (2 to 3½ inches in diameter) are yellow with a red throat; flowering generally takes place between May and June; the fleshy fruits (1 to 2½ inches in length and ¾ to 1 inch in diameter) are purple, purplish-red or red. HABITAT: Within the range of this species it has been reported from rocky hills; rocky hillsides; slopes; bajadas; sand hills; plains; sandy flats; valley floors, and along washes growing in dry rocky, gravelly and sandy ground, occurring from 2,000 to 5,500 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 macrocentra* var. *macrocentra* is native to southwest-central and southern North America. *5, 6, 12 (*Opuntia violacea* var. *macrocentra* and *Opuntia violacea* var. *violacea*, Pages 91-93, color photograph, Page 94), 18 (species), 26 (genus), 27 (recorded as *Opuntia violacea* Engelmann var. *macrocentra* (Engelmann) L. Benson, Page 59 and *Opuntia violacea* Engelmann var. *violacea* L. Benson. Page 57, color photographs: Plates 33 & 33A, Page 100), 43 (062710), 45 (color photograph), 46 (Page 583), 48 (genus), 63 (062710 - color presentation), 85 (062710 - unable to access species information), 91, **HR***

***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, **138***

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

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

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

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

Opuntia spinosior (see *Cylindropuntia spinosior*)

Opuntia violacea var. *macrocentra* (see *Opuntia macrocentra* var. *macrocentra*)

Opuntia violacea var. *violacea* (see *Opuntia macrocentra* var. *macrocentra*)

***Stenocereus thurberi* (G. Engelmann) F. Buxbaum: Organpipe Cactus**

SYNONYMY: *Cereus thurberi* G. Engelmann, *Lemaireocereus thurberi* (G. Engelmann) N.L. Britton & J.N. Rose. COMMON NAMES: Marismena, Mehuelé (Spanish), Organ Pipe Cactus, Organ-pipe Cactus, Organo, Órgano Marismeña (Spanish), Organpipe Cactus, Pitahaya, Pitahaya Dulce (Spanish for Sweet Cactus Fruit), Pitayo Dulce (Spanish). DESCRIPTION: Terrestrial perennial stem-succulent shrub or tree (erect stems 5 to over 40 feet in height and 5 to 12 or more inches in width with 10 to 20 stems with larger specimens having 40 to 45 stems clustering to 6 to 18 feet in diameter); the stems are gray-green, green, yellow-green or yellowish; the spines are black, brownish, gray or reddish-brown aging to gray; the flowers (1½ to 2½ inches in width) may be brownish-green, greenish-white, pale lavender, lavender with white margins, pink, purple, white or white with a pale pink center; the anthers are yellowish; the stigma lobes are white; flowering generally takes place between mid-May and mid-June (additional records: one for early March, one for mid-April, one for mid-July and one for late July), the ripe fruits are red or reddish with green scales. HABITAT: Within the range of this species it has been reported from mountains; mesas; rocky canyons; rocky canyonsides; ledges; ridges; foothills; rocky and sandy hills; rocky and rocky-gravelly hillsides; rocky slopes; gravelly bajadas; amongst rocks; sand dunes; sandy plains; flats; valley floors; coastal bluffs; sandy and powdery coastal plains, and rocky benches growing in dry rocky, rocky-gravelly, stony, gravelly, sandy ground and powdery ground, occurring from sea level to 3,700 feet elevation in the scrub, grassland and desertscrub ecological formations. NOTES: This plant may be an attractive component of a restored native habitat, but it is sensitive to frosts. 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, beverage, cooking agent and/or fiber crop; it was also noted as having been used as a ceremonial item, for tools (in the making of torches) and in making paint. It has been estimated that plants 10 to 15 feet in height may be between 50 and 75 years of age, Cristate forms have been reported. The flowers reportedly open after sunset and close the following morning. The Broad-billed Hummingbird (*Cynanthus latirostris*), Costa's Hummingbird (*Calypte costae*) and Rufous Hummingbird (*Selasphorus rufus*) have been observed visiting the flowers. The flowers are pollinated by bats, including Southern Long-nosed Bat (*Leptonycteris curasoae yerbabuenae*), and bees. The ripe fruits are eaten by ants, bats, Coyotes (*Canis latrans mearnsi*), Desert Bighorn Sheep (*Ovis canadensis mexicana*) and White-winged Doves (*Zenaida asiatica*). The candy, Pitahaya Dulce, is made by cooking the fruits of the Organ Pipe Cactus with those of Prickly Pear Cacti. This is a PERIPHERAL - DISJUNCT POPULATION. *Stenocereus thurberi* is native to southwest-central and southern North America. *5, 6, 8, 12 (recorded as *Cereus thurberi* Engelm., Pages 111 & 113-114), 13 (color photograph, in habitat with associated species Plate D.1), 18, 27 (recorded as *Cereus thurberi* Engelm., Page 63, color photographs: Plate 38, Page 102 and Page 93 color photograph of plant in habitat), 28 (recorded as color photograph, recorded as *Cereus thurberi*), 43 (070310), 45 (color photograph, recorded as *Stenocereus thurberi*), 46 (recorded as *Lemaireocereus thurberi* (Engelm.) Britt. & Rose, Pages 569-570), 48 (recorded as *Cereus thurberi*), 53 (*Cereus thurberi* Engelm.), 63 (070310 - color presentation including habitat), 85 (070310 - color presentation including habitat, unable to access species information), 91 (recorded as *Stenocereus thurberi* (Engelm.) Buxb.), 119 (recorded as *Lemaireocereus thurberi* (Engelm.) B. & R.), 127, **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), **138***

Capparaceae (Capparidaceae): The Caper Family

***Koeberlinia spinosa* J.G. Zuccarini var. *spinosa*: 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 (a rounded spreading shrub 3 to 6 feet in height); the bark of the branches is yellow-green; the flowers are inconspicuous; flowering generally takes place in late summer (flowering record: one for early August); the berries are black. HABITAT: Within the range of this species it has been reported from gravelly and sandy mesas; hillsides; rocky slopes; sandy and gravelly plains; gravelly flats; along arroyos; along gravelly drainage ways; banks of washes, and disturbed areas growing in dry rocky, gravelly and sandy ground, occurring from 2,400 to 6,900 feet in elevation in the woodland, grassland and desertscrub ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. Jackrabbits use the twigs for browse. This is a PERIPHERAL POPULATION. *Koeberlinia spinosa* var. *spinosa* is native to southwest-central and southern North America. *5, 6, 13, 43 (012410), 46 (placed in the Koeberliniaceae: The Junco Family, Page 558), 53, 63 (012410), 85 (012410), 91, **HR***

Caryophyllaceae: The Pink Family

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

COMMON NAMES: Alfinetes-da-terra-miúdo (Portuguese), Catchfly, Desert Sleepy Catchfly, Sleepy Catchfly, Silène Muflier (French), Sleepy Silene, Tjärglim (Swedish). DESCRIPTION: Terrestrial annual forb/herb (4¾ inches to 3 feet in height); the stems may be purple; the flowers may be lavender, magenta, magenta-pink, pink, pinkish-whitish, purple, purple-pink, red, rose, white with pink or dark purple-tipped lobes or white fading to deep pink; flowering generally takes place between mid-February and early July (additional records: one for mid-September and one for early November). HABITAT:

Within the range of this species it has been reported from mountains; mesas; cliffs; rocky canyons; sandy canyon bottoms; gorges; talus slopes; bouldery and rocky ledges; ridges; ridgetops; foothills; rocky hills; rocky hillsides; along bouldery-silty-clayey, rocky, gravelly, sandy-loamy and loamy-clayey slopes; rocky-sandy alluvial fans; gravelly bajadas; rocky, gravelly and sandy flats; basins; along gravelly and gravelly-loamy roadsides; rocky arroyos; rocky draws; clayey gulches; ravines; seeps; in sand along streams; along rocky, rocky-sandy and sandy streambeds; in sand along creeks; along creekbeds; along rivers; along and in rocky, gravelly-sandy and sandy washes; within drainages; sandy banks of washes; rocky-gravelly edges of streambeds, rivers and ponds; sandy-loamy margins of streambeds and rivers; benches; terraces; sandy and loamy bottomlands; floodplains; mesquite bosques; ditches; gravelly-sandy, gravelly-sandy-loamy and sandy riparian areas; waste places, and recently burned areas in woodlands and chaparral growing in wet, moist and dry bouldery, rocky, rocky-gravelly, rocky-sandy, gravelly, gravelly-sandy and sandy ground; gravelly loam, gravelly-sandy loam, sandy loam, clayey loam and loam ground; bouldery-silty clay, loamy clay and clay ground, and gravelly-sandy silty and silty ground, occurring from sea level to 8,500 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTE: *Silene antirrhina* is native to central and southern North America. *5, 6, 15, 16, 28 (color photograph), 43 (012610), 46 (Page 302), 58, 63 (012610 - color presentation), 77, 85 (012710 - color presentation), 101 (note under *Silene alba*), 115 (color presentation), **138***

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, **138***

Crossosomataceae: The Crossosoma Family

***Crossosoma bigelovii* S. Watson: Ragged Rockflower**

COMMON NAMES: Bigelow Ragged Rock Flower, Bigelow Ragged Rock-flower, Crossosoma, Ragged Rockflower, Rhyolite Bush. DESCRIPTION: Terrestrial perennial shrub (20 inches to 8 feet in height); the leaves are bluish-green; the flowers (2 inches in diameter) are white sometimes tinged with purple; flowering generally takes place between January and May (rarely in September). HABITAT: Within the range of this species it has been reported from canyons; mountains; rocky cliffs; crevices in cliff faces; rocky canyons; rocky hillsides; rocky slopes, and along washes growing in dry rocky ground, occurring from 200 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. The flowers are reportedly fragrant *Crossosoma bigelovii* is native to southwest-central and southern North America. *5, 6, 13, 15, 28 (color photograph), 43 (070510), 46 (Pages 371-372), 63 (070510 - color presentation), 77 (color photograph #25), 85 (070510 - color presentation), 115 (color presentation), **138***

Euphorbiaceae: The Spurge Family

***Argythamnia lanceolata* (G. Bentham) J. Müller Argoviensis: Narrowleaf Silverbush**

SYNONYMY: *Ditaxis lanceolata* (G. Bentham) F.A. Pax & K. Hoffmann. COMMON NAMES: Lanceleaf Ditaxis, Lance-leaved Argythamnia, Lance-leaved Ditaxis, Narrowleaf Silverbush. DESCRIPTION: Terrestrial perennial subshrub (8 inches to 4 feet in height, one plant was described as being 20 inches in height with a crown 11 inches in diameter); the bark is gray; the stems are brown or green and covered with silky hairs; the leaves are gray-green, light green, green, silvery, silvery-gray or silvery green and covered with silvery hairs; the small flowers may be cream, greenish-white, white, whitish, whitish-green, yellow or yellowish; flowering generally takes place between mid-January and early June (additional records: one for late June, one for mid-August, one for early September, four for mid-September, seven for late September, one for early October, three for mid-October, two for late October, two for early November, one for mid-November, one for early December, one for mid-December and one for late December, flowering had also been reported as occurring between February and September). HABITAT: Within the range of this species it has been reported from mountains; rocky mountainsides; cliffs; bouldery, rocky and gravelly canyons; rocky canyon walls; along gravelly and sandy canyon bottoms; bases of cliffs; buttes; gravelly ridges; rocky foothills; rocky hills; rocky and gravelly hillsides; rocky, rocky-sandy, gravelly and gravelly-sandy-loamy slopes; rocky-sandy alluvial fans; rocky and gravelly bajadas; amongst boulders and rocks; lava hills; sand dunes; crests of dunes; deposits of wind-blown sand; flats; sandy coastal plains; sandy coastal beaches; railroad right-of-ways; along gravelly and sandy roadsides; along arroyos; gravelly bottoms of arroyos; ravines; along and in bouldery-rocky, rocky, rocky-sandy, gravelly and sandy washes; along and in drainages; rocky-silty-clayey banks of washes; along edges of washes; rocky margins of arroyos; sandy beaches; terraces; along floodplains; gravelly-sandy riparian areas, and disturbed areas growing in wet, moist and dry desert pavement; bouldery, bouldery-rocky, rocky, rocky-gravelly, rocky-sandy, gravelly, gravelly-sandy and sandy ground; gravelly-sandy loam and sandy loam ground, and rocky-silty clay and clay ground, occurring from sea level to 4,600 feet in elevation in the scrub, desertscrub and wetland ecological formation. NOTES: This plant may be browsed by rodents. *Argythamnia lanceolata* is native to southwest-central and southern North America. *5, 6, 43 (052310), 46 (recorded as *Ditaxis lanceolata* (Benth.) Pax & Hoffmann, Page 506), 63 (052310), 77, 85 (052310 - color presentation), **138***

Ditaxis lanceolata (see *Argythamnia lanceolata*)

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), **138***

***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.")*

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."), **138***

***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, **138**, **WTK** (July 4, 2005)*

Fabaceae (Leguminosae): The Pea Family

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

SYNONYMY: *Vachellia constricta* (G. Bentham) D.S. Seigler & J.E. Ebinger. COMMON NAMES: All-thorn Acacia, Chaparo Prieta, Chaparro Prieto, Common Whitethorn, Garabato, Gidag (Tohono O'odham), Gigantillo, Huisache, Largoncillo, Mescat Acacia, Twinthorn Acacia, Vara Prieta, Vinorama, Whitethorn Acacia, White Thorn, Yellow Cat Claw. DESCRIPTION: Terrestrial perennial deciduous (drought and cold) shrub or tree (1 to 20 feet in height with crowns to about the same in width, one plant was described as being 8 feet in height with a crown 8 feet in width); the bark may be light gray, mahogany or nearly black; the stems may be red; the spines on the branches and stems are gray or white; the small pinnate leaves are green; the small flowers have been described as being golden, golden-yellow, orange-yellow, light yellow, yellow or yellowish-orange; flowering generally takes place between late

March and late October (additional records: two for early March and one for late December); the seedpods are brown, purple-red, reddish or rusty-brown. HABITAT: Within the range of this species it has been reported from mountains; mesas; cliffs; canyons; canyon sides; sandy canyon bottoms; sandy ridges; foothills; rocky and gravelly hills; bouldery hilltops; rocky and gravelly hillsides; escarpments; rocky, rocky-clayey-loamy and clayey-loamy slopes; gravelly bajadas; rocky outcrops; amongst boulders; sandy-loamy plains; gravelly flats; valley floors; coastal plains; along rocky, rocky-gravelly-loamy, rocky-gravelly-clayey loam, rocky-clayey-loamy, gravelly, gravelly-sandy, gravelly-sandy-loamy, gravelly-sandy-clayey-loamy, gravelly-loamy, gravelly-clayey loam and sandy roadsides; along and in rocky arroyos; bottoms of arroyos; rocky gulches; along streambeds; creeks; along and in sandy creekbeds; rivers; along and in gravelly, gravelly-sandy, sandy and silty-clayey washes; drainages; swales; along gravelly-sandy and sandy banks of streams, creeks, rivers and washes; along edges of washes; rocky margins of arroyos and washes; mudflats; benches; alluvial terraces; sandy bottomlands; floodplains; mesquite bosques; riparian areas, and disturbed areas growing in dry bouldery, rocky, rocky-sandy, gravelly, gravelly-sandy and sandy ground; rocky-gravelly loam, rocky-gravelly-clayey loam, rocky-clayey loam, gravelly loam, gravelly-sandy loam, gravelly-sandy-clayey loam, gravelly-clayey loam, sandy loam, sandy-clayey loam, clayey loam and loam ground, and silty clay ground, occurring from 1,100 to 6,500 feet (infrequently as low as 500 feet and as high as 9,200 feet) in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat, plants may live to be more than 72 years of age and the flowers may be fragrant. Whitethorn Acacia is used for food (but not extensively) by the Desert Mule Deer (*Odocoileus hemionus*) and Scaled Quail (*Callipepla squamata*), Merriam's Kangaroo Rats (*Dipodomys merriami*), Bailey's Pocket Mice (*Chaetodipus baileyi*) and Rock Pocket Mice (*Chaetodipus intermedius*) as well as a variety of other birds and mammals feed on the seeds. *Acacia constricta* is native to southwest-central and southern North America. *5, 6, 13 (color photograph), 15, 16, 18, 26 (color photograph), 28 (color photograph), 43 (080409), 46 (Page 399), 48, 53 (note under *Acacia farnesiana*), 63 (020710 - color presentation), 68, 77, 80 (This species is listed as a Major Poisonous Range Plant. "The plants are high in cyanide forming-compounds and have been reported to cause death of cattle in Arizona. In general, the plants are not palatable to livestock although the pods are grazed. However, in the fall of the year at or near frost time, when the range grasses become less palatable, cattle may eat heavily of these plants and death is likely to result. ... Animals should be removed from heavily infested areas during the early frost period or considerable death losses may occur." See text for additional information.), 85 (020710 - color presentation), 91, 115 (color presentation), 134, **138**, **WTK** (July 4, 2005)*

***Acacia greggii* A. Gray (var. *greggii* is the variety reported as occurring in Arizona): Catclaw Acacia**

SYNONYMY: (for *A.g.* var. *greggii*: *Acacia greggii* A. Gray var. *arizonica* D. Isely). COMMON NAMES: Acacia, Algarroba, Arizona Acacia (for var. *greggii*), Cat Claw, Cat Claw Acacia, Catclaw, Catclaw Acacia, Cat's-claw, Devil's Catclaw, Devil's Claw, Devil's-claw, Devilsclaw, Devil's-claw Acacia, Di:s (Seri), Gatuno, Gregg Catclaw, Gregg's Acacia, Tearblanket, Tepame, Tesota, Texas Catclaw, Texas Mimosa, Texas-mimosa, Una de Gato, Wait-a-minute, Wait-a-minute Bush, Wright Acacia (for var. *wrightii*). DESCRIPTION: Terrestrial perennial winter-deciduous shrub or tree (40 inches to 35 feet in height with a broad crown, one plant was reported as being 6½ feet in height with a crown 10 feet in width, one plant was reported as being 13 feet in height with a crown 16½ feet in width); 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, dull white, white, pale yellow, yellow, yellow-cream or yellow-green in catkins; flowering generally takes place between early March and early August (additional records: two for late August, one for mid-September, two for late September, one for early October, three for mid-October, one for early November, one for mid-November, one for early December and one for late December); the mature fruits (straight or twisted pods) are brown or brownish-red. HABITAT: Within the range of this species it has been reported from rocky mountains; mountainsides; gravelly mesas; rocky canyons; rocky and sandy canyon bottoms; gorges; rocky bluffs; rocky and sandy

ridges; ridgetops; foothills; rocky hills; gravelly hilltops; rocky, gravelly and gravelly-loamy hillsides; bedrock, rocky, rocky-gravelly-loamy, gravelly, gravelly-sandy and sandy slopes; alluvial fans; bajadas; amongst boulders; debris flows; plains; sandy flats; basins; valley floors; loamy valley bottoms; coastal plains; along gravelly-sandy, gravelly-sandy-clayey-loamy and sandy roadsides; along and in arroyos; bottoms of arroyos; draws; ravines; seeps; springs; along streams; along creeks; along sandy and sandy-silty creekbeds; along rivers; along and in rocky, rocky-sandy, gravelly, gravelly-sandy and sandy washes; within drainages; along drainage ways; along rocky, gravelly-sandy, gravelly-silty, sandy and sandy-silty banks of arroyos, streams, creeks, rivers and washes; along sandy edges of arroyos, creeks and washes; margins of washes; shorelines; sand bars; shelves; gravelly-sandy and sandy terraces; sandy bottomlands; lowlands; sandy-loamy floodplains; mesquite bosques; riparian areas, and disturbed areas growing in dry bouldery, rocky, rocky-sandy, gravelly, gravelly-sandy and sandy ground; rocky-gravelly loam, gravelly-sandy-clayey loam, gravelly loam, sandy loam, clayey loam and loam ground; gravelly clay, sandy clay and clay ground, and gravelly silty and sandy silty ground, occurring from slightly above sea level to 6,000 feet in elevation in the woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat; the flowers are fragrant, it may live to be up to 120 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, 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* is native to southwest-central and southern North America. *5, 6, 13 (color photograph), 15, 18, 26 (color photograph), 28 (color photograph), 43 (020710), 46 ("This is probably the most heartily disliked plant in the state, the sharp, strong prickles tearing the cloths and lacerating the flesh.", Page 398), 48 ("A good honey plant but a poisonous weed on range lands."), 52, 53, 58, 63 (020710 - color presentation), 77, 80 (This 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 - color presentation), 91, 115 (color presentation), 127, **138***

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** (July 4, 2005)*

***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, **138**, **WTK** (July 4, 2005)*

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

Cassia covesii (see *Senna covesii*)

Cercidium floridum (see *Parkinsonia florida*)

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

Dalea parryi (see *Marina parryi*)

***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), **138***

***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, **138**, **WTK** (July 4, 2005)*

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

COMMON NAMES: Arrêtenègre (French), Bacapore, Bagota, Barbados Flowerfence, Cina-cina (Portuguese), Espinheiro-de-Jerusalém (Portuguese), Espinho-de-jerusalém (Portuguese), Espinillo (Spanish), Guacoporo, Horse Bean, Horsebean, Jerusalem Thorn, Jerusalem-thorn, Jerusalemdorn (German), Junco, Long-leaf Paloverde, Mexican Palo Verde, Mexican Paloverde, Mezquite Verde, Palo de Rayo (Spanish), Palo Verde Mejicano (Spanish), Retaima, Retama, Rosa-da-turquia (Portuguese), Sessaban (transliterated Arabic), Turco (Portuguese). DESCRIPTION: Terrestrial perennial drought- and possibly cold-deciduous shrub or tree (10 to 40 feet in height); the older bark is brown or gray; the younger bark, branches and twigs are green or yellow-green; the leaves are green; the flowers (¾ to 1 inch in width) are golden-yellow, orange, yellow, yellow with orange or red spots or golden-yellow; flowering generally takes place between mid-February and early July (additional records: two for late July, four for early August, one for mid-August, two for late August, one for mid-September, two for late September, one for mid-October, three for late October, one for mid-September, one for early October, one for late October, one for early November, one for mid-November and one for late November) with the bloom generally lasting 3 to 4 weeks; the mature seedpods (2 to 4 inches in length) are brown. HABITAT: Within the range of this species it has been reported from mountains; mesas; rocky and gravelly canyons; canyon bottoms; foothills; bouldery hills; hillsides; rocky-gravelly-sandy-clayey-loamy slopes; bajadas; gravelly and sandy alluvial fans; sand hummocks; sandy plains; sandy flats; basin bottoms; valley floors; coastal flats; railroad right-of-ways; along rocky-gravelly, gravelly and sandy-loamy roadsides; along sandy-silty arroyos; bottoms of arroyos; along streams; along rocky streambeds; along rivers; rocky-cobbly-sandy and sandy riverbeds; along and in sandy and silty washes; along watercourses; clayey pondbeds; banks of creeks and rivers; edges of ponds; shores of rivers; beaches; terraces; bottomlands; gravelly-sandy and sandy-silty-clayey floodplains; bosques; along canals; along canal banks; along ditches; riparian areas; waste places, and disturbed areas growing in moist and dry bouldery, rocky-cobbly, rocky-cobbly-sandy, rocky-gravelly, gravelly, gravelly-sandy and sandy ground; rocky-gravelly-sandy-clayey loam, rocky-sandy loam and sandy loam ground; sandy-silty clay and clay ground, and sandy silty and silty ground, occurring from sea level to 4,100 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant was 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. This plant was observed as an escaped and naturalized ornamental. *Parkinsonia aculeata* is native to southwest-central and southern North America. *5, 6, 13, 16, 18, 26 (color photograph), 28 (color photograph), 43 (021310), 46 (Page 407), 48, 52 (color photograph), 53, 58, 63 (021310 - color presentation), 77, 80 (This species is listed as a Poisonous Cropland and Garden Plant. "This ornamental shrub or small tree has been reported to accumulate toxic levels of nitrate."), 85 (021310 - color presentation), 91, 115 (color presentation), 127, **HR***

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

SYNONYMY: *Cercidium floridum* G. Bentham, *Cercidium floridum* G. Bentham var. *floridum*. COMMON NAMES: Blue Palo Verde, Blue Palo-verde, Blue Paloverde, Caro (Mayo), Palo Verde (Spanish for Green Pole, Green Stick or Green Tree), Paloverde, Stedak U'us (Pima), Studuk U'us (Bajo Pima). DESCRIPTION: Terrestrial perennial deciduous shrub or tree (40 inches to 40 feet in height); the bark may be blue-green, green, yellow or yellow-green, and gray on the older trunks; the leaves are blue-green; the flowers (¾ to 1 inch in width) are yellow or seldom white; flowering generally takes place between early March and mid-June (additional records: two for early February, two for mid-August, two for early September, one for late September, one for early October, two for mid-October, one for late October, two for early November, one for mid-November and one for early December); the mature fruits (1½ to 4 inches in length) are light brown. HABITAT: Within the range of this species it has been reported from mountains; mountainsides; mesas; along canyons; canyon walls; sandy canyon bottoms; buttes; gravelly-clayey ridges; foothills; rocky, rocky-sandy, gravelly-loamy and sandy hills; bajadas; rocky, rocky-sandy and sandy slopes; sand hills; sand dunes; rocky-sandy, cindery, sandy and sandy-silty flats; valley floors; valley bottoms; coastal slopes; along rocky-gravelly-sandy, gravelly-sandy and sandy roadsides; along gravelly arroyos; along sandy bottoms of arroyos; rocky draws; seeps; streambeds; creekbeds; along rivers; along riverbeds; along and in rocky, rocky-sandy, gravelly, gravelly-sandy and sandy washes; drainages; watercourses; playas; along rocky and sandy banks of arroyos, rivers and washes; edges of draws and washes; margins of rivers and washes; gravelly sand bars; benches; gravelly terraces; loamy bottomlands; clayey lowlands; sandy-loamy floodplains; mesquite bosques; fencerows; catchments; stock tanks; along canals; along canal banks; gravelly-sandy riparian areas, and disturbed areas growing in dry rocky, rocky-gravelly-sandy, rocky-sandy, cindery, gravelly, gravelly-sandy and sandy ground; gravelly loam, sandy loam and loam ground; gravelly clay and clay ground, and sandy silty ground, occurring from sea level to 5,000 feet in elevation in the woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat, it has a very showy display of yellow flowers in very showy in late March and April. This plant was reported to have been utilized by native peoples of North America and could be investigated to determine its value as a home garden or commercial food crop; it was also noted as having been used for shelter and for tools. The Blue Paloverde may be useful in controlling erosion. Bighorn Sheep (*Ovis canadensis*), Mule Deer (*Odocoileus hemionus*) and other wildlife browse the fruits, leaves and twigs and the seeds are eaten by birds and rodents and used by Bruchid Beetles. *Parkinsonia florida* is native to southwest-central and southern North America. *5, 6, 13 (recorded as *Cercidium floridum* Bentham, color photograph of habitat Plate S.2), 15, 16 (recorded as *Cercidium floridum* Benth.), 18, 26 (recorded as *Cercidium floridum*, color photograph), 28 (recorded as *Cercidium floridum*, color photograph), 43 (021310 - *Cercidium floridum* Benth. ex A. Gray, *Parkinsonia florida* S. Watson), 46 (recorded as *Cercidium floridum* Benth., Page 407), 48, 52 (recorded as *Cercidium floridum* Benth. ex Gray, color photograph), 53 (recorded as *Cercidium floridum* Benth.), 58, 63 (021310 - color presentation), 77 (recorded as *Cercidium floridum* Benth.), 85 (021410 - color presentation), 86 (recorded as *Cercidium floridum*, color photograph), 91 (recorded as *Cercidium floridum* Benth.), 115 (color presentation), 127, **HR***

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

SYNONYMY: *Cercidium microphyllum* (J. Torrey) J.N. Rose & I.M. Johnston. COMMON NAMES: Dipua, Foothill Palo Verde, Foothill Paloverde, Hillside Paloverde, Horsebean, Kuk Cehedagi (Tohono O'odham), Little Horsebean, Littleleaf Horsebean, Little Leaf Paloverde, Little-leaf Palo Verde, Little-leaf Palo-verde, Little-leaf Paloverde, Littleleaf Palo Verde, Littleleaf Paloverde, Palo Verde (Spanish for Green Pole, Green Stick or Green Tree), Palo-verde, Paloverde, Yellow-Palo-verde, Yellow Paloverde. DESCRIPTION: Terrestrial perennial drought deciduous shrub or tree (40 inches to 26 feet in height with a crown diameter of 12 to 18, one plant was described as being 6 feet in height and 7 feet in width, one plant was described as being 9 feet in height and width, one plant was described as being 16 feet in height and width); the bark is green, olive-green or yellow-green, and gray on older trunks; the ends of the leafy branchlets are spine-like; the small leaflets are green, greenish-gray or yellow-green; the flowers (½ inch in width) are lemon-yellow, whitish & yellow, yellow, yellow-green or yellow & white; the styles are pale yellow or pale yellow-green; the filaments are pale yellow or pale yellow-green; the anthers are orange; flowering generally takes place between mid-March and mid-June (additional records: one for mid-August and one for mid-October); the mature seedpods (2 to 3 inches in length) are light brown or tan. HABITAT: Within the range of this species it has been reported from mountains; rocky mountaintops; mesas; cliffs; rocky walls; rocky canyons; canyon walls; canyon bottoms; bluffs; buttes; ledges; ridges; bouldery and rocky foothills; bases of foothills; rocky hills; rocky hillsides; rocky and sandy slopes; alluvial fans; rocky, gravelly and gravelly-silty bajadas; boulder fields; bouldery and rocky outcrops; plains; gravelly and sandy flats; valley floors; sandy valley bottoms; along rocky and gravelly roadsides; within gravelly-sandy arroyos; along and in rocky, gravelly, gravelly-sandy and sandy washes; drainages; rocky-sandy banks of arroyos and rivers; along edges of washes; margins of arroyos and washes; rocky sand bars; coves; gravelly terraces; floodplains; ditches; riparian areas, and disturbed areas growing in dry desert pavement; bouldery, rocky, gravelly, gravelly-sandy and sandy ground; sandy loam, clay loam and loam ground; clay ground, and gravelly silty ground, occurring from sea level to 4,000 feet in elevation in the grassland and desertscrub ecological formations. NOTES: This plant may be an attractive component of a restored native habitat and may live to be more than 400 years of age. This plant was reported to have been utilized by native peoples of North America and could be investigated to determine its value as a home garden or commercial food crop. To reduce water loss during extended periods of drought a tree may undergo a natural drought-pruning process where entire branches die back The Foothill Paloverde is a common "nurse plant" of the Saguaro or Giant Cactus (*Carnegiea gigantea*) and provides a sheltered microhabitat in which other desert plants are able to become established. Bighorn Sheep (*Ovis canadensis*), Mule Deer (*Odocoileus hemionus*), jackrabbits and other small mammals browse the fruits, leaves and twigs; the Collard Peccary (*Peccari tajacu*) feed on the fruit, and the seeds are used by Bruchid Beetles. The Foothill Paloverde is considered a significant foraging site for birds; it is used as a nesting site by the Black-tailed Gnatcatcher (*Polioptila melanura*) and Verdins, and as a roosting site by Gambel's Quail (*Callipepla gambelii* subsp. *gambelii*). The Costa's Hummingbird (*Calypte costae*) has been observed visiting the flowers. *Parkinsonia microphylla* is native to southwest-central and southern North America. *5, 6, 10, 13 (recorded as *Cercidium microphyllum*, color photograph in habitat Plate T.1), 15, 16 (recorded as *Cercidium microphyllum* (Torr.) Rose & Johnst.), 18, 26 (recorded as *Cercidium microphyllum*, color photograph), 28 (recorded as *Cercidium microphyllum*, color photograph), 43 (021410 - *Cercidium microphyllum* Rose & I.M. Johnst.), 46 (recorded as *Cercidium microphyllum* (Torr.) Rose & Johnston, Page 407), 48, 52 (recorded as *Cercidium microphyllum* (Torr.) Rose & I.M. Johnst., color photograph), 53 (recorded as *Cercidium microphyllum* (Torr.) Rose & Johnst.), 63 (021410 - color presentation), 77 (recorded as *Cercidium microphyllum* (Torr.) Rose & Johnst.), 85 (021410 - color presentation), 86 (note under *Cercidium floridum*), 91 (recorded as *Cercidium microphyllum* (Torr.) Rose & I.M. Johnston), 115 (color presentation), 127, 134, **138**, **WTK** (July 4, 2005)*

Cercidium microphyllum (see *Parkinsonia microphylla*)

***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), **138***

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

***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), **WTK** (July 4, 2005)*

Vachellia constricta (see *Acacia constricta*)

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, **138**, **WTK** (July 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, **138***

***Erodium texanum* A. Gray: Texas Stork's Bill**

COMMON NAMES: Alfilerilla, Bull Filaree, Desert Storksbill, Desert Stork's Bill, False Filaree, Heron Bill, Heron-bill, Heron's Bill, Large-flowered Stork's Bill, Pine Needle, Stork's Bill, Texas Filaree, Texas Fillarie, Texas Stork's Bill, Tufted Filaree. DESCRIPTION: Terrestrial annual or biennial forb/herb (prostrate to ascending 2 inches to 2 feet in height/length); the basal rosette leaves are green with red spots; the flowers may be lavender, magenta, pink-purple, purple-magenta, reddish-purple, rose-magenta, purple, purplish-red, rose-magenta, rose-pink, violet or violet-red; flowering generally takes place

between late January and mid-May (additional records: one for early June, one for mid-September and one for early October); the fruits are reddish. HABITAT: Within the range of this species it has been reported from mountains; pebbly-sandy-silty and sandy mesas; stony canyons; gorges; bases of cliffs; buttes; rocky ledges; rocky and chalky ridges; ridgetops; meadows; foothills; rocky and sandy hills; hillsides; bouldery, bouldery-gravelly, rocky, rocky-cobbly-sandy, rocky-loamy, stony, gravelly, gravelly-sandy-loamy and sandy slopes; rocky-sandy, gravelly, gravelly-loamy and sandy bajadas; bouldery and rocky outcrops; amongst boulders; sandy lava flows; sandy lava fields; dunes; berms; prairies; gravelly, sandy-loamy clayey-loamy plains; rocky, stony, stony-chalky, gravelly, pebbly-sandy-silty and sandy flats; basins; valley floors; along gravelly, gravelly-sandy, gravelly-loamy and sandy roadsides; rocky arroyos; bottoms of arroyos; gulches; gullies; creekbeds; riverbeds; along and in gravelly, sandy and sandy-silty washes; along gravelly drainages; silty lakebeds; marshes; silty depressions; swales; banks of creeks and creekbeds; benches; gravelly, gravelly-sandy and gravelly-sandy-loamy terraces; beds of silty-clayey impoundments; margins of stock tanks; canals; canal banks; sandy riparian areas, and disturbed areas growing in muddy and damp and dry rocky and sandy desert pavement; bouldery, bouldery-gravelly, rocky, rocky-cobbly-sandy, rocky-sandy, stony, gravelly, gravelly-sandy and sandy ground; rocky loam, gravelly loam, gravelly-sandy loam, gravelly-clayey loam, sandy loam, clayey loam and loam ground; silty clay ground; pebbly-sandy silty, sandy silty and silty ground, and chalky ground, occurring from sea level to 7,900 feet in elevation in the woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: These low growing and sprawling or widely spreading plants may be an attractive component of a restored native habitat. The Texas Stork's Bill is browsed by food by quail. *Erodium texanum* is native to southwest-central and southern North America. *5, 6, 15, 16, 43 (022010), 46 (Page 486), 58, 63 (022010 - color presentation), 77 (color photograph #76), 85 (022110 - color presentation), 86 (note), 115 (color presentation), **138***

Hydrophyllaceae: The Waterleaf Family

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

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

California) North America. *5, 6, 16, 43 (072209), 46 (Page 698), 63 (022110), 77, **85** (022110 - color presentation of dried material)*

***Eucrypta micrantha* (J. Torrey) A.A. Heller: Dainty Desert Hideseed**

COMMON NAMES: Dainty Desert Hideseed, Peluda, Small-flower Eucrypta, Smallflower Eucrypta, Small-flower Eucrypta Small-flowered Eucrypta. DESCRIPTION: Terrestrial annual forb/herb (stems may appear to be vining, 2 inches to 1 foot in height); the leaves are dark green; the cup-shaped flowers may be pale blue-purple, blue, blue-magenta, blue-purple, pale lavender, pale pink-lavender, purple, reddish-purple with a yellow throat, pale violet, violet or white; the anthers are blue; flowering generally takes place between mid-January and mid-June (additional record: one for late October). HABITAT: Within the range of this species it has been reported from mountains; gravelly mesas; cliffs; along canyons; rocky canyon walls; bouldery and rocky canyon bottoms; bases of cliffs; knolls; ledges; rocky ridges; bouldery ridgetops; cinder cones; foothills; rocky and gravelly-sandy hills; rocky and sandy-loamy hillsides; bases of hillsides; bouldery, bouldery-gravelly, rocky, rocky-stony, rocky-gravelly, rocky-sandy, rocky-clayey, gravelly, gravelly-loamy, gravelly-silty and sandy slopes; alluvial fans; sandy bajadas; amongst boulders and rocks; bases of rocks; lava flows; sand hills; sand dunes; sandy plains; gravelly flats; basins; valley floors; along railroad right-of-ways; along gravelly roadsides; within rocky, rocky-sandy and sandy arroyos; along draws; gulches; ravines; along streams; along rivers; along and in rocky, rocky-sandy, rocky-silty, cobbly-silty-loamy, gravelly, gravelly-sandy and sandy washes; along drainages; lakebeds; sandy and clayey depressions; along gravelly-sandy and sandy banks of rivers and washes; edges of washes and lakes; sand bars; benches; gravelly terraces; sandy bottomlands; floodplains; riparian areas, and disturbed areas growing in dry desert pavement; bouldery, bouldery-gravelly, rocky, rocky-stony, rocky-gravelly, rocky-sandy, shaley, cindery, gravelly, gravelly-sandy and sandy ground; bouldery-sandy-clayey loam, cobbly-silty loam, gravelly loam, sandy loam, sandy-clayey loam and silty loam ground; rocky-clayey and clayey ground, and rocky silty, gravelly-sandy silty and gravelly silty ground often n the shade of boulders, rocks, shrubs and trees, occurring from 100 to 8,300 feet in elevation in the woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTE: *Eucrypta micrantha* is native to southwest-central and southern North America. *5, 6, 15, 16, 28 (color photograph), 43 (022110), 46 (Page 697), 58, 63 (022110 - color presentation), 77, 85 (022110 - color presentation), 115 (color presentation), **138***

***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, **138** (recorded as *Phacelia* cf. *crenulata*)*

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

SYNONYMY: *Phacelia distans* G. Bentham var. *australis* A. Brand. COMMON NAMES: Blue Phacelia, Caterpillar Phacelia, Caterpillar Weed, Distant Phacelia, Distant Scorpion-weed, Fern-leaf Phacelia, Scorpion-weed, Wild Heliotrope. DESCRIPTION: Terrestrial annual or perennial forb/herb (3 to 40 inches in height, one plant was reported to be 20 inches in height and 20 inches in width); the fern-like leaves are green, the flowers may be light blue-purple, blue, blue-lavender, blue-lavender-purple, blue-pink, blue-purple, blue-violet, bluish-lavender, bluish-white, pale lavender, lavender, lavender-blue, lavender-pink, light purple, purple, purplish-blue, dark purplish-blue, pale violet, violet-blue or white; flowering generally takes place between mid-January and late June (additional records: one for mid-July, one for late July, one for early August, one for early September, two for early November, one for mid-November and two for late November). HABITAT: Within the range of this species it has been reported from mountains; rocky mountainsides; gravelly-loamy mesas; sandy plateaus; rocky and rocky-silty canyons; bouldery, rocky, rocky-sandy, gravelly-sandy and sandy canyon bottoms; chasms; scree; bases of cliffs; rocky knobs; rocky ridges; sandy ridgetops; meadows; foothills; bouldery and rocky hills; hilltops; bouldery and rocky hillsides; bouldery, rocky, rocky-gravelly, rocky-sandy, rocky-clayey-loamy, gravelly, gravelly-sandy-loamy, gravelly-loamy, sandy, clayey and silty-clayey slopes; rocky, rocky-gravelly, rocky-sandy and rocky-sandy-loamy alluvial fans; gravelly, gravelly-sandy and sandy bajadas; bouldery and rocky outcrops; amongst boulders and rocks; bases of rocks; sand dunes; sandy-loamy plains; gravelly, gravelly-sandy, sandy and clayey flats; basins; rocky and gravelly valley floors; coastal plains; sandy coastal strands; sandy railroad right-of-ways; along gravelly and sandy roadsides; along arroyos; along bottoms of arroyos; rocky draws; ravines; seeps; springs; along streams; sandy streambeds; along creeks; creekbeds; along and in bouldery-gravelly-sandy, rocky, rocky-sandy, gravelly, gravelly-sandy and sandy washes; in gravelly-sandy and sandy drainages; sandy lakebeds; ponds; bogs; rocky-sandy depressions; sandy banks of arroyos, streams, creeks, rivers and washes; along gravelly-sandy edges of streams and washes; margins of washes; along rocky-sandy and rocky-loamy benches; sandy and silty-loamy terraces; loamy bottomlands; sandy floodplains; along canals; bouldery-sandy and sandy riparian areas; recently burned areas of woodland, chamise chaparral and sage scrub, and disturbed areas often reported as growing in the shade of boulders, shrubs and trees in moist and dry desert pavement; bouldery, bouldery-gravelly-sandy bouldery-sandy, rocky, rocky-gravelly, rocky-sandy, gravelly, gravelly-sandy and sandy ground; rocky loam, rocky-sandy loam, rocky-clayey loam, gravelly loam, gravelly-sandy loam, sandy loam, silty loam and loam ground; silty clay and clay ground, and rocky silty ground, occurring from sea level to 7,100 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. This plant was reported to have been utilized by native peoples of North America and could be investigated to determine its value as a home garden or commercial food crop. *Phacelia distans* is native to southwest-central and southern North America. *5, 6, 15, 16, 28 (color photograph), 43

(022410 - *Phacelia distans* var. *australis* Brand), 46 (Page 703), 58, 63 (022410 - color presentation), 77 (color photograph 29), 85 (022410 - color presentation), 86 (color photograph), 115 (color presentation), 127, **138***

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

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

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

Krameriaceae: The Ratany Family

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

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

lava flows; sand dunes; gravelly, gravelly-sandy-loamy, gravelly-loamy and sandy plains; rocky, gravelly, pebbly-sandy and sandy flats; basins; valley floors; gravelly-loamy roadsides; arroyos; along bottoms of arroyos; rocky draws; gulches; along creeks; along rivers; along and in rocky-gravelly, gravelly and sandy washes; along and in rocky drainages; playas; depressions; banks of rivers and washes; sandy edges of washes and drainage ways; benches, and riparian areas growing in dry bouldery, bouldery-rocky-sandy, rocky, rocky-gravelly, rocky-sandy, cindery, gravelly, pebbly-sandy and sandy ground; rocky-sandy loam, gravelly loam, gravelly-sandy loam, gravelly-sandy-clayey loam, gravelly-clayey loam, sandy loam and sandy-clayey loam ground; silty clay and clay ground; sandy silty ground, and chalky ground, occurring from sea level to 5,700 feet in elevation in the woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. This plant was reported to have been utilized by native peoples of North America and could be investigated to determine its value as a home garden or commercial dye crop; it was also noted as having been used as a drug or medication. The roots of this plant form grafts with other Littleleaf Ratany plants, as well as, other species. This plant is browsed by Mule Deer (*Odocoileus hemionus crooki*) and Whitetail Deer (*Odocoileus virginianus couesi*) and pocket mice, rattlesnakes, whiptails and other animals use the plant for cover. *Krameria erecta* is native to southwest-central and southern North America. *5, 6, 13, 15, 16, 28 (color photograph), 43 (022610 - *Krameria erecta* Wild. ex Schult., *Krameria erecta* Wild. *ex* Schult. & Schult.f.), 46 (recorded as *Krameria parviflora* Benth., Page 404), 48 (genus), 58, 63 (022610 - color presentation), 77 (color photograph #30), 85 (022610 - color presentation), 115 (color presentation), 127, **WTK** (July 4, 2005)*

Krameria parviflora (see *Krameria erecta*)

***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, **138**, **WTK** (July 4, 2005)*

Lamiaceae (Labiatae): The Mint Family

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

COMMON NAMES: Bee Sage, Bee-sage, "Chia" (name given to the seeds of this plant, and also to the seeds of several species of *Salvia*, which are used in cooking), Desert Lavender, Desert-lavender, Lavender, Mariola (Yaqui), Salvia. DESCRIPTION: Terrestrial perennial evergreen shrub (8 inches to 15 feet in height, one plant was reported to be 8 feet in height and 8 feet in width); the leaves are gray, gray-green, grayish-white or green-gray; the flowers may be blue, blue-lavender, blue-purple, blue-violet, dark blue, lavender, pink-purple, purple, purple-indigo, violet, violet-blue or white; the styles are purple; the filaments are white; the anthers are purple; flowering generally takes place between mid-January and mid-June and between early September and mid-June (additional records: one for early July, one for mid-July and two for mid-August). HABITAT: Within the range of this species it has been reported from rocky mountains; rocky mountainsides; bouldery-clayey-loamy mesas; along and in bouldery, rocky and rocky-sandy canyons; along rocky, gravelly and sandy canyon bottoms; rocky talus slopes; bases of cliffs; crevices in rocks; buttes; ledges; rocky and gravelly ridges; bouldery ridgetops; rocky foothills; rocky hills; rocky, rocky-gravelly and gravelly hillsides; bouldery, bouldery-rocky, rocky, rocky-gravelly-loamy, stony and sandy slopes; rocky alluvial fans, bajadas; rocky outcrops; amongst boulders and rocks; sand dunes; rocky-gravelly and sandy plains; gravelly flats; coastal plains; coast lines; along roadsides; rocky and rocky-gravelly arroyos; along rocky and gravelly bottoms of arroyos; troughs; along seepage streams; along streambeds; bouldery-rocky-sandy creekbeds; along and in bouldery, bouldery-gravelly, bouldery-gravelly-sandy, rocky, gravelly, gravelly-sandy and sandy washes; within rocky and rocky-gravelly drainages; rocky banks of streams and washes; along sandy edges of washes; along margins of washes and drainage ways; gravelly shores; floodplains; bouldery-cobbly-sandy riparian areas, and disturbed areas growing in dry desert pavement; bouldery, bouldery-rocky-sandy, bouldery-cobbly-sandy, bouldery-gravelly, bouldery-gravelly-sandy, rocky, rocky-gravelly, rocky-sandy, stony, gravelly, gravelly-sandy and sandy ground; bouldery-clayey loam, rocky-gravelly loam, rocky-sandy loam, sandy loam and clayey loam ground, and rocky clay and clay ground, occurring from sea level to 6,000 feet in elevation in the woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat, but is sensitive to frosts. This plant was reported to have been utilized by native peoples of North America; it was noted as having been used as a drug or medication. The foliage is fragrant, having the odor of lavender or turpentine. Native bees and hummingbirds visit the flowers and the seeds provide food for wildlife. *Hyptis emoryi* is native to southwest-central and southern North America. *5, 6, 13, 16, 18, 28 (color photograph), 43 (022710), 46 (Page 748), 48, 63 (022710), 77 (color photograph #31), 85 (022710 - color presentation), 91, 115 (color presentation), 127, **138***

***Monardella arizonica* C.C. Epling: Arizona Monardella**

COMMON NAMES: Arizona Monardella, Arizona Mountainbalm, Bee Balm. DESCRIPTION: Terrestrial perennial forb/herb or subshrub (ascending stems 6 to 32 inches in height and about the same in width, one plant was described as being 26 inches in height and width); the flowers are cream-lavender, pale lavender, pink, pink-purple, white-lavender or white with a purple line on the petals; the anthers are

pale purple or purple; flowering generally takes place between early April and early January (flowering records: one for early January, two for early April, three for late April, three for mid-May, one for late June, one for mid-July, two for mid-August, one for mid-September, four for late September, one for late October, one for early November and one for late December). HABITAT: Within the range of this species it has been reported from mountains; mountaintops; along canyons; along canyon walls; rocky canyon bottoms; within crevices in bedrock, boulders and rocks; bases of cliffs; rocky ledges; rocky slopes; rocky outcrops; amongst rocks; springs; riverbeds; along washes; within drainages, and riparian areas growing in bouldery and rocky ground, occurring from 2,000 to 5,800 feet in elevation in the scrub, desertscrub and wetland ecological formations. NOTE: This plant may be an attractive component of a restored native habitat. The herbage is very aromatic and has an odor reminiscent of sweet turpentine. *Monardella arizonica* is native to southwest-central North America, this plant is endemic to Arizona. *5, 6, 18 (genus), 43 (070710), 46 (Page 747), 63 (070710), 85 (070710 - color presentation of dried material, unable to access species information), **138***

***Salvia columbariae* G. Bentham var. *columbariae*: Chia**

COMMON NAMES: Chia, Desert Chia, Desert Sage. DESCRIPTION: Terrestrial annual forb/herb (4 to 24 inches in height); the flowers are blue, bluish-purple or purple; flowering generally takes place between January and June. HABITAT: Within the range of this species it has been reported from mountains; mesas; along cliffs; canyons; canyon bottoms; buttes; rocky ridges; hills; hillsides; bouldery, rocky and gravelly slopes; gravelly bajadas; rocky outcrops; plains; gravelly and sandy flats; gravelly roadsides; arroyos; creekbeds; along and in gravelly, gravelly-sandy and sandy washes; banks of arroyos; loamy bottomlands; floodplains; riparian areas, and disturbed areas growing in dry rocky, gravelly, gravelly-sandy and sandy ground; sandy loam ground; rocky clay ground, and silty ground, occurring from 1,000 to 4,700 feet in elevation in the scrub, grassland, desertscrub and wetland ecological formation. NOTES: This plant may be an attractive component of a restored native habitat. The species, *Salvia columbariae*, was reported to have been utilized by native peoples of North America and could be investigated to determine its value as a home garden or food, beverage, spice and/or fiber crop; it was also noted as having been used as a drug or medication. *Salvia columbariae* var. *columbariae* is native to southwest-central and southern North America. *5, 6, 18 (genus), 28 (species, color photograph of the species), 46 (species, Page 741), 48 (genus), 63 (022710), 85 (022710), 86 (species, color photograph of the species), 115 (color presentation of the species), 127 (species), **HR***

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), **138***

Malvaceae: The Mallow Family

***Abutilon* P. Miller*:* Indian Mallow**

COMMON NAME: Indian Mallow. *43 (062710), 46 (Pages 538-540), 63 (062710 - color presentation), **WTK** (July 4, 2005)*

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, **138***

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

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

***Abutilon malacum* S. Watson: Yellow Indian Mallow**

COMMON NAMES: Indian Mallow, Yellow Abutilon, Yellow Indian Mallow. DESCRIPTION: Terrestrial perennial subshrub or shrub (12 to 40 inches in height); the leaves are grayish or gray-green; the flowers are golden, light orange, orange, orange-yellow, dull tan-apricot, yellow or yellow-orange; flowering generally takes place between mid-January and early December (flowering records: one for mid-January, two for late February, two for early March, one for late March, four for early April, four for mid-April, one for late April, two for early May, two for mid-May, two for early June, one for mid-June, one for early July, five for mid-August, three for late August, three for early September, eight for mid-September, seven for late September, one for early October, three for mid-October, one for late October, two for late November and two for early December. HABITAT: Within the range of this species it has been reported from mountains; bases of mountains; cliffs; rocky canyons; hilltops; bouldery rocky hillsides; bouldery and rocky slopes; bajadas; amongst rocks; bases of boulders; gravelly-loamy roadsides; along arroyos; along bottoms of arroyos; rocky ravines; springs; along rocky and sandy washes; along drainages, and floodplains growing in dry bouldery, rocky, gravelly and sandy ground and gravelly loam ground, occurring from 1,700 to 4,900 feet in elevation in the scrub, grassland and desertscrub ecological formations. NOTE: *Abutilon malacum* is native to southwest-central and southern North America. *5, 6, 18 (genus), 43 (072010), 63 (072010), 77, **85** (080710 - color presentation)*

Abutilon 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), **138***

***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)*

***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), **138***

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

***Horsfordia newberryi* (S. Watson) A. Gray: Newberry's Velvetmallow**

COMMON NAMES: Newberry Velvetmallow, Newberry's Velvetmallow, Orange Velvet Mallow, Orange Velvet-mallow, Yellow Felt Plant, Yellow Feltplant. DESCRIPTION: Terrestrial perennial subshrub or shrub (40 inches to 10 feet in height); the flowers are yellow; flowering generally takes place between March and October; however, flowering taking place throughout the year has also been reported. HABITAT: Within the range of this species it has been reported from mountains; canyons; ridges; rocky hillsides; rocky slopes; alluvial fans; bajadas; basins, and along washes growing in dry rocky ground, occurring from 1,000 to 3,500 feet in elevation in the desertscrub ecological formation. NOTES: The plants are covered with dense yellowish hairs. *Horsfordia newberryi* is native to southwest-central and southern North America. *5, 6, 13, 43 (070710 - *Horsfordia newberryi* A. Gray), 46 (Page 540), 63 (070710), 77, **85** (070710 - color presentation of dried material), 91, **138***

***Sphaeralcea* A.F. Prouvençal de Saint-Hilaire: Globemallow**

COMMON NAME: Globemallow. *43 (070710), 46 (Pages 540-547), 63 (070710 - color presentation), **138***

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*

***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), **138***

Commicarpus scandens (see *Boerhavia scandens*)

Oleaceae: The Olive Family

***Menodora scabra* A. Gray: Rough Menodora**

SYNONYMY: *Menodora scoparia* G. Engelmann *ex* A. Gray. COMMON NAMES: Broom Menodora, Rough Desert Olive, Rough Menodora, Twinberry, Twinfruit, Yellow Menodora. DESCRIPTION: Terrestrial perennial deciduous forb/herb or subshrub (6 inches to 4 feet in height, one plant was described as being 12 inches in height with a crown 16 inches in width, one plant was described as being 12 to 16 inches in height with a crown 8 to 12 inches in width); the older bark is dark gray; the stems are green or green-yellow; the leaves are grayish-green, green or green-yellow; the flowers are white or yellow; flowering generally takes place between mid-March and late November (additional record: one for mid-February). HABITAT: Within the range of this species it has been reported from mountains; rocky mountaintops; rocky and stony mountainsides; bouldery crags; bouldery mesas; rocky canyons; along rocky and gravelly canyon bottoms; gorges; talus slopes; rocky buttes, rocky-sandy and sandy ridges; rocky ridgetops; meadows; foothills; talus hills; rocky, sandy and clayey hills; rocky and gravelly hilltops; rocky and gravelly-clayey hillsides; sandy edges of escarpments; bedrock, bouldery, rocky, rocky-gravelly, rocky-sandy, rocky-clayey-loamy, cindery, gravelly, gravelly-sandy-loamy, gravelly-loamy, sandy, clayey and clayey-loamy slopes; gravelly and sandy bajadas; rocky outcrops; amongst rocks; sandy plains; rocky, cindery, gravelly, sandy, clayey and clayey-loamy flats; cindery valley floors; along rocky-gravelly-sandy-clayey-loamy, rocky-sandy-loamy, gravelly, gravelly-sandy and gravelly-sandy loamy roadsides; sandy arroyos; bottoms of arroyos; gullies; springs; creekbeds; along gravelly, sandy and humusy-loamy washes; drainages; clayey edges of washes and drainage ways; along margins of washes; benches; rocky-sandy terraces; floodplains; bouldery-cobbly-sandy riparian areas, and disturbed areas growing in dry rocky desert pavement; bouldery, bouldery-cobbly-sandy, rocky, rocky-gravelly, rocky-sandy, shaley, shaley-sandy, stony, cindery, gravelly, gravelly-sandy and sandy ground; rocky-gravelly-sandy-clayey loam, rocky-sandy loam, rocky-clayey loam, gravelly loam, gravelly-sandy loam, sandy-clayey loam, clayey loam and humusy loam ground, and gravelly clay, silty clay and clay ground, occurring from 1,100 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. 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. Rough Menodora is an important browse plant for wildlife. *Menodora scabra* is native to southwest-central and southern North America. *5, 6, 13, 15, 16, 28 (color photograph), 43 (031310), 46 (recorded as *Menodora scabra* Gray, Page 644 and *Menodora scoparia* Engelm., Page 644), 48, 63 (031310 - color presentation), 77, 85 (031310 - color presentation), 86 (color photograph), 115 (color presentation), 127*

Menodora scoparia (see *Menodora scabra*)

Onagraceae: The Evening-primrose Family

***Camissonia boothii* (D. Douglas) P.H. Raven subsp. *condensata* (P.A. Munz) P.H. Raven: Shredding Suncup**

SYNONYMY: *Oenothera decorticans* (W.J. Hooker & G.W. Arnott) E.L. Greene var. *condensata* P.A. Munz). COMMON NAMES: Booth Evening-primrose, Booth Suncop, Shredding Suncup, Woody Bottle-washer. DESCRIPTION: Terrestrial annual forb/herb (to 20 inches in height); the leaves are dark green marked with reddish-purple; the flowers are white fading to pink; flowering generally takes place between February and May. HABITAT: Within the range of this species it has been reported from hills; plains; flats; valley floors; roadsides, and sandy washes growing in dry desert pavement and sandy ground, occurring from sea level to 2,500 feet in elevation in the desertscrub ecological formation. NOTE: *Camissonia boothii* subsp. *condensata* is native to southwest-central North America. *5, 6, 28 (color photograph), 43 (070710 - *Camissonia boothii* subsp. *condensata* (Munz) P.H. Raven, *Oenothera decorticans* Greene var. *condensata* Munz), 46 (recorded as *Oenothera decorticans* (Hook. & Arn.) Greene var. *condensata* Munz, Page 600), 48 (genus, *Oenothera*), 63 (070710), 85 (070710 - color presentation of dried material, unable to acce3ss species information), **HR***

Oenothera decorticans var. *condensata* (see *Camissonia boothii* subsp. *condensata*)

Plantaginaceae: The Plantain Family

Plantago fastigiata (see *Plantago ovata*)

Plantago insularis (see *Plantago ovata*)

Plantago insularis var. *fastigiata* (see *Plantago ovata*)

***Plantago ovata* P. Forsskål: Desert Indianwheat**

SYNONYMY: *Plantago fastigiata* E.L. Morris, *Plantago insularis* A. Eastwood, *Plantago insularis* A. Eastwood var. *fastigiata* (E.L. Morris) W.L. Jepson. COMMON NAMES: Ataxén (Seri, also shown as being spelled Hataxén for *Plantago ovata* var. *fastigiata* (Morris) Meyers & Liston), Blond Psyllium, Blonde Espaghula, Desert Indian Wheat, Desert Indian-wheat, Desert Indianwheat, Fleaseed, Fleawort, Hataxén (Seri, also shown as being spelled Ataxén for *Plantago ovata* var. *fastigiata* (Morris) Meyers & Liston), Indian Plantago, Indian Plantain, Indian Wheat, Indian-wheat, Indianwheat, Ispaghul, Ispaghula, Muumshum (Gila River Pima), Psyllium, Spogel Seeds, Tanchagem-ovada (Portuguese), Transagem-ovada (Portuguese), Woolly Plantain. DESCRIPTION: Terrestrial annual forb/herb (2 to 14 inches in height); the basal leaves are gray-green or grayish; the flowers are cream, pinkish, tan with reddish-brown mid-stripes, white or white-green; flowering generally takes place between mid-December and early June (additional records: one for early July, one for mid-July, one for early August, one for early September, one for late October, one for early November and two for mid-November). HABITAT: Within the range of this species it has been reported from mountains; mountaintops; rocky and rocky-sandy mesas; bouldery and rocky canyons; rocky canyon bottoms; sandy talus slopes; buttes; ledges; ridges; rocky ridgetops; meadows; foothills; rocky, gravelly-sandy and sandy hills; bouldery and rocky hillsides; along bedrock, rocky, rocky-sandy, rocky-loamy, rocky-silty-loamy, gravelly, gravelly-sandy, gravelly-loamy and sandy slopes; rocky and sandy alluvial fans; rocky, gravelly, gravelly-sandy and sandy bajadas; rocky outcrops; amongst boulders and rocks; lava flows; lava fields; sand hills; sand dunes; ridges on sand dunes; sand hummocks; rocky embankments; gravelly-sandy-loamy and sandy plains; rocky-sandy, gravelly, gravelly-sandy-loamy, gravelly-silty-loamy, sandy and silty flats; sandy basins; gravelly and sandy valley floors; valley bottoms; sandy coastal plains; along rocky, rocky-sandy, gravelly-sandy, gravelly-sandy-loamy and sandy roadsides; gulches; seeps; along creeks; along rivers; riverbeds; along and in rocky, rocky-sandy, stony-sandy, gravelly-sandy, gravelly-sandy-silty, sandy and clayey washes; drainages; gravelly drainage ways; silty lakebeds; silty depressions; gravelly and sandy banks of streams,

creeks, washes and lakes; gravelly and sandy edges of rivers, washes and lakes; margins of washes; sandy shores of lakes; gravelly mudflats; benches; gravelly, gravelly-sandy sandy terraces; floodplains; along canals; canal banks; along edges of canals; along ditch banks; gravelly-sandy riparian areas, and disturbed areas growing in wet, moist and dry desert pavement; bouldery, rocky, rocky-sandy, stony-sandy, gravelly, gravelly-sandy and sandy ground; rocky loam, rocky-silty loam, gravelly loam, gravelly-sandy loam, gravelly-clayey loam, gravelly-silty loam and sandy loam ground; gravelly-sandy clay and clay ground, and gravelly-sandy silty ground, occurring from sea level to 6,700 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: EXOTIC Invasive Plant. This plant was reported to have been utilized by native peoples of North America; it was noted as having been used for food, fodder and as a drug or medication. *Plantago ovata* plant is native to southwestern Europe; western and southern Asia, and northern Africa. *5, 6, 15, 16 (*Plantago insularis* Eastw.), 43 (072509), 46 (*Plantago insularis* Eastw., Page 805), 48 (genus), 63 (031810 - color presentation), 77 (*Plantago fastigiata* Morris), 85 (031810 - includes records for *Plantago ovata* var. *fastigiata* (Morris) Meyers & Liston, color presentation of dried material), 115 (color presentation), 127, **138** (recorded as *Plantago insularis*)*

Plantago ovata var. *fastigiata* (see footnote 85 under *Plantago ovata*)

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), **138***

***Gilia sinuata* D. Douglas ex G. Bentham: Rosy Gilia**

SYNONYMY: *Gilia inconspicua* (J.E. Smith) R. Sweet var. *sinuata* (D. Douglas *ex* G. Bentham) A. Gray. COMMON NAMES: Bare-base Gilia, Cinder Gilia, Gilia, Gily-flower, Rosy Gilia. DESCRIPTION: Terrestrial annual forb/herb (2½ to 15 inches in height, plants were observed and described as being 4 to 10 inches in height and 2 to 4 inches in width); the foliage is medium green; the flowers are pale blue-violet, blue, blue-lavender, blue-purple, blue-yellow, bluish-white, cream, lavender-pink, pink, purple, violet, white or pale yellow; the anthers are blue; flowering generally takes place between early March and early July (additional records: one for mid-February and one for mid-September). HABITAT: Within the range of this species it has been reported from mountains; mesas; sandy plateaus; cliffs; sandy canyons; sandy canyon bottoms; bluffs; rocky-gravelly-sandy sides of buttes; gravelly ridges; ridgetops; meadows; foothills; rocky, rocky-sandy-silty and gravelly hills; hilltops; rocky hillsides; rocky, gravelly, sandy and clayey slopes; gravelly and sandy alluvial fans; bajadas; lava flows; lava fields; sand dunes; sandy breaks; sandy and silty-loamy plains; gravelly, sandy and silty flats; sandy valley floors; valley bottoms; along rocky, rocky-gravelly-sandy-clayey-loamy, gravelly and gravelly-sandy roadsides; sandy arroyos; along creeks; along and in gravelly-sandy and sandy creekbeds; along rivers; along and in rocky, rocky-sandy, gravelly-sandy and sandy washes; drainages; in sandy-silty drainage ways; silty lakebeds; rocky and sandy banks of creeks, creekbeds and washes; edges of washes and dry lakes; sandy bottomlands; sandy benches; cobbly-sandy terraces; gravelly-sandy and silty riparian areas, and disturbed areas growing in dry bouldery, rocky, rocky-gravelly, rocky-gravelly-sandy, rocky-sandy, cobbly-sandy, cindery, gravelly, gravelly-sandy and sandy ground; rocky-gravelly-sandy-clayey loam, gravelly loam and silty loam ground; clay ground, and rocky-sandy silty, sandy silty and silty ground, occurring from 1,500 to 7,900 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant was reported to have been utilized by native peoples of North America and could be investigated to determine its value as a home garden or commercial food crop. *Gilia sinuata* is native to southwest-central and southern North America. *5, 6, 15, 18 (genus), 43 (031910 - *Gilia inconspicua* var. *sinuata* (Douglas *ex* Benth.) Brand), 46 (Page 691), 63 (031910 - color presentation), 85 (031910 - color presentation of dried material), 127, **138** (recorded as *Gilia* cf. *sinuata*)*

Gilia inconspicua var. *sinuata* (see *Gilia sinuata*)

***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), **HR***

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), **138***

Polygonaceae: The Buckwheat Family

***Chorizanthe brevicornu* J. Torrey (var. *brevicornu* is the variety reported as occurring in Arizona): Brittle Spineflower**

COMMON NAMES: Brittle Spine Flower, Brittle Spineflower, Sagebrush Chorizanthe, Short-horn Spine-flower. DESCRIPTION: Terrestrial annual forb/herb (2 to 20 inches in height and 2 to 12 inches in width, one plant was described as being 7 inches in height and 10 inches in width); the basal rosette of leaves may be lime, maroon, reddish or yellow-green; the small inconspicuous flowers are green, greenish-white, white, yellow-green or yellowish-white; flowering generally takes place between early January and late May (additional record: one for mid-June, flowering may continue into July). HABITAT: Within the range of this species it has been reported from mountains; mesas; rocky and rocky-gravelly canyons; sandy and sandy-loamy canyon bottoms; rocky talus slopes; gravelly ridges; ridgetops; rocky foothills; rocky and rocky-sandy hills; hilltops; rocky hillsides; bedrock, bouldery, rocky, rocky-gravelly-loamy, rocky-sandy, gravelly, gravelly-sandy, gravelly-loamy and sandy slopes; rocky alluvial fans; gravelly bajadas; rock, and shaley outcrops; amongst boulders, rocks and gravels; boulder fields; 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), **138***

***Chorizanthe rigida* (J. Torrey) J. Torrey & A. Gray: Devil's Spineflower**

COMMON NAMES: Devil's Spineflower, Devil's Spiny-herb, Rigid Spineflower, Rigid Spiny Herb, Spine Herb, Spiny Chorizanthe, Turkshead, Turk's Rug. DESCRIPTION: Terrestrial annual forb/herb (1 to 8 inches in height and ½ to 4 inches in width); the minute flowers are green, white, yellow or yellow-green; flowering generally takes place between early February and late May (additional records: two for early January, two for mid-January and one for late July). HABITAT: Within the range of this species it has been reported from mountains; mountainsides; gravelly mesas; gravelly canyons; canyon walls; canyon bottoms; rocky ridges; foothills; rocky, gravelly and sandy hills; rocky and rocky-gravelly hilltops; rocky and sandy hillsides; rocky, stony, gravelly, gravelly-sandy and sandy slopes; rocky alluvial fans; gravelly, gravelly-sandy and sandy bajadas; shaley outcrops; amongst rocks; lava flows; rocky-sandy and sandy lava fields; sand dunes; gravelly plains; rocky, stony, stony-chalky, gravelly, sandy, sandy-silty and chalky flats; basins; gravelly valley floors; along gravelly and sandy roadsides; ravines; springs; along rivers; along and in rocky, gravelly, gravelly-sandy and sandy washes; gravelly drainages; gravelly and gravelly-sandy edges of washes; benches; gravelly-sandy riparian areas, and disturbed areas growing in dry desert pavement; bouldery-rocky-gravelly, rocky, rocky-sandy, shaley-sandy, stony, stony-chalky, gravelly, gravelly-sandy, sandy and chalky ground; rocky clay and clay ground, and sandy silty and silty ground, occurring from 200 to 5,000 feet in elevation in the desertscrub and wetland ecological formation. NOTES: Becomes stiff and bur-like when dried. *Chorizanthe rigida* is native to southwest-central and southern North America. *5, 6, 16, 28 (color photograph), 43 (032210), 46 (Page 230), 63 (032210 - color presentation), 77, 85 (032210 - color presentation of dried material), **138***

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), **138***

***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 fasciculatum* G. Bentham var. *polifolium* (G. Bentham) J. Torrey & A. Gray: Eastern Mojave Buckwheat**

SYNONYMY: *Eriogonum polifolium* G. Bentham. COMMON NAMES: Bladderstem, Buckwheat, California Buckwheat, California Wild Buckwheat, Desert Trumpet, Eastern Mojave Buckwheat, Flat-top, Flat-top Buckwheat, Flat-top Buckwheat-brush, Flat-topped Buckwheat, Flat-topped Buckwheat Brush, Flat-topped Buckwheatbrush, Indian Pipe-weed, Maderista, Mohave Desert California Buckwheat. DESCRIPTION: Terrestrial perennial subshrub or shrub (compact to spreading decumbent stems 4 to 40 inches in height with crowns 8 inches to 10 feet in width, one plant was reported to be 1 foot in height and 2 feet in width, one plant was reported to be 16 inches in height and 2 feet in width, plants were observed and described as being 18 inches in height and 2 feet in width, plants were observed and described as being 20 inches in height and 18 inches in width, plants were observed and described as being 20 inches in height and 3 feet in width); the bark is gray; ; the stems are greenish-coral; the leaves are gray, grayish or gray-green; the flowers may be cream, cream-pink, cream-white-pink, pale pink, pink, pinkish, pinkish-white, reddish-pink, white, white with pink veins, white-pink, white-pinkish, white-rose

or whitish; flowering generally takes place between late November and mid-August (additional records: one for mid-September, one for late September, one for early October, three for mid-October, two for late October and one for early November, flowering taking place year-round has also been reported). HABITAT: Within the range of this species it has been reported from rocky mountains; rocky mountaintops; mountainsides; rocky mesas; rims of canyons; rocky cliffs; rocky canyons; canyon bottoms; scree; talus slopes; bases of cliffs; crevices in bedrock; buttes; ledges; rocky ridges; rocky ridgetops; foothills; bouldery and rocky hills; rocky hillsides; bases of hillsides; bouldery, bouldery-rocky-gravelly, rocky, rocky-sandy, stony-gravelly-sandy, cindery, gravelly, gravelly-sandy and sandy slopes; rocky-gravelly alluvial fans; stony-gravelly-sandy bajadas; bouldery and rocky outcrops; amongst rocks; boulderfields; lava flows; sandy lava beds; sand dunes; gravelly, gravelly-sandy and sandy flats; valley floors; clayey roadsides; rocky arroyos; gullies; along creeks; creekbeds; along and in rocky, gravelly-sandy and sandy washes; along drainage ways; gravelly depressions; gravelly-sandy banks of streams and rivers; edges of washes; gravelly and gravelly-sandy benches; gravelly terraces; floodplains; shores of reservoirs; riparian areas; recently burned areas of coastal sage scrub, and disturbed areas growing in dry bouldery, bouldery-rocky-gravelly, bouldery-gravelly-sandy, rocky; rocky-gravelly, rocky-sandy, stony-gravelly-sandy, cindery, gravelly, gravelly-sandy and sandy ground and clay ground, occurring from 100 to 8,200 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. This plant was reported to have been utilized by native peoples of North America; it was noted as having been used as a drug or medication; the leaves were used to line acorn granaries prevent the stored acorns from getting wet, and the wood was used to pierce ears. *Eriogonum fasciculatum* var. *polifolium* is native to southwest-central and southern North America. *5, 6, 13, 18 (genus & species), 28 (color photograph), 43 (072210), 46 (Page 242), 48 (genus), 63 (072210 - color presentation), **85** (072310 - color presentation of dried material), 115 (color presentation of the species), 127*

***Eriogonum inflatum* J. Torrey & J.C. Frémont: Desert Trumpet**

COMMON NAMES: Bladder Stem, Bladderstem, Bottle-stopper, Cigarette Plant, Desert Trumpet, Indian Pipe-weed, Indian Pipeweed, Indianpipe Weed, Native American Pipeweed. DESCRIPTION: Terrestrial annual or perennial forb/herb (stems 8 inches to 5 feet in height); this plant has a basal rosette of gray-green, green or red leaves; the flowering stems and branches are grayish, gray-green, green, purple-red or yellowish-green; the flowers are greenish-yellow, orange-yellow, pink or yellow; flowering generally takes place between early March and late November (additional records: one for mid-January, one for early February and one for mid-February, flowering has also been reported as occurring year round). HABITAT: Within the range of this species it has been reported from mountains; rocky-clayey mesas; plateaus; rocky canyons; talus slopes; rocky buttes; rocky ledges; rocky ridges; ridgelines; crater walls; foothills; rocky hills; gravelly crests of hills; rocky and gravelly hillsides; bouldery, rocky, gravelly and sandy slopes; gravelly and gravelly-sandy bajadas; gypsum outcrops; rocky coves; sand dunes; plains; flats; rocky valley floors; along gravelly roadsides; along rocky and gravelly arroyos; along rivers; along and in bouldery, rocky, rocky-sandy, gravelly, gravelly-sandy and sandy washes; rocky banks of rivers; gravelly terraces; sandy bottomlands; floodplains; riparian areas, and disturbed areas growing in dry desert pavement; bouldery, rocky, rocky-sandy, shaley, gravelly, gravelly-sandy and sandy ground, and rocky clay ground, occurring from sea level to 6,600 feet in elevation in the woodland, grassland, desertscrub and wetland ecological formations. NOTES: This plant was reported to have been utilized by native peoples of North America and could be investigated to determine its value as a home garden or commercial food crop; it was also noted as having been used as tools (used as pipes and drinking tubes) and as a drug or medication. The Desert Trumpet is a food plant for the larva and adult forms of the Desert Metalmark Butterfly (*Apodemia palmerii* subsp. *deserti*). *Eriogonum inflatum* is native to southwest-central and southern North America. *5, 6, 18 (genus), 28 (color photograph), 43 (070810 - *Eriogonum inflatum* Torr.), 46 (Pages 237-238), 48 (genus), 63 (070810 - color presentation), 77 (plants observed had yellow flowers and stems that were not inflated), 85 (070810 - color presentation,

unable to access species information), 86 (color photograph), 106 (070810 - *Apodemia palmerii*), 127, **138***

Eriogonum polifolium (see *Eriogonum fasciculatum* var. *polifolium*)

Primulaceae: The Primrose Family

***Androsace occidentalis* F.T. Pursh: Western Rockjasmine**

SYNONYMY: *Androsace occidentalis* F.T. Pursh var. *arizonica* (A. Gray) H. St. John. COMMON NAMES: Rock Jasmine, Rock-jasmine, Western Fairy Candelabra, Western Androsace, Western Rock Jasmine, Western Rock-jasmine, Western Rockjasmine. DESCRIPTION: Terrestrial annual forb/herb (1 to 5 inches in height); the basal rosette leaves may be reddish; the minute flowers (1/8 inch in diameter) may be pink, purple, red, white or white with a pink or red tinge; flowering generally takes place between early February and mid-May. HABITAT: Within the range of this species it has been reported from mountains; rocky mountainsides; rocky mesas; cliffs; sandy canyons; along bedrock and sandy-loamy canyon bottoms; bases of cliffs; crevices in rock; gravelly ledges; ridges; ridgetops; shaded rock niches; meadows; rocky foothills; rocky hills; rocky hillsides; rocky, rocky-gravelly-loamy, rocky-sandy, rocky-loamy, gravelly, gravelly-sandy, gravelly-loamy and sandy slopes; rocky-sandy alluvial fans; bajadas; rocky outcrops; amongst boulders and rocks; rock niches; rocky and silty flats; basins; sandy valley floors; along roadsides; within bedrock arroyos; along rocky draws; seeps; springs; around seeping streams; along rocky and sandy streams; sandy streambeds; along creeks; along and in sandy creekbeds; along rivers; riverbeds; along and in rocky, rocky-sandy, gravelly and sandy washes; drainages; depressions; rocky and gravelly banks of rivers and washes; channel bars in rivers; terraces; sandy bottomlands; floodplains; rocky mesquite bosques; banks of stock tanks; gravelly-sandy riparian areas, and disturbed areas growing in muddy and wet, moist, damp and dry rocky, rocky-sandy, gravelly, gravelly-sandy and sandy ground; rocky loam, rocky-gravelly loam gravelly loam and sandy loam ground; sandy clay ground, and silty ground, occurring from 1,000 to 11,500 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant was reported to have been utilized by native peoples of North America; it was noted as having been used as a drug or medication. *Androsace occidentalis* is native to central and southern North America. *5, 6, 15, 16, 43 (072809), 46 (Page 636), 58, 63 (032710 - color presentation), 77, **85** (032710 - color presentation of dried material), 127, **138***

Androsace occidentalis var. *arizonica* (see *Androsace occidentalis*)

Ranunculaceae: The Buttercup Family

***Anemone tuberosa* P.A. Rydberg (var. *tuberosa* is the variety reported as occurring in Arizona): Tuber Anemone**

COMMON NAMES: Desert Anemone, Desert Thimbleweed, Desert Windflower, Tuber Anemone, Windflower. DESCRIPTION: Terrestrial (tuberous) perennial forb/herb (4 to 20 inches in height); the stems may be purplish; the flowers may be cream & pink, creamy-white, pink, pinkish, pinkish-purple, pinkish-white, purple, white, white-blue, white-lavender, white-pink, white-purple and whitish-yellow; flowering generally takes place between early January and late May. HABITAT: Within the range of this species it has been reported from reported from mountains; rocky mountainsides; mesas; cliffs; rocky canyons; rocky canyon walls; rocky canyon bottoms; gorges; talus slopes; bases of cliffs; crevices in rocks; buttes; rocky promontories; along bouldery and rocky ridges; rocky ridgetops; foothills; bouldery-rocky and rocky hills; rocky hilltops; bouldery and rocky hillsides; rocky, rocky-gravelly-sandy, rocky-gravelly-loamy, rocky-clayey, gravelly and gravelly-loamy slopes; bajadas; rocky outcrops;

amongst rocks; volcanic dikes and plugs; sandy lava flows; rocky barrens; rocky and sandy flats; rocky basins; along rocky roadsides; along rocky draws; seeps; springs; along creeks; creekbeds; along and in gravelly washes; within bouldery-cobbly and cobbly drainage ways; along banks of streams and washes; rocky benches; terraces, and riparian areas growing in dry bouldery, bouldery-rocky, bouldery-cobbly, rocky, rocky-gravelly, rocky-gravelly-sandy, cobbly, cindery, gravelly and sandy ground; rocky-gravelly loam, gravelly loam, gravelly-clayey loam and sandy loam ground, and rocky clay and clay ground, occurring from 1,400 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. *Anemone tuberosa* is native to southwest-central and southern North America. *5, 6, 15, 16, 18 (genus), 28 (color photograph), 43 (072309), 46 (Page 311), 58, 63 (032810 - color presentation), 77 (color photograph #90), 80 (Species in the genus *Anemone* are considered to be Rarely Poisonous and Suspected Poisonous Range Plants. "These perennial forbs have been suspected of causing poisoning of livestock and have caused hairballs in the digestive tract of sheep."), **85** (042010 - color presentation), 86 (color photograph), 115 (color presentation), **138***

***Delphinium scaposum* E.L. Greene: Tall Mountain Larkspur**

COMMON NAMES: Bare-stem Larkspur, Barestem Larkspur, Desert Larkspur, Espuelita, Larkspur, Low Larkspur, Naked Delphinium, Tall Mountain Larkspur, Tcoro'si (Hopi), Wild Delphinium. DESCRIPTION: Terrestrial perennial forb/herb (6 inches to 4 feet in height); the leafless stems may be reddish; the basal leaves are gray-green, dark green or yellow-green; the flowers (to 1 inch in width) may be blue, blue & cream-white, blue-purple, blue-purple-white, blue-violet, blue-white, dark blue, lavender-blue-purple, purple, dark purple-blue, dark purple-blue & white, purple-blue, royal blue-white, deep royal blue, violet, violet-blue or white; flowering generally takes place between early March and early July (additional record: one for early January). HABITAT: Within the range of this species it has been reported from mountains; bouldery, gravelly and sandy mesas; plateaus; along rocky rims of canyons and gorges; rocky, rocky-sandy and sandy canyons; sandy canyon bottoms; gorges; talus slopes; bases of cliffs; bluffs; buttes; knolls; rocky ledges; ridges; clearings in forests; meadows; rocky foothills; rocky and sandy hills; rocky and sandy-loamy hillsides; bouldery-rocky-gravelly, rocky, gravelly, gravelly-loamy, gravelly-sandy-loamy, gravelly-clayey-loamy, loamy and clayey slopes; bajadas; bouldery outcrops; sand dunes; gravelly and clayey flats, basins; valley floors; along rocky, gravelly-sandy and sandy roadsides; arroyos; gravelly gullies; along seeping washes; along streams; streambeds; along rivers; along washes; drainages; along water courses; gravelly-silty-clayey and gravelly-clayey depressions; rocky banks of washes; rocky edges of washes; shores of lakes; sandy beaches; benches; gravelly-sandy terraces; sandy bottomlands, and riparian areas growing in dry bouldery, bouldery-rocky-gravelly, rocky, rocky-sandy, cindery, gravelly, gravelly-sandy and sandy ground; gravelly loam, gravelly-sandy loam, gravelly-clayey loam, sandy loam and loam ground, and rocky clay, gravelly clay, gravelly-silty clay and clay ground, occurring from 1,900 to 8,900 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. This plant was reported to have been utilized by native peoples of North America and could be investigated to determine its value as a home garden or commercial dye crop; it was also noted as having been used in ceremonies; as a toy or in games, and as a drug or medication. The Tall Mountain Larkspur is reportedly visited by butterflies. *Delphinium scaposum* is native to southwest-central and southern North America. *5, 6, 15, 16, 18 (genus), 28 (color photograph), 43 (042110), 46 (Pages 308-309), 48 (genus), 58, 63 (042110 - color presentation including habitat), 68, 77 (color photograph #91), 80 (This species is listed as a Major Poisonous Range Plant; however, "All species of Larkspur in Arizona should be considered potentially dangerous. ... The most toxic period of growth is when the plant is young and prior to flowering" - May and June for Low Larkspur (*Delphinium nelsoni*, *Delphinium scaposum* and *Delphinium virescens*) and May through July for Tall Larkspur (*Delphinium scopulorum*). "Plants remain dangerous throughout their life. Cattle are the principle livestock poisoned by larkspur. Sheep apparently graze larkspur without harm. ... Since cattle will graze on larkspur even though other forage is available, management to keep them away from heavily infested areas during this

period is the best control technique." See text for additional information.), **85** (042210 - color presentation), 115 (color presentation), 127, **138***

Rhamnaceae: The Buckthorn Family

Condalia lycioides var. *canescens* (see *Ziziphus obtusifolia* var. *canescens*)

***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, **HR***

Rubiaceae: The Madder Family

***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), **138***

***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), **138***

Galium stellatum var. *eremicum* (see *Galium stellatum* subsp. *eremicum*)

Salicaceae: The Willow Family

***Populus fremontii* S. Watson subsp. *fremontii*: Frémont Cottonwood**

SYNONYMY: *Populus arizonica* C.S. Sargent *Populus fremontii* S. Watson var. *arizonica* (C.S. Sargent) W.L. Jepson, *Populus fremontii* S. Watson var. *macdougalii* (J.N. Rose) W.L. Jepson, *Populus fremontii* S. Watson var. *pubescens* C.S. Sargent, *Populus fremontii* S. Watson var. *thornberi* C.S. Sargent, *Populus fremontii* S. Watson var. *toumeyi* C.S. Sargent. COMMON NAMES: Alamo (Spanish), Alamo Cottonwood, Arizona Cottonwood, Cordate-leaved Cottonwood, Cottonwood, Frémont Cottonwood, Frémont Poplar, Frémont's Cottonwood, Rio Grande Cottonwood, Western Cottonwood. DESCRIPTION: Terrestrial perennial deciduous tree (10 to 112 feet in height with a wide and flat-topped crown); the older bark is brownish, gray, gray-brown, grayish-white, pale tan or whitish; the branches are gray-brown to reddish-brown; the twigs are yellow before turning a bone-white, pale gray, tan or tannish-white; the leaves are a shiny bright green or yellow-green turning golden-yellow or lemon-yellow in autumn; the flowers (catkins with the male (1 to 3¼ inches in length) and female (2 to 5 inches in length) on separate trees) may be greenish-yellow, reddish or yellowish-green; flowering generally takes place between early February and early May; the cottony seeds are fuzzy and white. HABITAT: Within the range of this species it has been reported from mountains; mesas; plateaus; along canyons; canyon bottoms; foothills; along bouldery hills; bouldery-loamy and rocky slopes; gravelly and clayey flats; basins; valley floors; springs; along streams; streambeds; along creeks; sandy-loamy creekbeds; along rivers; sandy-clayey-loamy riverbeds; along washes; drainages; waterholes; oases; cienegas; along banks of streams, creeks and rivers; edges of ponds and lakes; margins of playas; along shores of lakes; gravel and sand bars; terraces; bottomlands; floodplains; mesquite bosques; stock tanks; edges of reservoirs; along ditches; bouldery-gravelly-sandy riparian areas, and disturbed areas growing in areas where subsurface water is available in bouldery, bouldery-gravelly-sandy, bouldery-loamy, rocky, gravelly and sandy ground; sandy loam and sandy-clayey loam ground; clay ground, and 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. The species, *Populus fremontii*, was reported to have been utilized by native peoples of North America and could be investigated to determine its value as a home garden or commercial food and/or fiber crop; it was also noted as having been used as an indicator of planting seasons; as tools; as musical instruments, fuel and as a drug or medication. The Frémont Cottonwood may have a life span of more than 130 year of age. It reaches reproductive maturity in 5 to 10 years. Use as a specimen plant in a large area and as a re-vegetation plant for the areas immediately adjacent to the main channel of streams, creeks, and rivers. Consider planting male trees if the "cotton" produced by female trees is objectionable. The cottonwood provides food for Beavers, Elk, Deer, and squirrels, and the Golden Eagle (*Aquila chrysaetos*), Swainson's Hawk (*Buteo swainsoni*), Red-tailed Hawk (*Buteo jamaicensis*), Bell's Vireo (*Vireo bellii*) build nests in the crown. Cottonwood bark is a principle food of the American Beaver (*Castor canadensis*), and the stems of poplars are used in the construction of their dams. The trees are sometimes parasitized by the Yellow (or Colorado Desert) Mistletoe (*Phoradendron macrophyllum* subsp. *macrophyllum*). Native stands of Cottonwood Trees have been decimated due to the altering of natural water flows, the clearing and development of the flood plains, stream channelization and the loss of suitable recruitment sites. *Populus fremontii* subsp. *fremontii* is native to southwest-central and southern

North America. *5, 6, 13, 15, 18 (species), 26 (species, color photograph of species), 28 (species, color photograph of the species), 43 (042410), 46 (Pages 208-209), 48 (species), 52 (species, color photograph of the species), 53 (species), 58 (species), 63 (042410 - color presentation of bark), 85 (042410), 115 (color presentation of the species), 127 (species), **HR***

Populus arizonica (see *Populus fremontii* subsp. *fremontii* and/or *Populus fremontii* subsp. *mesetae*)

Populus fremontii var. *arizonica* (see *Populus fremontii* subsp. *fremontii*)

Populus fremontii var. *macdougalii* (see *Populus fremontii* subsp. *fremontii*)

Populus fremontii var. *pubescens* (see *Populus fremontii* subsp. *fremontii*)

Populus fremontii var. *thornberi* (see *Populus fremontii* subsp. *fremontii*)

Populus fremontii var. *toumeyi* (see *Populus fremontii* subsp. *fremontii*)

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), **138***

Maurandya antirrhiniflora (see *Maurandella antirrhiniflora*)

***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; in 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)*

Simaroubaceae: The Quassia-wood Family

***Castela emoryi* (A. Gray) R.V. Moran & R.S. Felger: Crucifixion Thorn**

SYNONYMY: *Holacantha emoryi* A. Gray. COMMON NAMES: Cascara Amarga, Castela, Chaparro Amargosa, Corona de Cristo (Spanish), Crucifixion Thorn, Emory Crucifixion Thorn, Holacantha (Latin for allthorn), Rosario. DESCRIPTION: Terrestrial perennial deciduous (leafless most of the year) shrub or tree (3 to 16½ feet in height); the color of the stems and stout branches has been described as being blue-green, gray-green or dark green; the flowers are cream-yellow, gray-green, greenish-yellow, rose-pink (salmon) or yellow; flowering generally takes place between mid-April and early August (additional records: two for late September and one for mid-November); the persistent fruits are green changing to yellow, red, dark brown and finally black as they ripen. HABITAT: Within the range of this species it has been reported from mountains; rocky canyons; hills; cobbly-gravelly and sandy slopes; bajadas; sand dunes; gravelly-silty plains; sandy and silty flats; valley floors; gravelly-silty valley bottoms; roadsides; along and in rocky, gravelly-sandy and sandy washes; around lakes; sandy, sandy-silty and silty lakebeds; silty playas; shallow depressions; margins of dry lakes and playas;

mudflats; bottomlands; floodplains; riparian areas, and disturbed areas growing in damp and dry desert pavement; rocky, cobbly-gravelly, gravelly, gravelly-sandy and sandy ground; sandy clay and clay ground, and gravelly silty, sandy silty and silty ground, occurring from sea level to 2,400 feet in elevation in the 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; it was noted as having been used as a drug or medication. The branches are heavily armed with thorns; the fruits remain on the plant for five to seven years. This is a PERIPHERAL-DISJUNCT POPULATION. *Castela emoryi* is native to southwest-central and southern North America. *5, 6, 8, 13, 28 (color photograph), 43 (052010), 46 (recorded as *Holacantha emoryi* Gray, Pages 495-496), 48, 53 (recorded as *Holacantha emoryi* A. Gray), 63 (052010), 85 (052010 - color presentation), 91, 127, **HR***

Holacantha emoryi (see *Castela emoryi*)

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, **HR***

Solanaceae: The Potato Family

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

COMMON NAMES: Desert-thorn, Lycium, Thornbush, Wolfberry. *43 (052010), 46 (Pages 749-752), 63 (040207), **WTK** (July 4, 2005)*

***Lycium andersonii* A. Gray: Water Jacket**

COMMON NAMES: Anderson Desert Thorn, Anderson Lycium, Anderson Thornbush, Anderson's Thornbush, Anderson Wolfberry, Barchata, Boxthorn, Cacaculo, Desert-thorn, Desert Wolfberry, Manzanita, Narrowleaf Wolfberry, Squawberry, Tomatillo, Water Jacket, Water-jacket, Wolfberry, Wright Desert Thorn, Wright Lycium. DESCRIPTION: Terrestrial perennial drought-deciduous shrub (1 to 10 feet in height and about the same in width, one plant was described as being 2 feet in height and width with a trunk diameter of 1 inch, one plant was described as being 3 feet in height and width with a trunk diameter of 1½ inches, one plant was described as being 4 feet in height and 6½ feet in width); the thorn-tipped older branches are grayish; the newer growth is brownish; the spatula-shaped leaves are dark green; the flowers (to ½ inch in length) may be light blue, blue, blue-lavender, pale bluish-cream, cream, cream-white, pale lavender, lavender, pink, light purple, purple, dark purple, pale violet, white, whitish or whitish with a pink tinge; flowering generally takes place between late September and late May (additional records: two for mid-June, four for late June, one for early July, one for mid-July, two for late July, one for early August, four for late August and two for early September); the juicy fruits (to 3/8 inch in length) are orange, orange-red, bright red, reddish-orange or salmon. HABITAT: Within the range of this species it has been reported from mountains; shaley mountainsides; sandy mesas; plateaus; cliffs; rocky, rocky-gravelly, gravelly, sandy and sandy-loamy canyons; along canyon walls; rocky and sandy canyon bottoms; gorges; along bases of cliffs; rocky talus; crevices in rocks; bluffs; buttes; knolls; rocky ledges; ridges; foothills; hills; rocky hillsides; bouldery-gravelly, rocky, rocky-gravelly, rocky-sandy, rocky-clayey, shaley, cindery, gravelly and sandy slopes; alluvial fans; gravelly bajadas; amongst boulders and rocks; rocky alcoves; lava flows; sand dunes; pockets of wind-blown silt-like soils; gravelly and sandy plains; cindery, gravelly, sandy, sandy-silty and clayey flats; loamy basins; cindery valley floors; loamy valley bottoms; along railroad right-of-ways; along sandy roadsides, along rocky, gravelly and sandy arroyos; rocky draws; gullies; seeps; in shale and clay around springs; creekbeds; along rocky-sandy rivers; rocky riverbeds; along and in muddy and rocky, rocky-gravelly, rocky-sandy, rocky-clayey, gravelly, gravelly-sandy, sandy, sandy-silty washes; drainages; within drainage ways; playas; boggy areas; swales; along rocky and sandy banks of arroyos and washes; along sandy edges of streambeds and washes; along sandy-loamy margins of washes and ponds; shores of rivers; rocky benches; shaley and sandy terraces; sandy and loamy bottom lands; flood plains; mesquite bosques; fence lines; canals, and shaley and gravelly-sandy riparian areas growing in dry desert pavement; bouldery, bouldery-gravelly, rocky, rocky-gravelly, rocky-gravelly-sandy, rocky-sandy, shaley, cobbly, cindery, gravelly, gravelly-sandy and sandy ground; sandy loam, silty loam and loam ground; rocky clay and clay ground, and sandy silty and silty ground, occurring from 300 to 5,800 feet in elevation in the woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES:

This plant may be an attractive component of a restored native habitat. This plant was reported to have been utilized by native peoples of North America and could be investigated to determine its value as a home garden or commercial food and/or beverage crop. The Black-chinned Hummingbird (*Archilochus alexandri*) and Broad-billed Hummingbird (*Cynanthus latirostris*) have been observed visiting the flowers and birds and mammals feed on the berries. The Anderson Lycium provides resting and feeding cover for small wildlife including the Masked Bobwhite Quail (*Colinus virginianus* subsp. *ridgwayi*). *Lycium andersonii* is native to southwest-central and southern North America. *5, 6, 10, 13, 15, 18, 28 (color photograph), 43 (043010), 46 (Pages 751-752), 58, 63 (043010 - color presentation), 77, 85 (041030 - color presentation), 127, **138***

***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)*

***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 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. The flowers are utilized by hummingbirds when other nectar-rich sources are not available. *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, **138***

Nicotiana trigonophylla (see *Nicotiana obtusifolia* var. *obtusifolia*)

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)*

Tamaricaceae: The Tamarix Family

***Tamarix ramosissima* C.F. von Ledebour: Saltcedar**

COMMON NAMES: Atarfe, Perstamarisk (Afrikaans), Pink Tamarisk, Pino Salado, Salado, Salt Cedar, Salt-cedar, Saltcedar, Talaya, Tamarisco, Tamarisk, Tamarix, Tamariz, Taray. DESCRIPTION: Terrestrial perennial winter deciduous or evergreen shrub or tree (2 to 33 feet in height, one shrubby tree was recorded as being 20 feet in height with a crown 20 feet in width); the bark is red or reddish-brown; the scale-like leaves are grayish-green; the flowers may be pale lavender, lavender-pink, pale pink, pale pink-purple, pink, deep pink, pink-lavender, pink-white, pinkish-purple, purple, purple-pink, red, deep rose, white or white-pink; flowering generally takes place between early March and late November (additional records: one for early January, two for early February and one for mid-December). HABITAT: Within the range of this species it has been reported from mountains; plateaus; rocky and stony canyons; bouldery-gravelly-sandy and sandy canyon bottoms; meadows; bluffs; ledges; foothills; rocky and cindery slopes; rocky outcrops; sand dunes; hummocks; plains; sandy flats; sandy basins; valley floors; along sandy roadsides; along and in sandy arroyos; along bottoms of arroyos; draws; seeps; around springs; along streams; streambeds; along creeks; along and in bouldery-cobbly-sandy, rocky, rocky-sandy and sandy creekbeds; in clayey-loams along rivers; sandy and sandy-loamy riverbeds; along and in bouldery-sandy and sandy washes; along rocky-loamy drainages; around pebbly-sandy waterholes; lagoons; lakebeds; playas; silty marshy areas; saltwater marshes; clayey depressions; along sloughs; clayey banks of streambeds and rivers; rocky-sandy, gravelly and sandy edges of arroyos, streams, rivers, washes, pools, ponds, lakes and bogs; along muddy, rocky, sandy and clayey margins of creeks, pools, ponds and lakes; clayey shores of lakes; mudflats; sand bars; sandy-clayey beaches; sandy benches; sandy terraces; rocky bottomlands; floodplains; margins of stock tanks (charcos); reservoirs; canals; canal banks; along edges of canals; sandy ditches; ditch banks; rocky-gravelly-sandy, rocky-sandy and sandy riparian areas, and disturbed areas growing in wet and moist bouldery-cobbly-sandy, bouldery-gravelly-sandy, rocky, rocky-gravelly-sandy, rocky-sandy, stony, cindery, gravelly, pebbly-sandy and sandy ground; rocky loam, sandy loam and clayey loam ground; sandy clay and clay ground, and sandy silty ground, occurring from sea level to 7,100 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. Saltcedar is similar to and may be confused with Smallflower Tamarisk (*Tamarisk parviflora* DC.), Tamarisk flowers are 5-petaled and Smallflower Tamarisk flowers are 4-petaled, and the bark on the stems of Saltcedar is reddish-brown whereas on Smallflower Tamarisk it is brown to deep purple. Some Arizona populations of *Tamarix ramosissima* may have historically been referred to as *Tamarix pentandra*. Some botanists consider *Tamarix ramosissima* to be a synonymous with *Tamarix chinensis*. *Tamarix ramosissima* is native to eastern Europe and western and central Asia. *5, 6, 13, 18 (note under *Tamarix chinensis*), 22 (color photograph), 26 (note), 43 (050810), 46 (genus, no record of species, Page 557), 58, 63 (050810 - color presentation), 77, 85 (050810 - color presentation), 91, 101 (color photograph), 109 (color photograph of a Tamarix), **HR***

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), **138***

Celtis pallida (see *Celtis ehrenbergiana*)

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

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

Urticaceae: The Nettle Family

***Parietaria* C. Linnaeus: Pellitory**

COMMON NAMES: Pellitory. *43 (070810), 46 (Page 223), 63 (070810), **138***

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; in 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, **138** (recorded as *Aloysia wrightii*)*

Lippia wrightii (see *Aloysia wrightii*)

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, Desert Ironwood 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: 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. When removing the Mesquite Mistletoe from the trees and shrubs on your property don't remove all of it, consider leaving some of the plants for the wildlife. The Phainopepla (*Phainopepla nitens*) feeds on the berries and disperses the seeds

to other host plants and Verdins nest in the stems. *Phoradendron californicum* is native to southwest-central and southern North America. *5, 6, 13 (color photograph), 15, 16, 28 (color photograph), 43 (051710 - *Phoradendron californicum* var. *distans* Trel. in Trel.), 46 (recorded as *Phoradendron californicum* Nutt., Page 224 and *Phoradendron californicum* Nutt. var. *distans* Trelease, Page 224), 58, 63 (051410 - color presentation), 77, 80 (Species of the genus *Phoradendron* are considered to be Rarely Poisonous and Suspected Poisonous Range Plants. "Cattle may be killed by browsing these parasitic forbs, but plants are unpalatable and poisoning is rare. Also children may be poisoned by eating the berries."), 85 (051410 - color presentation), 97, 115 (color presentation), 127, **WTK** (July 4, 2005)*

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

Zygophyllaceae: The Creosote-bush Family

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 flood plains 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), **138** (recorded as *Fagonia californica* subsp. *longipes*)*

Fagonia longipes (see *Fagonia laevis*)

Larrea divaricata (see *Larrea tridentata* var. *tridentata*)

Larrea divaricata subsp. *tridentata* (see *Larrea tridentata* var. *tridentata*)

***Larrea tridentata* (A.P. de Candolle) F.V. Coville var. *tridentata*: Creosote Bush**

SYNONYMY: *Larrea divaricata* auct. non A.J. Cavanilles, *Larrea divaricata* A.J. Cavanilles subsp. *tridentata* (A.P. de Candolle) R.S. Felger & C.H. Lowe. COMMON NAMES: Chaparral, Coville Creosotebush, Creosote Bush, Creosote-bush, Creosotebush, Gobernadora, Greasewood (erroneously called), Guamis, Hediondilla (Spanish - for Little Bad Smeller). DESCRIPTION: Terrestrial perennial

evergreen shrub (20 inches to 13 feet in height and about the same in width); the bark is gray; the leaves are bright glossy green or yellow-green; the flowers (½ to 1 inch in diameter) are yellow or yellow-white; flowering takes place throughout the year with the peak blooming periods occurring in the spring, between March and April, and then again between November and December; the round, fuzzy fruits (¼ inch in diameter) are gray, reddish, white or rust colored. HABITAT: Within the range of this species it has been reported from mountains; rocky, gravelly and sandy mesas; plateaus; rims of canyons; sandy canyons; canyon bottoms; talus slopes; sandy pockets of soil; rocky ridges; foothills; hills; hillsides; rocky and gravelly slopes; alluvial fans; gravelly and sandy bajadas; rocky outcrops; amongst boulders and rocks; sand dunes; sandy plains; cindery-gravelly, gravelly and sandy flats; valley floors; sandy roadsides; arroyos; bottoms of arroyos; riverbeds; along and in gravelly-sandy and sandy washes; sandy banks of streams, creeks and rivers; edges of washes; gravelly and sandy terraces; floodplains; mesquite bosques; riparian areas, and disturbed areas growing in dry bouldery, rocky, rocky-sandy, stony, gravelly, gravelly-sandy and sandy ground; rocky-clayey loam and clayey loam ground; sandy clay ground, and rocky-sandy silty and silty ground, occurring from below sea level to 5,000 feet in elevation in the woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. This plant was reported to have been utilized by native peoples of North America; it was noted as having been used as a building material, as tools, in the making of brooms, brushes and musical instruments, as a drug or medication and in body art. Older stems of the Creosote Bush may be 40 to 90 years of age. Using Creosote Bush in the restoration of disturbed sites may increase water infiltration and storage, transplants recommended over spot-seeding and rodent protection for the transplanted seedlings is necessary. When planting a Creosote Bush consider planting a small Desert Night-blooming Cereus (*Peniocereus greggii* var. *transmontanus*) at the base of the plant. The branches will provide support and the roots will protect the tuber of the cereus from hungry Javelinas. The Creosote Bush is the characteristic plant of the southwestern deserts in North America with its distribution very closely delineating the desert regions. As the Creosote Bush ages the older central stems of the plant die off and new stems form at the outer edge of the crown. New stems are not created at the center of the plant. As the crown of the plant expands a “clonal ring”, made up of genetically identical individual shrublets, develops which continues the outward expansion of the ring eventually reaching several yards in diameter. It has been estimated that some of the older rings approach from 9,400 to 11,700 years of age. The Creosote Bush provides cover for many animals; Lac Scale insects (*Tachardiella larreae*), jackrabbits, desert woodrats and other small mammals feed on this plant; stem galls are produced in response to the Creosote Gall midge (*Asphondylia* sp.), and the Desert Tortoise (*Gopherus agassizi*) often digs its shelter under the base of the plant where the roots help to stabilize the soil. *Larrea tridentata* var. *tridentata* is native to southwest-central and southern North America. *5, 6, 13 (color photograph), 16, 18, 26 (species, recorded as *Larrea tridentata*, color photograph of species), 28 (species, recorded as *Larrea tridentata*, color photograph of species), 43 (051710 - *Larrea tridentata* Coville, *Larrea divaricata* Cav. subsp. *tridentata* (Sessé & Moc. ex DC.) Felger), 46 (species, recorded as *Larrea tridentata* (DC.) Coville: “An outstanding xerophyte and a very important element of the perennial desert flora in southern and western Arizona. ... Creosote-bush has a strong characteristic odor, especially noticeable when the foliage is wet. The plant is ordinarily not touched by livestock, although it is reported that sheep, especially pregnant ewes, have been killed by partaking of it. This plant is reported to cause dermatitis in exceptional persons who are allergic to it.”, Page 491), 48, 63 (051610 - color presentation), 77 (color photograph #101), 80 (This species is listed under Rarely Poisonous and Suspected Poisonous Range Plants. “Early reports accusing this common desert shrub of being poisonous have been proven wrong.”), 85 (051610 - color presentation), 91, 101 (species, color photograph of species), 107, 115 (color presentation), 127, **138** (recorded as *Larrea divaricata*), **WTK** (July 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 AVES: The BIRDS

Columbidae: The Dove and Pigeon Family

***Zenaida macroura* (C. Linnaeus): Mourning Dove**

SYNONYMY: *Zenaidura macroura* (C. Linnaeus). COMMON NAMES: Hohhi (Tohono O'odham), Huilota (Hispanic), Paloma Triste (Hispanic), Mourning Dove, Turtle Dove, Wild Dove. HABITS: Feeds on fruit, insects and seeds. Nests are loose platforms made of forbs, grasses, leaves, rootlets, sticks and twigs located in cacti, shrubs, trees and on the ground. HABITAT: Within the range of this species it has been reported from the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. *14 (subspp. *carolinensis* (C. Linnaeus) and *marginella* (S.W. Woodhouse) - 071806), 20, 55, 69, 73, 84, 93, 106 (071806), **HR***

Zenaidura macroura (see *Zenaida macroura*)

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** (*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 (*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: *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** (*Antilocapra americana mexicana* Merriam - Distribution: Southeastern 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** (*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 (*Ovis canadensis mexicana* Merriam - Distribution: Probably formerly statewide in mountainous situations. Figure 112, Page 257), **HR***

***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: *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** (*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** (*Canis latrans* Say. Coyote. Statewide (120 - 9,100 feet).), 65 (color photograph), 73, 100 (color photograph), 106 (052906), 118 (*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: *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** (*Canis latrans mearnsi* Merriam - Distribution: Statewide. Figure 87, Page 217)*

***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** (*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 (*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: *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** (*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 (*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** (*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 velox (see Note under *Vulpes macrotis*)

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** (*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 (*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: *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** (*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** (*Odocoileus virginianus* (Zimmermann). White-tailed Deer. Southeastern Arizona (1,200 - 9,000 feet).),

65, 73, 100 (color photograph), 106 (052906), 118 (*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: *Odocoileus virginianus* (Zimmermann). White-tailed Deer. Southeastern Arizona (1,200 - 9,000 feet).), 65, 73 (species), 100 (species, color photograph of species), 106 (052906 - species), **118** (*Odocoileus virginianus couesi* (Coues & Yarrow) - Distribution: Southern Arizona. Figure 110, Page 254)*

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** (*Felis concolor* Linnaeus. Mountain Lion. Statewide (200 - 8,000 feet).), 65, 73, 100 (color photograph), 106 (052906), **118** (*Felis concolor azteca* Merriam - Distribution: Statewide except extreme western and northwestern parts; *Felis concolor browni* (Merriam) - Distribution: Southwestern part of the state, and *Felis concolor kaibabensis* Nelson and Goldman - Distribution: Northwestern Arizona, north and west of the Colorado River. Figure 105, Page 245)*

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

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

Felis rufus (see *Lynx rufus*)

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

***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: *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** (*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** (*Lynx rufus* (Schreber). Bobcat. Statewide (120 - 9,300 feet).), 65, 73, 100 (color photograph), 106 (052906), 118 (*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: *Lynx rufus* (Schreber). Bobcat. Statewide (120 - 9,300 feet).), 65, 73 (species), 100 (species, color photograph of species), 106 (052906 - spies), **118** (*Lynx rufus baileyi* Merriam - Distribution: Statewide. Figure 106, Page 247)*

***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: *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** (*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*)

Geomyidae: The Pocket Gopher Family

***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: *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** (*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* 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: *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** (*Chaetodipus baileyi baileyi* Merriam - Distribution: Grasslands of southeastern Arizona. Figure 51, Page 133)*

***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: *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** (*Perognathus hispidus conditi* Allen - Distribution: Grasslands of southeastern Arizona. Figure 51, Page 132)*

***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: *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 - *Perognathus intermedius*), 100 (species), 106 (051007 - species), **118** (*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* 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: *Perognathus penicillatus* Woodhouse. Desert Pocket Mouse. Widely distributed in desert and low grasslands of southern and western Arizona (120 - 5,200 feet).), 65 (genus), 73 (species, *Perognathus penicillatus*), 100 (species, color photograph of species), 106 (051007 - species), **118** (*Perognathus penicillatus pricei* Allen - Distribution: Known from south-central Arizona. Figure 53, Page 137)*

***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: *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** (*Dipodomys merriami merriami* Mearns - Distribution: Occurs throughout most of the western and southern part of the state. Figure 56, Page 145)*

***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: *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** (*Dipodomys spectabilis perblandus* Goldman - Distribution: Known from the grasslands of southern Pinal and Pima County. Figure 55, Page 143)*

***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: *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** (*Perognathus amplus taylori* Goldman. Distribution: Known from south central Arizona. Figure 50, Page 129)*

***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: *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** (*Perognathus flavus flavus* Baird - Distribution: Southeastern part of the state. Figure 48, Page 124)*

Perognathus baileyi subsp. *baileyi* (see *Chaetodipus baileyi* subsp. *baileyi*)

Perognathus hispidus subsp. *conditi* (see *Chaetodipus hispidus* subsp. *conditi*)

Perognathus intermedius subsp. *intermedius* (see *Chaetodipus intermedius* subsp. *intermedius*)

***Perognathus longimembris* subsp. *pimensis* Huey: Little Pocket Mouse**

COMMON NAME: Little Pocket Mouse. HABITS: Feeds on greens and seeds. HABITAT: Within the range of this species it has been reported from the scrub, grassland, desertscrub and wetland ecological formations. *14 (082308), 55 (recorded as *Perognathus longimembris* (Coues). Little Pocket Mouse. Known from scattered localities in the western part of the state (500 - 4,500 feet).), 65 (genus), 73 (species), 85 (052906), 100 (species, color photograph of species), 106 (082308), **118** (recorded as *Perognathus longimembris pimensis* Huey - Distribution: Southcentral part of the state. Figure 49, Page 127)*

Perognathus penicillatus subsp. *pricei* (see *Chaetodipus penicillatus* subsp. *pricei*)

Leporidae: The Hare and Rabbit Family

***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: *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** (*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** (*Lepus californicus* Gray. Black-tailed Jack Rabbit. Statewide.), 65, 73, 100 (color photograph), 106 (052906), 118 (*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: *Lepus californicus* Gray. Black-tailed Jack Rabbit. Statewide.), 65 (species), 73 (species), 100 (species, color photograph of species), 106 (052906 - species), **118** (*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** (*Sylvilagus audubonii* (Baird). Desert Cottontail. Common at elevations below 6,000 feet throughout the state.), 65, 73, 100 (color photograph), 106 (052906), 118 (*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: *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** (*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* 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: *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** (*Conepatus mesoleucus venaticus* Goldman - Distribution: South central and southeastern Arizona. Figure 102, Page 241)*

Conepatus mesoleucus subsp. *venaticus* (see *Conepatus leuconotus* subsp. *venaticus*)

***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: *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** (*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** (*Mephitis mephitis* (Schreber). Striped Skunk. Statewide (300 - 9,000 feet).), 65 (color photograph), 73, 100 (color photograph), 106 (053006 - genus), 118 (*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: *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** (*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** (*Spilogale putorius* (Linnaeus). Spotted Skunk. Probably statewide (120 - 7,000 feet).), 65 (*Spilogale putorius*), 73 (*Spilogale gracilis*), 100 (*Spilogale gracilis*, color photograph), 106 (053006 - genus), **118** (*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* 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: *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** (*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 (*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** (*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** (*Tadarida molossa* (Pallas). Big Free-tailed Bat. Rare; statewide, mainly at elevations below 5,000 feet.), 73, 100 (color photograph), 106 (053006 - family), **118** (*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** (*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 (*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: *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** (*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* 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: *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** (*Neotoma albigula albigula* Hartley - Distribution: Occurs commonly south of the Mogollon Rim. Figure 76, Page 193)*

***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: *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** (*Onychomys torridus torridus* (Coues) - Distribution: Southeastern quarter of the state. Figure 62, Page 161)*

***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: *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** (*Peromyscus eremicus eremicus* (Baird) - Distribution: Almost all of the western and southern part of the state. Figure 67, Page 171)*

***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** (*Peromyscus maniculatus* (Wagner). Deer Mouse. Statewide (120 - 11,400 feet).), 65 (genus), 73, 100 (color photograph), 106 (053006 - genus), 118 (*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: *Peromyscus maniculatus* (Wagner). Deer Mouse. Statewide (120 - 11,400 feet).), 65 (genus), 73 (species), 100 (species, color photograph of species), 106 (053006 - genus), **118** (*Peromyscus maniculatus sonoriensis* (Le Conte) - Distribution: Grasslands at lower elevations throughout the state. Figure 69, Page 177)*

***Peromyscus merriami* subsp. *merriami* Mearns: Merriam's Mouse**

COMMON NAMES: Merriam's Mouse, Mesquite Mouse. HABITS: The species probably feeds on invertebrates and seeds. HABITAT: Within the range of this species it has been reported from the grassland, desertscrub and wetland ecological formations. *14 (082308), 55 (species: *Peromyscus merriami* Mearns. Merriam's Mouse. Known from scattered localities is Pinal, Pima and Santa Cruz counties (1,600 - 3,600 feet).), 73 (note on species), 100 (species), 106 (072306 - genus, listing of species), **118** (*Peromyscus merriami merriami* Mearns - Distribution: Known from mesquite bosque situations in southern Arizona. Figure 68, Page 174)*

***Reithrodontomys megalotis* (Baird): Western Harvest Mouse**

COMMON NAME: Western Harvest Mouse. HABITS: Feeds on arachnids, grasses, insects (larvae and adults) and seeds of grasses, forbs and shrubs. Spherical nests are made of woven plant material and lined with plant fibers and can be located near the ground or above the ground in dense vegetation. HABITAT: Within the range of this species it has been reported from the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. *14 (050907 - subspp. *arizonensis*; *aztecus* J.A. Allen, and *megalotis* (Baird)), **55** (*Reithrodontomys megalotis* (Baird). Western Harvest Mouse. Statewide (120 - 8,000 feet).), 73, 100 (color photograph), 106 (053006), 118 (*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: *Reithrodontomys megalotis* (Baird). Western Harvest Mouse. Statewide (120 - 8,000 feet).), 73 (species), 100 (species, color photograph of species), 106 (053006), **118** (*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** (*Taxidea taxus* (Schreber). Badger. Statewide (120 - 7,000 feet).), 65, 73, 100 (color photograph), 106 (053006), **118** (*Taxidea taxus* - Distribution: Statewide. Figure 98, Page 235)*

Phyllostomidae: The Leaf-nosed Bat Family

***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: *Leptonycteris nivalis* (Saussure). Long-nosed Bat. Locally common in moist caves. Known from Pinal, Pima, Santa Cruz and Cochise Counties.), 92 (*Leptonycteris sanborni*), 100 (species, color photographs - *Leptonycteris curasoae* and *Leptonycteris nivalis*), 106 (053006), 110 (*Leptonycteris sanborni*), **118** (*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 (*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** (*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** (*Bassariscus astutus* (Lichenstein). Ringtail. Statewide (120 - 6,500 feet).), 65 (color photograph), 73, 100 (color photograph), 106 (051107), 118 (*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: *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** (*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 (*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** (*Nasua narica pallida* Allen - Distribution: Mountains of southern and southeastern part of the state. Figure 95, Page 230)*

***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: *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** (*Procyon lotor mexicanus* Baird - Distribution: Southeastern Arizona. Figure 94, Page 229)*

***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 (*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** (*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 (*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** (*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** (*Citellus variegatus* (Erxleben). Rock Squirrel. Statewide, especially at elevations below 6,000 feet.), 65 (color photograph), 73, 100 (color photograph), 106 (053106 - genus), 118 (*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: *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** (*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** (*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 (*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: *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** (*Notiosorex crawfordi crawfordi* (Coues) - Distribution: Probably occurs statewide at elevations below 6000 feet. Figure 5, Page 30)*

Tayassuidae: The Javelina Family

Dicotyles tajacu (see *Peccari tajacu*)

Dicotyles tajacu subsp. *sonoriensis* (see *Peccari tajacu* subsp. *sonoriensis*)

Pecari angulatus (see footnote 65 under *Peccari tajacu* subsp. *sonoriensis*)

***Peccari tajacu* (C. Linnaeus): Collared Peccary**

SYNONYMY: *Dicotyles tajacu* (C. Linnaeus), *Tayassu tajacu* (C. Linnaeus). COMMON NAMES: Collared Peccary, Jabalina (Hispanic), Javelina, "Musk Hog", Peccary. HABITS: Feeds on agaves, amphibians, berries, bulbs, fruits, fungi, grasses, insects, mesquite beans, nuts, roots, palm nuts,

succulent plants, prickly-pear and other cacti, reptiles, rodents, roots, sotol, tubers and worms. Javelina bed down during the day in thick brush and prickly-pear thickets and at night in burrows usually under the roots of trees. HABITAT: Within the range of this species it has been reported from forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. *14 (050907 - subspp. *angulatus* (Cope) and *sonoriensis* (Mearns)), 55 (*Tayassu tajacu* (Linnaeus), Javelina. Southeastern and central parts of the state (1,200 - 6,000 feet).), 65 (*Pecari angulatus*), 73 (*Dicotyles tajacu*), 100 (*Tayassu tajacu*, color photograph), 106 (051107 - *Tayassu tajacu*), 118 (*Tayassu tajacu sonoriensis* (Mearns) - Distribution: Southern part of the state. Figure 107, Page 249), **HR***

***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: *Tayassu tajacu* (Linnaeus). Javelina. Southeastern and central parts of the state (1,200 - 6,000 feet).), 65 (species: *Pecari angulatus*), 73 (species: *Dicotyles tajacu*), 100 (species: *Tayassu tajacu*, color photograph of species), 106 (051107 - species: *Tayassu tajacu*), **118** (*Tayassu tajacu sonoriensis* (Mearns) - Distribution: Southern part of the state. Figure 107, Page 249)*

Pecari angulatus (see footnote 65 under *Peccari tajacu*)

Pecari angulatus (see footnote 65 under *Peccari tajacu* and *Peccari tajacu* subsp. *sonoriensis*)

Tayassu tajacu (see *Peccari tajacu*)

Tayassu tajacu subsp. *sonoriensis* (see see *Peccari tajacu* subsp. *sonoriensis*)

Ursidae: The Bear Family

***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: *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** (*Euarctos americanus amblyceps* (Baird) - Distribution: Probably formerly occurred throughout the state, at least in mountainous areas. Figure 91, Page 224)*

Euarctos americanus subsp. *amblyceps* (see *Ursus americanus* subsp. *amblyceps*)

***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 (*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 (*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 (*Ursus horribilus* Ord. Grizzly Bear. Formerly throughout the mountainous areas of the state, now extinct in Arizona.), 73 (*Ursus horribilus*), 100 (species: *Ursus arctos*, color photograph), 106 (051207 - *Ursus arctos* subsp. *horribilus* Ord), **118** (*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** (*Antrozous pallidus* (Le Conte). Pallid Bat. Locally common throughout the state.), 73, 92 (color photograph), 100 (color photograph), 106 (053106), 118 (*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: *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** (*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*)

***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** (*Eptesicus fuscus* (Palisot de Beauvois). Big Brown Bat. Locally common throughout the state.), 73, 92 (color photograph), 100 (color photograph), 106 (053106), 118 (*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: *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** (*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 (*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** (*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 (*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** (*Lasionycteris noctivagans* (Le Conte) - Distribution: Probably statewide, at least during certain seasons of the year. Figure 18, Page 48)*

***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** (*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 (*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: *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** (*Lasiurus cinereus cinereus* (Beauvois) - Distribution: Statewide. Figure 22, Page 55)*

***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** (*Myotis californicus* Audubon & Bachman. California Myotis. Locally common throughout the state.), 73, 100 (color photograph), 106 (053106 - genus), 118 (*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. *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: *Myotis californicus* N. Miller), 14 (051007 - subspp. *californicus* (Audubon & Bachman) and stephensi (Dalquest)), 55 (species: *Myotis californicus* Audubon & Bachman. California Myotis. Locally common throughout the state.), 73 (species), 100 (species), 106 (genus -

053106), **118** (*Myotis californicus stephensi* Dalquest - Distribution: Northern and western part of the state. Figure 16, Page 45)*

***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: *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** (*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** (*Myotis yumanensis* (H. Allen). Yuma Myotis. Locally common, statewide in distribution.), 73, 100 (color photograph), 106 (072306 - genus with a listing of species), 118 (*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: *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** (*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** (*Pipistrellus hesperus* (H. Allen). Western Pipistrelle. Common throughout the state.), 73, 100 (color photograph), 106 (053106 - genus), 118 (*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: *Pipistrellus hesperus*

(H. Allen). Western Pipistrelle. Common throughout the state.), 73 (species), 100 (species, color photograph of species), 106 (053106 - genus), **118** (*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** (*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 (*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: *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** (*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:

Arizona Atlas & Gazetteer. 2002. DeLorme.
www.delorme.com

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

Tucson Metropolitan Street Atlas 2005 Edition. Wide World of Maps, Inc., Phoenix, Arizona.
www.maps4u.com

(2) Physiographic Province Mapping:

Walker, Henry P. and Don Bufkin. 1979. Historical Atlas of Arizona, University of Oklahoma Press, Norman, Page 4A and Map.

(3) Soils Mapping:

Arizona General Soil Map, July 1975, United States Department of Agriculture, Soil Conservation Service and the University of Arizona Agricultural Experiment Station, compiled by J.E. Jay, Y.H. Havens, D.M. Hendricks, D.F. Post and C.W. Guernsey.

Richardson, M.L. and M.L. Miller. March 1974. United States Department of Agriculture - Soil Conservation Service in cooperation with the Pima County Natural Resource Conservation District, Report and Interpretations for the General Soil Map of Pima County, Arizona and General Soil Map Pima County Arizona. Arizona General Soil Map, July 1975, United States Department of Agriculture - Soil Conservation Service and the University of Arizona Agricultural Experiment Station, compiled by J.E. Jay, Y.H. Havens, D.M. Hendricks, D.F. Post and C.W. Guernsey.

(4) Biotic Communities Mapping and Definitions

Ecological formations used in the listings follow those presented in the mapping for the Biotic Communities of the Southwest.

Brown, David E. 1982. Biotic Communities of the American Southwest – United States and Mexico, Desert Plants, Volume 4, Numbers 1-4, Published by the University of Arizona for the Boyce Thompson Southwestern Arboretum, Tucson, Arizona.

Brown, David E. and Charles H. Lowe. Revised June 1983. Biotic Communities of the Southwest, August 1980, General Technical Report RM-78, United Stated Department of Agriculture, Forest Service, Rocky Mountain Forest and Range Experiment Station.

Brown, David E., Charles H. Lowe and Charles P. Pase. June 1980. A Digitized Systematic Classification for Ecosystems with an Illustrated Summary of the Natural Vegetation of North America, United States Department of Agriculture, Forest Service, General Technical Report RM-73

(5) Nomenclature:

for Plants:

Generally follows that presented by The Biota of North America Program of the North Carolina Botanical Garden (BONAP) with A Synonymized Checklist of the Vascular Flora of the United States, Puerto Rico and the Virgin Islands, Full Index 1998.
http://www.bonap.org/
http://www.csdl.tamu.edu/FLORA/b98/check98.htm

The International Plant Names Index (2004, 2005)
Published on the Internet:
http://www.ipni.org [accessed 2004, 2005, 2006]

(http://plants.usda.gov). National Plant Data Center, Baton Rouge, LA 70874-4490 USA

for Vertebrate Animals:

Section on Arizona Habitats, The University of Arizona Press, Tucson, Arizona and E. Lendell Cockrum. 1960. The Recent Mammals of Arizona: Their Taxonomy and Distribution, The University of Arizona Press, Tucson, Arizona.

Biota Information System of New Mexico (BISON-M), New Mexico Game and Fish, New Mexico Natural Heritage Program
http://nmnhp.unm.edu/bisonm/bisonquery.php

for Invertebrate Animals:

Arizona Game and Fish Department. Unpublished Abstracts Compiled and Edited by the Heritage Data Management System, Arizona Game and Fish Department, Phoenix, AZ.
http://www.gf.state.az.us/w_c/edits/species_concern.shtml

Biota Information System of New Mexico (BISON-M), New Mexico Game and Fish, New Mexico Natural Heritage Program
http://nmnhp.unm.edu/bisonm/bisonquery.php

(6) Growth Habits of Plants:

Generally coincides with that presented by the National Plants Database. USDA, NRCS. 2004. The PLANTS Database, Version 3.5 (http://plants.usda.gov). National Plant Data Center, Baton Rouge, LA 70874-4490 USA

Common names identified in the USDA NRCS database have been printed in bold lettering: A few of the plants were not provided with a common name in the USDA NRCS database and additional resources were used, including:

Arizona Game and Fish Department. Unpublished Abstracts Compiled and Edited by the Heritage Data Management System, Arizona Game and Fish Department, Phoenix, AZ. *8*

Sunset Western Garden Book Kathleen N. Brenzel, 2001, Sunset Publishing Corporation, Menlo Park, California. *18*

(7) Arid Zone Trees, A Resource for Landscape Professionals, dedicated to providing quality trees to the Landscape Industries that are appropriate to the Desert Southwest
http://www.aridzonetrees.com/index.htm

(8) Arizona Game and Fish Department. Unpublished abstracts compiled and edited by the Heritage Data Management System, Arizona Game and Fish Department, Phoenix, AZ.
http://www.gf.state.az.us/w_c/edits/species_concern.shtml

Amphibians: 2002. *Bufo microscaphus*, Arizona Toad; 2005. *Bufo retiformis*, Sonoran Green Toad; 2001. *Eleutherodactylus augusti* subsp. *cactorum*, Western Barking Frog; 2003. *Gastrophryne olivacea*, Great Plains Narrow-mouthed Toad; 2002. *Hyla arenicolor*, Canyon Treefrog; 2003. *Pternohyla fodiens*, Lowland Burrowing Treefrog; 2001. *Rana chiricahuensis*, Chiricahua Leopard Frog, and 2001. *Rana yavapaiensis*, Lowland Leopard Frog.

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(HR) Historical Record (possibly without author and/or observation date)

(TC) Tucson Citizen (Month Day, Year Section and Page Number)

(ADS) Arizona Daily Star (Month Day, Year Section and Page Number)

(AHS) Arizona Historical Society

(ANN) Anonymous

(JFW) John F. Wiens

(MBJ) Matthew B. Johnson, Program Manager and Curator of the Desert Legume Program - Boyce Thompson Southwestern Arboretum

(PCM) Personal Communication (Date)

(PDJ) Philip D. Jenkins, Assistant Curator of the University of Arizona Herbarium

(RGM) G. Meades

(TBL) Township Bird Listing

(WTK) William T. Kendall

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(KOLD) Channel 13 (CBS - Month Day, Year & Program)

(KVOA) Channel 4 (NBC - Month Day, Year & Program)

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