

# *Le Jardin de Mère Nature dans une Petite Planète*

(Mother Nature's Garden on a Small Planet)

a SPECIES DISTRIBUTION LISTING for

## **TOWNSHIP 13 SOUTH, RANGE 09 EAST PIMA COUNTY, ARIZONA Gila and Salt River Baseline and Meridian**

August 31, 2010 Update

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

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



This photograph was taken looking northwest, the Waterman Mountains are in the background.  
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

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

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

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

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

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

## SPECIES DISTRIBUTION LISTINGS

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

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

recorded sighting. Note also that many of the individual species collection records found in SEINet include additional associated species. For assistance with the identification of a plant, contact the University of Arizona Herbarium (520-621-7243; FAX: 520-621-7186; P.O. Box 210036 Herring Hall, 1130 East South Campus Drive, Tucson, Arizona 85721).

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

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

to locate photographs of the area prior to clearing or look for natural areas and remnant populations and plants adjacent to where the restoration is to take place. Plants should be planted in their approximate original habitat and density and taking into consideration the original local native site and elevation of occurrence.

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

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

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

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

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#### Acknowledgements

#### Footnotes and References for the Species Distribution Listings

### TOWNSHIP NOTES

**LOCATION:** This township is located in north-central Pima County in south-central Arizona. A portion of the Tohono O'odham boundary line runs north-south down the west township line. This township is located within the Ironwood Forest National Monument.

**Historic Ranching Activities:** General ranching activities included the placement of corrals and stock tanks. Named ranches: the Agua Blanco Ranch, Lords Ranch and the Lost Acres Ranch. Named stock tank: El Represso de Lamita.

**Historic Mining Activities:** General mining activities included mining, quarrying and prospecting. Historic mines: the Penny Claim and the Squabllle Mine.

**LANDMARKS:** A portion of the Roskruge Mountains is located in the southwest quarter. Named peaks in the township include Dos Titos and the southern portion of Pan Quemado. Named washes include the Cocio Wash. Other landmarks include El Cerrito de Gallinas, El Cerrito de Represso and Waterman Pass.

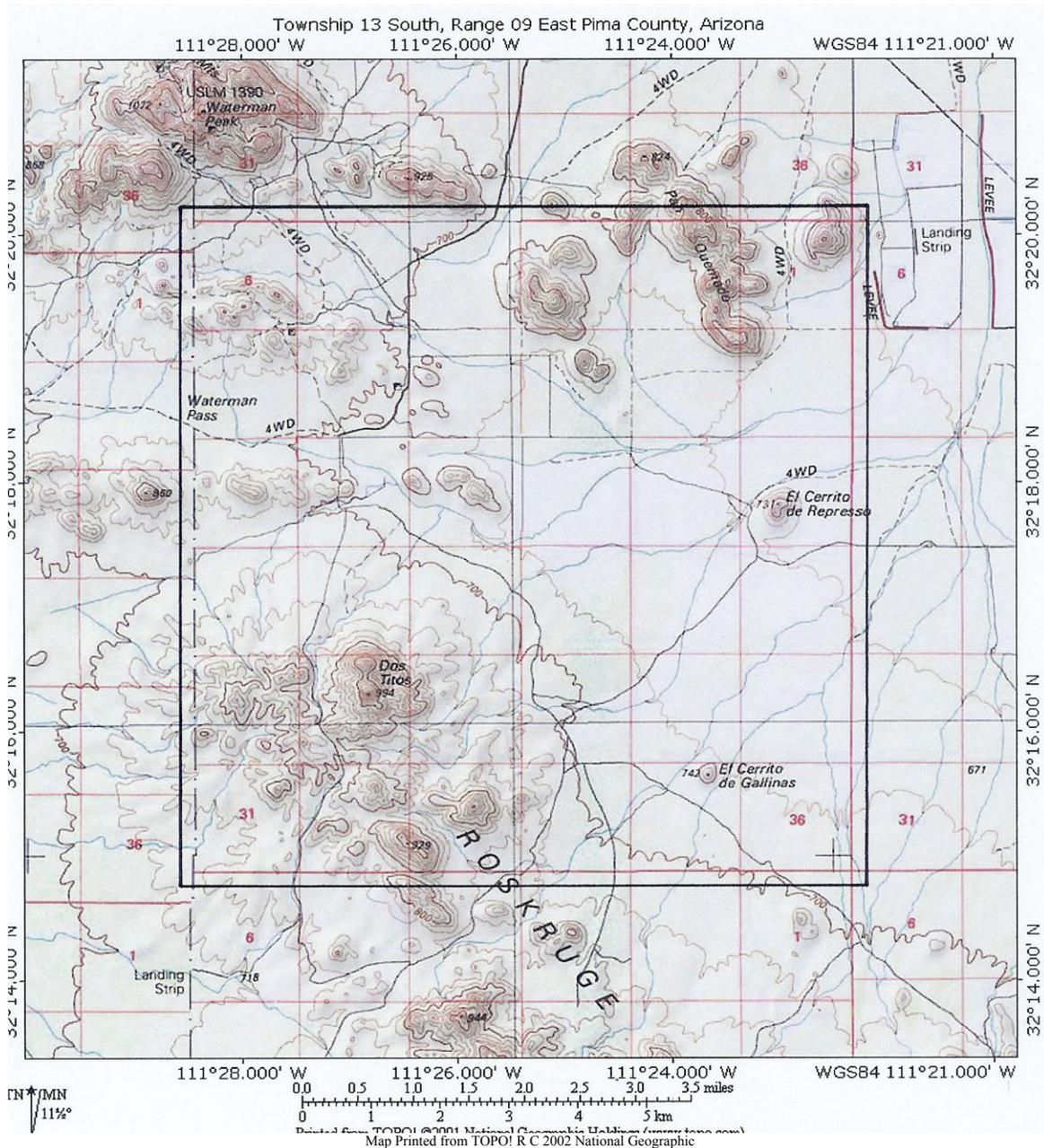
**ELEVATION:** Elevations range from approximately 2,100 feet south of the northeast corner on the east township line to approximately 3,262 feet at the top of Dos Titos (1).

**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) Semi-arid 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 Anthony-Sonoita Association (deep, arid soils on the alluvial fans and valley slopes); 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 semi-arid soils of the mountains and foothills) with isolated areas of Rock Outcrop and shallow soils (3).

**BIOTIC COMMUNITY:** Portions of this township are located within the Lower Colorado River and Arizona Upland Subdivisions 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')

Western Soapberry (*Sapindus saponaria* var. *drummondii* - 7' to 50')

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')

Prairie Acacia (*Acacia angustissima* var. *filicioides* - 20" 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')

Longleaf Joint-fir (*Ephedra trifurca* - 20" 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')

Pencil Cholla (*Cylindropuntia arbuscula* - 20" to 12')

Fishhook Barrel Cactus (*Ferocactus wislizeni* - 1' to 11')

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')

Resinleaf Brickellbush (*Brickellia baccharidea* - 18" to 8¼")

Smooth Chain-fruit Cholla (*Cylindropuntia fulgida* var. *mamillata* - 2' to 9')

Desert Pricklypear Cactus (*Opuntia engelmannii* var. *engelmannii* - 20" to 8')

Four-spined Klein's Cholla (*Cylindropuntia* x *tetracantha* - 1' to 8')

### Vines and Climbers

Drummond Clematis (*Clematis drummondii* - 10' to 40')

Slender Janusia (*Janusia gracilis* - 16" to 10')

### Shrubs (2 to 7 feet maximum height)

Major Cholla (*Cylindropuntia acanthocarpa* var. *major* - 2' to 7')

Canyon Ragweed (*Ambrosia ambrosioides* - 1' to 7')  
 Limberbush (*Jatropha cardiophylla* - 1' to 7')  
 Tulip Pricklypear Cactus (*Opuntia phaeacantha* - 10" to 7')  
 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')  
 Rough Jointfir (*Ephedra aspera* - 1' to 5')  
 White Rantany (*Krameria grayi* - 8" to 5')  
 Desert Mistletoe (*Phoradendron californicum* - 8" to 5', see note)  
 Fairyduster (*Calliandra eriophylla* - 4" to 5')  
 Turpentine Bush (*Ericameria laricifolia* - 10" to 50")  
 Threadleaf Snakeweed (*Gutierrezia microcephala* - 8" to 4')  
 Triangleleaf Bursage (*Ambrosia deltoidea* - 1' to 4')  
 White Bursage (*Ambrosia dumosa* - 7" to 40")  
 Yellow-spined Pricklypear Cactus (*Opuntia engelmannii* var. *flavispina* - to 3')

#### Grasses

Spike Dropseed (*Sporobolus contractus* - 16" to 60")  
 Spidergrass (*Aristida ternipes* var. *gentilis* - 8" to 48")  
 Bush Muhly (*Muhlenbergia porteri* - 10" to 44")  
 Cotta Grass (*Cottea pappophoroides* - 10" to 40")  
 Blue Threeawn (*Aristida purpurea* var. *nealleyi* - 6" to 40")  
 Parish Threeawn (*Aristida purpurea* var. *parishii* - 4" to 40")  
 Slender Grama (*Bouteloua repens* - 4" to 32")  
 Desert Fluffgrass (*Dasyochloa pulchella* - ½" to 6")

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

Brownfoot (*Acourtia wrightii* - 1' to 5')  
 Rock Hibiscus (*Hibiscus denudatus* - 10" to 56")  
 Tall Mountain Larkspur (*Delphinium scaposum* - 6" to 4')  
 Yellow Menodora (*Menodora scabra* - 6" to 4')  
 Distant Phacelia (*Phacelia distans* - 3" to 40")  
 Whitestem Paperflower (*Psilostrophe cooperi* - 4" to 32")  
 Covena (*Dichelostemma capitatum* subsp. *pauciflorum* - 16" to 30")  
 Goodding Mock Vervain (*Glandularia gooddingii* - 6" to 24")  
 New Mexico Plumeseed (*Rafinesquia neomexicana* - 4" to 24")  
 Golden Dogweed (*Thymophylla pentachaeta* var. *pentachaeta* - 4" to 24")  
 Desert Zinnia (*Zinnia acerosa* - 3" to 20")  
 Cleftleaf Wildheliotrope (*Phacelia crenulata* - 3" to 18")  
 Bundle Hedgehog Cactus (*Echinocereus fasciculatus* - 2" to 18")  
 Graham Pincushion Cactus (*Mammillaria grahamii* - 1" to 12")  
 Mohave Desertstar (*Monoptilon bellioides* - 1" to 12")  
 Desert Holly (*Acourtia nana* - 2" to 10")  
 Wright's Lipfern (*Cheilanthes wrightii* - 1½" to 10")  
 Woolly Crinklemat (*Tiquilia canescens* var. *canescens* - 4" to 8")

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](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](mailto: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 CLUBMOSES, FIRMOSES and SPIKEMOSSES**

## Selaginellaceae: The Spike-moss Family

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

COMMON NAMES: Arizona Selaginella, Arizona Spike-moss, Arizona Spikemoss, Desert Spike-moss, Flor de Piedra (Hispanic), Resurrection Fern. DESCRIPTION: Terrestrial perennial evergreen forb/herb (mat-forming and spreading prostrate or decumbent stems ½ to 1½ inches in height); the minute leaves are green or yellowish-green; the strobili are solitary; the megaspores of the sporangium are orange or yellow. HABITAT: Within the range of this species it has been reported from mountains; rocky mountainsides; rocky mesas; rocky cliffs; rocky canyons; bases of cliffs; pockets of soil in bedrock; crevices in rocks; rocky bluffs; rocky ledges; rocky ridges; rocky foothills; rocky hilltops; rocky hillsides; rocky, stony, stony-sandy, gravelly, gravelly-sandy-loamy and loamy slopes, bajadas; rocky outcrops; on boulders and rocks; amongst boulders and rocks; bases of rocks; basins; streambeds; bouldery-gravelly-sandy, rocky, gravelly and sandy washes; rocky-gravelly drainages; banks of rivers, and riparian areas growing in wet, moist and dry bouldery, bouldery-gravelly-sandy, rocky, rocky-gravelly, stony, stony-sandy, gravelly and sandy ground and gravelly-sandy loam and loam ground, occurring from 1,900 to 6,600 feet in elevation in the woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. *Selaginella arizonica* is native to southwest-central and southern North America. \*5, 6, 15, 43 (052510), 46 (Page 28), 51, 63 (052510), 77, **85** (052510 - reported as occurring with *Cheilanthes wrightii*, color presentation)\*

## Division Pteridophyta: The Ferns

### CLASS FILICOPSIDA: The FERNs

#### Pteridaceae: The Maidenhair Fern Family

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

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

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

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

COMMON NAMES: Brigham Young Tea, Canatilla, Desert Ephedra, Desert Joint-fir, Desert Jointfir, Itama Real, Kanutio (Yaqui), Long-leaf Jointfir, Long-leafed Joint-fir, Long-leaved Joint Fir, Long-leaved Jointfir, Longleaf Ephedra, Longleaf Joint-fir, Longleaf Jointfir, Longleaf Mormon Tea, Mexican Tea, Mexican-tea, Mormon Tea, Popotilla (Hispanic), Popotillo (Hispanic), Tepopote (Hispanic), Teposote (Hispanic). DESCRIPTION: Terrestrial perennial evergreen shrub (20 inches to 16½ feet in height with a crown 8 to 10 feet in width, one plant was described as being 3 feet in height with a crown 5 feet in width); the stems are blue-green, green, olive-green or yellow-green; the tiny flowers are pale yellow with male and female flowers occurring on separate plants; the production of the tan-brown strobili (female and male cones) generally takes place between early February and late May (additional record: one for mid-January). HABITAT: Within the range of this species it has been reported from mountains; mesas; canyons; clayey ridges; foothills; gravelly hills; hilltops; rocky hillsides; knolls; rocky, rocky-gravelly, gravelly, gravelly-loamy and sandy slopes; rocky-sandy and gravelly-sandy alluvial fans;

sandy bajadas; rocky outcrops; gravelly lava hills; sand hills; sand dunes; ridges of sand dunes; inter-dune swales; rocky, rocky-gravelly and sandy plains; rocky, gravelly and sandy flats; sandy basins; valley floors; along rocky, rocky-sandy, gravelly, gravelly-clayey-loamy and sandy roadsides; within sandy arroyos; riverbeds; along and in sandy and sandy-silty washes; within drainages; edges of swales; rocky, gravelly-sandy-loamy and sandy banks of arroyos, rivers and washes; edges of rivers; sandy margins of lakes; gravelly terraces; floodplains; along canals, and disturbed areas growing in dry rocky, rocky-gravelly, rocky-sandy, gravelly, gravelly-sandy and sandy ground; gravelly loam, gravelly-sandy loam and gravelly-clayey loam ground; clay ground, and sandy silty ground, occurring from sea level to 5,500 feet in elevation in the woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat and may live to be 50 years of age. This plant was reported to have been utilized by native peoples of North America; it was noted as having been used as a drug or medication. This plant is valuable as a soil binder. This plant is browsed by Bighorn Sheep. *Ephedra trifurca* is native to southwest-central and southern North America. \*5, 6, 13, 15, 16, 18, 28 (color photograph), 43 (081209), 46 (Page 61), 48 (genus), 58, 63 (081209 - color presentation), 77, 85 (081209 - color presentation), 91, 127, **HR\***

### Division Magnoliophyta: The Flowering Plants

#### CLASS LILIOPSIDA: The MONOCOTS

##### Liliaceae: The Lily Family

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

***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

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

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

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

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

COMMON NAMES: Blue Threeawn, Democrat Grass, Nealley Three-awn, Perennial Three-awn, Purple Needle-grass, Purple Three-awn, Purple Threeawn, Red Threeawn, Reverchon Three-awn, Reverchon Threeawn, Three Awn, Three-awn, Threeawn, Tres Barbas, Tres Barbas Purpurea, Wiregrass. DESCRIPTION: Terrestrial annual or perennial graminoid (a bunchgrass (clumpgrass) with erect culms 4 to 40 inches in height and up 4 to 12 inches in width at the base, plants 8 to 12 inches in height and 4 to 6 inches in width at the base were reported, plants 14 inches in height and 2 to 6 inches in width at the base were reported); the foliage is light to dark green curing to gray or straw; the inflorescence is green, purplish or dark red-purple; the awns are purple; flowering generally takes place between early January and mid-August; however, flowering may occur throughout the year under favorable conditions (additional records, including varieties: one for early January, one for early September, six for mid-September, one for late September, four for early October, three for late October, two for mid-November and two for late November). HABITAT: Within the range of this species it has been reported from mountains; rocky summits; gravelly-sandy, sandy and clayey-loamy mesas; plateaus; along canyon rims; rocky cliffs; chutes; rocky canyons; rocky canyon sides; along bouldery-rocky-cobbly, rocky, rocky-gravelly, gravelly-sandy and sandy canyon bottoms; scree; talus slopes; sandy bases of escarpments; crevices in boulders and rocks; gravelly bluffs; buttes; rocky knolls; ledges; bouldery and rocky, gravelly-sandy-clayey and sandy ridges; ridgetops; silty ridgelines; rocky openings in forests; along meadows; foothills; rocky, gravelly, sandy, loamy and clayey hills; rocky, rocky-gravelly and gravelly hillsides; bedrock, bouldery, rocky, rocky-cobbly, rocky-sandy, rocky-sandy-loamy, shaley, cindery, gravelly, gravelly-sandy, gravelly-sandy-loamy, gravelly-sandy-clayey, sandy, loamy, clayey-loamy and silty-clayey slopes; sandy alluvial fans; rocky, rocky-gravelly, gravelly and sandy bajadas; bedrock, bouldery, rocky and shaley outcrops; amongst boulders and rocks; sandy lava flows; sand hills; sand dunes; in blow sand; breaks; rocky-sandy and sandy steppes; rocky, sandy, sandy-clayey, clayey and clayey-loamy prairies; bouldery-rocky, rocky, gravelly, gravelly-sandy and sandy plains; rocky, rocky-sandy, cindery, gravelly, gravelly-loamy, sandy, loamy, clayey-loamy and silty-clayey flats; rocky, gravelly-sandy and sandy valley floors; valley bottoms; along railroad right-of-ways; along gravelly, gravelly-loamy, sandy, sandy-loamy and clayey roadsides; along and in rocky, gravelly, sandy and clayey-loamy arroyos; along sandy bottoms of arroyos; along and in sandy draws; gulches; gravelly-sandy bottoms of gulches; rocky gullies; rocky-gravelly ravines; springs; in rocks along streams; bouldery streambeds; along creeks; along and in creekbeds; riverbeds; along and in bouldery, bouldery-cobbly-sandy, rocky, rocky-sandy, gravelly,

gravelly-sandy and sandy washes; along and in bedrock, rocky, gravelly-sandy and sandy drainages; bouldery-rocky, rocky and pebbly drainage ways; sandy lakebeds; swamps; depressions; rocky, gravelly and sandy banks of washes; sandy edges of rivers and washes; gravelly margins of washes; mudflats; gravel bars; sandy beaches; rocky-clayey, gravelly and sandy benches; gravelly terraces; bottomlands; gravelly and sandy floodplains; mesquite bosques; along ditches; recently burned areas; riparian areas, and disturbed areas growing in dry rocky desert pavement; bouldery, bouldery-rocky, bouldery-rocky-cobbly, bouldery-cobbly-sandy, bouldery-cindery, bouldery-gravelly, rocky, rocky-cobbly, rocky-gravelly, rocky-sandy, shaley, shaley-sandy, cindery, gravelly, gravelly-sandy, pebbly and sandy ground; rocky loam, rocky-sandy loam, rocky-clayey loam, cobbly-gravelly loam, gravelly loam, gravelly-sandy loam, gravelly-clayey loam, sandy loam, sandy-clayey loam, sandy-silty loam, clayey loam, silty loam, humusy loam and loam ground; rocky clay, rocky-sandy clay, gravelly-sandy clay, sandy clay, silty clay and clay ground, and gravelly silty, sandy silty and silty ground, occurring from sea level to 9,000 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. This plant may be grazed by Black-tailed Prairie Dogs (*Cynomys ludovicianus*) and White-tailed Jackrabbits (*Lepus townsendii*). *Aristida purpurea* is native to central and southern North America. \*5, 6, 15, 33 (Page 244), 43 (081709), 46 (Page 120), 48, 58, 63 (081709 - color presentation), 85 (092709 - color presentation of dried material), 105\*

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

243), 43 (081809), 46 (recorded as *Aristida glauca* (Nees) Walp., Page 120), 48 (species), 63 (081809), 77, **85** (092709 - color presentation of dried material), 105 (species)\*

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

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

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

COMMON NAMES: Aristida Grass, Spider Grass, Spidergrass, Spider Threeawn, Three Awn, Three-awn, Threeawn, Zacate Arana. DESCRIPTION: Terrestrial perennial tufted graminoid (a bunchgrass (clumpgrass) 10 to 79 inches in height, one plant was described as being 4 inches in diameter at the base and 52 inches in height); flowering generally takes place between mid-March and mid-December. HABITAT: Within the range of this species it has been reported from mountains; bouldery-cobbly mesas; plateaus; rock cliffs; rocky canyons; rocky canyon walls; along rocky canyon bottoms; rocky talus; crevices in rocks; rock ledges; rocky ridges; rocky ridgetops; meadows; foothills; rocky, rocky-gravelly, gravelly-sandy, gravelly-clayey-loamy and sandy hills; rocky hillsides; bouldery, rocky, rocky-gravelly, rocky-gravelly-clayey, gravelly, sandy, sandy-loamy and sandy-clayey slopes; alluvial fans; gravelly and sandy bajadas; rocky outcrops; amongst boulders and rocks; gravelly plains; bouldery-sandy, rocky-loamy, gravelly, sandy and silty flats; valley floors; coastal plains; railroad right-of-ways; along bouldery-rocky and gravelly roadsides; along arroyos; along draws; ravines; along streams; streambeds; along bouldery creeks; rocky creekbeds; along rivers; along and in rocky and sandy washes; within drainages; banks of creeks; along edges of washes; sandy beaches; benches; rocky terraces; sandy floodplains; mesquite bosques; along fencelines; stock tanks (charcos or repressos); ditches; sandy riparian areas, and disturbed areas growing in dry bouldery, bouldery-rocky, bouldery-cobbly, bouldery-sandy, rocky, rocky-gravelly, rocky-sandy, gravelly, gravelly-sandy and sandy ground; rocky loam, rocky-gravelly loam, gravelly-clayey loam, sandy loam, sandy-clayey loam and humus loam ground; sandy clay ground, and sandy silty and silty ground, occurring from sea level to 6,800 feet in elevation in the forest (woodland transition), woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. *Aristida ternipes* is native to southwest-central and southern North America; Central America, and northern South America. \*5, 6, 15, 16, 33 (Page 238), 43 (092709), 46 (Page 119), 58, 63 (092709 - color presentation), 77, 85 (092709 - color presentation of dried material), **HR\***

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

SYNONYMY: *Aristida hamulosa* J.T. Henrard, *Aristida ternipes* A.J. Cavanilles var. *hamulosa* (J.T. Henrard) J.S. Trent, *Aristida ternipes* A.J. Cavanilles var. *minor* (G. Vasey) A.S. Hitchcock. COMMON NAMES: Arizona Threeawn, Hook Threeawn, Mesa Threeawn, Poverty Threeawn, Spidergrass, Three Awn, Threeawn Spider Grass, Three-awn, Three-awn Grass, Threeawn, Wild Oat, Zacate Arana de Tres. DESCRIPTION: Terrestrial perennial tufted graminoid (a bunchgrass (clumpgrass) 8 inches to 4 feet in height); the flowers are maroon-red; flowering generally takes place between mid-March and mid-December. HABITAT: Within the range of this species it has been reported from mountains; mesas; plateaus; rock cliffs; canyons; rocky canyon bottoms; crevices in boulders; rocky and rocky-clayey ridges; foothills; rocky, gravelly-sandy, gravelly-clayey-loamy and sandy hills; hillsides; piedmonts; rocky and sandy slopes; bajadas; amongst rocks; sandy hills; sandy prairies; gravelly and sandy plains; sandy and silty flats; rocky valley floors; railroad right-of-ways; along gravelly-loamy, sandy and clayey-loamy roadsides; shallow draws; along streambeds; along creeks; along and in sandy washes; drainages; within drainages; sandy and sandy-clayey-loamy swales; sandy beaches; benches; terraces; floodplains; mesquite bosques; along fencelines; stock tanks (charcos or repressos); ditches; riparian areas, and disturbed areas growing in dry bouldery, rocky, gravelly, gravelly-sandy and sandy ground; rocky-gravelly loam, gravelly loam, gravelly-sandy loam, gravelly-clayey loam, sandy-clayey loam and clayey loam ground, and silty ground, occurring from 600 to 7,300 feet in elevation in the woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. *Aristida ternipes* var. *gentilis* is native to southwest-central and southern North America and Central America. \*5, 6, 15 (recorded as *Aristida hamulosa* Henr.), 33 (recorded as *Aristida hamulosa* Henr., Page 239), 43 (092709), 46 (recorded as *Aristida hamulosa* Henr., Page 120), 58 (*Aristida hamulosa* Henr.), 63 (092709), 77 (recorded as *Aristida hamulosa* Henr.), **85** (092709 - color presentation of dried material), 105 (note on page 15)\*

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

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

*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*)

*Cenchrus ciliaris* (see *Pennisetum ciliare*)

***Cottea pappophoroides* K.S. Kunth: Cotta Grass**

COMMON NAME: Cotta Grass. DESCRIPTION: Terrestrial annual or perennial tufted graminoid (10 to 40 inches in height); the inflorescence is purple; flowering generally takes place between August and late October (flowering records: one for early February, four for early September, two for late September and three for late October). HABITAT: Within the range of this species it has been reported from along mountains; cliffs; rocky canyons; rocky talus; bases of cliffs; rocky buttes; ledges; ridges; foothills; hills; hilltops; rocky hillsides; rocky and sandy slopes; sandy bajadas; amongst rocks; sandy and sandy-loamy plains; gravelly flats; valley floors; along rocky-sandy roadsides; sandy banks of arroyos; along and in draws; along rocky and sandy washes; within drainages; along sandy and loamy banks of washes; benches; rocky shelves; terraces; floodplains; mesquite bosques; ditches; riparian areas, and disturbed areas growing in moist and dry rocky, rocky-sandy, gravelly and sandy ground and sandy loam and loam ground, occurring from 900 to 4,800 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. *Cottea pappophoroides* is native to southwest-central and southern North America and western and southern South America. \*5, 6, 15, 16, 33 (Page 100), 43 (100509), 46 (Page 91), 58, 63 (100509 - color presentation), 77, **85** (100509 - color presentation of dried material)\*

***Dasyochloa pulchella* (K.S. Kunth) C.L. von Willdenow 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, **HR**\*

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

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

***Eriochloa acuminata* (J.S. Presl) K.S. Kunth var. *acuminata*: Tapertip Cupgrass**

SYNONYMY: *Eriochloa gracilis* (E.P. Fournier) A.S. Hitchcock, *Eriochloa lemmonii* G. Vasey & F.L. Scribner var. *gracilis* (E.P. Fournier) F.W. Gould. COMMON NAMES: Cupgrass, Southwestern Cupgrass, Tapertip Cupgrass. DESCRIPTION: Terrestrial annual graminoid (6 inches to 4 feet in height); the foliage may be bright green or yellow-green; flowering generally takes place between August and

October (flowering record: one for late August). HABITAT: Within the range of this species it has been reported from mountains; canyons; hills; rocky and loamy slopes; bedrock outcrops; amongst boulders; sand hills; flats; valleys; along roadsides; arroyos; bottoms of arroyos; draws; seeps; along streams; along and in gravelly and sandy washes; rocky drainages; pools; depressions; swales; banks of rivers; edges of ponds; terraces; sandy floodplains; mesquite bosques; along and in clayey ditches; sandy riparian areas, and disturbed areas growing in moist, damp and dry bouldery, rocky, gravelly and sandy ground; rocky loam, humus-clayey loam and loam ground, and sandy clay and clay ground, occurring from 100 to 6,300 feet in elevation in the woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: Alternate spellings of *lemmonii* were presented: *lemmonii* and *lemmoni*. *Eriochloa acuminata* var. *acuminata* is native to south-central and southern North America. \*5, 6, 15 (recoded as *Eriochloa lemmoni* Vasey & Scribn. var. *gracilis* (Fourn.) Gould.), 16 (recoded as *Eriochloa lemmoni* Vasey & Scribn. var. *gracilis* (Fourn.) Gould), 33 (recoded as *Eriochloa lemmoni* Vasey & Scribn. var. *gracilis* (Fourn.) Gould., Pages 273-274), 43 (101109), 46 (recoded as *Eriochloa gracilis* (Fourn.) Hitchc., Page 133), 63 (101109), 68 (recoded as *Eriochloa gracilis* (Fourn.) Hitchc.), **85** (101109 - color presentation of dried material), 101 (color photograph, recoded as *Eriochloa gracilis* (Fourn.) A.S. Hitchc.)\*

*Eriochloa gracilis* (see *Eriochloa acuminata* var. *acuminata*)

*Eriochloa lemmonii* var. *gracilis* (see *Eriochloa acuminata* var. *acuminata*)

*Erioneuron pulchellum* (see *Dasyochloa pulchella*)

### ***Leptochloa viscida* (F.L. Scribner) W.J. Beal: Sticky Sprangletop**

COMMON NAMES: Sonoran Sprangletop, Sticky Sprangletop, Zacate Salado Pagajoso. DESCRIPTION: Terrestrial annual graminoid (decumbent or geniculate spreading culms 1 to 24 inches in height); the spikelets (flowers) are green or magenta; the florets may be reddish; based on few flowering records found, flowering generally takes place between late August and late October (flowering records: one for mid-January, one for August, one for early September, four for mid-September and one for late October, flowering beginning as early as June has been reported). HABITAT: Within the range of this species it has been reported from mountains; mesas; canyon bottoms; rocky slopes; llanos; gravelly-sandy plains; flats; valley floors; along roadsides; arroyos; bottoms of arroyos; springs; rivulets; streams; along sandy streambeds; sandy riverbeds; in bouldery and sandy washes; along and in muddy and sandy drainages; within sandy drainage ways; muddy waterholes; poolbeds; around ponds; powdery playas; cienegas; marshes; silty-muddy swampy areas; clayey depressions; muddy and clayey-loamy swales; muddy and sandy edges of riverbeds, pools, ponds, cienegas and playas; along sandy margins of washes, ponds; playas and drying swales; mudflats; loamy bottomlands; floodplains; clayey mesquite bosques; around and in stock tanks (charcos, repressos); in ditches; riparian areas; waste places, and disturbed areas growing in shallow water; muddy, and wet, moist, damp and dry bouldery, rocky, gravelly-sandy and sandy ground; sandy loam, clayey loam and loam ground; clay ground; silty ground, and powdery ground, occurring from sea level to 5,300 feet in elevation in the woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTE: *Leptochloa viscida* is native to southwest-central and southern North America. \*5, 6, 33 (Page 137), 43 (080810 - *Leptochloa viscida* (Scribn.) Beal), 46 (Page 123), 63 (101509), **85** (101509 - 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.”), **WTK** (July 4, 2005)\*

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

SYNONYMY: *Cenchrus ciliaris* C. Linnaeus. COMMON NAMES: African Foxtail, African Foxtail Grass, Anjangrass, Buffel Grass, Büffelgras (German), Buffelgrass, Bufle, Cadillo Büffel (Hispanic), Cenchrus Cilié (French), Dhaman (India), Huizapol (Hispanic), Pasto Buffel (Spanish), Sandbur, Zacate Buffle (Hispanic). DESCRIPTION: Terrestrial perennial tufted graminoid (a bunchgrass (clumpgrass) 4 inches to 5 feet in height); the leaves are green; the spikelets are reddish turning a golden-brown when dry; flowering may take place several times a year when sufficient moisture is available (flowering records: one for mid-February, one for early April, one for mid-April, one for mid-August, one for late September, one for early October, one for mid-October, one for late October and one for late November). HABITAT: Within the range of this species it has been reported from mountains; mountainsides; along rocky and sandy canyons; canyon bottoms; bases of cliffs; rocky-gravelly-clayey

bluffs; buttes; ridges; ridgetops; foothills; rocky hillsides; rocky slopes; bajadas; rocky and rocky-gravelly outcrops; sandy plains; sandy flats; valley floors; along rocky roadsides; along and in arroyos; within draws; ravines; springs; cobbly creekbeds; rocky, rocky-cobbly-sandy and cobbly riverbeds; along and in gravelly-sandy washes; oases; marshes; depressions; rocky-sandy banks of washes; edges of arroyos and washes; sandy beaches; floodplains; lowlands; riparian areas, and disturbed areas growing in moist and dry rocky, rocky-cobbly-sandy, rocky-gravelly, rocky-sandy, cobbly, gravelly-sandy and sandy ground; loam ground; rocky-gravelly clay ground, and sandy-silty (loess) ground, occurring from sea level to 7,100 feet in elevation in the woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: **EXOTIC** Invasive Plant that poses a significant threat to our native biotic communities. *Pennisetum ciliare* is native to southeastern Europe; western and southern Asia, and Africa. \*5, 6, 16, 22 (color photograph), 30, 33 (Page 266), 43 (101909), 46 (Supplement Page 1041), 63 (101909 - color presentation), 77, 85 (101909 - color presentation of dried material), **WTK** (July 4, 2005)\*

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

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

*Tridens pulchellus* (see *Dasyochloa pulchella*)

*Triodia pulchella* (see *Dasyochloa pulchella*)

## Amaranthaceae: The Amaranth Family

### ***Amaranthus x tucsonensis* J.S. Henrickson [hybridus x]: Tucson Amaranth**

COMMON NAMES: Tucson Amaranth, Tucson Pigweed. DESCRIPTION: Terrestrial annual forb/herb (to 32 inches in height); based on few records located, flowering generally takes place between mid-August and late December (flowering records: one for mid-August, one for late August, one for early September, two for mid-September, two for late November, one for mid-December and two for late December). HABITAT: Within the range of this species it has been reported from mountains; canyons; canyon bottoms; rocky slopes; roadsides; along washes, and disturbed areas growing in dry rocky ground, occurring from 2,200 to 4,800 feet in elevation in the grassland and desertscrub ecological formations. NOTES: This species was not found in either BONAP or NRCS Plants Database. *Amaranthus x tucsonensis* is native to southwest-central North America. \*5, 6, 43 (071710), 46 (no record of species, genus Pages 265-267 & 1048), 63 (071710), 77, **85** (071710)\*

*Cladanthus lanuginosa* (see *Tidestromia lanuginosa*)

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

SYNONYMY: *Cladanthus 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, Woolly 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), **WTK** (July 4, 2005)\*

*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*)

#### Asclepiadaceae: The Milkweed Family

##### ***Cynanchum arizonicum* (A. Gray) L.H. Shoiners: 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)\*

*Metastelma arizonicum* (see *Cynanchum arizonicum*)

#### Asteraceae (Compositae): The Aster Family

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

SYNONYMY: *Perezia nana* A. Gray. COMMON NAMES: Ban Auppa-ga (Gila River Pima), Desert Holly, Desert-holly, Dwarf Desertpeony. DESCRIPTION: Terrestrial perennial forb/herb (2 to 10 inches in height, plants 4 to 5 inches in height and 3 to 6 inches in width were reported); the holly-like leaves are pale grayish-green or olive-green; the flowers may be cream, pale lavender-pink, lavender, lavender-pink, maroon and white, pale pink-lavender, pink, pink-purple, purple, white or white-pink; flowering generally takes place between late March and early June (additional records: one for late January, one for late February, one for early July, one for late July, one for early August, one for mid-August, one for early September, two for late September, one for mid-October, one for mid-November and two for mid-December). HABITAT: Within the range of this species it has been reported from rocky mountains; sandy mesas; gravelly-loamy canyons; talus slopes; rocky foothills; rocky and gravelly hills; rocky and gravelly hillsides; bouldery, rocky, stony, gravelly, gravelly-sandy and sandy slopes; bajadas; amongst boulders and rocks; gravelly breaks; gravelly plains; rocky, gravelly, gravelly-sandy, sandy, sandy-loamy and clayey flats; basins; basin bottoms; rocky valley floors; valley bottoms; gravelly-loamy roadsides; arroyos; bottoms of arroyos; rocky gullies; gravelly-loamy creekbeds; riverbeds; within gravelly, gravelly-sandy and sandy-clayey washes; drainage ways; playas; sandy-loamy, sandy-clayey-loamy and clayey-loamy swales; clayey-loam banks of washes; benches; gravelly and sandy terraces; floodplains; mesquite mosques; riparian areas, and disturbed areas growing in dry desert pavement; bouldery, rocky, rocky-sandy, stony, gravelly, gravelly-sandy and sandy ground; gravelly loam, sandy loam, sandy-clayey loam, clayey loam, silty loam and loam ground, and sandy clay and clay ground often in the shade of trees and shrubs, occurring from 1,200 to 7,100 feet (one record for 8,500 feet) in elevation in the woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES:

This plant may be an attractive component of a restored native habitat. Consider using Desert Holly as a ground cover under larger shrubs and trees. The flowers give off a fragrance similar to that of violets or lilacs. *Acourtia nana* is native to southwest-central and southern North America. \*5, 6, 15, 16, 28 (color photograph), 43 (110809), 46 (recorded as *Perezia nana* Gray, Page 957), 58, 63 (110809 - color presentation), 77, **85** (110909 - color presentation), 115 (color presentation)\*

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

SYNONYMY: *Perezia wrightii* A. Gray. COMMON NAMES: Brownfoot, Desert Holly, Perezia, Pink Perezia, Pink Perezia, Wright's Desertpeony. DESCRIPTION: Terrestrial perennial forb/herb (1 to 5 feet in height, one plant was recorded as being 1 foot in height with a crown 1 foot in width); the holly-like leaves are dark green; the flowers may be lavender, pink, pink-brown, pink-lavender, pink-purple, pale purple, purple, white, white & pink, whitish-maroon or white & purple; flowering generally takes place between early February and early July and sometimes in autumn between early September and early November (additional records: one for mid-August, one for late November and one for early December). HABITAT: Within the range of this species it has been reported from mountains; plateaus; rock cliffs; crater walls; rocky canyons; rocky canyon bottoms; talus slopes; bases of cliffs; along crevices in boulders; buttes; along ledges; ridges; ridgetops; foothills; rocky, stony-gravelly and sandy hills; rocky and rocky-gravelly-loamy hillsides; bouldery-rocky, rocky, rocky-gravelly, shaley, gravelly and sandy slopes; sandy alluvial fans; gravelly and sandy bajadas; along bedrock and rocky outcrops; amongst boulders and rocks; bases of boulders; in shaded alcoves; rocky plains; rocky and silty flats; railroad right-of-ways; rocky and gravelly-sandy-clayey-loamy roadsides; along rocky arroyos; draws; gullies; ravines; seeps; rocky springs; along creeks; along rocky, gravelly and sandy washes; along drainage ways; rocky banks of streams and washes; edges of washes; mudflats; beaches; floodplains; mesquite bosques; riparian areas, and disturbed areas growing in dry desert pavement; bouldery, bouldery-rocky, rocky, rocky-gravelly, rocky-sandy, stony-gravelly, gravelly and sandy ground; rocky-gravelly loam, rocky silty loam, gravelly-sandy-clayey loam, sandy loam, silty-clayey loam and silty loam ground, and silty ground, occurring from 700 to 7,300 feet in elevation in the woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat, the flowers are reported to be fragrant. This plant was reported to have been utilized by native peoples of North America; it was noted as having been used as a drug or medication. *Acourtia wrightii* is native to southwest-central and southern North America. \*5, 6, 15, 16, 28 (color photograph), 43 (110809), 46 (recorded as *Perezia wrightii* Gray, Page 957), 58, 63 (110909 - color presentation), 77, **85** (110909 - color presentation), 115 (color presentation), 127\*

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

SYNONYMY: *Franseria ambrosioides* A.J. Cavanilles. COMMON NAMES: Ambrosia Bursage, Ambrosia Leaf Bur Ragweed, Ambrosia Leaf Burr Ragweed, Big Bursage, Burr Sage, Bur-sage, Bursage, Canyon Ragweed, Chicura (Hispanic), Giant Bursage, Leaf Burr Ragweed, Nu Nu Ju Its (Tohono O'odham), Tinkl (Seri). DESCRIPTION: Terrestrial perennial cold- and drought-deciduous subshrub or shrub (1 to 7 feet in height, one plant was described as being 3 feet in height and 6 feet in width); the branches are reddish-brown with white hairs; the leaves are dull gray-green or green; the flowers are yellowish or yellowish-green; flowering generally takes place between mid-February and early May (additional records: two for mid-January, one for late May, one for early June, one for mid-June, one for early July and one for mid-September), the fruits are burrs. HABITAT: Within the range of this species it has been reported from rocky mountains; mesas; rocky canyons; canyon walls; rocky, gravelly and gravelly-sandy canyon bottoms; bases of cliffs; crevices in rocks; foothills; rocky hills; rocky hillsides; rocky and sandy slopes; rocky outcrops; sandy soil pockets in rocks; plains; basins; silty valleys; along coasts; coastal plains; along rocky-sandy roadsides; arroyos; arroyo bottoms; along seeping streams; along streams; rocky and sandy streambeds; along creeks; creekbeds; along rivers; riverbeds; along and in rocky, gravelly, gravelly-silty and sandy washes; along and in sandy drainages; along and in cobbly and sandy drainage ways; around waterholes; rocky and sandy banks of lakes; sandy edges of

washes; riparian areas, and disturbed areas growing in dry rocky, rocky-sandy, cobbly, gravelly, gravelly-sandy and sandy ground; rocky loam and sandy-clayey loam ground, and gravelly silty and silty ground, occurring from sea level to 4,500 feet in elevation in the woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. This plant was reported to have been utilized by native peoples of North America; it was noted as having been used as a drug or medication. *Ambrosia ambrosioides* is native to southwest-central and southern North America. \*5, 6, 13, 15, 28 (color photograph), 43 (111009 - *Ambrosia ambrosioides* (Delpino) W.W. Payne), 46 (recorded as *Franseria ambrosioides* Cav., Page 895), 63 (111009), 77 (color photograph #67), 85 (111009 - color presentation), 91, 115 (color presentation), 127, **HR\***

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

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

***Ambrosia dumosa* (A. Gray) W.W. Payne: Burrobush**

SYNONYMY: *Franseria dumosa* A. Gray. COMMON NAMES: Burro Bush, Burrobush, Burro Weed, Burro-weed, Burroweed, Bur Sage, Bur-sage, Chamizo, Chicurilla, Hierba del Burro, White Bursage, White Bursage, White Burrobush, Xcactz (Seri). DESCRIPTION: Terrestrial perennial cold- and drought-deciduous subshrub or shrub (7 to 40 inches in height, one low mound-shaped plant was reported to be 40 inches in width); the branches may be gray, tan or white; the leaves are blue-green-gray, gray-green or white-tomentose; the flowers are cream, cream-yellow, greenish, green-yellow or yellow with yellowish anthers; flowering generally takes place between mid-January and late June and again between late September and late June; the fruits are spiny burs. HABITAT: Within the range of this species it has been reported from mountains; mountainsides; gravelly mesas; sandstone cliffs; rocky canyons; sandy canyon bottoms; gorges; talus slopes; buttes; along ridges; bouldery ridge tops; rocky-sandy foothills; rocky hills; rocky and gravelly hillsides; bouldery, rocky, rocky-sandy, gravelly, gravelly-loamy, sandy and sandy-silty slopes; rocky alluvial fans; sandy and sandy-silty bajadas; bouldery and rocky outcrops;

amongst boulders; lava fields; sand hills; sand dunes; blow-sand deposits; gravelly and sandy plains; rocky, gravelly, gravelly-sandy, sandy and sandy-loamy flats; sand sheets; gravelly-sandy and sandy valley floors; valley bottoms; shifting beach dunes; along gravelly and sandy roadsides; within sandy arroyos; along and in gravelly, gravelly-sandy and sandy washes; drainages; along drainage ways; silty playas; banks of streambeds and washes; sandy edges of washes and lakes; benches; sandy bottomlands; floodplains; canal banks; sandy and sandy-silty riparian areas, and disturbed areas growing in dry desert pavement; bouldery, rocky, rocky-sandy, stony, gravelly, gravelly-sandy and sandy ground; gravelly loam, sandy loam and clayey loam ground, and sandy silty ground, occurring from sea level to 4,600 feet in elevation in the desertscrub ecological formation. NOTES: This plant may be an attractive component of a restored native habitat, and may live to be more than 100 years of age with an estimated average longevity of 35.7 years. This plant is a host for the parasitic Sand Root (*Pholisma sonora*). In the revegetation of disturbed sites more success may be achieved through the use of transplanted plants than from over-seeding. White Bursage serves as a nurse plant for Creosote Bush (*Larrea tridentata*), Foothill Paloverde (*Parkinsonia microphylla*) and other woody plants. White Bursage is an early colonizer of disturbed sites and open spaces. *Ambrosia dumosa* is native to southwest-central and southern North America. \*5, 6, 13, 15, 16, 28 (color photograph), 43 (111109), 46 (recorded as *Franseria dumosa* Gray, Page 895), 63 (111109 - color presentation), 77, 85 (111109 - color presentation), 91, **HR\***

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

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

COMMON NAMES: Baccharis-leaf Brickellia, Baccharisleaf Brickellbush, Brickell-bush, Brickellbush, Resinleaf Brickellbush. DESCRIPTION: Terrestrial perennial subshrub or shrub (18 inches to 8¼ feet in height, one plant was described as being 8¼ feet in height and width); the leaves are green; the flowers are pale yellow with a green tinge; flowering generally takes place between mid-September and late November. HABITAT: Within the range of this species it has been reported from mountains; mountainsides; cliff faces; shaded canyons; bases of cliffs; crevices in boulders; bedrock and rocky ridges; foothills; hills; rocky-clayey and cobbly hillsides; bouldery-rocky-sandy and rocky slopes; rocky outcrops; amongst boulders; gravelly road banks; draws; riverbeds; clayey washes; within drainages; rocky waterholes, and riparian areas growing in dry bouldery, bouldery-rocky-sandy, rocky, cobbly, gravelly and sandy ground and rocky clay and clay ground, occurring from 500 to 5,800 feet in elevation in the woodland, grassland and desertscrub ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. *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** (080810 - color presentation of dried material)\*

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

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

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

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

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

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

### ***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. Brandegees ex S.F. Blake. COMMON NAMES: Brittle Bush, Brittle-bush, Brittlebush, Button Brittlebush, Goldenhills, Hierba Cenisa, Hierba de Gusano, Hierba de las Animas, Hierba del Vaso, Inceinso, Incienso (Spanish), Rama Blanca, Tohavs (Pima), White Brittle Bush, White Brittlebush. DESCRIPTION: Terrestrial perennial evergreen (leaves will be shed under extreme drought conditions) subshrub or shrub (1 to 6 feet in height, one plant was described as being 2 feet in height and width, many plants were reported as being 40 inches in height); the foliage may be dark green, pale gray-green, silvery-gray, silvery-gray-green, silvery-green, silvery or whitish; the disk flowers are brown, brown-maroon, brown-purple, orange-yellow, purple, dark purple or yellow; the ray flowers are yellow or yellow-orange (the flowers appear 6 to 12 inches above or beyond the end of the foliage); flowering generally takes place between early November and mid-June (additional records: three for early July, four for late August, one for early September, two for mid-October). HABITAT: Within the range of this species it has been reported from mountains; mountainsides; mesas; cliffs; rocky and shaley canyons; rocky canyon walls; rocky, rocky-sandy and sandy canyon bottoms; talus slopes; bases of cliffs; bluffs; buttes; rocky ledges; along ridges; rocky ridgetops; sandy meadows; foothills; rocky and sandy hills; hilltops; bouldery, rocky, stony and cobbly hillsides; bouldery-gravelly, rocky, rocky-loamy, gravelly, sandy, loamy and clayey slopes; bouldery-stony-gravelly-sandy, rocky and rocky-sandy-loamy alluvial fans; gravelly-sandy bajadas; bouldery and rocky outcrops; amongst boulders and rocks; lava flows; sand dunes; sandy and clayey plains; rocky-sandy, gravelly-sandy and sandy flats; rocky and gravelly-sandy valley floors; coastal dunes; sandy railroad right-of-ways; along rocky, sandy and clayey roadsides; arroyos; sandy-silty bottoms of arroyos; around springs; along creeks; creekbeds; along rivers; sandy riverbeds; along and in rocky, gravelly, gravelly-sandy and sandy washes; within sandy drainages; drainage ways; along swales; edges of arroyos and washes; shores of rivers; beaches; gravelly benches; gravelly, rocky shelves; gravelly-sandy and sandy terraces; rocky-sandy floodplains; canal banks; riparian

areas, and disturbed areas growing in dry desert pavement; bouldery, bouldery-stony-gravelly-sandy, bouldery-gravelly, rocky, rocky-sandy, shaley, gravelly, gravelly-sandy and sandy ground; rocky loam, rocky-sandy loam and loam ground; sandy clay and clay ground (where it reportedly does poorly), and sandy silty ground, occurring from sea level to 4,800 feet in elevation in the woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat, and has an estimated life span of 32 years. This plant was reported to have been utilized by native peoples of North America and could be investigated to determine its value as a home garden or commercial food (candy), and/or paint (varnish) crop; it was also noted as having been used as fuel, as a tool and waterproofing agent and as a drug or medication. According to the Fire Effects Information System, Brittlebush competes strongly with Buffelgrass (*Pennisetum ciliare*); it may be top-killed or completely killed by fire, and is considered to be a good off-site colonizer of post-fire communities. Plants with yellow ray flowers and dark purple disk flowers have historically been referred to as variety *phenicodonta* which has been observed growing with the typical plant which has yellow disk flowers. The Brittle Bush is browsed by Desert Bighorn Sheep (*Ovis canadensis* subsp. *mexicana*) and Desert Mule Deer (*Odocoileus hemionus* subsp. *crooki*). *Encelia farinosa* is native to southwest-central and southern North America. \*5, 6, 13 (color photograph), 16, 18, 26 (color photograph), 28 (color photograph), 43 (112009), 46 (Page 904), 48, 58, 63 (112009 - color presentation), 85 (112109 - color presentation), 86 (color photograph), 91, 115 (color presentation), 127, **HR\***

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

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

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

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

SYNONYMY: *Haplopappus laricifolius* A. Gray. COMMON NAMES: Ericameria, Larch-leaf Goldenweed, Roundleaf Rabbitbrush, Turpentine Bush, Turpentine-bush, Turpentine Brush, Turpentine-brush. DESCRIPTION: Terrestrial perennial subshrub or shrub (10 to 50 inches in height, one plant was described as being 1 foot in height and 2 to 3 feet in width, one plant was described as being 16 inches in height and 40 inches in width, one plant was described as being 40 inches in height and 40 inches in width); the leaves are gray, gray-green, gray-silver, green or yellow-green; the disk flowers may be orange-yellow or yellow, the ray flowers may be orange-yellow or yellow; flowering generally takes place between mid-August to late December (additional records: two for mid-January, two for late January, one for mid-February, one for late March, one for late April, two for early May, two for late May, one for early July and one for late July); the fruits are white. HABITAT: Within the range of this species it has been reported from mountains; bouldery-gravelly mountainsides; mesas; plateaus; bouldery and rocky canyons; along bouldery and rocky-clayey canyon bottoms; rocky talus; bouldery bases of cliffs; crevices in rocks; rocky knolls; rocky ledges; rocky and gravelly ridges; stony ridgetops; ridgelines; clearings in woodlands; bouldery foothills; rocky hills; rocky and silty hillsides; rocky, rocky-gravelly, gravelly, gravelly-loamy-silty sandy-loamy and loamy-clayey slopes; bouldery and rocky outcrops; amongst boulders and rocks; bases of boulders; bouldery coves; plains; gravelly and sandy flats; rocky basins; valley floors; along gravelly, gravelly-sandy, sandy and loamy roadsides; along arroyos; draws; gulches; rocky gullies; seeps; along streams; along streambeds; along creekbeds; bouldery-cobbly-sandy riverbeds; along bouldery and sandy washes; drainage ways; gravelly-sandy edges of washes; margins of arroyos; gravelly terraces; floodplains; riparian areas, and disturbed areas growing in dry rocky desert pavement; bouldery, bouldery-cobbly-sandy, bouldery-gravelly, rocky, rocky-gravelly, rocky-sandy, cobbly, gravelly, gravelly-sandy and sandy ground; rocky-gravelly-sandy loam, gravelly-silty loam, clayey loam and loam ground; rocky clay and gravelly clay ground, and gravelly-loamy silty and silty ground, occurring from 1,000 to 7,200 feet in elevation in the woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native

habitat. The flowers are visited by many types of insects. *Ericameria laricifolia* is native to southwest-central and southern North America. \*5, 6, 13 (*Haplopappus laricifolius* A. Gray), 15, 16, 28 (color photograph), 43 (112109), 46 (recorded as *Aplopappus laricifolius* Gray, Page 861), 58, 63 (112109 - color presentation), 77, **85** (112109 - color presentation), 115 (color presentation)\*

*Franseria ambrosioides* (see *Ambrosia ambrosioides*)

*Franseria deltoidea* (see *Ambrosia deltoidea*)

*Franseria dumosa* (see *Ambrosia dumosa*)

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

COMMON NAMES: Broomweed, Little-head Snakeweed, Matchweed, Perennial Snakeweed, Resinweed, Snakeweed, Small-head Matchbrush, Small-head Snakeweed, Sticky Snakeweed, Threadleaf Snakeweed, Threadleaf Snakeweed, Thread Snakeweed, Three-leaf Snakeweed, Turpentineweed. DESCRIPTION: Terrestrial perennial subshrub or shrub (8 inches to 4 feet in height); the lower portion of the stem may be brown with the upper portion of the stem being green or yellow; the leaves are dark gray-green; the disk flowers are gold or yellow; the ray flowers are yellow; flowering generally takes place between mid-June and late November, plants may cease flowering during summer drought (additional records: two for early January, one for late January, one for late February, one for late March, one for early April, one for mid-April and three for late December). HABITAT: Within the range of this species it has been reported from mountains; mountainsides; sandy and sandy-silty mesas; plateaus; rocky rims of canyons and craters; rocky spurs; along rocky and gravelly-loamy canyons; rocky canyon walls; along rocky canyon bottoms; rocky gorges; rocky bases of cliffs; knolls; rocky ridges; sandy ridgetops; clearings in forests; meadows; foothills; bouldery, rocky and silty hills; gravelly-silty hilltops; rocky hillsides; bouldery-cobbly-gravelly, rocky, shaley, cobbly, cindery, gravelly, gravelly-loamy and sandy slopes; sandy bajadas; rocky and gypsum outcrops; amongst boulders; alcoves; rocky lava flows; sand hills; sand dunes; stony and sandy plains; sandy flats; basins; rocky valley floors; gravelly-sandy valley bottoms; along rocky railroad right-of-ways; along rocky, gravelly, gravelly-loamy and sandy roadsides; along arroyos; within gravelly draws; gullies; seeps; springs; along streams; gravelly-loamy streambeds; creekbeds; along rivers; along rocky, gravelly-sandy and sandy washes; silty lakebeds; along gravelly and sandy banks of streams, creeks, rivers and washes; sandy edges of washes and marshes; mudflats; beaches; benches; floodplains; mesquite bosques; ditches; sandy riparian areas, and disturbed areas growing in drained dry rocky desert pavement; bouldery, bouldery-rocky, bouldery-cobbly-gravelly, rocky, shaley, stony, cobbly, cindery, gravelly, gravelly-sandy and sandy ground; gravelly loam, sandy loam and clayey loam ground; rocky clay, gravelly clay and clay ground, and gravelly silty, sandy silty and silty ground, occurring from 1,200 to 8,700 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. This plant was reported to have been utilized by native peoples of North America; it was noted as having been used as a drug or medication, as cooking tools and as decorations on prayer sticks. Threadleaf Snakeweed may live to be 18 years of age; however, the average lifespan is less than ten years. Threadleaf Snakeweed invades disturbed areas and may serve as an indicator of overgrazed rangelands reducing both native plant diversity and forage values, populations may best be reduced by increasing native grass competition. *Gutierrezia microcephala* is native to southwest-central and southern North America. \*5, 6, 13, 15, 16, 28 (note under *Gutierrezia sarothrae*), 43 (112909), **46** (Snake-weeds “are more or less poisonous to sheep and goats when eaten in quantity, but are unpalatable and are seldom grazed. It is said that *G. microcephala* absorbs selenium in large quantity on certain soils.”, Page 853), 58, 63 (112909 - color presentation), **68, 77, 80** (This species is listed as a Major Poisonous Range Plant. “The poisonous principal is apparently a saponin. It is most toxic at earlier stages of growth during early leaf development and when growing on sandy soils. ... Livestock apparently eat small amounts of the relatively unpalatable snakeweed without serious consequences. Therefore, range improvement to provide

alternate, desirable feed and to reduce snakeweed infestations through grass competition will control most losses.” See text for additional information.), **85** (113009 - color presentation), 86 (note under *Gutierrezia sarothrae*), 127\*

*Haplopappus laricifolius* (see *Ericameria laricifolia*)

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

COMMON NAMES: Golden Ragweed, Trans-Pecos Thimblehead, TransPecos Thimblehead, Wislizenus Beeflower, Yellow Thimblehead. DESCRIPTION: Terrestrial annual or biennial forb/herb (8 inches to 5 feet in height); the foliage is green; the disc and ray flowers are green-yellow or yellow; flowering generally takes place between early June and early December (additional record: one for late March). HABITAT: Within the range of this species it has been reported from mountains; mesas; clefts in cliffs; rocky canyons; buttes; meadows; foothills; stony-gravelly hills; rocky and gravelly hillsides; bouldery-rocky-sandy and rocky slopes; alluvial fans; bajadas; amongst boulders; plains; gravelly, sandy and clayey flats; valley floors; along gravelly, gravelly-sandy-clayey-loamy, gravelly-silty, sandy and sandy-clayey-loamy roadsides; within sandy arroyos; along sandy bottoms of arroyos; springs; sandy streambeds; along creeks; along rivers; sandy riverbeds; along and in rocky, gravelly, gravelly-sandy, sandy and clayey washes; gravelly-sandy and sandy banks of washes; sandy edges of washes; terraces; floodplains; mesquite bosques; around stock tanks, and disturbed areas growing in dry bouldery, bouldery-rocky-sandy, rocky, rocky-sandy, stony-gravelly, gravelly, gravelly-sandy and sandy ground; rocky-clayey loam, gravelly-sandy-clayey loam, sandy-clayey loam and loam ground; gravelly clay and clay ground, and gravelly silty ground, occurring from 1,300 to 7,600 feet in elevation in the woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTE: *Hymenothrix wislizeni* is native to southwest-central and southern North America. \*5, 6, 15, 16, 43 (062009), 46 (Page 920), 58, 63 (120209), 77, **85** (120209 - color presentation), 115 (color presentation)\*

***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  $\frac{3}{4}$  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  $\frac{3}{4}$  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)\*

*Perezia nana* (see *Acourtia nana*)

*Perezia wrightii* (see *Acourtia wrightii*)

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

COMMON NAMES: Deerweed, Hierba del Venado (Herb of the Deer), Odora, Poreleaf, Slender Poreleaf. DESCRIPTION: Terrestrial perennial subshrub (4 to 48 inches in height, one plant was described as being 8 inches in height and 12 inches in width, one plant was described as being 16 inches in height and 20 inches in width), the foliage is bluish, blue-gray, gray, gray-green, green or purple-gray; the disk flowers (no ray flowers) may be cream, cream-maroon, cream-purple, cream-white, flesh, grayish-white, maroon, maroon-cream, pinkish, pinkish-white, purple, purplish-white, white, whitish, white tinged with purple, yellow or yellow-white; flowering generally takes place between mid-February and late December (additional records: one for early January and one for mid-January). HABITAT: Within the range of this species it has been reported from mountains; rocky mountainsides; rocky-gravelly and gravelly mesas; cliffs; bouldery and rocky and stony canyons; rocky and sandy canyon bottoms; scree; talus slopes; bouldery bases of cliffs; crevices in boulders and rocks; ledges; rocky ridges; ridgetops; meadows; foothills; rocky and rocky-sandy hills; along bouldery hilltops; rocky hillsides; bouldery, rocky, rocky-gravelly, rocky-loamy, rocky-clayey, gravelly and sandy slopes; alluvial fans; rocky and gravelly bajadas; rocky outcrops; amongst boulders and rocks; sandy lava beds; sand dunes; sandy hummocks; sandy plains; rocky-sandy, gravelly and sandy flats; basins; valley floors; sandy coastal dune ridges; along gravelly roadsides; sandy arroyos; rocky arroyo walls; rocky arroyo bottoms; draws; along gullies; around springs; along streams; along creeks; sandy creekbeds; along rivers; rocky riverbeds; along and in rocky, rocky-clayey, gravelly, gravelly-sandy and sandy washes; within drainage ways; rocky, cobbly and sandy banks of arroyos, rivers and washes; rocky edges of arroyos; along shores; beaches; gravelly terraces; floodplains; riparian areas, and recently burned areas of chaparral growing in wet and dry desert pavement; bouldery, bouldery-gravelly, rocky, rocky-gravelly, shaley, cobbly, cindery, gravelly, gravelly-sandy and sandy ground; rocky loam and rocky-gravelly loam ground, and rocky clay and clay ground, occurring from sea level to 6,100 feet in elevation in the woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: Deerweed emits a pungent odor when bruised. This plant was reported to have been utilized by native peoples of North America crop; it was noted as having been used as a drug or medication. Deer browse this plant. *Porophyllum gracile* is native to southwest-central and southern North America. \*5, 6, 13, 15, 16, 28 (color photograph), 43 (121109), 46 (Pages 933-934), 58, 63 (121109 - color presentation), 77, 85 (121209 - color presentation), 115 (color presentation), 127, **HR\***

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

COMMON NAMES: Cooper Paperflower, Paper Daisy, Paper-daisy, Paper Flower, Paper-flower, Paperflower, Whitestem Paperflower, Yellow Paper Daisy. DESCRIPTION: Terrestrial perennial forb/herb or subshrub (4 to 32 inches in height, one plant was described as being 32 inches in height and 40 inches in width); the stems are white; the leaves may be blue-green, gray, gray-green, green, greenish-gray or white; the disk flowers are yellow, the ray flowers are lemon-yellow, pale yellow or yellow fading to cream or white and persisting on plant when dry; flowering generally takes place between early January and early December. HABITAT: Within the range of this species it has been reported from mountains; rocky mesas; bouldery canyons; along canyon bottoms; buttes; rocky and chalky ridges; ridgelines; foothills; rocky, stony-gravelly, cobbly-gravelly-loamy and clayey hills; rocky and gravelly hillsides; bouldery, rocky, rocky-gravelly-clayey, stony, gravelly-sandy-silty, gravelly-clay and sandy-silty slopes; sandy bajadas; amongst boulders and rocks; lava fields; plains; gravelly and sandy flats; basins; sandy valley floors; rocky embankments; in roadbeds; along rocky-sandy-loamy, gravelly-sandy, sandy and clayey roadsides; arroyos; along streams; along and in rocky, rocky-sandy, gravelly, gravelly-sandy and sandy washes; drainages; sandy along rocky drainage ways; sandy depressions; gravelly-silty edges of draws; along sandy banks of arroyos, rivers and washes; mudflats; rocky benches; gravelly terraces;

sandy bottomlands; floodplains; sandy riparian areas, and disturbed areas growing in moist and dry desert pavement; bouldery, rocky, rocky-sandy, stony, stony-gravelly, cindery, gravelly, gravelly-sandy, sandy and chalky ground; rocky-sandy loam, cobbly-gravelly loam, sandy-clayey loam and sandy-silty loam ground; rocky-gravelly clay, gravelly clay and clay ground, and gravelly silty, gravelly-sandy silty and sandy silty ground, occurring from 500 to 5,200 feet in elevation in the woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. *Psilostrophe cooperi* is native to southwest-central and southern North America. \*5, 6, 13 (color photograph), 15, 16, 18, 28 (color photograph), 43 (121209 - *Psilostrophe cooperi* Greene), 46 (Page 914), 48 (genus), 63 (121209 - color presentation), 77, 80 (This species is listed as a Rarely Poisonous and Suspected Poisonous Range Plant. "This showy, low-growing shrub is widespread in Arizona. No losses have been documented, but it may cause some poisoning similar to the other paperflowers."), 85 (121209 - color presentation), 86 (color photograph), 115 (color presentation), **WTK** (July 4, 2005)\*

***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), **HR\***

***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), **HR\***

### ***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), **HR\***

*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, **HR\***

*Zinnia pumila* (see *Zinnia acerosa*)

Boraginaceae: The Borage Family

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

SYNONYMY: *Coldenia canescens* A.P. de Candolle. COMMON NAMES: Crinkle Mats, Gray Coldenia, Hierba de la Virgin, Oreja del Perro, Shrubby Coldenia, Woody Crinklemat. DESCRIPTION: Terrestrial perennial subshrub (4 to 8 inches in height, plants 2 to 4 inches in height and 16 inches in width were reported); the leaves are gray or gray-green; the flowers may be lavender, lavender-pink, lavender-whitish, light pink-lavender, pink, purple or white with a yellow floral tube; flowering generally takes place between late March and late May (additional records: two for mid-February). HABITAT: Within the range of this species it has been reported from mountains; rocky mountainsides; mesas; canyons; ridges; ridgetops; gravelly bajadas; rocky-gravelly slopes; gravelly flats; rocky roadsides; arroyos; sandy riparian areas, and disturbed areas growing in dry rocky, rocky-gravelly, gravelly and sandy ground, occurring from 900 to 5,400 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 is browsed by Desert Bighorn Sheep (*Ovis canadensis* subsp. *mexicana*). *Tiquilia canescens* var. *canescens* is native to southwest-central and southern North America. \*5, 6, 28 (color photograph), 43 (010310), 46 (*Coldenia canescens* DC., Page 709), 63 (010310), 85 (010310), 115 (color presentation of species), **HR\***

*Coldenia canescens* (see *Tiquilia canescens* var. *canescens*)

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*)

***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), **HR\***

*Thysanocarpus amplexans* (see *Thysanocarpus curvipes*)

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

SYNONYMY: *Thysanocarpus amplexans* E.L. Greene, *Thysanocarpus curvipes* W.J. Hooker var. *elegans* (F.E. von Fischer & C.A. von Meyer) B.L. Robinson, *Thysanocarpus curvipes* W.J. Hooker var. *eradiatus* W.L. Jepson, *Thysanocarpus elegans* F.E. von Fischer & C.A. von Meyer. COMMON NAMES: Fringe-pod, Lace Pod, Lace-pod, Lacepod, Lacepod Mustard, Sand Fringepod, Sand Lacepod.

DESCRIPTION: Terrestrial annual forb/herb (6 to 32 inches in height, one plant was described as being 10 inches in height with a crown 2 inches in width, plants 16 to 22 inches in height and 4 to 8 inches in width were reported); the foliage is pale gray-green; the flowers may be cream, pale pink, pink, purple, white or white with green midribs; flowering generally takes place between early January and early June. HABITAT: Within the range of this species it has been reported from mountains; rocky mountainsides; mesas; rocky cliffs; rock faces and walls; rocky canyons; canyon walls; bouldery, rocky and sandy canyon bottoms; talus; bases of cliffs; crevices in bedrock and boulders; buttes; ledges; ridges; rocky ridgetops; meadows; foothills; bouldery and rocky hills; hilltops; bouldery, rocky, rocky-cobbly-gravelly and loamy hillsides; bouldery; bouldery-gravelly, rocky, rocky-gravelly, rocky-clayey-loamy, rocky-silty-loamy, cobbly, cobbly-clayey, gravelly, gravelly-loamy, sandy, sandy-loamy, loamy and clayey slopes; bajadas; amongst boulders and rocks; bases of rocks; lava flows; sand dunes; rocky banks; breaks; rocky and sandy flats; sandy valley floors; railroad right-of-ways; along roadsides; arroyos; draws; rocky chutes; gulches; seeps; along streams; edges of streambeds; along creeks; creekbeds; rocky riverbeds; along and in rocky-sandy, gravelly-sandy, sandy, sandy-loamy and loamy washes; along and in drainages; along and in sandy drainage ways; around pools; rocky and sandy banks of draws, creeks and rivers; cobbly edges of streambeds and washes; margins of washes; shores of lakes; bouldery and rocky benches; rocky-gravelly and sandy terraces; loamy bottomlands; floodplains; along sandy margins of reservoirs; ditches; rocky and sandy riparian areas; recently burned areas in woodlands and chaparral, and disturbed areas growing in moist and dry bouldery, bouldery-rocky-sandy, bouldery-gravelly, rocky, rocky-cobbly-gravelly, rocky-gravelly, rocky-sandy, cobbly, cobbly-sandy, cindery, gravelly, gravelly-sandy and sandy ground; rocky loam, rocky-sandy loam, rocky-clayey loam, rocky-silty loam, cobbly-gravelly loam, gravelly loam, sandy loam and loam ground; rocky clay, cobbly clay, gravelly clay, sandy clay and clay ground, and silty ground often having been reported as growing in shade and amongst grasses, occurring from sea level to 7,000 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant was reported to have been utilized by native peoples of North America and could be investigated to determine its value as a home garden or commercial food crop; it was also noted as having been used as a drug or medication. *Thysanocarpus curvipes* is native to west-central and southern North America. \*5, 6, 15 (recorded as *Thysanocarpus elegans* Fisch. & Mey.), 16, 43 (011610), 46 (recorded as *Thysanocarpus amplexans* Greene, Page 348), 58 (recorded as *Thysanocarpus curvipes* Hook. var. *elegans* (Fisch. & Meyer) Robins.), 63 (011610 - color presentation), 77 (recorded as *Thysanocarpus curvipes* Hook. var. *elegans* (F. and M.) Robins.), 85 (011610 - color presentation), 115 (color presentation), 127\*

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

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

*Thysanocarpus elegans* (see *Thysanocarpus curvipes*)

#### 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 whips 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, **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:saan (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). Saguaro 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 Saguaro 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, **WTK** (July 4, 2005)\*

*Cereus giganteus* (see *Carnegiea gigantea*)

***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* Engelm. & Bigelow var. *major* (Engelm. & Bigelow) L. Benson, Page 35 & 37), 26 (genus, recorded as *Opuntia*), 27 (Page 19, color photograph: Plates 14 & 14A, Page 96), 28 (recorded as *Opuntia acanthocarpa*, color photograph of species), 43 (011710 - *Cylindropuntia acanthocarpa* (Engelm. & J.M. Bigelow) F.M. Knuth var. *major* (Engelm.) Pinkava, *Opuntia acanthocarpa* Engelm. & J.M. Bigelow var. *major* (Engelm. & J.M. Bigelow) L.D. Benson, *Opuntia acanthocarpa* Engelm. & J.M. Bigelow var. *ramosa* Peebles), 45 (color photograph of species), 46 (recorded as *Opuntia acanthocarpa* Engelm. & Bigel. var. *ramosa* Peebles, Page 585), 48 (genus, recorded as *Opuntia*), 53 (species, recorded as *Opuntia acanthocarpa* Engelm. & Bigel.), 63 (011710 - color presentation), 77 (recorded as *Opuntia acanthocarpa* Engelm. & Bigel. var. *major* (Engelm. & Bigel.) L. Benson, color photograph labeled *Opuntia acanthocarpa* #66), 85 (011710 - color presentation), 115 (color presentation of species), 119 (species, recorded as *Opuntia acanthocarpa* Engelm.), 127, **WTK** (July 4, 2005)\*

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

SYNONYMY: *Opuntia arbuscula* G. Engelm. 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 ( $\frac{3}{4}$  to  $1\frac{1}{2}$  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 ( $\frac{1}{2}$  to  $\frac{7}{8}$  inch in diameter and 1 to  $1\frac{1}{4}$  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, **WTK** (July 4, 2005)\*

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

SYNONYMY: *Opuntia bigelovii* G. Engelmann. COMMON NAMES: Arizona Jumping Cactus, "Ball" Cholla, Cholla Guera, Go'te (Seri), Jumping Cactus, Jumping Cholla, Silver Cholla, Teddybear Cactus, Teddy Bear Cholla, Teddy-bear Cholla, Teddybear Cholla. DESCRIPTION: Terrestrial perennial stem-succulent subshrub or shrub (20 inches to 10 feet in height, one plant was reported to be just over 8 feet in height and 40 inches in width with 2 to 3 main trunks); the central trunk is black or dark brown; older branches are dark-brown; the stems (3 to 10 inches in length and 1¼ to 2½ inches in diameter) are bluish, light green, green or bluish-green; the spines are golden, silvery, tan, pale yellow or yellow aging to dark brown; the glochids are yellow; the flowers (1 to 1½ inches in diameter) may be chartreuse-yellow, cream tinged with rose, green, green-yellow, greenish-yellow, magenta, pink, white-yellow, yellow tinged with red-purple or white tinged with lavender; the anthers are yellow, deep yellow, yellow-orange or deep yellow-orange; the stigma lobes are cream, dark chartreuse-green, green, dark green or olive green; flowering generally takes place between early March and mid-June (additional records: one for late January, one for early February, one for early September, one for mid-November, two for late November and one for early December); the nearly spineless fruits (½ to ¾ inch in length and ½ to ¾ inch in diameter) are greenish-yellow, yellow or yellow-green and fleshy when ripe. HABITAT: Within the range of this species it has been reported from mountains; rocky and sandy mountainsides; canyons; canyon bottoms; cliffs; talus slopes; bluffs; rocky ridges; rocky ridgetops; rocky foothills; rocky and sandy hills; rocky hillsides; rocky, rocky-gravelly, rocky-sandy, gravelly and sandy slopes; rocky alluvial fans; gravelly-loamy bajadas; plains; cobbly-silty, gravelly and silty flats; basins; valley floors; along roadsides; arroyos; along and in rocky, gravelly and sandy washes; sandy drainages; benches; lowlands, and disturbed areas growing in dry desert pavement; rocky, rocky-gravelly, rocky-sandy, gravelly and sandy ground; gravelly loam and silty loam ground; clay ground, and cobbly-silty and silty ground, occurring from sea level to 4,400 feet in elevation in the scrub and desertscrub ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. This plant was reported to have been utilized by native peoples of North America and could be investigated to determine its value as a home garden or commercial food crop. This is the spiniest of the cholla cacti in Arizona. Thomas Kearney and Robert Peebles in their book Arizona Flora had this to say about the Teddybear Cholla: "The combination of barbed spines and densely armed, easily detached joints has earned profound respect for this formidable cholla." Teddy-bear Chollas may live to be 60 or more years of age. The Teddybear Cholla is a preferred nesting site of the Cactus Wren (*Campylorhynchus brunneicapillus*). Pack Rats (*Neotoma* sp.) use the joints of this plant in the construction of their nests. The change in nomenclature in USDA NRCS has not been recognized in BONAP, species remains as *Opuntia bigelovii* (accessed 041806). *Cylindropuntia bigelovii* is native to southwest-central and southern North America. \*5, 6, 12 (recorded as *Opuntia bigelovii* Engelm., Pages 50, 52 & 54-55), 15 (recorded as *Opuntia bigelovii* Engelm., color photograph on Page 77 includes habitat and associated species), 18, 26 (genus, recorded as *Opuntia*), 27 (Page 5, color photographs including habitat: Plates 5 & 5A, Page 94), 28 (recorded as *Opuntia bigelovii*, color photograph), 43 (052110), 45 (color photograph), 46 (recorded as *Opuntia bigelovii* Engelm., Page 584), 48, 63 (052110 - color presentation including habitat), 77 (recorded as *Opuntia bigelovii* Engelm., color photograph #13), 85 (052110 - color presentation), 86 (color photograph), 91 (recorded as *Opuntia bigelovii* Engelm.), 115 (color presentation), 119 (recorded as *Opuntia bigelovii* Engelm.), 127, **HR\***

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

SYNONYMY: *Opuntia fulgida* G. Engelmann, *Opuntia fulgida* G. Engelmann var. *fulgida*. COMMON NAMES: Chain Cholla, Chain-fruit Cholla, Cholla, Cholla Brincadora, Choya, Jumping Cahin-fruit Cholla, Jumping Cholla, Sonora Jumping Cholla, Velas de Coyote. 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 ( $\frac{3}{4}$  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 ( $\frac{3}{4}$  to 2 inches in length and  $\frac{3}{4}$  to 1 inch in diameter) are gray-green, green or purple forming clusters or pendant "chains". HABITAT: Within the range of this species it has been reported from mountains; mesas; canyons; ledges; ridges; hills; hillsides; rocky, gravelly-loamy and sandy slopes; gravelly bajadas; plains; rocky-gravelly, gravelly, sandy and sandy-silty flats; along valley floors; along rocky-gravelly and sandy roadsides; along creeks; along and in washes; banks of streams, creeks and washes; edges of washes; terraces, and floodplains growing in dry desert pavement; rocky, rocky-gravelly, gravelly and sandy soils; gravelly loam and silty-clayey loam ground; clay ground, and sandy silty ground, occurring from 800 to 4,100 feet in elevation in the grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. This plant was reported to have been utilized by native peoples of North America and could be investigated to determine its value as a home garden or commercial food crop. Each year, following flowering, additional fruits are added to the end of the chains. Chain-fruit Chollas may live to be from 40 to 80 years of age. The Chain-fruit Cholla is a preferred nesting site of the Cactus Wren (*Campylorhynchus brunneicapillus*). The Costa's Hummingbird (*Calypte costae*) has been observed visiting the flowers. Deer and Javelina feed on the fruits. The change in nomenclature in USDA NRCS has not been recognized in BONAP, species remains as *Opuntia fulgida* (accessed 041806). *Cylindropuntia fulgida* var. *fulgida* is native to southwest-central and southern North America. \*5, 6, 12 (recorded as *Opuntia fulgida* Engelm. var. *fulgida*, Pages 49-52), 15 (recorded as *Opuntia fulgida* Engelm. var. *fulgida*), 16 (recorded as *Opuntia fulgida* Engelm.), 26 (genus, recorded as *Opuntia*), 27 (species, Pages 10-11, color photograph: Plate 10, Page 96), 28 (recorded as *Opuntia fulgida*, color photograph), 43 (011810), 45 (species, color photograph of species), 46 (recorded as *Opuntia fulgida* Engelm., Page 585), 48 (genus, recorded as *Opuntia*), 52 (recorded as *Opuntia fulgida*, color photograph), 53 (recorded as *Opuntia fulgida* Engelm.), 63 (011810 - color presentation), 77 (recorded as *Opuntia fulgida* Engelm. var. *fulgida*), 85 (011810 - color presentation), 91 (recorded as *Opuntia fulgida* Engelm. var. *fulgida*), 115 (color presentation of species), 119 (recorded as *Opuntia fulgida* Engelm.), 127, **WTK** (July 4, 2005)\*

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

SYNONYMY: *Opuntia fulgida* G. Engelmann var. *mamillata* (A.C. Schott ex G. Engelmann) J.M. Coulter, *Opuntia fulgida* G. Engelmann var. *mamillata* (A.C. Schott ex G. Engelmann) J.M. Coulter forma *monstrosa* J.M. Coulter, *Opuntia mamillata* A.C. Schott ex G. Engelmann. COMMON NAMES: Cholla Brincadora, Cholla, Club Cactus, Jumping Cholla, Smooth Chain-fruit Cholla, Velas de Coyote. DESCRIPTION: Terrestrial perennial stem-succulent shrub or tree (2 to 9 feet in height, one plant was reported as being 6 feet in height and 4 feet in width, one plant was reported as being 8 feet in height and 8 feet in width); the stems are drab green or green; the flowers ( $\frac{3}{4}$  to 1 inch in diameter) are cream tinged with magenta, light pink, pink, pink-purple, rose-pink or violet; flowering generally takes place between late May and mid-September (additional records: one for mid-April and one for late April); the smooth fleshy fruits ( $\frac{3}{4}$  to 2 inches in length and  $\frac{3}{4}$  to 1 inch in diameter) are gray-green or green forming pendant "chains". HABITAT: Within the range of this species it has been reported from mountains; ridges; rocky ridgetops; foothills; hills; rocky slopes; bajadas; sand dunes; plains; gravelly and sandy flats; roadsides; along washes; rocky-sandy benches; floodplains, and disturbed areas growing in dry rocky, rocky-sandy, gravelly and sandy ground, occurring from sea level to 3,900 feet in elevation in the grassland and desertscrub ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. The plant, *Opuntia fulgida*, was reported to have been utilized by native peoples of North America and could be investigated to determine its value as a home garden or commercial food crop. Each year, following flowering, additional fruits may be added to the end of the chains. Chain-fruit Cholla may live to be from 40 to 80 years of age. Cristate forms (forma *monstrosa* J.M. Coulter) have been reported. The Chain-fruit Cholla is a preferred nesting site of the Cactus Wren (*Campylorhynchus*

*brunneicapillus*). The Costa's Hummingbird (*Calypte costae*) has been observed visiting the flowers. Deer and Javelina feed on the fruits. The change in nomenclature in USDA NRCS has not been recognized in BONAP, species remains as *Opuntia fulgida* (accessed 041806). *Cylindropuntia fulgida* var. *mamillata* is native to southwest-central and southern North America. \*5, 6, 12 (recorded as *Opuntia fulgida* Engelm. var. *mamillata* (Schott) Coulter, Pages 50 & 52), 15 (recorded as *Opuntia fulgida* var. *mamillata* (Schott) Coulter.), 26 (genus, recorded as *Opuntia*), 27 (Pages 12 & 13 (forma *monstrosa*), color photograph: Plate 11, Page 96), 43 (011810 - recorded as *Opuntia fulgida* Engelm. var. *mamillata* (A. Schott) J.M. Coult., no record for *Opuntia fulgida* var. *mamillata* forma *monstrosa*), 45 (species, color photograph of species), 46 (recorded as *Opuntia fulgida* Engelm. var. *mamillata* (Schott) Coult., Page 585), 48 (genus, recorded as *Opuntia*), 53 (recorded as *Opuntia fulgida* Engelm. var. *mamillata* (Schott) Coult.), 63 (011810), 58 (recorded as *Opuntia fulgida* Engelm. var. *mamillata* (Schott) Coult.), 77 (recorded as *Opuntia fulgida* Engelm. var. *mamillata* (Schott) Coult.), 85 (011810 - color presentation), 91 (recorded as *Opuntia fulgida* Engelm. var. *mamillata* (Schott) Coult.), 115 (color presentation of species), 127, **HR\***

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

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

SYNONYMY: *Opuntia leptocaulis* A.P. de Candolle. COMMON NAMES: Agujilla, Alfilerillo (Spanish), Catalinera (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 (*Dactylopius coccus*) has been observed growing on this plant. The change in nomenclature in USDA NRCS has not been recognized in BONAP, species remains as *Opuntia leptocaulis* (accessed 041806). *Cylindropuntia leptocaulis* is native to southwest-central and southern North America. \*5, 6, 12 (recorded as *Opuntia leptocaulis* DC., Pages 56-58), 15 (recorded as *Opuntia leptocaulis* DC.), 16 (recorded as *Opuntia leptocaulis* DC.), 18, 26 (genus, recorded as *Opuntia*), 27 (Page 2, color photograph: Plate 2, Page 94), 28 (recorded as *Opuntia leptocaulis*, color photograph), 43 (011910), 45 (color photograph), 46 (recorded as *Opuntia leptocaulis* DC., Page ), 48 (genus, recorded as *Opuntia*), 58 (recorded as *Opuntia leptocaulis* DC.), 63 (011910 - color presentation), 77 (recorded as *Opuntia leptocaulis* DC.), 85 (011910 - color presentation), 86 (recorded as *Opuntia leptocaulis*, color photograph), 91 (recorded as *Opuntia leptocaulis* DC.), 115 (color presentation), 119 (recorded as *Opuntia leptocaulis* DC.), 127, **WTK** (July 4, 2005)\*

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

SYNONYMY: *Opuntia spinosior* (G. Engelmann) J.W. Toumey. COMMON NAMES: Cane Cholla, Cardenche, Handgrip Cholla, Spiny Cholla, Tasajo, Tourney-cane Cholla (Arizona), Walkingstick Cactus, Walking Stick Cholla. DESCRIPTION: Terrestrial perennial stem-succulent shrub (16 inches to 10 feet in height, one plant was described as being 6½ feet in height and 5 to 6½ feet in width, one plant was described as being 6½ feet in height and 10 feet in width); the stems may be brown-green, grayish-maroon, grayish-purple, green, purple or purplish-green; the spines may be brown, gray, pale pink, pink, purplish-gray, reddish-gray or tan; the glochids may be tan, yellow or yellowish-white aging to gray; the flowers (1¼ 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 1¼ inches in length and ¾ to 1 inch in diameter) are bright lemon-yellow, red, bright yellow, pale yellow, yellow, yellow-green, yellowish-green or yellow with a reddish cast and remain on the plant for some time. HABITAT: Within the range of this species it has been reported from mountains; mountaintops; mountainsides; mesas; rocky canyons; canyon bottoms; talus, ridgelines; foothills; rocky hills; rocky hillsides; along rocky, rocky-sandy and sandy slopes; bajadas; rock outcrops; amongst rocks; plains; gravelly, gravelly-sandy and silty flats; grassy valley floors; roadsides; arroyos; rocky draws; springs; along creeks; creekbeds; along sandy washes; drainages; along drainage ways; sandy flood channels; terraces; floodplains; mesquite bosques; riparian areas, and disturbed areas growing in dry rocky, rocky-sandy, gravelly, gravelly-sandy and sandy ground; silty-clayey loam, silty loam and loam ground, and silty ground, occurring from 900 to 7,200 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. This plant was reported to have been utilized by native peoples of North America and could be investigated to determine its value as a home garden or commercial food crop. The Cactus Wren (*Campylorhynchus brunneicapillus*) nests in the branches. The change in nomenclature in USDA NRCS has not been recognized in BONAP, species remains as *Opuntia spinosior* (accessed 041806). *Cylindropuntia spinosior* is native to southwest-central and southern North America. \*5, 6, 12 (recorded as *Opuntia spinosior* (Engelm.) Toumey, Pages 39-43, color photograph), 15 (recorded as *Opuntia spinosior* (Engelm.) Toumey), 16 (recorded as *Opuntia spinosior* (Engelm.) Toumey), 26 (genus, recorded as *Opuntia*), 27 (Page 14, color photograph: Plate 12, Page 96), 28 (color photograph), 43 (063009), 45 (color photographs), 46 (recorded as *Opuntia spinosior* (Engelm. & Bigel.) Toumey, Page 585), 48 (genus, recorded as *Opuntia*), 53, 58 (recorded as *Opuntia*

*spinosior* (Engelm.) Toumey), 63 (011910 - color presentation), 77 (recorded as *Opuntia spinosior* (Engelm.) Toumey), 85 (012010 - color presentation), 115 (color presentation), 119, 127, **WTK** (July 4, 2005)\*

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

SYNONYMY: *Opuntia kleiniae* A.P. de Candolle var. *tetracantha* (J.W. Toumey) W.T. Marshall, *Opuntia x tetracantha* J.W. Toumey (pro sp.) [*Opuntia acanthocarpa* x *Opuntia leptocaulis*]. COMMON NAMES: Candle Cholla, Cane Cholla, Four-spined Cholla, Four-spined Klein's Cholla, Hybrid Pencil Cholla, Klein Pencil Cholla, Pencil Joint Cholla, Tucson Cholla, sometimes referred to as the Tucson Prickly-pear or Tucson Pricklypear. DESCRIPTION: Terrestrial perennial stem-succulent shrub (1 to 8 feet in height, plants were described as being 20 inches in height and 32 inches in width, one plant was described as being 4 feet in height and width); the stems are gray-green, green (often reported with a gray wax) or reddish; the spines are purple-brown or yellow; the glochids are dark brown or yellow; the flowers (3/4 to 1 3/8 inches in diameter) are green edged with brown, maroon or red, greenish-bronze, dirty pink, pink-purple-red over yellow, light reddish, dirty reddish-purple, red-magenta, yellow-green suffused with purple-brown; the anthers are pale green; flowering generally takes place between mid-April and late May (additional records: one for early February, one for late March, one for mid-September and one for late September); the egg-shaped fleshy to dry fruits are green turning yellow with a red blush or red with age; the ripe fruits (3/4 to 1 inch in length and 1/2 to 5/8 inch in diameter) are green, green-red, greenish-yellow, red or reddish-orange. HABITAT: Within the range of this species it has been reported from mountains; canyons; ridgetops; rocky hills; rocky slopes; gravelly bajadas; rocky and gravelly flats; roadsides; gullies; along washes; banks of arroyos, and mesquite bosques growing in damp and dry desert pavement and rocky and gravelly ground, occurring from 700 to 4,400 feet in elevation in the grassland and desertscrub ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. The change in nomenclature in USDA NRCS has not been recognized in BONAP, species remains as *Opuntia x tetracantha* (accessed 041806). *Cylindropuntia x tetracantha* is native to southwest-central and southern North America. \*5, 6, 12 (recorded as *Opuntia kleiniae* DC. var. *tetracantha* (Toumey) W.T. Marshall), 15 (recorded as *Opuntia kleiniae* DC. var. *tetracantha* (Toumey) W.T. Marshall), 16 (recorded as *Opuntia kleiniae* DC. var. *tetracantha* (Toumey) Marshall), 26 (genus, recorded as *Opuntia*), 27 (recorded as *Opuntia kleiniae* DeCandolle var. *tetracantha* (Toumey) F.M. Knuth, Marshall, Page 4, color photograph: Plate 4, Page 94), 43 (012010), 46 (recorded as *Opuntia tetracantha* Toumey, Page 584), 48 (genus, recorded as *Opuntia*), 63 (012010), 77 (recorded as *Opuntia x tetracantha* Toumey), 85 (012110 - color presentation of dried material), **HR**\*

***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 2 3/4 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 1/2 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 fasciculatus* (G. Engelmann ex B.D. Jackson) L.D. Benson: Pinkflower Hedgehog Cactus**

SYNONYMY: *Echinocereus fasciculatus* (G. Engelmann) L.D. Benson var. *fasciculatus*, *Echinocereus fendleri* (G. Engelmann) F. Sencke ex J.N. Haage var. *fasciculatus* (G. Engelmann ex B.D. Jackson) N.P. Taylor, *Echinocereus fendleri* (G. Engelmann) F. Sencke ex J.N. Haage var. *robustus* (R.H. Peebles) L.D. Benson, *Mammillaria fasciculata* G. Engelmann ex B.D. Jackson (possibly incorrectly applied). COMMON NAMES: Bundle Hedgehog, Bundle Hedgehog Cactus, Bundle-spine Hedgehog, Magenta-flower Hedgehog Cactus, Pinkflower Hedgehog Cactus, Robust Hedgehog, Robust Hedgehog Cactus, Short-spine Strawberry Cactus, Strawberry Cactus. DESCRIPTION: Terrestrial perennial stem-succulent shrub (erect to ascending 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; canyon sides; 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 desert scrub ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. The species, *Echinocereus fendleri*, was reported to have been utilized by native peoples of North America and could be investigated to determine its value as a home garden or commercial food crop. The fruits are eaten by birds and other animals. *Echinocereus fasciculatus* is native to southwest-central and southern North America. \*5, 6, 8, 12 (color photograph - recorded as *Echinocereus fasciculatus* (Engelm.) L. Benson var. *fasciculatus*, Pages 132-135), 15 (recorded as *Echinocereus fasciculatus* (Engelm.) L. Benson var. *fasciculatus*), 16 (recorded as *Echinocereus fasciculatus* (Engelm.) L. Benson), 27 (Page 81, color photograph: Plate 50, Page 104), 43 (012110), 45 (color photograph), 46 (recorded as *Echinocereus fendleri* (Engelm.) Rümpler var. *robustus* (Peebles) L. Benson, Page 572 and *Echinocereus fendleri* (Engelm.) Rümpler var. *robustus* (Peebles) L. Benson, Page 572), 48 (genus), 58 (recorded as *Echinocereus fasciculatus* (Engelm.) L. Benson var. *fasciculatus*), 63 (012110), 77 (recorded as *Echinocereus fasciculatus* (Engelm.) L. Benson, color photograph #64), 85 (012110 - color presentation), 115 (color presentation), 119 (species, recorded as *Echinocereus fendleri* (Engelm.) Rümpler), 127, **HR\***

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

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

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

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

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

SYNONYMY: *Ferocactus acanthodes* (C. Lemaire) N.L. Britton & J.N. Rose var. *lecontei* (G. Engelmann) G. Lindsay, *Ferocactus lecontei* (G. Engelmann) N.L. Britton & J.N. Rose. COMMON NAMES: Barrel Cactus, Bisnaga, Biznaga, LeConte Barrel Cactus, LeConte's Barrel Cactus, Spiny Barrel Cactus, Compass Plant. DESCRIPTION: Terrestrial perennial stem-succulent shrub (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, Vznaga 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 than 4¼ inches in height and 4¾ inches in width. The growth rate of propagated and cultivated barrel cacti is much faster. The life-span of Fishhook Barrel Cacti is reported to be from 50 to over 130 years of age. Some plants tend to lean to the south with age. Cristate forms have been reported. The fruits are eaten by Mule Deer (*Odocoileus hemionus*), Javelina (*Peccari tajacu*) and other animals, and the seeds are eaten by birds and rodents. *Ferocactus wislizeni* is native to southwest-central and southern North America. \*5, 6, 12 (Pages 166-170, color photograph), 15, 16, 18, 26 (genus, color photograph of genus), 27 (Page 120, color photographs: Plates 60, 60A, 60B & 60C Pages 106), 28, 43 (063009 - *Ferocactus wislizeni* Britton & Rose), 45 (color photograph), 46 (Page 573), 48 (genus), 58, 63 (012210 - color presentation), 77 (color photograph #10), 85 (012210 - color presentation, also recorded as *Ferocactus wislizeni* var. *wislizeni*), 91, 115 (color presentation), 119, 127, **WTK** (July 4, 2005)\*

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

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

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

SYNONYMY: *Mammillaria grahamii* G. Engelmann var. *grahamii* G. Engelmann, *Mammillaria grahamii* G. Engelmann var. *oliviae* (C.R. Orcutt) L.D. Benson, *Mammillaria microcarpa* G. Engelmann, *Mammillaria oliviae* C.R. Orcutt. *Neomammillaria microcarpa* (G. Engelmann) N.L. Britton & J.N. Rose, *Neomammillaria milleri* N.L. Britton & J.N. Rose, *Neomammillaria oliviae* (C.R. Orcutt) N.L. Britton & J.N. Rose. COMMON NAMES: Arizona Fishhook, Arizona Fishhook Cactus, Biznaguita, Cabeza de Viejo Cekida, Cactus, Corkseed Cactus, Fishhook Cactus, Fishhook Mammillaria, Fishhook Pincushion, Graham Fishhook, Graham Nipple Cactus, Graham's Fishhook Cactus, Graham's Nipple Cactus, Graham Pincushion Cactus, Lizard Catcher, Nipple Cactus, Olive Pincushion, Pin-cushion Cactus. DESCRIPTION: Terrestrial perennial stem-succulent shrub (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* Engelm. var. *oliviae* (Orcutt) L. Benson, Pages 173, color photograph: Plate 95, Page 113, and *Mammillaria microcarpa* Engelm., 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, **HR\***

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

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

*Mammillaria microcarpa* (see *Mammillaria grahamii*)

*Mammillaria oliviae* (see *Mammillaria grahamii*)

*Neomammillaria microcarpa* (see *Mammillaria grahamii*)

*Neomammillaria milleri* (see *Mammillaria grahamii*)

*Neomammillaria oliviae* (see *Mammillaria grahamii*)

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

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

*Opuntia arbuscula* (see *Cylindropuntia arbuscula*)

*Opuntia bigelovii* (see *Cylindropuntia bigelovii*)

*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* Engelm. var. *discata* (Griffiths) L. Benson - “Rocky slopes and gravelly flats; common; intergrading with *O. p.* var. *major*.”), 26 (species), 27 (recorded as *Opuntia phaeacantha* Engelm. 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* Engelm.: “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), **HR, WTK** (July 4, 2005)\*

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

SYNONYMY: *Opuntia phaeacantha* G. Engelmann var. *flavispina* L.D. Benson. COMMON NAMES: Cactus Apple, Yellow-spined Pricklypear. DESCRIPTION: Terrestrial perennial stem-succulent shrub (forms clumps to 3 feet in height and 3 feet in width, one plant was reported to be 40 inches in height and 40 inches in width, one plant was reported to be 5 feet in height and 6½ feet in width); the paddle-shaped stems (6 to 9 inches in length and 4 to 7¼ inches in width) are yellow-green; the spines are golden-yellow, yellow or yellow-brown aging to black or deep red; the flowers (2½ inches in diameter) are yellow; the anthers are yellow; the stigmas are green; flowering generally takes place between early April and early May (additional record: one for late August); the mature fruits (also known as tunas are 2¼ to 3 in length and 1 inch in diameter) may be maroon, purple-red, red-brown or red-purple. HABITAT: Within the range of this species it has been reported from mountains; foothills; hills; hilltops; slopes; sandy bajadas; plains; flats; valley floors; along washes, and sandy drainage ways growing in dry rocky and sandy ground and sandy loam ground, occurring from 1,200 to 4,100 feet in elevation in the woodland, grassland and desertscrub ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. The species, *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. This plant provides cover for many desert animals. *Opuntia engelmannii* var. *flavispina* is native to southwest-central and southern North America. \*5, 6, 26 (species), 27 (recorded as *Opuntia phaeacantha* Engelmann var. *flavispina* L. Benson, Page 55), 43 (063009), 45 (species, color photograph), 46 (species, Page 583), 48 (genus), 63 (012310), 85 (012310 - color presentation of dried material), 119, 127 (species), **HR\***

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

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

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

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

*Opuntia gilvescens* (see *Opuntia phaeacantha*)

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

*Opuntia leptocaulis* (see *Cylindropuntia leptocaulis*)

***Opuntia 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* Engelman var. *macrocentra* (Engelmann) L. Benson, Page 59 and *Opuntia violacea* Engelman 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, WTK** (July 4, 2005, recorded as *Opuntia gosseliniana*)\*

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

### ***Opuntia phaeacantha* G. Engelman: Tulip Pricklypear**

SYNONYMY: *Opuntia gilvescens* D. Griffiths, *Opuntia phaeacantha* G. Engelman var. *major* G. Engelman, *Opuntia phaeacantha* G. Engelman var. *phaeacantha*, *Opuntia phaeacantha* G. Engelman 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* Engelm., Pages 50, color photograph: Plate 28, Page 99; *Opuntia phaeacantha* Engelm. var. *major* Engelm., Pages 51, color photograph: Plate 29, Page 99, and *Opuntia phaeacantha* Engelm. 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* Engelm. - "Both species are sympatric throughout much of their range and often can be found together."), 119, 127\*

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

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

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

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

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

*Opuntia spinosior* (see *Cylindropuntia spinosior*)

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

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

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

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

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. *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\***

Chenopodiaceae: The Goosefoot Family

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

COMMON NAMES: Atahi'xp (Seri), Cenizo (Spanish), Chamere (Spanish), Chamiso (preferred usage over Chamise), Chamiso Cenizo, Chamiza, Chamizo (Spanish), Costilla de Vaca, Diwoozhii Ibehi (Navajo), Four-wing Salt-bush, Four-wing Saltbush, Fourwing Saltbush, Ke'ma:we (Zuni - "salt weed" refers to the salty taste of the flowers), Narrow-leaf Saltbush, Narrowleaf Wingscale, Thinleaf Fourwing Saltbush, Grey Sage Brush, Orache, Saladillo, Sha'ashkachk Iibatkam (River Pima), Shadscale, Wngscale, Yup (Seri). DESCRIPTION: Terrestrial perennial evergreen (winter-deciduous in cold climates) shrub (1 to 10 feet in height, one plant was reported to be 4½ feet in height and 4½ feet in width, one plant was reported to be 40 inches in height and 5 feet in width, plants were reported that were 6 ½ feet in height and width, one plant was reported to be 5 feet in height and width, plants were reported that were 6 ½ feet in height and width, one plant was reported to be 7 feet in height and 13 feet in width, plants were reported that were 8 feet in height and 15 feet in width); the leaves are gray, gray-green, light green or green; the flowers (male and female flowers are usually borne on separate plants) are brown, cream, green, greenish, greenish-white, greenish-yellow, white-brown, pale yellow, yellow or yellowish; flowering generally takes place between early February and late October (additional records: one for mid-January, four for mid-November, one for late November and one for early December); the mature four-winged fruits (0.4 to 1 inch square bracts) are green or yellow-green drying to pale brown or tan. HABITAT: Within the range of this species it has been reported from mountains; rocky mountainsides; mesas; rocky plateaus; along rocky, rocky-sandy and sandy rims; cliffs; rocky, sandy and clayey canyons; sandy canyon walls; sandy and clayey canyon bottoms; gorges; rocky scree; talus slopes; along gravelly-sandy bluffs; knolls; rocky ledges; rocky ridges; rocky-sandy, rocky-loamy and sandy ridgetops; meadows; foothills; rocky, gravelly-sandy and silty-loamy hills; rocky-gravelly hilltops; bouldery, rocky, gravelly and clayey hillsides; bedrock, bouldery, rocky, rocky-sandy, shaley, stony-loamy, cindery, sandy, sandy-loamy, sandy-loamy-silty-powdery, sandy-clayey, sandy-silty, clayey and silty-loamy slopes; alluvial fans; sandy bajadas; rocky and gypsum outcrops; amongst rocks; sandy lava flows; sand hills; sand dunes; blow-sand deposits; bouldery debris flows; sandy and sandy-loamy plains; rocky, gravelly, gravelly-loamy, sandy, sandy-loamy and clayey flats; basins; sandy and sandy-loamy valley floors; coastal dunes; sandy coastal plains; coastal flats; coastal saltmarshes; along rocky, gravelly, gravelly-sandy, sandy and sandy-loamy roadsides; arroyos; bottoms of arroyos; draws; gulches; ravines; seeps; around springs; streambeds; along creeks; along sandy creekbeds; along rivers; sandy riverbeds; along rocky and sandy washes; along and in drainages; lakebeds; playas; freshwater and saltwater marshes; around and in swamps; depressions; clayey pans; sinks; swales; along gravelly-sandy, sandy and clayey banks of arroyos, rivers and drainages; cindery edges of washes, ponds, lakes and salt marshes; margins

of drainages; gravel bars; beaches; sandy and clayey benches; sandy-loamy terraces; sandy bottomlands; Galleta lowlands; floodplains; mesquite bosques; ditches; sandy riparian areas, and disturbed areas growing in muddy and moist and dry bouldery, rocky, rocky-gravelly, rocky-sandy, shaley, cindery, gravelly, gravelly-sandy and sandy ground; rocky loam, stony loam, gravelly loam, sandy loam, clayey loam, silty loam and loam ground; sandy clay and clay ground; rocky silty, sandy silty and silty ground, and sandy-loamy-silty powdery ground, occurring from sea level to 8,800 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. This plant was reported to have been utilized by native peoples of North America and could be investigated to determine its value as a home garden or commercial food, fodder, cooking agent (ashes used in place of baking soda and also to give a greenish-blue color to dough), spice and/or dye crop; it was also noted as having been used as tools, as a drug or medication, to make ceremonial items (including prayer sticks - pahos) and as a commodity used in personal hygiene. The life span of the Fourwing Saltbush has been reported to be from 29 to over 100 years. Fourwing Saltbush may be useful in controlling erosion. Mule Deer (*Odocoileus hemionus*), White-tailed Deer (*Odocoileus virginianus*), Elk (*Cervus elaphus*), Black-tailed Jackrabbits (*Lepus californicus*), Pronghorn (*Antilocapra americana*), and Bighorn Sheep (*Ovis canadensis*); as well as, other small mammals browse this plant, and Grouse, Gray Partridge (*Perdis perdix*), Scaled Quail (*Callipepla squamata*) and other birds as well as Kangaroo Rats, Pocket Mice and other small rodents feed on the seeds. This plant is a larval food plant for the Pygmy Blue (*Brefidium exile*). Possible predation was reported by the exotic Puncturevine Seed Weevil (*Microlarinus lareynii*). The keying out of Four-wing Saltbushes may be difficult due to intraspecific variation and introgression with other saltbush species. *Atriplex canescens* is native to west-central and southern North America. \*5, 6, 13, 15, 16, 18, 26 (color photograph), 28 (color photograph), 43 (012710), 46 (Page 259), 48, 63 (012710 - color presentation), 77, 82, 85 (012710 - color presentation), 91 (“As a secondary or facultative absorber of selenium, *Atriplex canescens* can be mildly poisonous to livestock where selenium occurs in the soil.”), 115 (color presentation), 127, **HR\***

#### Euphorbiaceae: The Spurge Family

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

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

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

*Euphorbia setiloba* (see *Chamaesyce setiloba*)

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

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

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

COMMON NAMES: Catnip Noseburn, Noseburn, Ortiguilla (Hispanic), Ra'oke (Purépecha), Ra'uli (Purépecha). DESCRIPTION: Terrestrial perennial forb/herb (6 to 18 inches in height); the foliage is reddish; the flowers are maroon, reddish or yellow; flowering generally takes place between early March and mid-December. HABITAT: Within the range of this species it has been reported from mountains; forested mountainsides; mesas; rocky cliffs; along rocky canyons; canyon walls; sandy canyon bottoms; talus slopes; crevices; rocky buttes; ridge crests; clearings in forests; foothills; hills; rocky hillsides;

rocky, cobbly-gravelly-loamy, gravelly and sandy slopes; gravelly bajadas; bases of rock outcrops; amongst boulders, rocks and cobbles; lava beds; rocky flats; valley floors; along rocky and rocky-gravelly-sandy-clayey-loamy roadsides; along and in arroyos; along rocky ravines; along rocky and rocky-gravelly streams; streambeds; along creeks; creekbeds; along and in gravelly and sandy washes; drainages; along in drainage ways; rocky banks of washes; edges of washes; around lakes; benches; terraces; riparian areas, and disturbed areas growing in dry rocky desert pavement; bouldery, rocky, rocky-gravelly, rocky-sandy, stony, cobbly, gravelly and sandy ground and rocky-gravelly-sandy-clayey loam, cobbly-gravelly loam, gravelly loam, gravelly-clayey loam and sandy loam ground, occurring from 100 to 9,000 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant was reported to have been utilized by native peoples of North America; it was noted as having been used as a drug or medication. This vining or semi-vining herb has stinging hairs on the leaves; Richard S. Felger (SEINet record 02 Dec 2000) reported that the pain, from the mildly stinging hairs of variety *dissecta*, lasted for about 10 minutes. *Tragia nepetifolia* is native to southwest-central and southern North America. \*5, 6, 15, 16, 30, 43 (020610), 46 (Page 508), 58, 63 (020610), 77, 85 (020610 - color presentation of dried material), 127\*

#### Fabaceae (Leguminosae): The Pea Family

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

SYNONYMY: *Acaciella angustissima* (P. Miller) N.L. Britton & J.N. Rose. COMMON NAMES: Barbus de Chivo, Cantemo, Dai (Ocurahui, Sierra Surotato, Sinaloa, Mexico), Fern Acacia, Guajillo, Palo de Pulque (Hispanic), Prairie Acacia, Siraku K'amataraku (Purépecha), Texas Prairie Acacia, Timbe (Hispanic), Timben (Hispanic), Timbre (Hispanic), Tu Ntoo (N. Mixteco), White Ball Acacia, White-ball Acacia, Whiteball Acacia. DESCRIPTION: Terrestrial perennial deciduous forb/herb or shrub (6 inches to 10 feet, or a small tree 6½ to 26½ feet in height); the bark is light brown, gray or green-white with white stripes; the leaflets are bluish-green or dark green; the ball-shaped flowers (to ½ inch in diameter forming in clusters) may be cream, cream-white, pink, white, white-cream, white tinged with lavender or pink, or pale yellow; flowering generally takes place between early May and early January (additional records: one for late January, one for late February and two for late March); the fruits (seedpods 1¼ to 3 inches in length and ¼ to ½ inch in width) are dark reddish-brown. HABITAT: Within the range of this species it has been reported from mountains; mountaintops; rocky mesas; plateaus; rocky cliffs; rocky canyons; bouldery and rocky canyon bottoms; rocky talus; along crevices in boulders; ledges; along rocky, rocky-sandy and gravelly-clayey ridges; along ridgetops; ridgelines; clearings in woodlands; clayey-loamy meadows; rocky and rocky-sandy foothills; rocky and stony hills; rocky, rocky-gravelly-loamy, gravelly-sandy-loamy and sandy-loamy hillsides; bouldery-rocky-sandy, rocky, rocky-gravelly, rocky-sandy-clayey, rocky-clayey-loamy and gravelly slopes; bouldery bajadas; piedmonts; rocky outcrops; amongst boulders and rocks; stabilized sand dunes; rocky and clayey flats; silty valley floors; coastal flats; along rocky, gravelly-loamy and gravelly-clayey-loamy roadsides; rocky draws; ravines; along streams; gravelly creeks; along and in rocky-sandy and sandy washes; along watercourses; within rocky drainage ways; depressions; gravelly-loamy banks of washes; sandy edges of streams and washes; sandy-loamy benches; rocky terraces; bottomlands; floodplains; bosques; along ditches; riparian areas, and disturbed areas growing in damp and dry bouldery, bouldery-rocky-sandy, rocky, rocky-stony-sandy, rocky-gravelly, rocky-sandy, shaley, stony, gravelly and sandy ground; rocky-gravelly loam, rocky-clayey loam, gravelly loam, gravelly-sandy loam, gravelly-sandy-clayey loam, gravelly-clayey loam, sandy loam, clayey loam and loam ground; rocky-sandy clay, gravelly clay and clay ground, and silty ground, occurring from 100 to 8,500 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat, the leaves are fernlike. Quail feed on the seeds of this plant. *Acacia angustissima* is native to south-central and southern North America and Central America. \*5, 6, 13, 28 (color

photograph), 30, 43 (070709), 46 (Pages 398-399), 48, 58, 63 (020610 - color presentation), 77, **85** (020610 - color presentation), 91, 115 (color presentation)\*

***Acacia angustissima* (P. Miller) C.E. Kuntze var. *filicioides* (A.J. Cavanilles) C.E. Kuntze: Prairie Acacia**

SYNONYMY: *Mimosa filicioides* A.J. Cavanilles. COMMON NAME: Dai (Ocurahui, Sierra Surotato, Sinaloa, Mexico), Prairie Acacia, Tu Ntoo (N. Mixteco). DESCRIPTION: Terrestrial perennial deciduous forb/herb or subshrub (20 inches to 26 feet in height); the smooth bark is gray; the stems are reddish; the flowers are cream, green, rose, dull white or white; flowering generally takes place between early July and early December (additional records: one for late January, one for late February, two for late March, two for early May, one for mid-May, one for late May and one for mid-June). HABITAT: Within the range of this species it has been reported from mountains; mountaintops; barrancas; canyons; along rocky ridges; along ridgetops; clearings in woodlands; foothills; hills; hilltops; hillsides; rocky slopes; plains; rocky flats; sandy basins; valley floors; along grassy roadsides; rocky draws; ravines; along streams; riverbeds; in sandy washes; within rocky drainages; along watercourses; rocky terraces; lowlands; floodplains, and disturbed areas growing in damp and dry rocky, rocky-sandy and sandy ground and sandy loam ground, occurring from 100 to 8,200 feet in elevation in the in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTE: *Acacia angustissima* var. *filicioides* is native to southwest-central and southern North America. \*30 (species), 43 (020610), 46 (species, Pages 398-399), 48 (species), 63 (020610 - no record of this variety), **85** (020610), 91 (species), 115 (color presentation of the species)\*

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

SYNONYMY: *Vachellia constricta* (G. Bentham) D.S. Seigler & J.E. Ebinger. COMMON NAMES: All-thorn Acacia, Chaparo Prieta, Chaparro Prieto, Common Whitethorn, Garabato, Gidag (Tohono O'odham), Gigantillo, Huisache, Largoncillo, Mescat Acacia, Twinthorn Acacia, Vara Prieta, Vinorama, Whitethorn Acacia, White Thorn, Yellow Cat Claw. DESCRIPTION: Terrestrial perennial deciduous (drought and cold) shrub or tree (1 to 20 feet in height with crowns to about the same in width, one plant was described as being 8 feet in height with a crown 8 feet in width); the bark may be light gray, mahogany or nearly black; the stems may be red; the spines on the branches and stems are gray or white; the small pinnate leaves are green; the small flowers have been described as being golden, golden-yellow, orange-yellow, light yellow, yellow or yellowish-orange; flowering generally takes place between late March and late October (additional records: two for early March and one for late December); the seedpods are brown, purple-red, reddish or rusty-brown. HABITAT: Within the range of this species it has been reported from mountains; mesas; cliffs; canyons; canyon sides; sandy canyon bottoms; sandy ridges; foothills; rocky and gravelly hills; bouldery hilltops; rocky and gravelly hillsides; escarpments; rocky, rocky-clayey-loamy and clayey-loamy slopes; gravelly bajadas; rocky outcrops; amongst boulders; sandy-loamy plains; gravelly flats; valley floors; coastal plains; along rocky, rocky-gravelly-loamy, rocky-gravelly-clayey loam, rocky-clayey-loamy, gravelly, gravelly-sandy, gravelly-sandy-loamy, gravelly-sandy-clayey-loamy, gravelly-loamy, gravelly-clayey loam and sandy roadsides; along and in rocky arroyos; bottoms of arroyos; rocky gulches; along streambeds; creeks; along and in sandy creekbeds; rivers; along and in gravelly, gravelly-sandy, sandy and silty-clayey washes; drainages; swales; along gravelly-sandy and sandy banks of streams, creeks, rivers and washes; along edges of washes; rocky margins of arroyos and washes; mudflats; benches; alluvial terraces; sandy bottomlands; floodplains; mesquite bosques; riparian areas, and disturbed areas growing in dry bouldery, rocky, rocky-sandy, gravelly, gravelly-sandy and sandy ground; rocky-gravelly loam, rocky-gravelly-clayey loam, rocky-clayey loam, gravelly loam, gravelly-sandy loam, gravelly-sandy-clayey loam, gravelly-clayey loam, sandy loam, sandy-clayey loam, clayey loam and loam ground, and silty clay ground, occurring from 1,100 to 6,500 feet (infrequently as low as 500 feet and as high as 9,200 feet) in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat, plants may live to be more than 72 years of

age and the flowers may be fragrant. Whitethorn Acacia is used for food (but not extensively) by the Desert Mule Deer (*Odocoileus hemionus*) and Scaled Quail (*Callipepla squamata*), Merriam's Kangaroo Rats (*Dipodomys merriami*), Bailey's Pocket Mice (*Chaetodipus baileyi*) and Rock Pocket Mice (*Chaetodipus intermedius*) as well as a variety of other birds and mammals feed on the seeds. *Acacia constricta* is native to southwest-central and southern North America. \*5, 6, 13 (color photograph), 15, 16, 18, 26 (color photograph), 28 (color photograph), 43 (080409), 46 (Page 399), 48, 53 (note under *Acacia farnesiana*), 63 (020710 - color presentation), 68, 77, 80 (This species is listed as a Major Poisonous Range Plant. "The plants are high in cyanide forming-compounds and have been reported to cause death of cattle in Arizona. In general, the plants are not palatable to livestock although the pods are grazed. However, in the fall of the year at or near frost time, when the range grasses become less palatable, cattle may eat heavily of these plants and death is likely to result. ... Animals should be removed from heavily infested areas during the early frost period or considerable death losses may occur." See text for additional information.), 85 (020710 - color presentation), 91, 115 (color presentation), 134, **WTK** (July 4, 2005)\*

### ***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)\*

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

*Acaciella angustissima* (see *Acacia angustissima*)

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

SYNONYMY: *Calliandra eriophylla* G. Bentham var. *erriophylla*. COMMON NAMES: Cabelleto de Angel, Cabeza Angel, Desert Fairy-duster, Fairy Duster, Fairy-duster, Fairyduster, False Mesquite, False Mesquite Calliandra, Guajillo, Hairy-leaved Calliandra, Huajillo, Mesquitella (Spanish), Mesquitilla, Mock Mesquite. DESCRIPTION: Terrestrial perennial deciduous subshrub or shrub (4 inches to 5 feet in height, one plant was described as being 40 inches in height with a crown 80 inches in width); the stems are bluish, light gray, whitish or white-gray; the leaves may be leaves grayish, dark green or red; the flowers are cream-white, pink, pink-red, pink-white, purple, red, red and white, reddish-purple, rose or violet-red; flowering generally takes place between early February and mid-June (additional records: two for mid-January, four for mid-August, two for late August, one for early September, one for mid-September, one for early October, three for mid-October, four for late October, two for early November, one for mid-November, two for late November, one for early December, one for mid-December and two for late December). HABITAT: Within the range of this species it has been reported from mountains; rocky peaks; mesas; plateaus; rocky canyons; along canyon bottoms; buttes; knolls; sandy ridges; rocky ridgetops; rocky, shaley-sandy and gravelly-clayey-loamy foothills; rocky hills; hilltops; rocky hillsides; along bedrock, bouldery, rocky, rocky-clayey, gravelly and gravelly-sandy-loamy slopes; gravelly bajadas; rocky outcrops; amongst boulders and rocks; boulderfields; interior dunes; plains; rocky, gravelly and sandy flats; basins; valley floors; along rocky and sandy roadsides; along rocky-sandy arroyos; within gullies; around seeps; around springs; around seeping streams; along and in gravelly and sandy washes; within bouldery drainage ways; along water courses; rocky banks of arroyos and lakes; edges of washes and drainage ways; shores of lakes; gravelly terraces; ditches; riparian areas, and disturbed areas growing in dry desert pavement; bouldery, rocky, rocky-sandy, shaley-sandy, gravelly and sandy ground; pebbly-clayey loam, gravelly-sandy loam, gravelly-clayey loam and sandy loam ground, and rocky clay ground, occurring from sea level to 6,900 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat, and is a soil binder. This plant was reported to have been utilized by native peoples of North America; it was noted as having been used as a drug or medication. Fairy Duster is browsed by wildlife and found to be highly palatable by Mule Deer (*Odocoileus hemionus*) and White-tailed Deer (*Odocoileus virginianus*), and hummingbirds have been observed visiting the flowers. *Calliandra eriophylla* is native to southwest-central and southern North America. \*5, 6, 13, 15, 16, 18, 28 (color photograph), 43 (080409), 46 (Page 397), 48, 58, 63 (020910 - color presentation), 77 (color photograph #32), 85 (020910 - color presentation), 86 (color photograph), 91, 115 (color presentation), 127, **HR**\*

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

*Cercidium floridum* (see *Parkinsonia florida*)

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

*Cercidium microphyllum* (see *Parkinsonia microphylla*)

*Hosackia brachycarpa* (see *Lotus humistratus*)

*Hosackia humilis* (see *Lotus salsuginosus* var. *brevivexillus*)

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

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

***Lotus salsuginosus* E.L. Greene var. *brevivexillus* A.M. Ottley: Coastal Bird's-foot Trefoil**

SYNONYMY: *Hosackia humilis* (E.L. Greene) L. Abrams. COMMON NAMES: Coastal Bird's-foot Trefoil, Coastal Lotus, Deer Vetch, Deer-vetch, Humble Trefoil, Maresfat. DESCRIPTION: Terrestrial annual forb/herb (2 to 8 inches in height); the flowers are yellow or white with red tips; flowering generally takes place between early February and mid-May (additional record: one for mid-January). HABITAT: Within the range of this species it has been reported from mountains; bouldery bases of mountains; mesas; canyons; rocky and sandy-loamy canyon bottoms; talus; bases of cliffs; buttes; foothills; gravelly hills; rocky hillsides; bouldery, rocky, rocky-sandy, gravelly, gravelly-loamy and sandy slopes; bajadas; gravelly banks; plains; flats; coastal terraces; gravelly roadsides; along and in rocky and sandy arroyos; along gravelly-loamy ravines; along creeks; sandy creekbeds; along and in rocky-sandy, gravelly, gravelly-sandy and sandy washes; along and in sandy drainages; banks of rivers; gravel bars; sandy terraces; loamy bottomlands; floodplains, and riparian areas growing in dry bouldery, rocky, rocky-sandy, gravelly, gravelly-sandy and sandy ground; gravelly loam, sandy loam and loam ground, and silty ground, occurring from sea level to 6,200 feet in elevation in the woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTE: *Lotus salsuginosus* var. *brevivexillus* is

native to southwest-central and southern North America. \*5, 6, 43 (071410), 46 (Page 427), 48 (genus), 58, 63 (071410), 77, **85** (071410 - color presentation of dried material)\*

*Mimosa filicioides* (see *Acacia angustissima* var. *filicioides*)

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

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

### ***Parkinsonia 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* Benth., color photograph of habitat Plate S.2), 15, 16 (recorded as *Cercidium floridum* Benth.), 18, 26 (recorded as *Cercidium floridum*, color photograph), 28 (recorded as *Cercidium floridum*, color photograph), 43 (021310 - *Cercidium floridum* Benth. ex A. Gray, *Parkinsonia florida* S. Watson), 46 (recorded as *Cercidium floridum* Benth., Page 407), 48, 52 (recorded as *Cercidium floridum* Benth. ex Gray, color photograph), 53 (recorded as *Cercidium floridum* Benth.), 58, 63 (021310 - color presentation), 77 (recorded as *Cercidium floridum* Benth.), 85 (021410 - color presentation), 86 (recorded as *Cercidium floridum*, color photograph), 91 (recorded as *Cercidium floridum* Benth.), 115 (color presentation), 127, **HR\***

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

SYNONYMY: *Cercidium microphyllum* (J. Torrey) J.N. Rose & I.M. Johnston. COMMON NAMES: Dipua, Foothill Palo Verde, Foothill Paloverde, Hillside Paloverde, Horsebean, Kuk Cehedagi (Tohono O'odham), Little Horsebean, Littleleaf Horsebean, Little Leaf Paloverde, Little-leaf Palo Verde, Little-leaf Palo-verde, Little-leaf Paloverde, Littleleaf Palo Verde, Littleleaf Paloverde, Palo Verde (Spanish for Green Pole, Green Stick or Green Tree), Palo-verde, Paloverde, Yellow-Palo-verde, Yellow Paloverde. DESCRIPTION: Terrestrial perennial drought deciduous shrub or tree (40 inches to 26 feet in height with a crown diameter of 12 to 18, one plant was described as being 6 feet in height and 7 feet in width, one plant was described as being 9 feet in height and width, one plant was described as being 16 feet in height and width); the bark is green, olive-green or yellow-green, and gray on older trunks; the ends of the leafy branchlets are spine-like; the small leaflets are green, greenish-gray or yellow-green; the flowers (½ inch in width) are lemon-yellow, whitish & yellow, yellow, yellow-green or yellow & white; the styles are pale yellow or pale yellow-green; the filaments are pale yellow or pale yellow-green; the anthers are orange; flowering generally takes place between mid-March and mid-June (additional records: one for mid-August and one for mid-October); the mature seedpods (2 to 3 inches in length) are light brown or tan. HABITAT: Within the range of this species it has been reported from mountains; rocky mountaintops; mesas; cliffs; rocky walls; rocky canyons; canyon walls; canyon bottoms; bluffs; buttes; ledges; ridges; bouldery and rocky foothills; bases of foothills; rocky hills; rocky hillsides; rocky and sandy slopes; alluvial fans; rocky, gravelly and gravelly-silty bajadas; boulder fields; bouldery and rocky outcrops; plains; gravelly and sandy flats; valley floors; sandy valley bottoms; along rocky and gravelly roadsides; within gravelly-sandy arroyos; along and in rocky, gravelly, gravelly-sandy and sandy washes; drainages; rocky-sandy banks of arroyos and rivers; along edges of washes; margins of arroyos and washes; rocky sand bars; coves; gravelly terraces; floodplains; ditches; riparian areas, and disturbed areas growing in dry desert pavement; bouldery, rocky, gravelly, gravelly-sandy and sandy ground; sandy loam, clay loam and loam ground; clay ground, and gravelly silty ground, occurring from sea level to 4,000 feet in elevation in the grassland and desertscrub ecological formations. NOTES: This plant may be an attractive component of a restored native habitat and may live to be more than 400 years of age. This

plant was reported to have been utilized by native peoples of North America and could be investigated to determine its value as a home garden or commercial food crop. To reduce water loss during extended periods of drought a tree may undergo a natural drought-pruning process where entire branches die back. The Foothill Paloverde is a common "nurse plant" of the Saguaro or Giant Cactus (*Carnegiea gigantea*) and provides a sheltered microhabitat in which other desert plants are able to become established. Bighorn Sheep (*Ovis canadensis*), Mule Deer (*Odocoileus hemionus*), jackrabbits and other small mammals browse the fruits, leaves and twigs; the Collard Peccary (*Peccari tajacu*) feed on the fruit, and the seeds are used by Bruchid Beetles. The Foothill Paloverde is considered a significant foraging site for birds; it is used as a nesting site by the Black-tailed Gnatcatcher (*Polioptila melanura*) and Verdins, and as a roosting site by Gambel's Quail (*Callipepla gambelii* subsp. *gambelii*). The Costa's Hummingbird (*Calypte costae*) has been observed visiting the flowers. *Parkinsonia microphylla* is native to southwest-central and southern North America. \*5, 6, 10, 13 (recorded as *Cercidium microphyllum*, color photograph in habitat Plate T.1), 15, 16 (recorded as *Cercidium microphyllum* (Torr.) Rose & Johnst.), 18, 26 (recorded as *Cercidium microphyllum*, color photograph), 28 (recorded as *Cercidium microphyllum*, color photograph), 43 (021410 - *Cercidium microphyllum* Rose & I.M. Johnst.), 46 (recorded as *Cercidium microphyllum* (Torr.) Rose & Johnston, Page 407), 48, 52 (recorded as *Cercidium microphyllum* (Torr.) Rose & I.M. Johnst., color photograph), 53 (recorded as *Cercidium microphyllum* (Torr.) Rose & Johnst.), 63 (021410 - color presentation), 77 (recorded as *Cercidium microphyllum* (Torr.) Rose & Johnst.), 85 (021410 - color presentation), 86 (note under *Cercidium floridum*), 91 (recorded as *Cercidium microphyllum* (Torr.) Rose & I.M. Johnston), 115 (color presentation), 127, 134, **WTK** (July 4, 2005)\*

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

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

SYNONYMY: *Prosopis juliflora* (O. Swartz) A.P. de Candolle var. *velutina* (E.O. Wooton) C.S. Sargent. COMMON NAMES: Algarroba, Chachaca, Fluweelprosopis (Afrikaans), Kvi (or possibly Kui - Tohono O'odham), Mesquite, Mezquite, Mizquitl, Velvet Mesquite. DESCRIPTION: Terrestrial perennial deciduous shrub or tree (2 to 56 feet in height, one plant was reported to be 6½ feet in height with a canopy 6½ feet in width, one plant was reported to be 13 feet in height with a canopy 16½ feet in width, one tree was reported to be 20 feet in height and 40 feet in width); the bark on the trunk and older branches is dark brown, dark brownish-green or dark gray; the leaves are gray-green; the flowers (cylindrical spikes 2 to 5 inches in length) are cream, cream-yellow, green-yellow, greenish-white, pale yellow, yellow, yellow-green or yellowish-green; flowering generally takes place between mid-March and late August (additional records: one for early October and one for early November); the mature seedpods (3 to 8 inches in length) are red, tan, yellow or mottled. HABITAT: Within the range of this species it has been reported from mountains; mesas; plateaus; canyons; along sandy canyon bottoms; rocky bases of cliffs; buttes; rocky and sandy ridges; foothills; rocky hills; rocky hillsides; rocky and rocky-loamy slopes; alluvial fans; gravelly bajadas; rocky outcrops; rocky plains; gravelly and sandy flats; sandy valley floors; valley bottoms; along rocky-gravelly-loamy, gravelly-clayey-sandy-loamy and silty-clayey roadsides; along and in sandy arroyos; rocky-gravelly-loamy draws; seeps; springs; around seeping streams; along streams; along rocky streambeds; along creeks; creekbeds; along rivers; along rocky-sandy riverbeds; along and in rocky, gravelly-sandy and sandy washes; along drainages; within drainage ways; playas; cienegas; banks of streams, creeks and rivers; gravelly and sandy edges of rivers, washes and ponds; sandy-loamy benches; gravelly and gravelly-sandy terraces; bottomlands; floodplains; mesquite bosques; along fencelines; around stock tanks; around reservoirs; along canals; canal banks; ditches; along ditch banks; riparian areas, and disturbed areas growing in dry rocky, rocky-gravelly, rocky-sandy, gravelly, gravelly-sandy and sandy ground; rocky loam, rocky-gravelly loam, gravelly-clayey-sandy loam, sandy loam, clayey loam and loam ground; silty clay ground, and sandy silty, clayey silty and silty ground, occurring from 100 to 6,300 feet in elevation in the woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native

habitat, it may live to be more than several hundred years of age. This plant was reported to have been utilized by native peoples of North America and could be investigated to determine its value as a home garden or commercial food, beverage, fiber and/or dye or paint (boiled resin used as a pottery paint) crop; it was also noted as having been used as fuel, as a tool, as toys, as a drug or medication and as a guide for determining a planting season. The Velvet Mesquite is a common “nurse plant” of the Saguaro or Giant Cactus (*Carnegiea gigantea*). Much of the mesquite forest (bosques) originally found along the desert water courses have been lost to fuel wood cutting and clearing for agricultural fields and commercial and residential development. Velvet Mesquite Bosques were small, open, park-like woodlands with the Velvet Mesquite often occurring in nearly pure stands and interspersed with other common species such as the Netleaf Hackberry (*Celtis laevigata* var. *reticulata*), Catclaw Acacia (*Acacia greggii* var. *greggii*), Mexican Elder (*Sambucus nigra* subsp. *canadensis*), Desert Hackberry (*Celtis ehrenbergiana*), Greythorn (*Ziziphus obtusifolia* var. *canescens*), Wolfberry (*Lycium* spp.), Four-wing Salt-bush (*Atriplex canescens*) and Vine Mesquite Grass (*Panicum obtusum*). The Velvet Mesquite provides food and shelter for many species of wildlife. The plant is a food source for quail, Desert Mule Deer (*Odocoileus hemionus crooki*) and Desert Bighorn Sheep (*Ovis canadensis mexicana*). Coyotes (*Canis latrans*), Round-tailed Ground Squirrels (*Spermophilus tereticaudus*), Desert Cottontails (*Sylvilagus audubonii*) and many other wild animals feed on the seed pods. Velvet Mesquite is the host for a Drywood Termite (*Incisitermes banksi*). Bruchid Beetles feed on the fruits and seeds. *Prosopis velutina* is native to southwest-central and southern North America. \*5, 6, 13 (recorded as *Prosopis juliflora* (Swartz) DC. var. *velutina* (Wootton) Sarg., color photograph), 15, 16, 18, 26 (color photograph), 28 (color photograph), 43 (071609), 46 (recorded as *Prosopis juliflora* (Swartz) DC. var. *velutina* (Wootton) Sarg., Page 402), 48, 52 (color photograph), 53 (species: recorded as *Prosopis juliflora* (Sw.) DC.), 58, 63 (021610), 68, 77, 80 (This species is listed as a Rarely Poisonous and Suspected Poisonous Range Plant. “Heavy, long-continued consumption of pods and leaves of these common desert shrubs may cause rumen impaction and poisoning.”), 85 (021610 - color presentation), 91), 115 (color presentation), 127, 134, ADS (Arizona Daily Star, Sunday, July 26, 2009, Tucson & Region, B1: Mesquite Pods are of Consuming Interest), **WTK** (July 4, 2005)\*

*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 (*Cyananthus latirostris*), Butterflies, Carpenter Bee (*Xylocopa californica*), Costa’s Hummingbird (*Calypte costae*), Finches, Orioles, Rufous Hummingbird (*Selasphorus rufus*), Solitary Bees, Syrphid Flies, Verdins, and Warblers have been observed visiting the flowers. The Ocotillo is a preferred food plant of the Costa’s Hummingbird. *Fouquieria splendens* is native to southwest-central and southern North America. \*5, 6, 10, 13 (color photograph: Plate N), 15, 16, 18, 26 (color photograph), 28 (color photograph), 43 (080309), 45 (color photograph), 46 (Page 640), 48, 58, 63 (021810 - color presentation), 77 (color photograph #27), 85 (021810 - color presentation), 86 (color photograph), 91, 106 (021810 - color presentation), 107, 115 (color presentation), 127, **WTK** (July 4, 2005)\*

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

#### Hydrophyllaceae: The Waterleaf Family

##### ***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 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, **HR\***

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

SYNONYMY: *Phacelia distans* G. Bentham var. *australis* A. Brand. COMMON NAMES: Blue Phacelia, Caterpillar Phacelia, Caterpillar Weed, Distant Phacelia, Distant Scorpion-weed, Fern-leaf Phacelia, Scorpion-weed, Wild Heliotrope. DESCRIPTION: Terrestrial annual or perennial forb/herb (3 to 40 inches in height, one plant was reported to be 20 inches in height and 20 inches in width); the fern-like leaves are green, the flowers may be light blue-purple, blue, blue-lavender, blue-lavender-purple, blue-pink, blue-purple, blue-violet, bluish-lavender, bluish-white, pale lavender, lavender, lavender-blue, lavender-pink, light purple, purple, purplish-blue, dark purplish-blue, pale violet, violet-blue or white; flowering generally takes place between mid-January and late June (additional records: one for mid-July, one for late July, one for early August, one for early September, two for early November, one for mid-November and two for late November). HABITAT: Within the range of this species it has been reported from mountains; rocky mountainsides; bases of mountains; gravelly-loamy mesas; sandy plateaus; rocky and rocky-silty canyons; bouldery, rocky, rocky-sandy, gravelly-sandy and sandy canyon bottoms; chasms; scree; bases of cliffs; rocky knobs; rocky ridges; sandy ridgetops; meadows; foothills; bouldery and rocky hills; hilltops; bouldery and rocky hillsides; bouldery, rocky, rocky-gravelly, rocky-sandy, rocky-clayey-loamy, gravelly, gravelly-sandy-loamy, gravelly-loamy, sandy, clayey and silty-clayey slopes; rocky, rocky-gravelly, rocky-sandy and rocky-sandy-loamy alluvial fans; gravelly, gravelly-sandy and sandy bajadas; bouldery and rocky outcrops; amongst boulders and rocks; bases of rocks; sand dunes; sandy-loamy plains; gravelly, gravelly-sandy, sandy and clayey flats; basins; rocky and gravelly valley floors; coastal plains; sandy coastal strands; sandy railroad right-of-ways; along gravelly and sandy roadsides; along arroyos; along bottoms of arroyos; rocky draws; ravines; seeps; springs; along streams; sandy streambeds; along creeks; creekbeds; along and in bouldery-gravelly-sandy, rocky, rocky-sandy, gravelly, gravelly-sandy and sandy washes; in gravelly-sandy and sandy drainages; sandy lakebeds; ponds; bogs; rocky-sandy depressions; sandy banks of arroyos, streams, creeks, rivers and washes; along gravelly-sandy edges of streams and washes; margins of washes; along rocky-sandy and rocky-loamy benches; sandy and silty-loamy terraces; loamy bottomlands; sandy floodplains; along canals; bouldery-sandy and sandy riparian areas; recently burned areas of woodland, chamise chaparral and sage scrub, and disturbed areas often reported as growing in the shade of boulders, shrubs and trees in moist and dry desert pavement; bouldery, bouldery-gravelly-sandy bouldery-sandy, rocky, rocky-gravelly, rocky-sandy, gravelly, gravelly-sandy and sandy ground; rocky loam, rocky-sandy loam, rocky-clayey loam, gravelly loam, gravelly-sandy loam, sandy loam, silty loam and loam ground; silty clay and clay ground, and rocky silty ground, occurring from sea level to 7,100 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. This plant was reported to have been utilized by native peoples of North America and could be investigated to determine its value as a home garden or commercial food crop. *Phacelia distans* is native to southwest-central and southern North America. \*5, 6, 15, 16, 28 (color photograph), 43 (022410 - *Phacelia distans* var. *australis* Brand), 46 (Page 703), 58, 63 (022410 - color

presentation), 77 (color photograph 29), 85 (022410 - color presentation), 86 (color photograph), 115 (color presentation), 127, **HR\***

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

#### Krameriaceae: The Ratany Family

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

#### Malvaceae: The Mallow Family

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

COMMON NAME: Indian Mallow. \*43 (062710), 46 (Pages 538-540), 63 (062710 - color presentation), **HR**\*

##### ***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), **HR**\*

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

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

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

## Oleaceae: The Olive Family

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

SYNONYMY: *Menodora scoparia* G. Engelman *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, **HR\***

*Menodora scoparia* (see *Menodora scabra*)

## Plantaginaceae: The Plantain Family

### ***Plantago* C. Linnaeus: Plantain**

COMMON NAMES: Indian-wheat, Plantain. \*43 (052010), 46 (Pages 802-805 and Supplement Page 1070), 63 (032907), **HR\***

## Polemoniaceae: The Phlox Family

### ***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)\*

#### Polygonaceae: The Buckwheat Family

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

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

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

COMMON NAMES: Bladder Stem, Bladderstem, Cigarette Plant, Desert Trumpet, Indian Pipeweed, Indianpipe Weed, Inflated Buckwheat, Native American Pipeweed. DESCRIPTION: Terrestrial annual or perennial forb/herb (8 to 40 inches in height); this plant has a basal rosette of green leaves that turn red with age; the flowering stems and branches are grayish; the flowers are yellow; flowering generally takes place between early March and early November. HABITAT: Within the range of this species it has been reported from mountains; rocky canyons; rocky ridges; foothills; rocky hills; rocky hillsides; rocky and sandy slopes; gravelly-sandy bajadas; sand dunes; flats; gravelly roadsides; sandy washes; rocky banks of rivers, and gravelly terraces growing in dry rocky, rocky-sandy, gravelly, gravelly-sandy and sandy soils and clay soils, occurring from 700 to 5,000 feet in elevation in the woodland, grassland and desertscrub ecological formations. NOTES: The species, *Eriogonum inflatum*, 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, *Eriogonum inflatum*, is a food plant for the larva and adult forms of the Desert Metalmark Butterfly (*Apodemia palmerii* subsp. *deserti*). *Eriogonum inflatum* var. *inflatum* is native to southwest-central and southern North America. \*5, 6, 18 (genus), 28 (species, color photograph), 43 (070810 - *Eriogonum inflatum* Torr.), 46 (species, Pages 237-238), 48 (genus), 63 (070810 - color presentation), 77 (species - plants observed had yellow flowers and stems that were not inflated), 85 (070810), 86 (species, color photograph), 127 (species), **HR\***

#### Ranunculaceae: The Buttercup Family

***Clematis drummondii* J. Torrey & A. Gray: Drummond's Clematis**

COMMON NAMES: Barba de Chivo, Barba de Viejo (Spanish), Barbas de Chivato (Spanish), Chiva'ato Himsita Saila (Yaqui - Brother of Goat's Moustache), Drummond Clematis, Drummond's Clematis, Old Man's Beard, Old-man's-beard, Pipe-stem, Texas-virgin Bower, Texas Virgin Bower, Texas Virgin's Bower, Virgin's Bower. DESCRIPTION: Terrestrial perennial deciduous vine (10 to 40 feet in length); the trifoliate leaves are grayish-green or medium green; the flowers are cream, cream-white, green & yellow-green, white, yellow, yellow-white, yellowish-green-white or yellowish-white; flowering generally takes place between early March and late October (additional records: one for early January, one for late January and two for early December). HABITAT: Within the range of this species it has been reported from mountains; cliffs; rocky canyons; canyon bottoms; chasms; bases of cliffs; crevices; bluffs; foothills; rocky hills; rocky hillsides; rocky and sandy slopes; bajadas; rocky outcrops; amongst boulders and rocks; sandy lava flows; lava beds; plains; sandy flats; basins; valley floors; railroad right-of-ways; along roadsides; within bouldery and gravelly-sandy and sandy arroyos; rocky bottoms of arroyos; around springs; along streams; along streambeds; along creeks; along creekbeds; along rivers; riverbeds; along and in gravelly, gravelly-sandy and sandy washes; drainages; within sandy drainage ways; around ponds; around lakes; along rocky and gravelly-sandy banks of creeks, rivers and washes; edges of creeks, washes and lakes; terraces; bottomlands; floodplains; mesquite bosques; fencerows; edges of stock tanks (charcos); along canals; riparian areas, and disturbed areas growing in moist, damp and dry bouldery, rocky, gravelly, gravelly-sandy and sandy ground; gravelly loam ground, and sandy silty and silty ground often reported as growing in shrubs and trees, occurring from sea level to 7,300 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This woody vine may be an attractive component of a restored native habitat. *Clematis drummondii* is native to southwest-central and southern North America. \*5, 6, 13, 15, 16, 18 (genus), 28 (color photograph), 43 (042010), 46 (Page 312), 58, 63 (042010 - color presentation), 77, 80 (Species in the genus *Clematis* are considered to be Rarely Poisonous and Suspected Poisonous Range Plants. "These climbing, perennial forbs contain toxins that have been suspected of causing losses in other countries but none have been reported in the United States. Some species do cause dermatitis."), 85 (042010 - color presentation), 115 (color presentation), **HR\***

***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, HR\*

#### 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\***

#### Sapindaceae: The Soapberry Family

*Sapindus drummondii* (see *Sapindus saponaria* var. *drummondii*)

#### ***Sapindus saponaria* C. Linnaeus var. *drummondii* (W.J. Hooker & G.W. Arnott) L.D. Benson: Western Soapberry**

SYNONYMY: *Sapindus drummondii* W.J. Hooker & G.W. Arnott. COMMON NAMES: Amole, Amolio, Arbolillo, Cherioni, Cherrion, Guayul, Indian Soap Plant, Jaboncillo (Spanish), Matamuchacho, Mexican Soapberry, Ojo de Loro, Palo Blanco, Soap Berry, Soapberry, Tehuistle, Tzatzupa, Western Soapberry, Wild Chinaberry, Wild China-tree, Wild Chinatree. DESCRIPTION: Terrestrial perennial winter deciduous shrub or tree (7 to 50 feet in height with a rounded crown 25 to 30 feet in width); the bark is gray, grayish, grayish-brown, reddish-brown or yellow-gray; the twigs are gray-brown, yellow-green or yellowish-gray; the leaflets are a light green or dull yellow-green turning to yellow-gold in the fall; the flowers (1/8 to 1/4 inch in diameter in clusters 6 to 9 inches in length) are cream, cream-yellow, greenish-white, white, yellow or yellowish-white; flowering generally takes place between early May and mid-July (additional record: one for late March, flowering as late as August has been reported); the poisonous fruits (3/8 to 1/2 inch in diameter) are amber, golden, orange, orange-brown, yellowish or yellow-amber turning black or reddish-brown when dry. HABITAT: Within the range of this species it has been reported from mountains; along canyons; canyon sides; rocky, gravelly-clayey, sandy-loamy and loamy canyon bottoms; talus slopes; crevices in rock; meadows; foothills; hilltops; rocky and rocky-clayey hillsides; rocky, rocky-clayey, gravelly-clayey, sandy-loamy and clayey slopes; amongst boulders; sand dunes; sandy-silty berms; plains; bouldery flats; valley floors; along roadsides; along and in arroyos; within draws; gulches; ravines; springs; along rocky streams; along streambeds; along and in creeks; along and in creekbeds; bouldery and sandy riverbeds; along and in bedrock, rocky and rocky-gravelly washes; along bouldery drainages; along watercourses; along banks of streams, creeks and drainages; along edges of creekbeds and washes; sandy shores of riverbeds; terraces; sandy bottomlands; floodplains; mesquite bosques; fencerows; rocky riparian areas; sandy waste places, and disturbed areas growing in moist and dry bouldery, rocky, rocky-gravelly, rocky-sandy and sandy ground; sandy loam and loam ground; rocky clay, gravelly clay, silty clay and clay ground, and sandy silty and silty ground, occurring from 1,100 to 6,500 feet in elevation in the woodland, scrub, grassland, desert scrub and wetland ecological formation. NOTES: This plant may be an attractive component of a restored native habitat. This plant was reported to have been utilized by native peoples of North America; it was noted as having been used as tools, for making toys and as a drug or medication. *Sapindus saponaria* var. *drummondii* is

native to south-central and southern North America. \*5, 6, 13, 15, 28 (color photograph), 43 (042710), 46 (Page 528), 52 (recorded as *Sapindus drummondii* Hook. & Arn., color photograph), 53 (recorded as *Sapindus drummondii* Hook. & Arn.), 58, 63 (042710 - color presentation), 80 (*Sapindus saponaria* var. *drummondii* is listed as a Rarely Poisonous and Suspected Poisonous Range Plant. “This small tree growing along streams is considered poisonous but it is seldom eaten by livestock.”), 85 (042710 - color presentation), 91), 115 (color presentation of the species), 127\*

#### Scrophulariaceae: The Figwort Family

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

SYNONYMY: (for *V.p.* subsp. *xalapensis*: *Veronica peregrina* C. Linnaeus var. *xalapensis* (K.S. Kunth) F.W. Pennell). COMMON NAMES: American Speedwell, Hairy Purslane Speedwell, Jalapa Speedwell, Mushikusa (transcribed Japanese), Necklace Speedwell, Necklace Weed, Neckweed, Purslane Speedwell, Veronica-de-xalapa (Portuguese, for *V.p.* subsp. *xalapensis*), Wandering Speedwell, Wen Mu Cao (transcribed Chinese). DESCRIPTION: Aquatic or terrestrial annual forb/herb (4 to 14 inches in height); the leaves are yellow-green; the tiny flowers may be blue, pink-white, purple, purple-blue, white, white-blue or white-light pink; flowering generally takes place between early February and early October (additional record: one for early November); the heart-shaped fruits are reddish. HABITAT: Within the range of this species it has been reported from mountains; mesas; plateaus; along bouldery and rocky canyons; bedrock and bouldery canyon bottoms; bluffs; ledges; ridges; clayey and silty meadows; bouldery hills; bouldery and rocky hillsides; bouldery, gravelly-sandy, sandy and silty slopes; rocky-sandy-loamy and gravelly-sandy alluvial fans; bouldery outcrops; amongst rocks; clayey-loamy prairies; plains; loamy flats; sandy hollows; valley floors; muddy valley bottoms; coastal plains; along gravelly and gravelly-sandy roadsides; within bedrock arroyos; draws; bottoms of draws; gulches; ravines; muddy seeps; springs; in clay along rocky-silty streams; along and in bouldery-sandy and sandy streambeds; along creeks; along rocky-sandy, cobbly, gravelly-sandy and sandy creekbeds; along rivers; sandy riverbeds; along and in rocky, rocky-clayey, rocky-silty, gravelly and sandy washes; rocky-sandy and rocky-silty drainages; in drainage ways; waterholes; around and in clayey and clayey-loamy pools; silty-clayey poolbeds; in rocks around silty ponds; pondbeds; in lakes; lakebeds; playas; around and in lagoons; boggy areas; silty marshes; loamy-clayey depressions; within clayey “tobosa” swales; along muddy, sandy, sandy-silty and loamy banks of streams, creeks, rivers, pools and lakes; along muddy edges of streams, rivers, washes, pools, ponds and lakes; along clayey margins of streamlets, streams, pools, ponds and lakes; along mucky and muddy shores of ponds and lakes; gravelly-silty-loamy mudflats; sand bars; benches; sandy terraces; bottomlands; silty-clayey floodplains; dams; below dikes; in silty-clayey stock tanks; sandy, silty and muddy edges of stock tanks (charcos, repressos); edges of reservoirs; along ditches; silty trenches; rocky, cobbly, gravelly-sandy, sandy and sandy-clayey riparian areas; waste places, and disturbed areas growing in shallow water; mucky and muddy, and wet, soggy, moist, damp and dry bouldery, bouldery-sandy, rocky, rocky-sandy, cobbly, gravelly, gravelly-sandy and sandy ground; rocky-sandy loam, gravelly loam, gravelly-clayey loam, gravelly-silty loam, clayey loam and loam ground; rocky clay, sandy clay, loamy clay, silty clay and clay ground, and rocky silty, sandy silty and silty ground, occurring from 100 to 9,800 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTE: *Veronica peregrina* is native to northwestern, northern, central and southern North America; Central America and coastal Islands in the Caribbean Sea, and eastern, western and southern South America. \*5, 6, 18 (genus), 43 (042810 - *Veronica peregrina* var. *xalapensis* Kunth), 46 (Page 785), 63 (042810 - color presentation), 85 (042910 - color presentation), 101 (color photograph)\*

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

## Solanaceae: The Potato Family

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

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

### ***Lycium andersonii* A. Gray: 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, **HR\***

***Lycium berlandieri* M.F. Dunal: Berlandier's Wolfberry**

COMMON NAMES: Berlandier Lycium, Berlandier Wolfberry, Berlandier's Wolfberry, Boxthorn, Huichutilla, Terrac Wolfberry, Wolfberry. DESCRIPTION: Terrestrial perennial drought-deciduous shrub (20 inches to 10 feet in height, one plant was reported to be 3 feet in height with a crown 3 feet in width); the bark on the stems and branches may be almost black, brown, dark brown, gray, gray-brown, purple-brown, dark red or reddish; the leaves are dark green; the bell-shaped flowers may be bluish, cream, cream-white, cream-yellow, pale green, lavender, purple, tan, white, whitish or pale yellow; flowering generally takes place between early February and early September (additional records: one for early January, two for late September, three for early October, one for mid-October, two for late November, one for early December and one for late December); the mature fruits are orange, red or red-orange. HABITAT: Within the range of this species it has been reported from mountains; rocky canyons; bouldery and rocky canyon bottoms; bases of cliffs; rocky talus slopes; crevices; buttes; ledges; rocky ridgetops; rocky foothills; rocky, gravelly, gravelly-sandy and sandy hills; rocky hillsides; bedrock and rocky slopes; rocky, gravelly, gravelly-sandy and sandy bajadas; bouldery and rocky outcrops; amongst boulders and rocks; boulderfields; prairies; plains; gravelly and gravelly-sandy flats; rocky-gravelly basins; valley floors; along gravelly-sandy-clayey-loamy roadsides; along rocky arroyos; ravines; around streams; along and in sandy washes; playas; clayey-loamy terraces; mesquite bosques; ditches, and riparian areas growing in dry desert pavement; bouldery, rocky, rocky-gravelly, gravelly, gravelly-sandy and sandy ground; gravelly-sandy-clayey loam, sandy loam and clayey loam ground, and loamy clay ground, occurring from 100 to 5,700 feet in elevation in the woodland, scrub, grassland and desertscrub ecological formations. NOTES: This spiny shrub may be an attractive component of a restored native habitat. The Berlandier Lycium may live to be more than 90 years of age. The Costa's Hummingbird (*Calypte costae*) has been observed visiting the flowers and Gambel's Quail (*Callipepla gambelii* subsp. *gambelii*) uses the plant for cover, feeding and roosting. *Lycium berlandieri* is native to southwest-central and southern North America. \*5, 6, 10, 13, 16, 18 (genus), 28 (species, color photograph of species), 43 (043010), 46 (Page 752), 63 (043010), 85 (043010 - color presentation), 115 (color presentation), **HR\***

Sterculiaceae: The Cacao Family

***Ayenia filiformis* S. Watson: Trans-Pecos Ayenia**

COMMON NAMES: Desert Ayenia, Trans-Pecos Ayenia, TransPecos Ayenia. DESCRIPTION: Terrestrial perennial subshrub (4 inches to 4 feet in height); the leaves may be bronze, dark green or red; the tiny flowers may be brownish, maroon, purple, red, red-cream, white or white with purple tips; flowering generally takes place between late February and early November (additional records: one for mid-January, two for late January, one for late November, two for mid-December and three for late December); the fruits are bur-like round balls with red tipped spines. HABITAT: Within the range of this species it has been reported from mountains; rocky mountainsides; rocky mesas; cliffs; rocky canyons; along canyon walls; rocky canyon bottoms; talus slopes; crevices in boulders and rocks; rocky ridges; ridgetops; foothills; rocky hills, rocky hilltops; rocky hillsides; bouldery-gravelly and rocky slopes; bajadas; rocky outcrops; amongst boulders and rocks; flats; basins; along roadsides; arroyos; rocky bottoms of arroyos; gulches; seeps; springs; along streams; rocky streambeds; along and in rocky and sandy washes; in rocky and gravelly drainages; along rocky banks of ravines, creeks and washes; along bouldery edges of washes; floodplains; riparian areas, and disturbed areas growing in dry bouldery, bouldery-gravelly, rocky, gravelly and sandy ground and rocky silty ground, occurring from 100 to 5,400 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formation. NOTES: This plant is browsed by Desert Bighorn Sheep (*Ovis canadensis* subsp. *mexicana*). *Ayenia filiformis* is native to southwest-central and southern North America. \*5, 6, 43 (073009), 46 (no record of species), 63 (050610), 77 (color photograph #99), **85** (050610 - color presentation)\*

## 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), **HR\***

*Celtis pallida* (see *Celtis ehrenbergiana*)

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

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

## Verbenaceae: The Verbena Family

### ***Glandularia gooddingii* (J.I. Briquet) O.T. Solbrig: Southwestern Mock Vervain**

SYNONYMY: *Verbena gooddingii* J.I. Briquet, *Verbena gooddingii* J.I. Briquet var. *nepetifolia* I. Tidestrom. COMMON NAMES: Desert Verbena, Desert Vervain, Goodding Glandularia, Goodding Mock Vervain, Goodding Verbena, Goodding's Verbena, Goodding Vervain, Mexican Vervain,

Southwestern Mock Vervain, Southwestern Verbena, Southwestern Vervain, Sweet William, Verbena, Vervain. DESCRIPTION: Terrestrial perennial forb/herb (6 inches to 2 feet in height, one plant was described as being 6 to 10 inches in height and 6 inches in width, one plant was described as being 24 inches in height and 12 inches in width); the leaves are gray-green, green or dark green; the flowers may be light blue, blue, sky blue, blue-lavender, blue-violet, bluish-purple, pale lavender, lavender, lavender-blue, lavender-purple, magenta, pink, pink-lavender, pink-purple, pink-violet, light purple, purple, purple-lavender, purplish-pink, rose-pink or white-lavender; flowering generally takes place between early February and mid-October (additional records: one for mid-November, two for late November and one for early December). HABITAT: Within the range of this species it has been reported from mountains; cobbly-gravelly mesas; plateaus; along canyons; bouldery-cobbly, rocky, gravelly and sandy canyon bottoms; rock cliffs; talus slopes; crevices in rocks; rocky ledges; rocky-sandy and sandy ridges; rocky ridgetops; meadows; cinder cones; gravelly, gravelly-sandy and sandy foothills; rocky hills; hilltops; rocky hillsides; bouldery-sandy, rocky and rocky-gravelly slopes; rocky outcrops; amongst boulders; rocky plains; sandy flats; sandy valley floors; in roadways; along rocky, cindery, gravelly, gravelly-sandy-clayey-loamy, gravelly-loamy, pebbly, sandy, sandy-loamy and loamy roadsides; within rocky and gravelly arroyos; rocky bottoms of arroyos; gravelly gulches; seeps; springs; along and in streambeds; along creeks; creekbeds; along rivers; along and in rocky, rocky-sandy, gravelly and sandy washes; drainages; around pools; playas; sandy and silty banks of creeks, rivers and washes; gravelly-sandy and silty edges of streambeds and washes; margins of washes; cobbly benches; shelves; terraces; sandy bottomlands; sandy-clayey floodplains; rocky, cobbly-gravelly, gravelly and sandy riparian areas; recently burned areas of forests, and disturbed areas growing in dry bouldery, bouldery-cobbly, bouldery-sandy, rocky, rocky-gravelly, rocky-sandy, stony, cobbly, cobbly-gravelly, cindery, gravelly, gravelly-sandy, pebbly and sandy ground; rocky-gravelly loam, gravelly loam, gravelly-sandy-clayey loam, gravelly-clayey loam, sandy loam and loam ground; bouldery clay, sandy clay and clay ground, and powdery-silty and silty ground, occurring from 700 to 7,000 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. The flowers may be fragrant. *Glandularia gooddingii* is native to southwest-central and southern North America. \*5, 6, 15, 16, 28 (color photograph), 43 (073109), 46 (*Verbena gooddingii* Briq., Pages 726-727 and *Verbena gooddingii* Briq. var. *nepetifolia* Tidestrom, Pages 726-727), 48 (genus), 63 (051410), 77 (color photograph #53, *Verbena gooddingii* Briq.), 85 (051410 - color presentation), 115 (color presentation)\*

*Verbena gooddingii* (see *Glandularia gooddingii*)

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

#### Viscaceae (Loranthaceae): The Christmas Mistletoe Family

##### ***Phoradendron californicum* T. Nuttall: Mesquite Mistletoe**

SYNONYMY: *Phoradendron californicum* T. Nuttall var. *distans* W. Trelease. COMMON NAMES: American Mistletoe, Desert Mistletoe, Mesquite American Mistletoe, Mesquite Mistletoe, Toji, Western Dwarf Mistletoe. DESCRIPTION: Terrestrial perennial subshrub or shrub (8 inches to 5 feet in height, one clump was described as being 16 inches in length and 36 inches in width); the stems (16 to 40 inches in length) may be brown, green, green-reddish, dark olive-green, reddish, red-brown, yellow-green or yellowish; the fragrant flowers are greenish-yellow; flowering generally takes place between late July and early June (additional records: one record for late June and one record for early July); the fruits may be orange, orange-pink, pink, pink-red, pale red, reddish, red-orange, white, white-pink or white-reddish with the older berries turning brown-red or red. HABITAT: Partial parasite observed growing on Whitethorn Acacia, Desert Ironwood, Foothill Paloverde and Velvet Mesquite, and commonly reported as growing on: *Acacia* spp. (*Acacia constricta*, Whitethorn Acacia; *Acacia farnesiana*, Sweet Acacia, and

*Acacia greggii*, Catclaw Acacia); *Condalia* spp. (*Condalia globosa*, Bitter Snakewood and *Condalia warnockii*, Kearney Snakewood); *Larrea tridentata*, Creosote Bush; *Olneya tesota*, Desert Ironwood; *Parkinsonia* spp. (*Parkinsonia aculeata*, Jerusalem Thorn; *Parkinsonia florida*, Blue Palo Verde; *Parkinsonia microphylla*, Yellow Palo Verde, and *Parkinsonia praecox*, Sonoran Palo Verde); *Prosopis* spp. (*Prosopis glandulosa*, Honey Mesquite; *Prosopis pubescens*, Screwbean Mesquite, and *Prosopis velutina*, Velvet Mesquite); *Simmondsia chinensis*, Jojoba, and *Ziziphus obtusifolia*, Lotebush, occurring from sea level to 5,100 feet in elevation in the woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: When removing the Mesquite Mistletoe from the trees and shrubs on your property consider leaving some of the plants for wildlife, Verdins nest in the stems and the Phainopepla (*Phainopepla nitens*) feeds on the berries. This plant was reported to have been utilized by native peoples of North America; it was noted as having been used as a food (berries) and as a drug or medication. *Phoradendron californicum* is native to southwest-central and southern North America. \*5, 6, 13 (color photograph), 15, 16, 28 (color photograph), 43 (051710 - *Phoradendron californicum* var. *distans* Trel. in Trel.), 46 (recorded as *Phoradendron californicum* Nutt., Page 224 and *Phoradendron californicum* Nutt. var. *distans* Trelease, Page 224), 58, 63 (051410 - color presentation), 77, 80 (Species of the genus *Phoradendron* are considered to be Rarely Poisonous and Suspected Poisonous Range Plants. "Cattle may be killed by browsing these parasitic forbs, but plants are unpalatable and poisoning is rare. Also children may be poisoned by eating the berries."), 85 (051410 - color presentation), 97, 115 (color presentation), 127, **WTK** (July 4, 2005)\*

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

#### Zygophyllaceae: The Creosote-bush Family

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

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

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

SYNONYMY: *Larrea divaricata* auct. non A.J. Cavanilles, *Larrea divaricata* A.J. Cavanilles subsp. *tridentata* (A.P. de Candolle) R.S. Felger & C.H. Lowe. COMMON NAMES: Chaparral, Coville Creosotebush, Creosote Bush, Creosote-bush, Creosotebush, Gobernadora, Greasewood (erroneously called), Guamis, Hediondilla (Spanish - for Little Bad Smeller). DESCRIPTION: Terrestrial perennial evergreen shrub (20 inches to 13 feet in height and about the same in width); the bark is gray; the leaves are bright glossy green or yellow-green; the flowers (½ to 1 inch in diameter) are yellow or yellow-white; flowering takes place throughout the year with the peak blooming periods occurring in the spring, between March and April, and then again between November and December; the round, fuzzy fruits (¼ inch in diameter) are gray, reddish, white or rust colored. HABITAT: Within the range of this species it has been reported from mountains; rocky, gravelly and sandy mesas; plateaus; rims of canyons; sandy canyons; canyon bottoms; talus slopes; sandy pockets of soil; rocky ridges; foothills; hills; hillsides; rocky and gravelly slopes; alluvial fans; gravelly and sandy bajadas; rocky outcrops; amongst boulders and rocks; sand dunes; sandy plains; cindery-gravelly, gravelly and sandy flats; valley floors; sandy roadsides; arroyos; bottoms of arroyos; riverbeds; along and in gravelly-sandy and sandy washes; sandy banks of streams, creeks and rivers; edges of washes; gravelly and sandy terraces; floodplains; mesquite bosques; riparian areas, and disturbed areas growing in dry bouldery, rocky, rocky-sandy, stony, gravelly, gravelly-sandy and sandy ground; rocky-clayey loam and clayey loam ground; sandy clay ground, and rocky-sandy silty and silty ground, occurring from below sea level to 5,000 feet in elevation in the woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. This plant was reported to have been utilized by native peoples of North America; it was noted as having been used as a building material, as tools, in the

making of brooms, brushes and musical instruments, as a drug or medication and in body art. Older stems of the Creosote Bush may be 40 to 90 years of age. Using Creosote Bush in the restoration of disturbed sites may increase water infiltration and storage, transplants recommended over spot-seeding and rodent protection for the transplanted seedlings is necessary. When planting a Creosote Bush consider planting a small Desert Night-blooming Cereus (*Peniocereus greggii* var. *transmontanus*) at the base of the plant. The branches will provide support and the roots will protect the tuber of the cereus from hungry Javelinas. The Creosote Bush is the characteristic plant of the southwestern deserts in North America with its distribution very closely delineating the desert regions. As the Creosote Bush ages the older central stems of the plant die off and new stems form at the outer edge of the crown. New stems are not created at the center of the plant. As the crown of the plant expands a “clonal ring”, made up of genetically identical individual shrublets, develops which continues the outward expansion of the ring eventually reaching several yards in diameter. It has been estimated that some of the older rings approach from 9,400 to 11,700 years of age. The Creosote Bush provides cover for many animals; Lac Scale insects (*Tachardiella larreae*), jackrabbits, desert woodrats and other small mammals feed on this plant; stem galls are produced in response to the Creosote Gall midge (*Asphondylia* sp.), and the Desert Tortoise (*Gopherus agassizi*) often digs its shelter under the base of the plant where the roots help to stabilize the soil. *Larrea tridentata* var. *tridentata* is native to southwest-central and southern North America. \*5, 6, 13 (color photograph), 16, 18, 26 (species, recorded as *Larrea tridentata*, color photograph of species), 28 (species, recorded as *Larrea tridentata*, color photograph of species), 43 (051710 - *Larrea tridentata* Coville, *Larrea divaricata* Cav. subsp. *tridentata* (Sessé & Moc. ex DC.) Felger), 46 (species, recorded as *Larrea tridentata* (DC.) Coville: “An outstanding xerophyte and a very important element of the perennial desert flora in southern and western Arizona. ... Creosote-bush has a strong characteristic odor, especially noticeable when the foliage is wet. The plant is ordinarily not touched by livestock, although it is reported that sheep, especially pregnant ewes, have been killed by partaking of it. This plant is reported to cause dermatitis in exceptional persons who are allergic to it.”, Page 491), 48, 63 (051610 - color presentation), 77 (color photograph #101), 80 (This species is listed under Rarely Poisonous and Suspected Poisonous Range Plants. “Early reports accusing this common desert shrub of being poisonous have been proven wrong.”), 85 (051610 - color presentation), 91, 101 (species, color photograph of species), 107, 115 (color presentation), 127, **WTK** (July 4, 2005)\*

## 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 (071806 - subspp. *carolinensis* (C. Linnaeus) and *marginella* (S.W. Woodhouse)), 20, 55, 69, 73, 84, 93, 106 (071806), **WTK** (July 4, 2005)\*

*Zenaidura macroura* (see *Zenaida macroura*)

### Cuculidae: The Ani, Cuckoo and Roadrunner Family

#### ***Geococcyx californianus* (R.P. Lesson): Greater Roadrunner**

COMMON NAMES: Correcaminos Norteno (Hispanic), Greater Roadrunner, Paisano (Hispanic), Roadrunner, Tadaí. HABITS: Feeds on the young of ground nesting birds, insects, lizards, scorpions and snakes. Nests are coarse shallow cups of sticks located in cacti, mesquite trees and shrubs. HABITAT: Within the range of this species it has been reported from the forest, scrub, grassland, desertscrub and wetland ecological formations. \*20, 55, 69, 73, 84, 93, 106 (0514-2606), **WTK** (July 4, 2005)\*

## CLASS MAMMALIA: The MAMMALS

### Antilocapridae: The Pronghorn Family

#### ***Antilocapra americana* G. Ord: Pronghorn**

COMMON NAMES: American Pronghorn, "Antelope", Chihuahuan Pronghorn, Chihuahuan Pronghorn Antelope, Prong-horn, Pronghorn, Pronghorn Antelope, Prong-horned Antelope, Sonoran Pronghorn, Sonoran Pronghorn Antelope. HABITS: Feeds on cacti, forbs, grasses and shrubs. HABITAT: Within the range of this species it has been reported from the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. \*8, 14 (113006 - subspp. *americana* (Ord), *mexicana* Merriam and *sonoriensis* Goldman), **55** (recorded as *Antilocapra americana* Ord. Prong-horned Antelope. Formerly widely distributed in grassland areas throughout the state; presently restricted to areas of favorable habitat.), 65, 73, 106 (052806), 100 (color photograph), 110 (Historic Range: Southwest Arizona, south of the Bill Williams River and east to the Santa Cruz River. In Mexico, the northern part of the State of Sonora.), 118 (recorded as *Antilocapra americana americana* (Ord) - Distribution: mapping and records for northeastern and northwestern Arizona; *Antilocapra americana mexicana* Merriam - Distribution: Southeastern Arizona, and *Antilocapra americana sonoriensis* Goldman - Distribution: Southwestern Arizona. Figure 111, Page 255)\*

#### ***Antilocapra americana* subsp. *mexicana* C.H. Merriam: Chihuahuan Pronghorn**

COMMON NAMES: "Antelope", Chihuahuan Pronghorn, Chihuahuan Pronghorn Antelope, Prong-horn, Pronghorn, Pronghorn Antelope, Prong-horned Antelope. HABITS: The species feeds on cacti, forbs, grasses and shrubs. HABITAT: Within the range of this species it has been reported from the woodland, grassland, desertscrub and wetland ecological formations. NOTES: EXTIRPATED from southeastern Arizona, several reintroductions have taken place. \*8 (Historically throughout south-eastern and south-central Arizona.), 14 (113006 - historically occurred in grass-shrub valleys and grasslands of southeastern and south-central Arizona), 55 (species: recorded as *Antilocapra americana* Ord. Prong-horned Antelope. Formerly widely distributed in grassland areas throughout the state; presently restricted to areas of favorable habitat.), 65 (species), 73 (species), 100 (color photograph of species), 106 (052806 - species), **118** (recorded as *Antilocapra americana mexicana* Merriam - Distribution: Southeastern Arizona. Figure 111, Page 255)\*

#### Bovidae: The Cow, Sheep and Allies Family

##### ***Ovis canadensis* G. Shaw: Rocky Mountain Bighorn Sheep**

COMMON NAMES: Berrego Cimarron (Hispanic), Bighorn, Bighorn Sheep, Desert Bighorn, Desert Bighorn Sheep, Mountain Sheep, Rocky Mountain Bighorn Sheep. HABITS: Feeds on agave, brittle bush, bursage, bush muhly, cacti, catclaw, cholla, coffeeberry, desert fluffgrass, desert ironwood, desert thorn, fairy duster, filaree, galleta, grama, jojoba, mesquite, mallow, Nevada joint fir, plantain, prickly-pear, ratany, ricegrass, saguaro, saltbush, threeawn and turpentine broom. Young are dropped in small scraped out depressions located in protected places on inaccessible peaks. HABITAT: Within the range of this species it has been reported from the tundra, forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. \*14, **55** (recorded as *Ovis canadensis* Shaw. Bighorn. Probably formerly statewide in mountainous or rocky situations; presently restricted to scattered low desert mountains.), 65, 73, 100 (color photograph), 106 (052906), 118 (recorded as *Ovis canadensis mexicana* Merriam - Distribution: Probably formerly statewide in mountainous situations. Figure 112, Page 257), **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: recorded as *Ovis canadensis* Shaw. Bighorn. Probably formerly statewide in mountainous or rocky situations; presently restricted to scattered low desert mountains."), 65 (species), 73 (species), 100 (color photograph of species, species record), 106 (072306), **118** (recorded as *Ovis canadensis mexicana* Merriam - Distribution: Probably formerly statewide in mountainous situations. Figure 112, Page 257)\*

#### Canidae: The Dog and Allies Family

##### ***Canis latrans* T. Say: Coyote**

COMMON NAME: Coyote, Prairie Wolf. HABITS: Feeds on amphibians, berries, birds, carrion, fruits, gophers, insects, mice, rabbits, reptiles and squirrels. The young are born in dens that may be dug in the ground or located in caves. HABITAT: Within the range of this species it has been reported from the tundra, forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. \*14, **55**

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

***Canis latrans* subsp. *mearnsi* Merriam: Coyote**

COMMON NAME: Coyote. HABITS: The species feeds on amphibians, berries, birds, carrion, fruits, gophers, insects, mice, rabbits, reptiles and squirrels. The young are born in dens that may be dug in the ground or located in caves. HABITAT: Within the range of this species it has been reported from the tundra, forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. \*14 (species), 55 (species: recorded as *Canis latrans* Say. Coyote. Statewide (120 - 9,100 feet.), 65 (color photograph of species, species record), 73 (species), 100 (color photograph of species, species record), 106 (052906 - species), 118 (recorded as *Canis latrans mearnsi* Merriam - Distribution: Statewide. Figure 87, Page 217)\*

***Urocyon cinereoargenteus* (J.C. von Schreber): Common Gray Fox**

COMMON NAMES: Common Gray Fox, Gray Fox, Zorra Gris (Hispanic). HABITS: The species feeds on birds, desert cottontails, hackberry and prickly-pear fruits, grasses, insects (crickets and grasshoppers), juniper berries, lizards, manzanita berries, nuts, small rodents and snakes. Nests are made of bark, grasses and leaves and located in underground burrows, small caves, piles of rock, amongst boulders, crevices in cliffs and in hollows in trees. HABITAT: Within the range of this species it has been reported from the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTE: The Gray Fox climbs trees. \*14 (082608 - subsp. *scottii* (Mearns)), 55 (recorded as *Urocyon cinereoargenteus* (Schreber). Gray Fox. Statewide with the possible exception of the northeast portion (120 - 5,800 feet.), 65 (species, color photograph), 73, 100 (color photograph), 106 (052906 - species with a listing of 16 subspecies), 118 (recorded as *Urocyon cinereoargenteus scottii* Mearns - Distribution: Probably statewide. Figure 90, Page 222)\*

***Urocyon cinereoargenteus* subsp. *scottii* Mearns: Common Gray Fox**

COMMON NAMES: Common Gray Fox, Gray Fox, Zorra Gris (Hispanic). HABITS: The species feeds on birds, desert cottontails, hackberry and prickly-pear fruits, grasses, insects (crickets and grasshoppers), juniper berries, lizards, manzanita berries, nuts, small rodents and snakes. Nests are made of bark, grasses and leaves and located in underground burrows, small caves, piles of rock, amongst boulders, crevices in cliffs and in hollows in trees. HABITAT: Within the range of this species it has been reported from the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTE: The Gray Fox climbs trees. \*14 (082608 - subsp. *scottii* (Mearns)), 55 (species: recorded as *Urocyon cinereoargenteus* (Schreber). Gray Fox. Statewide with the possible exception of the northeast portion (120 - 5,800 feet.), 65 (species, color photograph of species), 73 (species), 100 (species, color photograph of species), 106 (052906 - species with a listing of 16 subspecies), 118 (recorded as *Urocyon cinereoargenteus scottii* Mearns - Distribution: Probably statewide. Figure 90, Page 222)\*

***Vulpes macrotis* C.H. Merriam: Kit Fox**

COMMON NAMES: Kit Fox, Zorra del Desierto (Hispanic). HABITS: Feeds on berries, birds, cottontail rabbits, crickets, grasses, grasshoppers, ground squirrels, jack rabbits, kangaroo rats, lizards and pocket mice. The young are born in dens in underground burrows that have been excavated in soft soils. HABITAT: Within the range of this species it has been reported from the woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTE: *Vulpes velox* (T. Say): The Swift Fox is generally considered a separate species by most authors. \*14 (050907 - subspp. *macrotis* Merriam and *neomexicanus* Merriam), 55 (recorded as *Vulpes macrotis* Merriam. Kit Fox. Widely distributed at lower elevations throughout the southern part of the state (120 - 5,000 feet.), 65, 73, 78, 100 (color photograph), 106 (052906), 118 (recorded as *Vulpes macrotis arispus* Elliot - Distribution: Lower

elevations in western and southern part of the state. *Vulpes macrotis neomexicana* Merriam - Distribution: Extreme southeastern Arizona. Figure 89, Page 220)\*

***Vulpes macrotis* subsp. *arispus* Elliot: Kit Fox**

COMMON NAMES: Kit Fox, Zorra del Desierto (Hispanic). HABITS: The species feeds on berries, birds, cottontail rabbits, crickets, grasses, grasshoppers, ground squirrels, jack rabbits, kangaroo rats, lizards and pocket mice. The young are born in dens in underground burrows that have been excavated in soft soils. HABITAT: Within the range of this species it has been reported from the woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTE: *Vulpes velox* (T. Say): The Swift Fox is generally considered a separate species by most authors. \*14 (050907 - subspp. *macrotis* Merriam and *neomexicanus* Merriam), 55 (species: recorded as *Vulpes macrotis* Merriam. Kit Fox. Widely distributed at lower elevations throughout the southern part of the state (120 - 5,800 feet.) 65 (species), 73 (species), (100 - color photograph), 106 (052906), **118** (recorded as *Vulpes macrotis arispus* Elliot - Distribution: Lower elevations in western and southern part of the state. Figure 89, Page 220)\*

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

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 spurge. HABITAT: Within the range of this species it has been reported from the tundra, forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. \*14, **55** (recorded as *Odocoileus hemionus* (Rafinesque). Black-tailed or Mule Deer. Statewide, but not of uniform distribution (250 - 9,000 feet.), 65, 73, 100 (color photograph), 106 (052906), 118 (recorded as *Odocoileus hemionus crooki* (Mearns) - Distribution: Northeastern, central and southeastern part of the state. Figure 109, Page 252)\*

***Odocoileus hemionus* subsp. *crooki* (Mearns): Mule Deer**

COMMON NAMES: Black-tailed Deer, Burro, Desert Mule Deer, Mule Deer, Venado Pardo (Hispanic). HABITS: The species feeds on acorns, beans, branches, fruits, leaves or needles, nuts, seeds and/or twigs of aspen, barberry, bitterbrush, blackberry, buckbrush, buckwheat, calliandra, ceanothus, catclaw, cedar, cliffrose, dogwood, Douglas fir, huckleberry, joint fir, jojoba, juniper, mountain mahogany, mountainlover, oak, pinyon, ponderosa pine, poplar, sagebrush, saltbush, serviceberry, thimbleberry, white fir, wild cherry, willow and yew, and grasses lupines, mistletoe, moss, mushrooms, salal, sedges and spurge. HABITAT: Within the range of this species it has been reported from the tundra, forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. \*14 (species), 55 (species: recorded as *Odocoileus hemionus* (Rafinesque) Black-tailed or Mule Deer. Statewide, but not of uniform distribution (250 - 9,000 feet.), 65, 73 (species), 100 (species, color photograph of species), 106 (052906 - species), **118** (recorded as *Odocoileus hemionus crooki* (Mearns) - Distribution: Northeastern, central and southeastern part of the state. Figure 109, Page 252)\*

***Odocoileus virginianus* (Zimmermann): Coues' White-tailed Deer**

COMMON NAMES: Arizona Whitetail, Coues' Deer, Coues' White-tailed Deer, Desert Whitetail, Maso (Yaqui), Fantail, Sonora White-tailed Deer, Sonoran Fantail, Venado Cola Blanca

(Hispanic), Virginia Deer, Whitetail, White-tailed Deer, Whitetail Deer. HABITS: The species feeds on fungi, grass and acorns, branches, buds, cones, fruits, leaves, mast, needles and /or twigs of alder, barberry, buckbrush, calliandra, catclaw acacia, Emory and scrub oaks and other evergreen oaks, hackberry, hemlock, holly-leaf buckthorn, juniper, mesquite, mountainlover, Oregon-grape, pinyon, ratany, sagebrush, skunkbush, spiderwort, spruce, willow, yellow-leaf silktassel. Young are generally dropped along ridges and hillsides. HABITAT: Within the range of this species it has been reported from the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. \*14, 55 (recorded as *Odocoileus virginianus* (Zimmermann). White-tailed Deer. Southeastern Arizona (1,200 - 9,000 feet).), 65, 73, 100 (color photograph), 106 (052906), 118 (recorded as *Odocoileus virginianus couesi* (Coues & Yarrow) - Distribution: Southern Arizona. Figure 110, Page 254)\*

***Odocoileus virginianus* subsp. *couesi* (E. Coues & Yarrow): Coues' White-tailed Deer**

COMMON NAMES: Arizona Whitetail, Coues' Deer, Coues' White-tailed Deer, Desert Whitetail, Fantail, Maso (Yaqui), Sonora White-tailed Deer, Sonoran Fantail, Venado Cola Blanca (Hispanic), Virginia Deer, Whitetail, White-tailed Deer, Whitetail Deer. HABITS: The species feeds on fungi, grass and acorns, branches, buds, cones, fruits, leaves, mast, needles and /or twigs of alder, barberry, buckbrush, calliandra, catclaw acacia, Emory and scrub oaks and other evergreen oaks, hackberry, hemlock, holly-leaf buckthorn, juniper, mesquite, mountainlover, Oregon-grape, pinyon, ratany, sagebrush, skunkbush, spiderwort, spruce, willow, yellow-leaf silktassel. Young are generally dropped along ridges and hillsides. HABITAT: Within the range of this species it has been reported from the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. \*14, 55 (species: recorded as *Odocoileus virginianus* (Zimmermann). White-tailed Deer. Southeastern Arizona (1,200 - 9,000 feet).), 65, 73 (species), 100 (species, color photograph of species), 106 (052906 - species), 118 (recorded as *Odocoileus virginianus couesi* (Coues & Yarrow) - Distribution: Southern Arizona. Figure 110, Page 254)\*

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* subsp. *azteca* (Merriam); *hippolestes* (Merriam); *kaibabensis* (Nelson and Goldman), and *stanleyana* (Goldman). The Yuma Mountain Lion (*Felis concolor browni*) is included as a separate record.), 55 (recorded as *Felis concolor* Linnaeus. Mountain Lion. Statewide (200 - 8,000 feet).), 65, 73, 100 (color photograph), 106 (052906), 118 (recorded as *Felis concolor azteca* Merriam - Distribution: Statewide except extreme western and northwestern parts; *Felis concolor browni* (Merriam) - Distribution: Southwestern part of the state, and *Felis concolor kaibabensis* Nelson and Goldman - Distribution: Northwestern Arizona, north and west of the Colorado River. Figure 105, Page 245)\*

*Felis 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: recorded as *Felis pardalis* Linnaeus. Ocelot. Formerly southeastern Arizona as far north as Fort Verde; no recent records.), 100 (species, color photograph of species), 106 (091108 - includes a listing with location of subspecies), **118** (recorded as *Felis pardalis* subsp. *sonoriensis* Goldman - Distribution: Formerly southeastern Arizona as far north as Ft. Verde. Figure 104, Page 244)\*

***Lynx rufus* (J.C. von Schreber): Bobcat**

SYNONYMY: *Felis rufus* (J.C. von Schreber). COMMON NAMES: Bobcat, Gato Montes (Hispanic), Wildcat. HABITS: Feeds on almost any meat source available including ground nesting birds, carrion, domestic cats, cottontail rabbits, deer, foxes, jackrabbits, lizards, small mammals, opossums, porcupines, raccoons, reptiles, rodents, bighorn sheep, skunks and woodchucks. Shelter may be taken in a rock cleft, thickets or on the branches of trees. Young are born in dens located in rocky caves, rock shelters, recesses and protected areas with nests made of leaves and other dry plant material. HABITAT: Within the range of this species it has been reported from the tundra, forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. \*14 (091108 - *Lynx rufus baileyi* Schreber), **55** (recorded as *Lynx rufus* (Schreber). Bobcat. Statewide (120 - 9,300 feet.), 65, 73, 100 (color photograph), 106 (052906), 118 (recorded as *Lynx rufus baileyi* Merriam - Distribution: Statewide. Figure 106, Page 247)\*

***Lynx rufus* subsp. *baileyi* Merriam: Bobcat**

SYNONYMY: *Felis rufus* subsp. *baileyi* Elliot. COMMON NAMES: Bobcat, Gato Montes (Hispanic), Wildcat. HABITS: Feeds on almost any meat source available including ground nesting birds, carrion, domestic cats, cottontail rabbits, deer, foxes, jackrabbits, lizards, small mammals, opossums, porcupines, raccoons, reptiles, rodents, bighorn sheep, skunks and woodchucks. Shelter may be taken in a rock cleft, thickets or on the branches of trees. Young are born in dens located in rocky caves, rock shelters, recesses and protected areas with nests made of leaves and other dry plant material. HABITAT: Within the range of this species it has been reported from the tundra, forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. \*14 (091108 - *Lynx rufus baileyi* Schreber), 55 (species: recorded as *Lynx rufus* (Schreber). Bobcat. Statewide (120 - 9,300 feet.), 65, 73 (species), 100 (species, color photograph of species), 106 (052906 - spies), **118** (recorded as *Lynx rufus baileyi* Merriam - Distribution: Statewide. Figure 106, Page 247)\*

***Panthera onca* subsp. *arizonensis* Goldman: Jaguar**

SYNONYMY: *Felis onca* subsp. *arizonensis* Goldman. COMMON NAMES: Black Panther, Blank Panther, Jaguar, Jaguar (Hispanic), Jaguarete (Spanish), Yaguar. HABITS: Feeds on armadillos, birds, caiman, capybaras, deer, fish, frogs, livestock, pacas, peccaries (javelina), mice, rabbits, tapirs, turtles and other vertebrates. Young are born in dens located in caves, rocky areas, dense brush and thickets. HABITAT: Within the range of this species it has been reported from the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTE: EXTIRPATED from Arizona. \*8, 14 (091008 - *Panthera onca* subsp. *arizonensis* Goldman), 55 (species: recorded as *Felis onca* Linnaeus. Jaguar. Probably formerly rare throughout the state. Today an occasional individual is found in the southern part of the state.), 65 (species), 100 (species, color photograph of species), 106 (052906), **118** (recorded as *Felis onca arizonensis* Goldman - Distribution: Probably formerly rare throughout the state. Today an occasional individual found in the southern part of the state. Figure 104, Page 244)\*

*Puma concolor* (see *Felis concolor*)

*Puma yaguarondi* (see *Herpailurus yaguarondi*)

#### 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: recorded as *Thomomys bottae* (Eydoux and Gervais). Valley Pocket Gopher. Widely distributed throughout the state at all elevations.), 65 (species), 73 (species), 100 (species, color photograph of species), 106 (052906 - species), **118** (recorded as *Thomomys bottae modicus* Goldman - Distribution: Known from the Santa Cruz and Altar Valleys. Figure 46, Page 107)\*

#### Heteromyidae: The Kangaroo Rat and Pocket Mouse Family

##### ***Chaetodipus baileyi* subsp. *baileyi* C.H. Merriam: Bailey's Pocket Mouse**

SYNONYMY: *Perognathus baileyi* subsp. *baileyi* C.H. Merriam. COMMON NAMES: Bailey's Pocket Mouse, Raton de Bailey (Hispanic). HABITS: The species feeds on vegetation, and fruits and seeds of cacti, grasses and other herbs. Nests are located underground burrows. HABITAT: Within the range of this species it has been reported from the woodland, scrub, grassland, and desertscrub ecological formations. \*14 (082508 - subsp. *baileyi* Merriam), 55 (species: recorded as *Perognathus baileyi* Merriam. Bailey's Pocket Mouse. Widely distributed in the southern part of the state (900 - 4,700 feet).), 65 (genus), 73 (species), 100 (species, color photograph of species), 106 (082508), **118** (recorded as *Chaetodipus baileyi baileyi* Merriam - Distribution: Grasslands of southeastern Arizona. Figure 51, Page 133)\*

##### ***Chaetodipus hispidus* subsp. *conditi* Allen: Hispid Pocket Mouse**

SYNONYMY: *Perognathus hispidus* subsp. *conditi* Allen S.F. Baird. COMMON NAME: Hispid Pocket Mouse. HABITS: The species feeds on insects (grasshoppers), leaves and seeds. Nests are constructed of grasses and located in underground burrows. HABITAT: Within the range of this species it has been reported from the woodland, scrub, grassland, desertscrub and wetland ecological formations. \*14 (082508 - subsp. *conditi*), 55 (species: recorded as *Perognathus hispidus* Baird. Hispid Pocket Mouse. Locally common in grasslands of southeastern part of the state; an isolated population occurs near

Camp Verde (3,200 - 5,000 feet.), 65 (genus), 73 (species), 100 (species), 106 (082508 - species), **118** (recorded as *Perognathus hispidus conditi* Allen - Distribution: Grasslands of southeastern Arizona. Figure 51, Page 132)\*

***Chaetodipus intermedius* subsp. *intermedius* C.H. Merriam: Rock Pocket Mouse**

SYNONYMY: *Perognathus intermedius* subsp. *intermedius* C.H. Merriam. COMMON NAMES: Raton de Rocas de Bosla (Hispanic), Rock Pocket Mouse. HABITS: The species feeds on seeds. Burrows are dug in soil near to or under rocks. HABITAT: Within the range of this species it has been reported from the woodland, scrub, grassland, desertscrub and wetland ecological formations. \*14 (051007), 55 (species: recorded as *Perognathus intermedius* Merriam. Rock Pocket Mouse. Widely distributed in rocky areas in the Colorado River valley, western and southern Arizona (120 - 6,000 feet.), 65 (genus), 73 (species - recorded as *Perognathus intermedius*), 100 (species), 106 (051007 - species), **118** (recorded as *Chaetodipus intermedius intermedius* Merriam - Distribution: Known from Mohave County southward and eastward, across most of the state to Cochise County. Figure 54, Page 141)\*

***Chaetodipus penicillatus* subsp. *pricei* (S.W. Woodhouse): Desert Pocket Mouse**

SYNONYMY: *Perognathus penicillatus* subsp. *pricei* S.W. Woodhouse). COMMON NAMES: Desert Pocket Mouse, Raton de Desierto (Hispanic), Sonoran Desert Pocket Mouse. HABITS: The species feeds on seeds of creosote bush, grass, greythorn, herbs and mesquite. The nest is made in underground burrows. HABITAT: Within the range of this species it has been reported from the scrub, grassland, desertscrub and wetland ecological formations. \*14 (051007), 55 (species: recorded as *Perognathus penicillatus* Woodhouse. Desert Pocket Mouse. Widely distributed in desert and low grasslands of southern and western Arizona (120 - 5,200 feet.), 65 (genus), 73 (species, *Perognathus penicillatus*), 100 (species, color photograph of species), 106 (051007 - species), **118** (recorded as *Perognathus penicillatus pricei* Allen - Distribution: Known from south-central Arizona. Figure 53, Page 137)\*

***Dipodomys merriami* subsp. *merriami* Mearns: Merriam's Kangaroo Rat**

COMMON NAMES: Merriam's Kangaroo Rat, Rata de Nopalera Merriam (Hispanic). HABITS: The species feeds on ants, green plant material and seeds of creosote bush, grama grass, mesquite, ocotillo and purselane. Nests are made in underground burrows often located under bushes. HABITAT: Within the range of this species it has been reported from the woodland, scrub, grassland, desertscrub and wetland ecological formations. \*14 (051007), 55 (species: recorded as *Dipodomys merriami* Mearns. Merriam's Kangaroo Rat. Widely distributed in western and southern parts of the state (120 - 5,000 feet.), 65 (species, color photograph of species), 73 (species), 100 (species, color photograph of species), 106 (genus with a listing of species), **118** (recorded as *Dipodomys merriami merriami* Mearns - Distribution: Occurs throughout most of the western and southern part of the state. Figure 56, Page 145)\*

***Dipodomys spectabilis* subsp. *perblandus* Goldman: Banner-tailed Kangaroo Rat**

COMMON NAMES: Banner-tailed Kangaroo Rat, Kangaroo Rat, Rata de Nopalera (Hispanic). HABITS: The species feeds on grasses, forbs, succulent plants, insects, rodents and seeds. Nests are made up of chaff, stems and leaves of grass located in underground burrows in firm soils. HABITAT: Within the range of this species it has been reported from the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. \*14 (051007), 55 (species: recorded as *Dipodomys spectabilis* Merriam. Banner-tailed Kangaroo Rat. Locally common in grasslands of southeastern Arizona (1,300 - 5,000 feet.), 65 (species, color photograph), 100 (species, color photograph), 106 (genus, listing of species), **118** (recorded as *Dipodomys spectabilis perblandus* Goldman - Distribution: Known from the grasslands of southern Pinal and Pima County. Figure 55, Page 143)\*

***Perognathus amplus* subsp. *taylori* Goldman: Arizona Pocket Mouse**

COMMON NAME: Arizona Pocket Mouse. HABITS: The species feeds on green plants, insects and seeds. Nests are located in underground burrows. HABITAT: Within the range of this species it has been reported from the woodland, scrub, grassland, desertscrub and wetland ecological formations. \*55 (species: recorded as *Perognathus amplus* Osgood. Arizona Pocket Mouse. Locally common in desert areas on south-central, western and north-central parts of the state (500 - 5,100 feet).), 65 (genus), 73 (species), 100 (species, color photograph of species), 118 (recorded as *Perognathus amplus taylori* Goldman. Distribution: Known from south central Arizona. Figure 50, Page 129)\*

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

*Perognathus 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: recorded as *Lepus alleni* (Mearns). Antelope Jack Rabbit. Occurs in the central third of the southern half of the state.), 65 (species), 73 (species), 100 (species, color photograph of species), 106 (052906 - species), 118 (recorded as *Lepus alleni* subsp. *alleni* Mearns - Distribution: Occurs in the central third of the southern half of the state. Figure 31, Page 68)\*

***Lepus californicus* (J.E. Gray): Black-tailed Jack Rabbit**

COMMON NAMES: Black-tailed Jack Rabbit, "Jackass Rabbit". HABITS: Feeds on grass, mesquite leaves and prickly-pear cacti. Young are born in nests located either above or below ground in forms that have been lined with breast hair, after birth the young are moved to separate nests and cared for individually by the female. HABITAT: Within the range of this species it has been reported from the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. \*14, 55 (recorded as *Lepus californicus* Gray. Black-tailed Jack Rabbit. Statewide.), 65, 73, 100 (color photograph), 106 (052906), 118 (recorded as *Lepus californicus deserticola* Mearns - Distribution: Occurs in the western half of the state; *Lepus californicus eremicus* J.A. Allen - Distribution: Southeastern Arizona, and *Lepus californicus texianus* Waterhouse - Distribution: Occurs in the northeastern quarter of the state. Figure 32, Page 69)\*

***Lepus californicus* subsp. *eremicus* J.A. Allen: Black-tailed Jack Rabbit**

COMMON NAMES: Black-tailed Jack Rabbit, “Jackass Rabbit”. HABITS: The species feeds on grass, mesquite leaves and prickly-pear cacti. Young are born in nests located either above or below ground in forms that have been lined with breast hair, after birth the young are moved to separate nests and cared for individually by the female. HABITAT: Within the range of this species it has been reported from the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. \*14 (species), 55 (species: recorded as *Lepus californicus* Gray. Black-tailed Jack Rabbit. Statewide.), 65 (species), 73 (species), 100 (species, color photograph of species), 106 (052906 - species), **118** (recorded as *Lepus californicus eremicus* J.A. Allen - Distribution: Southeastern Arizona. Figure 32, Page 69)\*  
*Lepus californicus* subsp. *eremicus* J.A. Allen: Black-tailed Jack Rabbit

***Sylvilagus audubonii* (S.F. Baird): Desert Cottontail**

COMMON NAME: Desert Cottontail. HABITS: Feeds on green plants, cacti, bark and twigs. Young are born into nests lined with forbs, grasses and the female’s fur which are located on the ground and in brush piles, piles of rocks, and burrows abandoned by other animals. HABITAT: Within the range of this species it has been reported from the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. \*14, **55** (recorded as *Sylvilagus audubonii* (Baird). Desert Cottontail. Common at elevations below 6,000 feet throughout the state.), 65, 73, 100 (color photograph), 106 (052906), 118 (recorded as *Sylvilagus audubonii arizonae* (J.A. Allen) - Distribution: Widely distributed at elevations up to 6,000 feet in the western half of the state; *Sylvilagus audubonii minor* (Mearns) - Distribution: Known only from the southeastern part of the state, and *Sylvilagus audubonii warreni* Nelson - Distribution: Known only from the northeastern part of the state. Figure 34, Page 74)\*

***Sylvilagus audubonii* (S.F. Baird) subsp. *arizonae*: Desert Cottontail**

COMMON NAME: Desert Cottontail. HABITS: The species feeds on green plants, cacti, bark and twigs. Young are born into nests lined with forbs, grasses and the female’s fur which are located on the ground and in brush piles, piles of rocks, and burrows abandoned by other animals. HABITAT: Within the range of this species it has been reported from the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. \*14 (species), 55 (species: recorded as *Sylvilagus audubonii* (Baird). Desert Cottontail. Common at elevations below 6,000 feet throughout the state.), 65 (species), 73 (species), 100 (species, color photograph of species), 106 (052906 - species), **118** (recorded as *Sylvilagus audubonii arizonae* (J.A. Allen) - Distribution: Widely distributed at elevations up to 6,000 feet in the western half of the state. Figure 34, Page 74)\*

Mephitidae: The Skunk Family

***Conepatus leuconotus* subsp. *venaticus* (Goldman): Common Hog-nosed Skunk**

SYNONYMY: *Conepatus mesoleucus* subsp. *venaticus* Goldman. COMMON NAMES: Common Hog-nosed Skunk, Hog-nosed Skunk, Hognose Skunk, Rooter Skunk, Zorrillo Nariz de Puerco (Hispanic). HABITS: The species feeds on arachnids, birds, insects, small mammals, mollusks, plant material, reptiles and worms. These skunks take refuge in caves, crevices in rocks and in the ground. Rocky areas are used for denning with the young born beneath rocks, grasses are used for nesting. HABITAT: Within the range of this species it has been reported from forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. \*14 (072306 - subsp. *venaticus* (Goldman)), 55 (species: recorded as *Conepatus mesoleucus* Lichtenstein. Hog-nosed Skunk. Southeastern part of the state (2,000 - 6,000 feet).), 65 (species), 73 (species: *Conepatus mesoleucus*), 100 (species record (*Conepatus mesoleucus*), color photograph of species), 106 (072306 - genus), **118** (recorded as *Conepatus mesoleucus venaticus* Goldman - Distribution: South central and southeastern Arizona. Figure 102, Page 241)\*

*Conepatus mesoleucus* 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: recorded as *Mephitis macroura* (Lichtenstein). Hooded Skunk. Southeastern part of the state (2,000 - 6,000 feet).), 65 (species), 73 (species), 100 (species, color photograph of species), 106 (053006 - genus), **118** (recorded as *Mephitis macroura milleri* (Mearns) - Distribution: South central and southeastern Arizona. Figure 101, Page 240)\*

***Mephitis mephitis* (J.C. von Schreber): Striped Skunk**

COMMON NAMES: Striped Skunk, Zorrillo Rayado (Hispanic). HABITS: Feeds on amphibians, berries, the eggs of ground nesting birds, carrion, crayfish, earthworms, fishes, fruits, insects (beetles, crickets and grasshoppers among others), mollusks, plant material, reptiles, rodents, snails and spiders. The young are born in nests made of dried grasses and leaves located in dirt banks, underground burrows abandoned by other animals, downed logs, pits and rock outcrops. HABITAT: Within the range of this species it has been reported from the tundra, forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: The Striped Skunk is most active dusk through dawn. This species is the chief carrier of rabies in the United States and those active during the daylight hours frequently being found to be rabid. \*14 (082308 - subsp. *estor* Merriam, *hudsonica* (Richardson) and *varians* (Gray)), **55** (recorded as *Mephitis mephitis* (Schreber). Striped Skunk. Statewide (300 - 9,000 feet).), 65 (color photograph), 73, **100** (color photograph), 106 (053006 - genus), 118 (recorded as *Mephitis mephitis estor* Merriam - Distribution: Statewide. Figure 100, Page 239)\*

***Mephitis mephitis* (J.C. von Schreber) subsp. *estor* Merriam: Striped Skunk**

COMMON NAMES: Striped Skunk, Zorrillo Rayado (Hispanic). HABITS: Feeds on amphibians, berries, the eggs of ground nesting birds, carrion, crayfish, earthworms, fishes, fruits, insects (beetles, crickets and grasshoppers among others), mollusks, plant material, reptiles, rodents, snails and spiders. The young are born in nests made of dried grasses and leaves located in dirt banks, underground burrows abandoned by other animals, downed logs, pits and rock outcrops. HABITAT: Within the range of this species it has been reported from the tundra, forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: The Striped Skunk is most active dusk through dawn. This species is the chief carrier of rabies in the United States and those active during the daylight hours frequently being found to be rabid. \*14 (082308 - subsp. *estor* Merriam), 55 (species: recorded as *Mephitis mephitis* (Schreber). Striped Skunk. Statewide (300 - 9,000 feet).), 65 (species, color photograph of species), 73 (species), **100** (species, color photograph of species), 106 (053006 - genus), **118** (recorded as *Mephitis mephitis estor* Merriam - Distribution: Statewide. Figure 100, Page 239)\*

***Spilogale gracilis* Merriam: Western Spotted Skunk**

SYNONYMY: *Spilogale putorius* subsp. *gracilis* Merriam. COMMON NAMES: Spotted Skunk, Western Spotted Skunk, Zorrillo Pinto (Hispanic). HABITS: Feeds on arachnids, berries, birds and bird eggs, carrion, fruits, insects, small mammals, scorpions and seeds. Dens are made in rock crevices and hollow logs. HABITAT: Within the range of this species it has been reported from the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. \*14 (051107 - *Spilogale putorius* subsp. *gracilis* Merriam is a synonym for *Spilogale gracilis* C. Linnaeus the Western Spotted Skunk. *Spilogale putorius* subsp. *leucoparia* is a synonym for *Spilogale putorius* C. Linnaeus the Eastern Spotted Skunk), **55** (recorded as *Spilogale putorius* (Linnaeus). Spotted Skunk. Probably statewide (120 - 7,000 feet).), 65 (*Spilogale putorius*), 73 (recorded as *Spilogale gracilis*), 100 (recorded as *Spilogale gracilis*, color photograph), 106 (053006 - genus), **118** (recorded as *Spilogale putorius gracilis* Merriam - Distribution: Probably statewide. Figure 99, Page 237)\*

*Spilogale putorius* (see footnotes 14, 55, 65 and 85 under *Spilogale gracilis*)

*Spilogale putorius* subsp. *gracilis* (see *Spilogale gracilis*)

#### Molossidae: The Free-tailed Bat Family

##### ***Eumops perotis* subsp. *californicus* (Merriam): Greater Western Mastiff Bat**

COMMON NAMES: Bonnet Bat, Greater Western Bonneted Bat, Greater Mastiff Bat, Greater Western Mastiff Bat, Mastiff Bat, Murcielago Mastiff (Hispanic), Western Mastiff Bat. HABITS: The species feeds on crickets, long-horned grasshoppers, moths and other small insects. Roosts in crevices and shallow caves in cliffs and rock walls at lower elevations. HABITAT: Within the range of this species it has been reported from the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. \*8, 14 (051107), 55 (species: recorded as *Eumops perotis* (Schinz). Western Mastiff Bat. Rare; in small colonies in rock crevices at lower elevations in the western and southern part of the state.), 65 (species), 73 (species), 92 (species), 100 (species, color photograph of species), 106 (053006 - family), **118** (recorded as *Eumops perotis californicus* (Merriam) - Distribution: Probably throughout southern Arizona in the Lower Sonoran Life Zone. Figure 29, Page 65)\*

##### ***Nyctinomops femorosaccus* (C.H. Merriam): Pocketed Free-tailed Bat**

SYNONYMY: Also recorded as *Nyctinomops femorosacca* (C.H. Merriam), *Tadarida femorosacca* (Miller). COMMON NAMES: Pocketed Free-tailed Bat, Murcielago Cola en Bolsa (Hispanic). HABITS: Feeds on ants, leafhoppers, moths, wasps and other insects. Roosts in rocky crevices. HABITAT: Within the range of this species it has been reported from the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. \*8, 14, 55 (recorded as *Tadarida femorosacca* (Merriam). Pocketed Free-tailed Bat. Rare; found at lower elevations in the western and southern part of the state.), 100, 106 (053006 - family), **118** (recorded as *Tadarida femorosacca* (Miller) - Distribution: Probably occurs throughout the Lower Sonoran Life Zone of southern Arizona. Figure 27, Page 63)\*

##### ***Nyctinomops macrotis* (J.E. Gray): Big Free-tailed Bat**

SYNONYMY: *Tadarida macrotis* (J.E. Gray), *Tadarida molossa* (Pallas). COMMON NAMES: Big Free-tailed Bat, Murcielago Cola Libre (Hispanic), Murcielago Cola Suelta Mayor (Spanish) HABITS: Feeds on insects. Roosts in rocky cliffs, crevices, fissures, caves and holes in trees. HABITAT: Within the range of this species it has been reported from the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations ecological formations. \*8, 14, 42 (053006), **55** (recorded as *Tadarida molossa* (Pallas). Big Free-tailed Bat. Rare; statewide, mainly at elevations below 5,000 feet.), 73, 100 (color photograph), 106 (053006 - family), **118** (recorded as *Tadarida molossa* (Pallas) - Distribution: Probably occurs throughout the Lower Sonoran Life Zone of Arizona. Figure 28, Page 64)\*

##### ***Tadarida brasiliensis* (I.G. Saint-Hilaire) (subsp *mexicana* (Saussure) is the only subspecies reported as occurring in Arizona): Brazilian Free-tailed Bat**

COMMON NAMES: Brazilian Free-tailed Bat, Guano Bat, Mexican Free-tail Bat, Mexican Free-tailed Bat, Murcielago Braziliiano (Hispanic). HABITS: Feeds on ants, beetles, leafhoppers, moths and other small insects. Roosts in caverns; caves; crevices in rocks; fissures in cliffs; buildings; mines, and under bridges. HABITAT: Within the range of this species it has been reported from the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. \*8, 14, **55** (recorded as *Tadarida brasiliensis* (I.Geof. St.-Hilaire). Mexican Free-tailed Bat. Locally abundant throughout the state, especially at elevations below 5,000 feet.), 65, 73, 92, 100 (color photograph), 106 (053006), 118 (recorded as *Tadarida brasiliensis mexicana* (Saussure) - Distribution: Probably statewide in some part of the year. Figure 26, Page 62)\*

***Tadarida brasiliensis* (I.G. Saint-Hilaire) subsp. *mexicana* (Saussure): Brazilian Free-tailed Bat**

COMMON NAMES: Brazilian Free-tailed Bat, Guano Bat, Mexican Free-tail Bat, Mexican Free-tailed Bat, Murcielago Braziliano (Hispanic). HABITS: Feeds on ants, beetles, leafhoppers, moths and other small insects. Roosts in caverns; caves; crevices in rocks; fissures in cliffs; buildings; mines, and under bridges. HABITAT: Within the range of this species it has been reported from the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. \*8, 14, 55 (species: recorded as *Tadarida brasiliensis* (I.Geof. St.-Hilaire). Mexican Free-tailed Bat. Locally abundant throughout the state, especially at elevations below 5,000 feet.), 65 (species), 73 (species), 92 (species), 100 (species, color photograph of species), 106 (053006), 118 (recorded as *Tadarida brasiliensis mexicana* (Saussure) - Distribution: Probably statewide in some part of the year. Figure 26, Page 62)\*

*Tadarida femorosacca* (see *Nyctinomops femorosacca*)

*Tadarida macrotis* (see *Nyctinomops macrotis*)

*Tadarida molossa* (see *Nyctinomops macrotis*)

Muridae: The Mouse and Rat Family

***Neotoma albigula* subsp. *albigula* Hartley: White-throated Wood Rat**

COMMON NAMES: Packrat, White-throated Packrat, Trade Rat, White-throated Wood Rat. HABITS: The species feeds on cacti, forbs, fruits, juniper, leaves, mesquite beans, seeds and yucca. Nests are built under mesquite, cholla and prickly-pear cacti, or in rocky crevices using sticks, pieces of cholla and prickly-pear cacti, and rubbish, sometimes with underground burrows. HABITAT: Within the range of this species it has been reported from the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. \*14 (051107 - subsp. *albigula*), 55 (species: recorded as *Neotoma albigula* Hartley. White-throated Wood Rat. Widely distributed at elevations below 7,000 feet throughout all of the state south of the Colorado River (120 - 8,000 feet.), 65 (species, color photograph of species), 73 (species), 100 (species, color photograph of species), 106 (053006 - genus), 118 (recorded as *Neotoma albigula albigula* Hartley - Distribution: Occurs commonly south of the Mogollon Rim. Figure 76, Page 193)\*

***Onychomys torridus* subsp. *torridus* (E. Coues): Southern Grasshopper Mouse**

COMMON NAMES: Raton Chapulinero del Sur (Hispanic), Scorpion Mouse, Southern Grasshopper Mouse. HABITS: The species feeds on arthropods, beetles, grasshoppers, insects, lizards, other species of mice, scorpions, seeds and small vertebrates. Nests are located in underground burrows. HABITAT: Within the range of this species it has been reported from the woodland, scrub, grassland, desertscrub and wetland ecological formations. \*14 (020307 - subsp. *torridus*), 55 (species: recorded as *Onychomys torridus* (Coues). Southern Grasshopper Mouse. Widely distributed in the western and southern parts of the state (120 - 5,000 feet.), 65 (genus), 73 (species), 100 (species, color photograph of species), 106 (053006 - genus, listing of species), 118 (recorded as *Onychomys torridus torridus* (Coues) - Distribution: Southeastern quarter of the state. Figure 62, Page 161)\*

***Peromyscus eremicus* subsp. *eremicus* (S.F. Baird): Cactus Mouse**

COMMON NAMES: Cactus Mouse, Raton de Cactaceas (Hispanic). HABITS: The species feeds on flowers, small fruits, insects, green plant material and seeds. Nests are made within the abandoned burrows of other animals, clumps of cacti and among rocks. HABITAT: Within the range of this species it has been reported from the woodland, scrub, grassland, desertscrub and wetland ecological formations. \*14 (species), 55 (species: recorded as *Peromyscus eremicus* (Baird). Cactus Mouse. Widely

distributed in western and southern Arizona (120 - 6,000 feet.), 65 (genus), 73 (species), 100 (species, color photograph of species), 106 (053006 - genus), **118** (recorded as *Peromyscus eremicus eremicus* (Baird) - Distribution: Almost all of the western and southern part of the state. Figure 67, Page 171)\*

***Peromyscus maniculatus* (Wagner): Deer Mouse**

COMMON NAMES: Deer Mouse, Raton Venado (Hispanic). HABITS: Feeds on bark, berries, bones, centipedes, earthworms, small fruits, fungi, insects, leaves, nuts and snails. Nests are built in buildings, underground burrows, rock crevices debris, in and under logs, and clumps of vegetation. HABITAT: Within the range of this species it has been reported from the tundra, forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. \*14 (050907 - subspp. *blandus* (Osgood) and *rufinus* (Merriam)), **55** (recorded as *Peromyscus maniculatus* (Wagner). Deer Mouse. Statewide (120 - 11,400 feet.), 65 (genus), 73, 100 (color photograph), 106 (053006 - genus), 118 (recorded as *Peromyscus maniculatus blandus* Osgood - Distribution: Extreme southeastern part of the state; *Peromyscus maniculatus rufinus* (Merriam) - Distribution: Higher elevations throughout the state, and *Peromyscus maniculatus sonoriensis* (Le Conte) - Distribution: Grasslands at lower elevations throughout the state. Figure 69, Page 177)\*

***Peromyscus maniculatus* subsp. *sonoriensis* (Le Conte): Deer Mouse**

COMMON NAMES: Deer Mouse, Raton Venado (Hispanic). HABITS: The species feeds on bark, berries, bones, centipedes, earthworms, small fruits, fungi, insects, leaves, nuts and snails. Nests are built in buildings, underground burrows, rock crevices debris, in and under logs, and clumps of vegetation. HABITAT: Within the range of this species it has been reported from the tundra, forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. \*14 (050907 - species, and subspp. *blandus* (Osgood) and *rufinus* (Merriam)), **55** (species: recorded as *Peromyscus maniculatus* (Wagner). Deer Mouse. Statewide (120 - 11,400 feet.), 65 (genus), 73 (species), 100 (species, color photograph of species), 106 (053006 - genus), **118** (recorded as *Peromyscus maniculatus sonoriensis* (Le Conte) - Distribution: Grasslands at lower elevations throughout the state. Figure 69, Page 177)\*

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

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

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

COMMON NAME: Western Harvest Mouse. HABITS: Feeds on arachnids, grasses, insects (larvae and adults) and seeds of grasses, forbs and shrubs. Spherical nests are made of woven plant material and lined with plant fibers and can be located near the ground or above the ground in dense vegetation. HABITAT: Within the range of this species it has been reported from the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. \*14 (050907 - subspp. *arizonensis*; *aztecus* J.A. Allen, and *megalotis* (Baird)), **55** (recorded as *Reithrodontomys megalotis* (Baird). Western Harvest Mouse. Statewide (120 - 8,000 feet.), 73, 100 (color photograph), 106 (053006), 118 (recorded as *Reithrodontomys megalotis arizonensis* (Allen) - Distribution: Known only from the region of the type locality (Chiricahua Mountains); *Reithrodontomys megalotis aztecus* (Allen) - Distribution: Extreme northeastern part of state, and *Reithrodontomys megalotis megalotis* (Baird) - Distribution: At medium and low elevations statewide except extreme northeastern part of the state. Figure 64, Page 164)\*

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

COMMON NAME: Western Harvest Mouse. HABITS: The species feeds on arachnids, grasses, insects (larvae and adults) and seeds of grasses forbs and shrubs. Spherical nests are made of woven plant material and lined with plant fibers and can be located near the ground or above the ground in dense vegetation. HABITAT: Within the range of this species it has been reported from the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. \*14 (050907 - subsp. *megalotis* (Baird)), 55 (species: recorded as *Reithrodontomys megalotis* (Baird). Western Harvest Mouse. Statewide (120 - 8,000 feet.), 73 (species), 100 (species, color photograph of species), 106 (053006), **118** (recorded as *Reithrodontomys megalotis megalotis* (Baird) - Distribution: At medium and low elevations statewide except extreme northeastern part of the state. Figure 64, Page 164)\*

#### Mustelidae: The Weasel and Allies Family

##### ***Taxidea taxus* (J.C. von Schreber): American Badger**

COMMON NAMES: American Badger, Badger, Badger Tejon (Hispanic). HABITS: Feeds on ground dwelling birds (and eggs), carrion, insects, rodents and snakes. Young are born in dens in underground burrows. HABITAT: Within the range of this species it has been reported from the tundra, forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. \*14 (050907 - subsp. *berlandieri* Schreber), **55** (recorded as *Taxidea taxus* (Schreber). Badger. Statewide (120 - 7,000 feet.), 65, 73, 100 (color photograph), 106 (053006), **118** (recorded as *Taxidea taxus* - Distribution: Statewide. Figure 98, Page 235)\*

#### Phyllostomidae: The Leaf-nosed Bat Family

##### ***Leptonycteris curasoae* subsp. *yerbabuenae* (Martinez & Villa-R.): Southern Long-nosed Bat**

SYNONYMY: *Leptonycteris nivalis sanborni* D.F. Hoffmeister, *Leptonycteris sanborni* (Saussure). COMMON NAMES: Lesser Long-nosed Bat, Little Long-nosed Bat, Mexican Long-nosed Bat, Murcielago de Sanborn (Hispanic), Sanborn's Long-nosed Bat, Sanborn's Southern Long-nosed Bat, Southern Long-nosed Bat. HABITS: The species feeds on insects, nectar, pollen and the nectar and soft-bodied fruits of agaves and cacti. Roosts are located in caves, rock crevices, abandoned mines and tunnels. HABITAT: Within the range of this species it has been reported from the woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTE: Long-nosed bats are pollinators of Agaves, Cardons, Organ Pipe Cacti and Saguaros. \*8, 14 (050907 - **Populations may be compromised by roost-site disturbance, loss of food sources and direct killing by humans.**), 35 (**This species is vulnerable to disturbances at roosting sites by cave explorers.**), 55 (species: recorded as *Leptonycteris nivalis* (Saussure). Long-nosed Bat. Locally common in moist caves. Known from Pinal, Pima, Santa Cruz and Cochise Counties.), 92 (recorded as *Leptonycteris sanborni*), 100 (species, recorded as *Leptonycteris curasoae* and *Leptonycteris nivalis*, color photographs), 106 (053006), 110 (recorded as *Leptonycteris sanborni*), **118** (recorded as *Leptonycteris nivalis nivalis* (Saussure) - Distribution: Known only from the southeastern part of the state. Figure 9, Page 35)\*

*Leptonycteris nivalis* (see footnote 55 under *Leptonycteris curasoae* subsp. *yerbabuenae*)

*Leptonycteris nivalis nivalis* (see footnote 118 under *Leptonycteris curasoae* subsp. *yerbabuenae*)

*Leptonycteris nivalis sanborni* (see *Leptonycteris curasoae* subsp. *yerbabuenae*)

*Leptonycteris sanborni* (see *Leptonycteris curasoae* subsp. *yerbabuenae*)

##### ***Macrotus californicus* S.F. Baird: California Leaf-nosed Bat**

COMMON NAMES: California Leaf-nosed Bat, Leaf-nosed Bat, Leafnose Bat, Waterhouse's Leaf-nosed Bat, Murcielago de California (Hispanic). HABITS: Feeds on beetles, butterflies, caterpillars, cicadas, crickets, dragonflies, grasshoppers, leafhoppers, moths and other insects. Roosts are located in caves and abandoned mine tunnels. HABITAT: Within the range of this species it has been reported from the grassland, desertscrub and wetland ecological formations. \*8, 14 (050907 - subspp. *californicus* (Audubon & Bachman) and *stephensi* (Dalquest)), 55 (recorded as *Macrotus californicus* Baird. Leaf-nosed Bat. Locally common in shallow caves, mine tunnels and under bridges. Occurs widely at lower elevations in the western and southern parts of the state.”), 73, 92, 100 (color photograph), 106 (053006), **118** (recorded as *Macrotus californicus* Baird - Distribution: Known from lower elevations in the southern and western parts of the state. Figure 7, Page 32)\*

## Procyonidae: The Raccoon and Allies Family

### ***Bassariscus astutus* (M.H. Lichenstein): Ringtail**

COMMON NAMES: Band-tailed Cat, Cacomistle, Civet Cat, Coon CatGato Minero (Hispanic), Miner's Cat, Ringtail, Ringtail Cat, Ring-tailed Cat. HABITS: Feeds on berries, birds, fruits, carrion, crickets, eggs, insects, lizards, small mammals, snakes and spiders. Nests are made of grass located in dens in underground burrows, caves, cliffs, rocky outcrops, cavities in logs, stumps and trees and man-made structures. HABITAT: Within the range of this species it has been reported from the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. \*8 (subspp. *arizonensis*; *nevadensis*, and *yumanensis*), 14 (050907 - subspp. *arizonensis* Goldman; *flavus* Rhoads; *nevadensis*, and *yumanensis* Huey), **55** (recorded as *Bassariscus astutus* (Lichenstein). Ringtail. Statewide (120 - 6,500 feet).), 65 (color photograph), 73, 100 (color photograph), 106 (051107), 118 (recorded as *Bassariscus astutus arizonensis* Goldman - Distribution: Statewide except extreme southeastern and southwestern parts; *Bassariscus astutus flavus* Rhoads - Distribution: Extreme southeastern part of the state, and *Bassariscus astutus yumanensis* Huey - Distribution: Southwestern Arizona. Figure 93, Page 227)\*

### ***Bassariscus astutus* subsp. *arizonensis* Goldman: Ringtail**

COMMON NAMES: Band-tailed Cat, Cacomistle, Civet Cat, Coon CatGato Minero (Hispanic), Miner's Cat, Ringtail, Ringtail Cat, Ring-tailed Cat. HABITS: The species feeds on berries, birds, fruits, carrion, crickets, eggs, insects, lizards, small mammals, snakes and spiders. Nests are made of grass located in dens in underground burrows, caves, cliffs, rocky outcrops, cavities in logs, stumps and trees and man-made structures. HABITAT: Within the range of this species it has been reported from the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. \*8, 14 (050907), 55 (species: recorded as *Bassariscus astutus* (Lichenstein). Ringtail. Statewide (120 - 6,500 feet).), 65 (species, color photograph of species), 73 (species), 100 (species, color photograph of species), 106 (053106 - species), **118** (recorded as *Bassariscus astutus arizonensis* Goldman - Distribution: Statewide except extreme southeastern and southwestern parts. Figure 93, Page 227)\*

### ***Nasua narica* (C.H. Merriam): White-nosed Coati**

COMMON NAMES: Antoon, Chula, Chulo, Coati (Indian Name), Coatimundi, El Gato Solo (Los Gatos en Familia), Pizote, White-nosed Coati. HABITS: Feeds on the berries of juniper and manzanita, birds, carrion, eggs, fruits, insects (including among others crickets and grasshoppers) and other invertebrates, prickly pear fruit, lizards, small mammals, nuts, snakes, tubers, worms and yucca fruits. Young are born in dens located in caves, crevices in rocks, mines shafts and cavities among tree roots. HABITAT: Within the range of this species it has been reported from the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. \*14 (091008), 55 (recorded as *Nasua narica* (Linnaeus). Coati. In woodland situations in the Graham, Chiricahua, Huachuca, Patagonia and Pena Blanca mountains (5,000 to 7,500 feet).), 65, 73, 100 (color photograph), 106 (053106), **118** (recorded as

*Nasua narica pallida* Allen - Distribution: Mountains of southern and southeastern part of the state. Figure 95, Page 230)\*

***Procyon lotor 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: Raccoons are never very far from permanent water. \*14 (090108 - subsp. *fuscipes* (Mearns); *hirus* (Nelson & Goldman); *mexicanus* (Baird), and *pallidus* (Merriam)), 55 (species: recorded as *Procyon lotor* (Linnaeus). Raccoon. Riparian situations along the Colorado, Little Colorado and Gila River systems and in the grasslands of the southeastern portion of the state (120 - 6,900 feet.), 65 (color photograph), 73 (species), 100 (species, color photograph of species), 106 (053106), 118 (recorded as *Procyon lotor mexicanus* Baird - Distribution: Southeastern Arizona. Figure 94, Page 229)\*

Sciuridae: The Squirrel and Allies Family

***Ammospermophilus harrisi* (J.J. Audubon & Bachman): Harris' Antelope Squirrel**

SYNONYMY: *Citellus harrisi* (J.J. Audubon & Bachman). COMMON NAMES: Ardilla de Tierra Harris (Hispanic), Harris Antelope Squirrel, Harris' Antelope Squirrel, Yuma Antelope Squirrel. HABITS: Feeds on fruits, insects, plants and seeds. Dens are located in underground burrows. HABITAT: Within the range of this species it has been reported from the grassland, desertscrub and wetland ecological formations. \*14 (082308), 55 (recorded as *Citellus harrisi* (Audubon & Bachman). Harris Antelope Squirrel. Southern and western parts of the state at elevations below 6,500 feet.), 65 (color photograph), 73, 100 (color photograph), 106 (053106 - genus), 118 (recorded as *Citellus harrisi harrisi* (Audubon & Bachman) - Distribution: Southern and western Arizona except for most of Yuma County. *Citellus harrisi saxicola* (Mearns) - Distribution: Southwestern Arizona. Figure 38, Page 85)\*

*Citellus harrisi* (see *Ammospermophilus harrisi*)

*Citellus harrisi* subsp. *harrisi* (see footnote 118 under *Ammospermophilus harrisi*)

*Citellus harrisi* subsp. *saxicola* (see footnote 118 under *Ammospermophilus harrisi*)

*Citellus tereticaudus* (see *Spermophilus tereticaudus*)

*Citellus tereticaudus* subsp. *neglectus* (see footnote 118 under *Spermophilus tereticaudus*)

*Citellus variegatus* (see *Spermophilus variegatus*)

*Citellus variegatus* subsp. *grammurus* (see *Spermophilus variegatus* subsp. *grammurus*)

***Spermophilus tereticaudus* S.F. Baird: Round-tailed Ground Squirrel**

SYNONYMY: *Citellus tereticaudus* S.F. Baird. COMMON NAME: Round-tailed Ground Squirrel. HABITS: Feeds on buds of burroweed and mesquite, cacti, green vegetation, insects, seeds of creosote bush, mesquite, flowers of ocotillo, paloverde, plantain, and saltbush, observed visiting road kill and taking scavenging Gambel's Quail chicks; nests are made of plant fibers and stems and located in dens in underground burrows. HABITAT: Within the range of this species it has been reported from the

desertscrub ecological formation. \*14, 55 (recorded as *Citellus tereticaudus* Baird. Round-tailed Ground Squirrel. Lower Sonoran Life-zone of the western part of the state (below 3,200 feet.), 65, 73, 100 (color photograph), 106 (053106 - genus), **118** (recorded as *Citellus tereticaudus neglectus* (Merriam) - Distribution: Lower Sonoran Life Zone of southwestern Arizona. Figure 39, Page 90)\*

***Spermophilus variegatus* (Erxleben): Rock Squirrel**

SYNONYMY: *Citellus variegatus* (Erxleben). COMMON NAMES: Ardilla Coluda (Hispanic), Rock Squirrel. HABITS: Feeds on acorns, berries, small birds, chicks and eggs, carrion, insects, fruits, small mammals, nuts and seeds. Nests are made of leaves, pine needles and plant fibers and located in dens in underground burrows between boulders, rock crevices and talus. HABITAT: Within the range of this species it has been reported from the tundra, forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. \*14, **55** (recorded as *Citellus variegatus* (Erxleben). Rock Squirrel. Statewide, especially at elevations below 6,000 feet.), 65 (color photograph), 73, 100 (color photograph), 106 (053106 - genus), 118 (recorded as *Citellus variegatus grammurus* (Say) - Distribution: Statewide, especially common below 6000 feet. Figure 37, Page 82)\*

***Spermophilus variegatus* subsp. *grammurus* (Erxleben): Rock Squirrel**

SYNONYMY: *Citellus variegatus* subsp. *grammurus* (Say). COMMON NAMES: Ardilla Coluda (Hispanic), Rock Squirrel. HABITS: The species feeds on acorns, berries, small birds, chicks and eggs, carrion, insects, fruits, small mammals, nuts and seeds burrows. Nests are made of leaves, pine needles and plant fibers and located in dens in underground burrows between boulders, rock crevices and talus. HABITAT: Within the range of this species it has been reported from the tundra, forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. \*14, 55 (species: recorded as *Citellus variegatus* (Erxleben). Rock Squirrel. Statewide, especially at elevations below 6,000 feet.), 65 (species, color photograph of species), 73 (species), 100 (species, color photograph of species), 106 (053106 - genus), **118** (recorded as *Citellus variegatus grammurus* (Say) - Distribution: Statewide, especially common below 6000 feet. Figure 37, Page 82)\*

Soricidae: The Shrew Family

***Notiosorex crawfordi* (E. Coues): Crawford's Desert Shrew**

COMMON NAMES: Crawford's Desert Shrew, Crawford's Gray Shrew, Desert Shrew, Gray Shrew, Musarana del Deseirto Crawford (Hispanic). HABITS: Feeds on centipedes, insects, lizards, small mice, scorpions, sowbugs and spiders. Nests are made of shredded bark and leaves and located in packrat dens or under dead agaves. HABITAT: Within the range of this species it has been reported from forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. \*14 (050907 - subsp. *crawfordi* (Coues)), **55** (recorded as *Notiosorex crawfordi* (Coues). Desert Shrew. Locally common, widely distributed statewide at elevations below 6,000 feet, especially in riparian situations.), 65, 73, 100 (color photograph), 106 (051107), 118 (recorded as *Notiosorex crawfordi crawfordi* (Coues) - Distribution: Probably occurs statewide at elevations below 6000 feet. Figure 5, Page 30)\*

***Notiosorex crawfordi* subsp. *crawfordi* (E. Coues): Crawford's Desert Shrew**

COMMON NAMES: Crawford's Desert Shrew, Crawford's Gray Shrew, Desert Shrew, Gray Shrew, Musarana del Deseirto Crawford (Hispanic). HABITS: The species feeds on centipedes, insects, lizards, small mice, scorpions, sowbugs and spiders. Nests are made of shredded bark and leaves and located in packrat dens or under dead agaves. HABITAT: Within the range of this species it has been reported from forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. \*14 (050907 - subsp. *crawfordi* (Coues)), 55 (species: recorded as *Notiosorex crawfordi* (Coues). Desert Shrew. Locally common, widely distributed statewide at elevations below 6,000 feet, especially in riparian situations.), 65 (species), 73 (species), 100 (species, color photograph of species), 106 (051107 -

species), **118** (recorded as *Notiosorex crawfordi crawfordi* (Coues) - Distribution: Probably occurs statewide at elevations below 6000 feet. Figure 5, Page 30)\*

#### Tayassuidae: The Javelina Family

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

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

#### ***Peccari tajacu* subsp. *sonoriensis* (Mearns): Collared Peccary**

SYNONYMY: *Dicotyles tajacu* subsp. *sonoriensis* (Mearns), *Tayassu tajacu* subsp. *sonoriensis* (Mearns). COMMON NAMES: Collared Peccary, Jabalina (Hispanic), Javelina, “Musk Hog”, Peccary. HABITS: The species feeds on agaves, amphibians, berries, bulbs, fruits, fungi, grasses, insects, mesquite beans, nuts, roots, palm nuts, succulent plants, prickly-pear and other cacti, reptiles, rodents, roots, sotol, tubers and worms. Javelina bed down during the day in thick brush and prickly-pear thickets and at night in burrows usually under the roots of trees. HABITAT: Within the range of this species it has been reported from forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. \*14 (050907 - subsp. *sonoriensis* (Mearns)), 55 (species: recorded as *Tayassu tajacu* (Linnaeus). Javelina. Southeastern and central parts of the state (1,200 - 6,000 feet.), 65 (species, recorded as *Pecari angulatus*), 73 (species, recorded as *Dicotyles tajacu*), 100 (species, recorded as *Tayassu tajacu*, color photograph of species), 106 (051107 - species, recorded as *Tayassu tajacu*), **118** (recorded as *Tayassu tajacu sonoriensis* (Mearns) - Distribution: Southern part of the state. Figure 107, Page 249)\*

*Tayassu tajacu* 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: recorded as *Euarctos americanus* (Pallas). Black Bear. Formerly common throughout the mountainous areas of the state, now greatly reduced in numbers and distribution.), 73 (species), 100 (species, color photograph of species), 106 (050907 - includes a listing of subspecies and their distribution), **118** (recorded as *Euarctos americanus amblyceps* (Baird) - Distribution: Probably formerly occurred throughout the state, at least in mountainous areas. Figure 91, Page 224)\*

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

#### ***Ursus arctos* subsp. *horribilis* Ord: Grizzly Bear**

SYNONYMY: *Ursus horribilis* 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* subsp. *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** (recorded as *Antrozous pallidus* (Le Conte). Pallid Bat. Locally common

throughout the state.), 73, 92 (color photograph), 100 (color photograph), 106 (053106), 118 (recorded as *Antrozous pallidus pallidus* (Le Conte) - Distribution: Statewide. Figure 25, Page 60)\*

***Antrozous pallidus* subsp. *pallidus* (J.L. Le Conte): Pallid Bat**

COMMON NAMES: Murcielago Pallid (Hispanic), Pallid Bat. HABITS: The species feeds on flightless arthropods on the ground, insects, lizards and nectar. Roosts under bridges, buildings, in caves, crevices in cliffs, rocky outcrops, under slabs of rocks, hollow trees and tunnels. HABITAT: Within the range of this species it has been reported from forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. \*8, 14, 55 (species: recorded as *Antrozous pallidus* (Le Conte). Pallid Bat. Locally common throughout the state.), 73 (species), 92 (species, color photograph of species), 100 (species, color photograph of species), 106 (053106 - species), **118** (recorded as *Antrozous pallidus pallidus* (Le Conte) - Distribution: Statewide. Figure 25, Page 60)\*

*Corynorhinus townsendii* (see *Plecotus townsendii*)

*Corynorhinus townsendii* subsp. *pallescens* (see *Plecotus townsendii* subsp. *pallescens*)

***Eptesicus fuscus* (Palisot de Beauvois): Big Brown Bat**

COMMON NAMES: Big Brown Bat, Murcielago Cafe' Grande (Hispanic). HABITS: The species feeds on insects. Roosts under bridges, in buildings, caves, crevices in cliff faces, mines and holes in saguaros and trees. HABITAT: Within the range of this species it has been reported from tundra, forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. \*14, **55** (recorded as *Eptesicus fuscus* (Palisot de Beauvois). Big Brown Bat. Locally common throughout the state.), 73, 92 (color photograph), 100 (color photograph), 106 (053106), 118 (recorded as *Eptesicus fuscus pallidus* (Young) - Distribution: Statewide. Figure 20, Page 52)\*

***Eptesicus fuscus* subsp. *pallidus* (Young): Big Brown Bat**

COMMON NAMES: Big Brown Bat, Murcielago Cafe' Grande (Hispanic). HABITS: The species feeds on insects. Roosts under bridges, in buildings, caves, crevices in cliff faces, mines and holes in saguaros and trees. HABITAT: Within the range of this species it has been reported from tundra, forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. \*14, 55 (species: recorded as *Eptesicus fuscus* (Palisot de Beauvois). Big Brown Bat. Locally common throughout the state.), 73 (species), 92 (species, color photograph of species), 100 (species, color photograph of species), 106 (053106 - species), **118** (recorded as *Eptesicus fuscus pallidus* (Young) - Distribution: Statewide. Figure 20, Page 52)\*

***Euderma maculatum* (J.A. Allen): Spotted Bat**

COMMON NAMES: Death's Head Bat, Jackass Bat, Murcielago Pinto (Hispanic), Pinto Bat, Spotted Bat. HABITS: Feeds on insects. Roosts in cracks and crevices in caves, cliffs and ledges, and under loose rock in rocky situations, possibly in close proximity to water. HABITAT: Within the range of this species it has been reported from forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTE: This bat is rarely encountered. Riparian habitats seem to be important. \*8, 14 (053007), 55 (recorded as *Euderma maculata* (J.A. Allen). Spotted Bat. Extremely rare; known from four specimens, Maricopa and Yuma counties.), 73, 92, 100 (color photograph), 106 (072306), **118** (recorded as *Euderma maculata* (J.A. Allen) - Distribution: Can be expected almost anywhere in the state although recorded from only four localities. Figure 23, Page 57)\*

***Lasionycteris noctivagans* (J.L. Le Conte): Silver-haired Bat**

COMMON NAMES: Murcielago Plateado (Hispanic), Silver-haired Bat. HABITS: Feeds on caddis flies, flies, moths and other insects. Uncommon tree dwelling bat found under bark, in bird nests, dead trees, fissures in rock ledges, tree hollows, and woodpecker holes. HABITAT: Within the range of

this species it has been reported from tundra, forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. \*8, 14, 55 (recorded as *Lasionycteris noctivagans* (Le Conte). Silver-haired Bat. Uncommon solitary tree-dwelling bat found throughout the state at elevations above 5,000 feet), 73, 92 (color photograph), 100 (color photograph), 106 (053106 - family), **118** (recorded as *Lasionycteris noctivagans* (Le Conte) - Distribution: Probably statewide, at least during certain seasons of the year. Figure 18, Page 48)\*

***Lasiurus cinereus* (Palisot de Beauvois): Hoary Bat**

COMMON NAMES: Hoary Bat, Murcielago (Hispanic). HABITS: Feeds primarily on moths. Roosts in buildings, caves, mines, in dense foliage in shrubs and trees and under leaves on the ground. HABITAT: Within the range of this species it has been reported from tundra, forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. \*8, 14 (091308 - *Lasiurus cinereus cinereus* (Palisot de Beauvois)), **55** (recorded as *Lasiurus cinereus* (Palisot de Beauvois). Hoary Bat. Uncommon tree dwelling bat found throughout the state in the region of trees.), 73, 92 (color photograph), 100 (color photograph), 106 (genus - 053106), **118** (recorded as *Lasiurus cinereus cinereus* (Beauvois) - Distribution: Statewide. Figure 22, Page 55)\*

***Lasiurus cinereus* subsp. *cinereus* (Palisot de Beauvois): Hoary Bat**

COMMON NAMES: Hoary Bat, Murcielago (Hispanic). HABITS: Feeds primarily on moths. Roosts in buildings; caves; mines; in dense foliage in shrubs and trees, and under leaves on the ground. HABITAT: Within the range of this species it has been reported from tundra, forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. \*8, 14 (091308 - *Lasiurus cinereus cinereus* (Palisot de Beauvois)), **55** (species: recorded as *Lasiurus cinereus* (Palisot de Beauvois). Hoary Bat. Uncommon tree dwelling bat found throughout the state in the region of trees.), 73, 92 (species, color photograph of species), 100 (species, color photograph of species), 106 (053106 - genus), **118** (recorded as *Lasiurus cinereus cinereus* (Beauvois) - Distribution: Statewide. Figure 22, Page 55)\*

***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 - subsp. *californicus* (Audubon & Bachman) and *stephensi* (Dalquest)), **55** (recorded as *Myotis californicus* Audubon & Bachman. California Myotis. Locally common throughout the state.), 73, 100 (color photograph), 106 (053106 - genus), **118** (recorded as *Myotis californicus californicus* (Audubon & Bachman) - Distribution: Eastern and southeastern Arizona, and *Myotis californicus stephensi* Dalquest - Distribution: Northern and western part of the state. Figure 16, Page 45)\*

***Myotis californicus* (J.J. Audubon & Bachman) subsp. *stephensi*: California Myotis Bat**

COMMON NAMES: California Bat, California Myotis, California Myotis Bat, Murcielago de California (Hispanic). HABITS: The species feeds on arachnids and insects. Roosts in crevices and cracks in cliffs and canyon walls, caves, mine shafts and manmade shelters. HABITAT: Within the range of this species it has been reported from forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. \*8 (species: recorded as *Myotis californicus* N. Miller), 14 (051007 - subsp. *californicus* (Audubon & Bachman) and *stephensi* (Dalquest)), **55** (species: recorded as *Myotis californicus* Audubon & Bachman. California Myotis. Locally common throughout the state.), 73 (species), 100 (species), 106 (genus - 053106), **118** (recorded as *Myotis californicus stephensi* Dalquest - Distribution: Northern and western part of the state. Figure 16, Page 45)\*

***Myotis velifer* subsp. *brevis* Vaughan: Cave Myotis Bat**

COMMON NAMES: Cave Bat, Cave Myotis, Cave Myotis Bat, Mexican Brown Bat, Murcielago de Cueva (Hispanic), Southwestern Cave Myotis. HABITS: The species feeds on small moths and other small insects. Roosts in holes and pockets in caves, crevices, bridges, buildings, abandoned mine shafts, tunnels, and trees. HABITAT: Within the range of this species it has been reported from forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. \*14 (051007), 55 (species: recorded as *Myotis velifer* (J.A. Allen). Cave Myotis. Locally abundant in summer months at lower elevations (below 5,000 feet) throughout the southern and western parts of the state.), 73 (species), 92 (species), 100 (species, color photograph of species), 106 (053106 - genus), 118 (recorded as *Myotis velifer brevis* Vaughan - Distribution: Probably statewide. Figure 11, Page 37)\*

***Myotis yumanensis* (H. Allen): Yuma Myotis Bat**

COMMON NAMES: Murcielago de Yuma (Hispanic), Yuma Myotis, Yuma Myotis Bat. HABITS: Feeds on small insects. Roosts in caves, crevices and swallow nests in cliffs and rocky walls, tree cavities, under bridges and in buildings in close proximity to water. HABITAT: Within the range of this species it has been reported from the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. \*8, 14 (072306 - subsp. *yumanensis*), 55 (recorded as *Myotis yumanensis* (H. Allen). Yuma Myotis. Locally common, statewide in distribution.), 73, 100 (color photograph), 106 (072306 - genus with a listing of species), 118 (recorded as *Myotis yumanensis yumanensis* (H. Allen) - Distribution: Probably statewide at low and medium elevation. Figure 10, Page 36)\*

***Myotis yumanensis* subsp. *yumanensis* (H. Allen): Yuma Myotis Bat**

COMMON NAMES: Murcielago de Yuma (Hispanic), Yuma Myotis, Yuma Myotis Bat. HABITS: Feeds on small insects. Roosts in caves, crevices and swallow nests in cliffs and rocky walls, tree cavities, under bridges and in buildings in close proximity to water. HABITAT: Within the range of this species it has been reported from the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. \*8, 14 (072306 - subsp. *yumanensis*), 55 (species: recorded as *Myotis yumanensis* (H. Allen). Yuma Myotis. Locally common, statewide in distribution.), 73 (species), 100 (species, color photograph of species), 106 (072306 - genus, listing of species), 118 (recorded as *Myotis yumanensis yumanensis* (H. Allen) - Distribution: Probably statewide at low and medium elevation. Figure 10, Page 36)\*

***Pipistrellus hesperus* (H. Allen): Western Pipistrelle Bat**

COMMON NAMES: Canyon Bat, Flittermouse, Murcielago del Poniente (Hispanic), Western Pipistrelle, Western Pipistrelle Bat. HABITS: Feeds on insects. Roosts in buildings, crevices in canyon walls, caves, cliffs, rocky outcrops, under rocks and in mine shafts. HABITAT: Within the range of this species it has been reported from forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. \*8 (recorded as *Pipistrellus hesperus* N. Miller), 14 (051007 - subspp. *hesperus* (H. Allen) and *maximus* (Hatfield)), 55 (recorded as *Pipistrellus hesperus* (H. Allen). Western Pipistrelle. Common throughout the state.), 73, 100 (color photograph), 106 (053106 - genus), 118 (recorded as *Pipistrellus hesperus apus* Elliot - Distribution: Southeastern Arizona, and *Pipistrellus hesperus hesperus* (H. Allen) - Distribution: Northern and western Arizona. Figure 19, Page 49)\*

***Pipistrellus hesperus* (H. Allen) subsp. *apus* Elliot: Western Pipistrelle Bat**

COMMON NAMES: Canyon Bat, Flittermouse, Murcielago del Poniente (Hispanic), Western Pipistrelle, Western Pipistrelle Bat. HABITS: Feeds on insects. Roosts in buildings, crevices in canyon walls, caves, cliffs, rocky outcrops, under rocks and in mine shafts. HABITAT: Within the range of this species it has been reported from forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. \*8 (species: recorded as *Pipistrellus hesperus* N. Miller), 14 (051007), 55 (species: recorded as *Pipistrellus hesperus* (H. Allen). Western Pipistrelle. Common throughout the state.), 73 (species), 100 (species, color photograph of species), 106 (053106 - genus), 118 (recorded as *Pipistrellus hesperus apus* Elliot - Distribution: Southeastern Arizona. Figure 19, Page 49)\*

***Plecotus townsendii* (Cooper) (subsp. *pallescens* is the subspecies reported as occurring in Arizona): Pale Townsend's Big-eared Bat**

SYNONYMY: (for *P.t.* subsp. *pallescens*: *Corynorhinus townsendii* subsp. *pallescens* (Frost)).  
COMMON NAMES: Lump-nosed Bat, Mule-eared Bat, Murcielago de Townsend (Hispanic), Pale Townsend's Big-eared Bat, Western Big-eared Bat, Western Long-eared Bat, Western Lump-nosed Bat.  
HABITS: The species feeds on small moths and other small insects; roosts on open ceilings in caves and rock shelters, and under bridges and in water diversion tunnels, abandoned mines, mine tunnels and buildings. HABITAT: Within the range of this species it has been reported from tundra, forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTE: **The Pale Townsend's Big-eared Bat is a rather sedentary species that is extremely sensitive to human disturbance and the vandalism of roost caves.** \*14 (053007), 55 (recorded as *Plecotus townsendii* (Cooper). Lump-nosed Bat. Locally common throughout the state at elevations above 5,000 feet; rare at lower elevations.), 73, 92 (color photograph), 100 (color photograph), 118 (recorded as *Corynorhinus townsendii pallescens* Miller - Distribution: Probably more or less state wide but more abundant in the Upper Sonoran and Transitional Life Zones. Figure 24, Page 58)\*

***Plecotus townsendii* subsp. *pallescens* (Miller): Pale Townsend's Big-eared Bat**

SYNONYMY: *Corynorhinus townsendii* subsp. *pallescens* (Frost). COMMON NAMES: Lump-nosed Bat, Mule-eared Bat, Murcielago de Townsend (Hispanic), Pale Townsend's Big-eared Bat, Western Big-eared Bat, Western Long-eared Bat, Western Lump-nosed Bat. HABITS: The species feeds on small moths and other small insects; roosts on open ceilings in caves and rock shelters, and under bridges and in water diversion tunnels, abandoned mines, mine tunnels and buildings. HABITAT: Within the range of this species it has been reported from tundra, forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTE: **The Pale Townsend's Big-eared Bat is a rather sedentary species that is extremely sensitive to human disturbance and the vandalism of roost caves.** \*14 (053007), 55 (species: recorded as *Plecotus townsendii* (Cooper). Lump-nosed Bat. Locally common throughout the state at elevations above 5,000 feet; rare at lower elevations.), 73 (species), 92 (species, color photograph of species), 100 (species, color photograph of species), 118 (recorded as *Corynorhinus townsendii pallescens* Miller - Distribution: Probably more or less state wide but more abundant in the Upper Sonoran and Transitional Life Zones. Figure 24, Page 58)\*

## ACKNOWLEDGEMENTS

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FOOTNOTES and REFERENCES  
for the Species Distribution Listings compiled for Arizona

(1) General Mapping:

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(2) Physiographic Province Mapping:

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

(3) Soils Mapping:

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

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

(4) Biotic Communities Mapping and Definitions

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

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

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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.csd.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://nmmhp.unm.edu/bisonm/bisonquery.php>

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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](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://nmmhp.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](http://www.gf.state.az.us/w_c/edits/species_concern.shtml)

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(AHS) Arizona Historical Society

(ANN) Anonymous

(JFW) John F. Wiens

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

(PCM) Personal Communication (Date)

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

(RGM) G. Meades

(TBL) Township Bird Listing

(WTK) William T. Kendall

(KGUN) Channel 9 (ABC - Month Day, Year & Program)

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

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

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