Le Jardin de Mère Nature dans une Petite Planète

(Mother Nature's Garden on a Small Planet)

a SPECIES DISTRIBUTION LISTING for

TOWNSHIP 12S SOUTH, RANGE 10 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 west, the Waterman and Silverbell 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

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

Arizona Daily Star *ADS (date of article)*

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

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

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

SPECIES DISTRIBUTION LISTINGS

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

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

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

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

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

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

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

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

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

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

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Acknowledgements

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TOWNSHIP NOTES

LOCATION: This township is located in north-central Pima County in south-central Arizona. A portion of this township is located within the Ironwood Forest National Monument. The alignment for El Camino de Treas Arroyos runs across the north side of this township; the Alignment for Tucker Road runs across the south side of this township and Pump Station Road roughly follows the west side of this township

Historic Farming Activities: Historic farms: the Britton Farm, the Hale Farm, the Kai Farm, the Lupori Farm, the White Farm and the Wong Farm.

Historic Ranching Activities: General ranching activities included the placement of corrals and stock tanks. Named stock tanks include the BK Tank.

Historic Mining Activities: General mining activities included gravel pits.

LANDMARKS: Named washes include the Blanco Wash, Brawley Wash, Cocio Wash and China Draw. This township is located in Avra Valley.

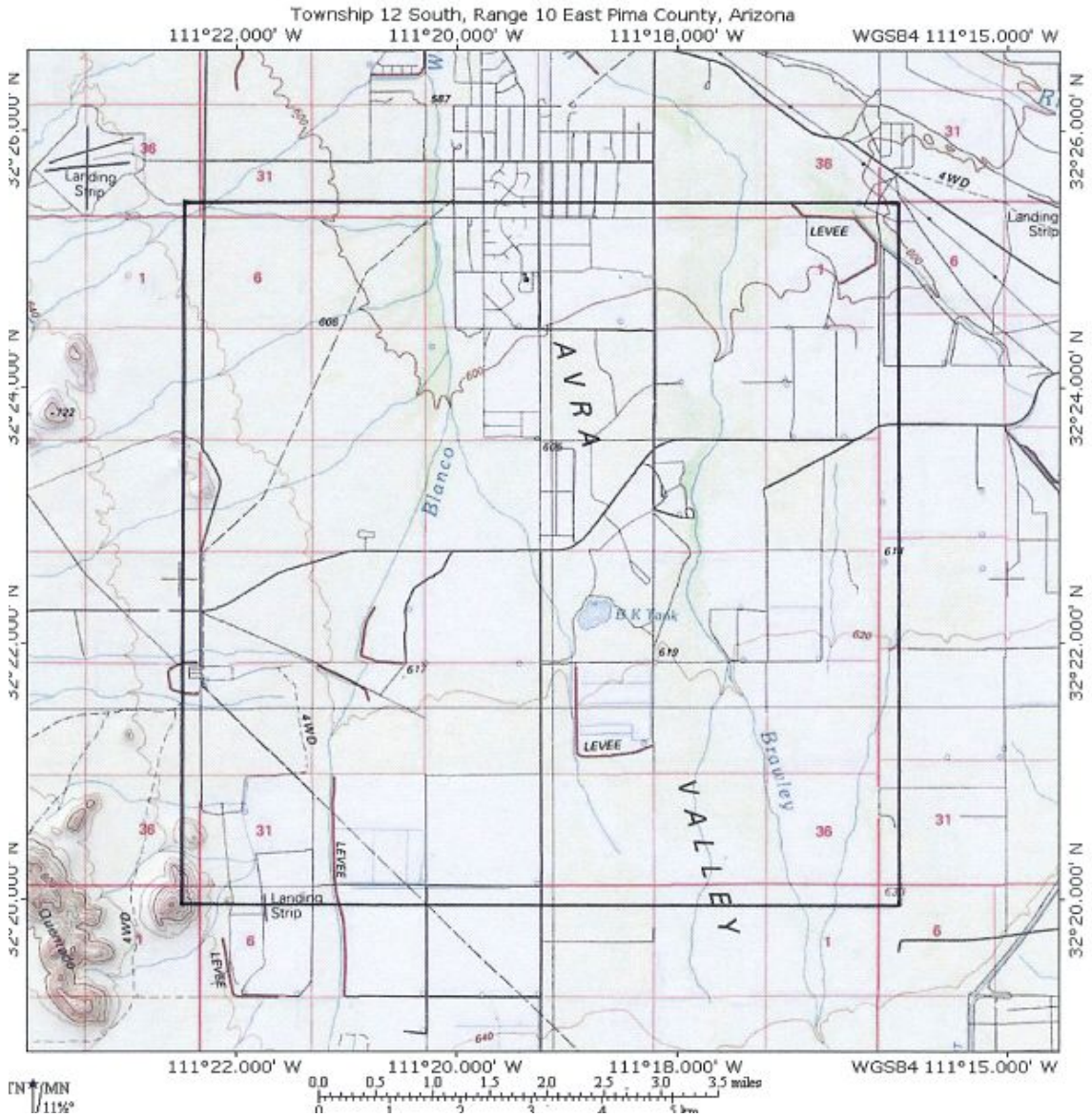
ELEVATION: Elevations range from approximately 1,940 feet on the north township line at the Blanco and Brawley Washes to approximately 2,200 feet at an unnamed hill on the west township line (1).

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

SOILS: Soils have been described as being Thermic (hot) Arid Soils (soils with mean annual temperatures of 59 degrees to 72 degrees Fahrenheit (15 degrees to 22 degrees Centigrade) and 5 to 10 inches (13 to 25 cm) mean annual precipitation) and/or Thermic (hot) Semiarid Soils (soils with mean annual temperatures of 59 degrees to 72 degrees Fahrenheit (15 degrees to 22 degrees Centigrade) and 10 to 16 inches (25 to 41 cm) mean annual precipitation) of the Grabe-Gila-Pima Association (deep soils of the floodplains), Continental-Sonoita-Tubac Association (deep, arid soils on uplands), Mohave-Tres Hermanos-Anway

Association (deep, arid soils on the valley plains) and the Pinaleno-Nickel-Palos Verdes Association (deep, arid, gravelly soils on deeply dissected uplands) (3).

BIOTIC COMMUNITY: This township is located within the Lower Colorado River Subdivision of the Sonoran Desertscrub Regional Formation of the Desertscrub Formation with associated Wetlands (4).



Map Printed from TOPO! R C 2002 National Geographic

Map of Township and Adjacent Sections

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

Trees and Large Shrubs (over 7 feet maximum height)

Saguaro (*Carnegiea gigantea* - 5’ to 60’)
Velvet Mesquite (*Prosopis velutina* - 2’ to 56’)
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’)
Catclaw Acacia (*Acacia greggii* var. *greggii* - 40” to 25’)
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’)
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’)
Desert Broom (*Baccharis sarothroides* - 3’ to 10’)
Cane Cholla (*Cylindropuntia spinosior* - 16” to 10’)
Fourwing Saltbush (*Atriplex canescens* - 1’ to 10’)
Anderson Lycium (*Lycium andersonii* - 1’ to 10’)
Desert Pricklypear Cactus (*Opuntia engelmannii* var. *engelmannii* - 20” to 8’)

Shrubs (2 to 7 feet maximum height)

Major Cholla (*Cylindropuntia acanthocarpa* var. *major* - 32” to 7’)
Desert Saltbush (*Atriplex polycarpa* - 12” to 78”)
Desert Christmas Cactus (*Cylindropuntia leptocaulis* - 1’ to 6’)
Triangleleaf Bursage (*Ambrosia deltoidea* - 1’ to 4’)
White Bursage (*Ambrosia dumosa* - 7” to 40”)
Burroweed (*Isocoma tenuisecta* - 6” to 40”)

Grasses

Spidergrass (*Aristida ternipes* - 10” to 79”)
False Rhodes Grass (*Trichloris crinita* - 24” to 60”)
Spike Dropseed (*Sporobolus contractus* - 16” to 60”)
Bush Muhly (*Muhlenbergia porteri* - 10” to 44”)
Purple Threeawn (*Aristida purpurea* - 4” to 40”)
Rothrock Grama (*Bouteloua rothrockii* - 8” to 30”)

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

Desert Night-blooming Cereus (*Peniocereus greggii* var. *transmontanus* - 1’ to 8’)
Desert Mistletoe (*Phoradendron californicum* - 8” to 5’, see note)
Desert Marigold (*Baileya multiradiata* - 6” to 30”)
White Tackstem (*Calycoseris wrightii* - 10” to 12”)
Thornber Pincushion Cactus (*Mammillaria thornberi* - 2” to 12”)

Graham Pincushion Cactus (*Mammillaria grahamii* - 1" to 12")

CONSERVATION RELATED ORGANIZATIONS AND NURSERIES

Arizona Department of Agriculture

http://www.azda.gov/

Native Plant Crimes HOTLINE: 602-364-0907

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

NOTICE OF INTENT TO CLEAR LAND

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

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

Arizona Game and Fish Department

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

Operation GAME THIEF: 602-942-3000

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

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

LIVING WITH WILDLIFE

http://www.azgfd.gov/w_c/urban_wildlife.shtml

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

Arizona Native Plant Society

http://aznps.org/

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

LISTING OF SOURCES FOR NATIVE PLANTS AND SEEDS

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

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

Tucson Cactus and Succulent Society

http://www.tucsoncactus.org/

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

NATIVE PLANT RESCUE NOTICE

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

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

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

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

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

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

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

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

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

LISTING OF PLANTS

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

Native Plant Crimes HOTLINE: 602-364-0907

Kingdom Plantae: The Plant Kingdom
Subkingdom Tracheobionta: The Vascular Plants
Superdivision Spermatophyta: The Seed Plants

Division Gnetophyta: The Gnetophytes

CLASS GNETOPSIDA: The GNETOPS

Ephedraceae: The Mormon-tea Family

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

COMMON NAMES: Brigham Young Tea, Canatilla, Desert Ephedra, Desert Joint-fir, Desert Jointfir, Itama Real, Kanutio (Yaqui), Long-leaf Jointfir, Long-leafed Joint-fir, Long-leaved Joint Fir, Long-leaved Jointfir, Longleaf Ephedra, Longleaf Joint-fir, Longleaf Jointfir, Longleaf Mormon Tea, Mexican Tea, Mexican-tea, Mormon Tea, Popotilla (Hispanic), Popotillo (Hispanic), Tepopote (Hispanic), Teposote (Hispanic). DESCRIPTION: Terrestrial perennial evergreen shrub (20 inches to 16½ feet in height with a crown 8 to 10 feet in width, one plant was described as being 3 feet in height with a crown 5 feet in width); the stems are blue-green, green, olive-green or yellow-green; the tiny flowers are pale yellow with male and female flowers occurring on separate plants; the production of the tan-brown strobili (female and male cones) generally takes place between early February and late May (additional record: one for mid-January). HABITAT: Within the range of this species it has been reported from mountains; mesas; canyons; clayey ridges; foothills; gravelly hills; hilltops; rocky hillsides; knolls; rocky, rocky-gravelly, gravelly, gravelly-loamy and sandy slopes; rocky-sandy and gravelly-sandy alluvial fans; sandy bajadas; rocky outcrops; gravelly lava hills; sand hills; sand dunes; ridges of sand dunes; inter-dune swales; rocky, rocky-gravelly and sandy plains; rocky, gravelly and sandy flats; sandy basins; valley floors; along rocky, rocky-sandy, gravelly, gravelly-clayey-loamy and sandy roadsides; within sandy arroyos; riverbeds; along and in sandy and sandy-silty washes; within drainages; edges of swales; rocky, gravelly-sandy-loamy and sandy banks of arroyos, rivers and washes; edges of rivers; sandy margins of lakes; gravelly terraces; floodplains; along canals, and disturbed areas growing in dry rocky, rocky-gravelly, rocky-sandy, gravelly, gravelly-sandy and sandy ground; gravelly loam, gravelly-sandy loam and gravelly-clayey loam ground; clay ground, and sandy silty ground, occurring from sea level to 5,500 feet in elevation in the woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat and may live to be 50 years of age. This plant was reported to have been utilized by native peoples of North America; it was noted as having been used as a drug or medication. This plant is valuable as a soil binder. This plant is browsed by Bighorn Sheep. *Ephedra trifurca* is native to southwest-central and southern North America. *5, 6, 13, 15, 16, 18, 28 (color photograph), 43 (081209), 46 (Page 61), 48 (genus), 58, 63 (081209 - color presentation), 77, 85 (081209 - color presentation), 91, 127, **HR***

Division Magnoliophyta: The Flowering Plants

CLASS LILIOPSIDA: The MONOCOTS

Cyperaceae: The Sedge Family

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

COMMON NAMES: Amande de Terre (French), Bebollin, Cebollín (Spanish), Choufa (French), Chufa (Portuguese), Chufa Flatsedge, Coquillo (Hispanic), Coquillo Amarillo (Hispanic), Earth-almond, Erdmandel (German), Juncia Avellanada (Spanish), Northern Nut Grass, Sai´ (Hispanic), Souchet Comestible (French), Tigernut, Tiririca (Portuguese), Tiririca-amarela (Portuguese), Tiririca-mansa (Portuguese), Water-grass, Yellow Nut Grass, Yellow Nut-grass, Yellow Nutgrass, Yellow Nut Sedge,

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

Poaceae (Gramineae): The Grass Family

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

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

rocky and shaley outcrops; amongst boulders and rocks; sandy lava flows; sand hills; sand dunes; in blow sand; breaks; rocky-sandy and sandy steppes; rocky, sandy, sandy-clayey, clayey and clayey-loamy prairies; bouldery-rocky, rocky, gravelly, gravelly-sandy and sandy plains; rocky, rocky-sandy, cindery, gravelly, gravelly-loamy, sandy, loamy, clayey-loamy and silty-clayey flats; rocky, gravelly-sandy and sandy valley floors; valley bottoms; along railroad right-of-ways; along gravelly, gravelly-loamy, sandy, sandy-loamy and clayey roadsides; along and in rocky, gravelly, sandy and clayey-loamy arroyos; along sandy bottoms of arroyos; along and in sandy draws; gulches; gravelly-sandy bottoms of gulches; rocky gullies; rocky-gravelly ravines; springs; in rocks along streams; bouldery streambeds; along creeks; along and in creekbeds; riverbeds; along and in bouldery, bouldery-cobbly-sandy, rocky, rocky-sandy, gravelly, gravelly-sandy and sandy washes; along and in bedrock, rocky, gravelly-sandy and sandy drainages; bouldery-rocky, rocky and pebbly drainage ways; sandy lakebeds; swamps; depressions; rocky, gravelly and sandy banks of washes; sandy edges of rivers and washes; gravelly margins of washes; mudflats; gravel bars; sandy beaches; rocky-clayey, gravelly and sandy benches; gravelly terraces; bottomlands; gravelly and sandy floodplains; mesquite bosques; along ditches; recently burned areas; riparian areas, and disturbed areas growing in dry rocky desert pavement; bouldery, bouldery-rocky, bouldery-rocky-cobbly, bouldery-cobbly-sandy, bouldery-cindery, bouldery-gravelly, rocky, rocky-cobbly, rocky-gravelly, rocky-sandy, shaley, shaley-sandy, cindery, gravelly, gravelly-sandy, pebbly and sandy ground; rocky loam, rocky-sandy loam, rocky-clayey loam, cobbly-gravelly loam, gravelly loam, gravelly-sandy loam, gravelly-clayey loam, sandy loam, sandy-clayey loam, sandy-silty loam, clayey loam, silty loam, humusy loam and loam ground; rocky clay, rocky-sandy clay, gravelly-sandy clay, sandy clay, silty clay and clay ground, and gravelly silty, sandy silty and silty ground, occurring from sea level to 9,000 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. This plant may be grazed by Black-tailed Prairie Dogs (*Cynomys ludovicianus*) and White-tailed Jackrabbits (*Lepus townsendii*). *Aristida purpurea* is native to central and southern North America. *5, 6, 15, 33 (Page 244), 43 (081709), 46 (Page 120), 48, 58, 63 (081709 - color presentation), 85 (092709 - color presentation of dried material), 105, **HR***

***Aristida 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***

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

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

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

Chloris crinita (see *Trichloris crinita*)

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

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

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

***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, **HR***

***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."), **HR***

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

COMMON NAMES: Common Mediterranean Grass, Kelch-grass, Mediterranean Grass, Mediterraneangrass, Zacate Mediterrane Comun. DESCRIPTION: Terrestrial annual tufted graminoid (1 to 14 inches in height); the foliage is green; the inflorescence is greenish-purple; the spikelets (flowers)

may be purple tinged; flowering generally takes place between early January and early June (additional records: one for mid-October and one for late October, flowering beginning as early as November has been reported). HABITAT: Within the range of this species it has been reported from mountains; mountaintops; sandy and sandy-silty mesas; rocky cliffs; rocky and clayey canyons; sandy canyon bottoms; rocky talus; bluffs; rocky ridges; ridgetops; ridgelines; rocky, sandy-loamy and clayey hills; hilltops; rocky hillsides; along rocky, rocky-gravelly-loamy, rocky-loamy-clayey, gravelly, gravelly-sandy, sandy, sandy-loamy, loamy and clayey slopes; rocky alluvial fans; gravelly-sandy bajadas; rocky outcrops; sand dunes; blow-sand deposits; gravelly-sandy plains; gravelly, gravelly-sandy, sandy and silty flats; sandy valley floors; around wharves; roadbeds; along gravelly and sandy roadsides; springs; in sandy soils along streams; along gravelly-sandy and sandy creekbeds; along rivers; along rocky, gravelly and clayey-loamy riverbeds; along and in rocky-sandy, rocky-silty, gravelly-sandy and sandy washes; drainages; sandy and silty lakebeds; depressions; sandy banks of streams; sandy edges of streambeds and lakes; margins of washes; sandy benches; shelves; gravelly and sandy terraces; floodplains; canal banks; gravelly-sandy riparian areas, and disturbed areas growing in wet, moist and dry desert pavement; rocky, rocky-gravelly, rocky-sandy, gravelly, gravelly-sandy and sandy ground; rocky-gravelly loam, gravelly-sandy loam, sandy loam, clayey loam and loam ground; rocky-loamy clay and clay ground, and rocky silty, gravelly silty, sandy silty and silty ground, occurring from sea level to 8,000 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: EXOTIC Invasive Plant that poses a significant threat to our native biotic communities. *Schismus barbatus* is native to southwestern Europe; western, central and southern Asia, and northern and southern Africa. *5, 6, 15, 16, 22 (color photograph), 33 (Pages 172-173), 43 (102209), 46 (Page 98), 58, 63 (102209 - color presentation of seeds), 68, 77, 85 (102209 - color presentation of dried material), **HR***

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

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

presentation), 68 ("Johnsongrass ordinarily is good feed, but sometimes the plant, particularly the leaves, contain hydrocyanic (prussic) acid, a cyanide type of poisoning. Any factor which interrupts normal growth may cause the release of HCN within plants. Rapid growth of new leaves, wilting due to drought, frost, freezing, cutting, or trampling are the most dangerous events." See text for additional information), 77, 80 (Johnsongrass is Listed as a Major Poisonous Range Plant. "Most losses from Johnsongrass are due to hydrocyanic-acid poisoning, but plants also accumulate dangerous levels of nitrate. Danger from HCN poisoning is greatest when soils are high in available nitrogen and low in phosphorus, when plants have been exposed to drouth or disease which results in slow or stunted growth, and when plants are making rapid regrowth or have been frosted. Leaves are more toxic than stems, and young plants are more toxic than mature ones.... Management to defer pastures during dangerous periods of growth, and feeding of animals before turning them on pastures containing Johnsongrass are the best preventive measures. " See text for additional information.), 85 (102409 - color presentation), 101 (color photograph), 105, 127, **HR***

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

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

***Trichloris crinita* (M. Lagasca y Segura) L.R. Parodi: False Rhodes Grass**

SYNONYMY: *Chloris crinita* M. Lagasca y Segura, *Trichloris mendocina* (R.A. Philippi) F. Kurtz. COMMON NAMES: False Rhodes Grass, False Rhodesgrass, Feather Fingergrass, Multiflowered Chloris, Rhodes Grass, Twoflower Chloris, Twoflower Trichloris. DESCRIPTION: Terrestrial perennial graminoid (2 to 5 feet in height); the foliage is green or reddish; based on few flowering records observed, flowering generally takes place between late April and mid-October (flowering records: one for late April, one for mid-July and one for mid-October, flowering has been generally described as taking place from

late spring to fall). HABITAT: Within the range of this species it has been reported from mountains; mesas, canyons, crevices in rocks; pockets of soil; rocky hills, slopes; bajadas; plains; gravelly-sandy flats; coastal plains; along railroad right-of-ways; along sandy-loamy roadsides; along bottoms of arroyos; along seeps; along sandy washes; drainages; depressions; loamy benches; terraces; floodplains; sandy lowlands, and disturbed areas growing in dry rocky, gravelly-sandy and sandy ground and loam ground, occurring from sea level to 4,000 feet in elevation in the scrub, grassland, and desertscrub ecological formations. NOTES: This large, showy grass may be an attractive component of a restored native habitat. *Trichloris crinita* is native to southwest-central and southern North America and western and southern South America. *5, 6, 15 (recorded as *Chloris crinita* (Lag.) Parodi), 33 (recorded as *Trichloris mendocina* (Phil.) Kurtz, Page 134), 43 (102509), 46 (Page 126), 63 (102509 - color presentation), 58 (recorded as *Chloris crinita* Lag.), 85 (102509 - color presentation), **HR***

Trichloris mendocina (see *Trichloris crinita*)

CLASS MAGNOLIOPSIDA: The DICOTS

Amaranthaceae: The Amaranth Family

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

COMMON NAMES: Bledo, Careless Weed, Careless-weed, Carelessweed, Palmer Amaranth, Palmer's Amaranth, Palmer Pigweed, Pigweed, Red-root Pigweed, Quelite, Quiltite de las Aguas, Red-root, Rough Pig Weed. DESCRIPTION: Terrestrial annual forb/herb (8 to 80 inches in height, sometimes to 15 feet in height); the stems may be green or red; the leaves are green, the flowers (in spikes) are hyaline cream with green midribs, green, pink or white-green; flowering generally takes place between early June and late December (additional records: one for early February, two for mid-March, two for early May and one for mid-May). HABITAT: Within the range of this species it has been reported from mountains; sandy mesas; rocky and gravelly-loamy canyons; sandy canyon bottoms; talus slopes; gravelly ridgetops; meadows; foothills; rocky hills; rocky hillsides; rocky, gravelly, sandy, sandy-loamy and sandy-silty-loamy slopes, alluvial fans; bajadas; sand dunes; sandy plains; gravelly, sandy and loamy flats; basins; valley floors; along railroad right-of-ways; along gravelly-loamy, sandy and sandy-silty roadsides, stony arroyos; draws; springs; sandy streams; creeks; creekbeds; along and in rocky-cobbly-sandy and sandy riverbeds; along and in gravelly, gravelly-sandy, gravelly-sandy-silty and sandy washes; gravelly-sandy-loamy drainage ways; water holes; playas; cienegas; swampy areas; silty swales; sandy and silty banks of streams, creeks, rivers and washes; sandy edges of washes and marshes; sandy-loamy shores of ponds; mudflats; beaches; gravelly-sand and sand bars; sandy benches; sandy terraces; bottomlands; along sandy floodplains; sandy mesquite bosques; along fencelines; around stock tanks; along sandy and silty ditches; sandy and gravelly-sandy-silty riparian areas; waste places, and disturbed areas growing in dry rocky, rocky-cobbly-sandy, stony, gravelly, gravelly-sandy and sandy ground; gravelly loam, gravelly-sandy loam, sandy loam, sandy-clayey loam, sandy-silty loam, humus-clayey loam and loam ground; clay ground, and gravelly-sandy silty, sandy silty and silty ground, occurring from sea level to 8,900 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant was reported to have been utilized by native peoples of North America and could be investigated to determine its value as a home garden or commercial food crop. Mourning Doves (*Zenaida macroura*), Quail and Whitewing Doves (*Zenaida asiatica*) feed on the seeds. *Amaranthus palmeri* is native to southwest-central and southern North America. *5, 6, 15, 16, 43 (110109), 46 (Page 266), 58, 63 (110109 - color presentation of seeds), 68 ("The plant is relished by livestock in all stages of growth, and is sometimes cut for hay or put into silos.... Palmer amaranth

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

Asteraceae (Compositae): The Aster Family

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

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

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

SYNONYMY: *Franseria cordifolia* A. Gray. COMMON NAMES: Chicurilla, Heartleaf Bursage, Sonoran Bursage, Tucson Bur Ragweed, Tucson Burr Ragweed. DESCRIPTION: Terrestrial perennial deciduous (cold and drought) subshrub or shrub (2 to 4 feet in height); the leaves are gray-

green; the flowers are yellow; flowering generally takes place between early December and mid-May. HABITAT: Within the range of this species it has been reported from mountains; cliffs; rocky canyons; canyon bottoms; rocky and gravelly hills; gravelly hillsides; rocky and rocky-gravelly slopes; coastal plains; along roadsides; arroyos; springs; along and in washes; drainages; banks of arroyos; along edges of creeks and washes, and floodplains growing in dry rocky, rocky-gravelly, gravelly, gravelly-sandy and sandy soils and gravelly-sandy silty soils sometimes growing in the shade of trees and shrubs, occurring from 100 to 4,100 feet in elevation in the scrub and desertscrub ecological formations. NOTE: *Ambrosia cordifolia* is native to southwest-central and southern North America. *5, 6, 13, 43 (111009), 46 (*Fransera cordifolia* Gray, Page 896), 63 (111009), 77, 85 (111009 - color presentation), 91, 115 (color presentation), **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 Bur-sage, 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 sonorae*). In the re-vegetation 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, **WTK** (July 4, 2005)*

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

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

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

photograph), 28 (color photograph), 43 (111209), 46 (Page 883), 48, 58, 63 (111209), 77, 85 (111309 - color presentation), 115 (color presentation), 127, **HR***

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

SYNONYMY: *Baileya multiradiata* W.H. Harvey & A. Gray ex A. Gray var. *thurberi* (P.A. Rydberg) M.T. Kittell. COMMON NAMES: Baileya del Desierto, Cloth-of-gold, Desert Baileya, Desert Marigold, Desert-marigold, Hierba Amarilla, Many-flowered Desert-marigold, Paper Daisy, Paperdaisy, Wild Marigold. DESCRIPTION: Terrestrial annual, biennial or perennial forb/herb (6 to 30 inches in height); the foliage may be gray-green, gray-white-green, grayish and woolly or silvery-green; the flowers (1½ to 2 inches in width) are lemon-yellow, orange, light yellow or yellow; flowering generally takes place between mid-January and late December but may continue year round under favorable conditions. HABITAT: Within the range of this species it has been reported from mountains; rocky and sandy mesas; rocky and sandy canyons; sandy pockets of soil in rock; rocky bluffs; buttes; sandy ridges; foothills; rocky, gravelly and gravelly-sandy hills; rocky, rocky-gravelly, sandy-clayey and clayey hillsides; rocky, stony-gravelly-sandy, cindery, gravelly, gravelly-sandy, sandy and sandy-loamy slopes; rocky-sandy alluvial fans; bajadas; amongst rocks; sand hills; sand dunes; sandy embankments; sandy plains; gravelly, sandy and sandy-loamy flats; valleys; along gravelly, sandy and sandy-loamy roadsides; within stony-gravelly-sandy arroyos; bottoms of arroyos; gravelly draws; along streams; sandy streambeds; sandy creekbeds; along rivers; rocky riverbeds; within rocky, rocky-sandy, gravelly, gravelly-sandy and sandy washes; rocky bowls; swales; sandy banks of rivers and washes; gravelly edges of washes; benches; gravelly terraces; sandy and loamy bottomlands; floodplains; ditch banks; riparian areas, and disturbed areas growing in dry rocky, rocky-gravelly, rocky-sandy, stony-gravelly-sandy, cindery, gravelly, gravelly-sandy and sandy ground; gravelly loam, gravelly-clayey loam, sandy loam and loam ground, and gravelly clay, sandy clay and clay ground, occurring from sea level to 7,000 feet in elevation in the woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. This plant was reported to have been utilized by native peoples of North America and could be investigated to determine its value as a home garden or commercial fiber crop; it was also noted as being a commodity used in personal hygiene. Consider seeding Desert Marigold with native Lupines (*Lupinus* spp.) and Globemallows (*Sphaeralcea* spp.) for a late winter and early spring desert wildflower display. *Baileya multiradiata* is native to southwest-central and southern North America. *5, 6, 15, 16, 18, 28 (color photograph), 43 (111309), 46 ("It is said that horses crop the heads, but fatal poisoning of sheep and goats eating this plant on overgrazed ranges has been reported.", Page 915), 48, 58, 63 (111309 - color presentation), 68 ("Desert Baileya, either fresh or dried, is poisonous to sheep and goats, but not to horses or cattle. The plant is not palatable to sheep, but the showy flower heads are relished, however, the flowering and fruiting heads are nearly twice as poisonous as the green leaves. Goats evidently do not graze the plant under range conditions, but have been poisoned in experimental feeding. Sheep losses from Desert Baileya have occurred in Arizona when green forage is scarce."), 77 (color photograph #17), 80 (This plant is listed as a Secondary Poisonous Range Plant. "The toxic principle is an unknown water-soluble compound. Plants are toxic to sheep on the range in both the green and dry state. ... Goats have been poisoned by experimental feeding but apparently do not eat the plant on the range. Both cattle and horses graze the plant on the range but no losses have been observed. Losses generally occur only when other feed is short or animals are trailed through dense stands." See text for additional information.), 85 (111309 - also recorded as *Baileya multiradiata* var *multiradiata* Harv. & Gray, color presentation), 86 (color photograph), 115 (color presentation), 127, **HR***

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

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

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

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

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

COMMON NAMES: Cardo, Centáurea-estrela-de-malta (Portuguese), Coix de Malte (French), Malta Centaurea, Malta Starthistle, Malta Thistle, Maltese Centaury, Maltese Cockspur, Maltese Star Thistle, Maltese Star-thistle, Malteser Flockenblume (German), Napa Starthistle, Napa Thistle, Saucy Jack, Spotted Knapweed, Star-thistle, Tocalote. DESCRIPTION: Terrestrial annual or biennial forb/herb (8 to 38 inches in height); the foliage is blue-green or dull green; the flowers (disc flowers only, no ray flowers) are yellow; flowering generally takes place between early March and late July (additional records: one for mid-August, one for late August, one for early September and one for early October). HABITAT: Within the range of this species it has been reported from mountains; mesas; clayey cliffs; canyons; sandy and clayey canyon bottoms; rocky edges of bluffs above the sea; sandy-loamy ridges; clayey ridgetops; openings in forests and woodlands; meadows; hills; rocky and rocky-sandy hillsides; rocky, rocky-loamy-clayey, rocky-clayey, sandy-silty, loamy and clayey slopes; bajadas; sand hills; gravelly banks; plains; flats; valley floors; coastal marshes; railroad right-of-ways; along gravelly-sandy-loamy, gravelly-sandy-clayey-loamy, gravelly-clayey loam, sandy-loamy and clayey roadsides; along arroyos; draws; gulches; springs; along creeks; riverbeds; along and in gravelly and sandy washes; salt marshes; depressions; edges of washes; banks of streams and lakes; along edges of washes and lagoons; silty benches; sandy terraces; floodplains; dikes; along sandy edges of stock tanks (charcos and repressos); ditches; along ditch banks; recently burned areas; riparian areas; waste places, and disturbed areas growing in muddy and wet, moist and dry rocky, rocky-sandy, shaley, gravelly, gravelly-sandy and sandy ground; gravelly loam, gravelly-sandy loam, gravelly-sandy-clayey loam, sandy loam, clayey loam, silty loam and loam ground; rocky-loamy clay and clay ground, and sandy silty and silty ground, occurring from sea level to 7,700 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: EXOTIC Invasive Plant that poses a significant threat to native habitat. This plant was reported to have been utilized by native peoples of North America; it was noted as having been used as a drug or medication. *Centaurea melitensis* is native to northern Africa and southern Europe. *5, 6, 15, 16, 22 (color photograph), 41 (color photograph), 43 (111409), 46 (Page 955), 63 (111409), 68, 77, 85 (111409 - color presentation), 101 (note under *Centaurea solstitialis*), 115 (color presentation), 127, **HR***

Franseria confertiflora (see *Ambrosia confertiflora*)

Franseria cordifolia (see *Ambrosia cordifolia*)

Franseria deltoidea (see *Ambrosia deltoidea*)

Franseria dumosa (see *Ambrosia dumosa*)

Haplopappus tenuisectus (see *Isocoma tenuisecta*)

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

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

Heterotheca psammophila (see *Heterotheca subaxillaris*)

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

SYNONYMY: *Heterotheca psammophila* B.L. Wagenknecht. COMMON NAMES: Camphor Daisy, Camphor Weed, Camphor-weed, Camphorweed, Golden Aster, Gordolobo, Telegraph Plant.

DESCRIPTION: Terrestrial annual forb/herb (6 inches to 6 feet in height); the leaves are light green and sticky; the disk flowers are orange or yellow; the ray flowers are yellow or yellow-orange; flowering generally takes place between mid-May and late December (additional records: two for late January, two for early March and two for early April). HABITAT: Within the range of this species it has been reported from mountains; mesas; canyons; canyon bottoms; sandy ridgetops; sandy meadows; sandy foothills; sandy hilltops; rocky hillsides; rocky, gravelly and gravelly-sandy slopes; alluvial fans; bajadas; sand dunes; sandy prairies; rocky-loamy, gravelly, gravelly-sandy, sandy and clayey flats; valley floors; along railroad right-of-ways; along gravelly, gravelly-sandy, gravelly-sandy-clayey-loamy and sandy roadsides; along arroyos; ravines; along streams; rocky creekbeds; rocky-gravelly-sandy and rocky-sandy creekbeds; riverbeds; along and in sandy and clayey washes; in drainages; around ponds; sandy depressions; along banks of rivers; along gravelly and sandy-loamy shores of ponds and lakes; benches; terraces; clayey bottomlands; floodplains; along and in ditches; ditch banks; sandy riparian areas, and disturbed areas growing in moist and dry rocky, rocky-gravelly, rocky-gravelly-sandy, rocky-sandy, gravelly, gravelly-sandy and sandy ground; rocky loam, gravelly-sandy loam, gravelly-sandy-clayey loam, gravelly-clayey loam and sandy loam ground, and gravelly clay and clay ground, occurring from sea level to 7,600 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: The foliage is strongly scented with crushed leaves smelling like camphor. *Heterotheca subaxillaris* is native to south-central and southern North America. *5, 6, 15, 16, 28 (color photograph), 43 (061909), 46 (Page 854, with an additional note on Page 1071 in the supplement), 58, 63 (120109 - color presentation), 68, 77, 85 (120209 - color presentation), 101 (color photograph), 115 (color presentation), **HR***

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

SYNONYMY: *Haplopappus tenuisectus* (E.L. Greene) S.F. Blake. COMMON NAMES: Burro Weed, Burro-weed, Burrow Goldenweed, Burroweed, Hierba del Burrow, Shrine Jimmyweed. DESCRIPTION: Terrestrial perennial forb/herb or subshrub (6 to 40 inches in height and 12 to 40 inches in width); the bark is gray or whitish; the leaves are gray, green, silvery or yellow-green; the flowers are cream, tawny-yellow or yellow; flowering generally takes place between late July and mid-November (additional records: two for late June, one for early July, three for early December and one for late December). HABITAT: Within the range of this species it has been reported from rocky mountains; mesas; canyons; along canyon bottoms; rocky-loamy foothills; rocky hills; rocky and gravelly hillsides; rocky and gravelly slopes; bajadas; rocky outcrops; amongst rocks; rocky-clayey plains; gravelly, gravelly-clayey, sandy and clayey flats; along gravelly roadsides; sandy arroyos; draws; gulches; sandy bottoms of ravines; around streams; along and in sandy and sandy-silty washes; drainages; within clayey drainage ways; clayey playas; rocky, gravelly-sandy and sandy banks of arroyos and washes; mudflats; alluvial terraces; gravelly floodplains; mesquite bosques; ditch banks; gravelly-sandy and sandy riparian areas; waste places, and disturbed areas growing in dry rocky, gravelly, gravelly-sandy and sandy ground; rocky loam ground; rocky clay, gravelly clay and clay ground, and sandy silty ground, occurring from 2,000 to 7,300 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. *Isocoma tenuisecta* is native to southwest-central and southern North America. *5, 6, 13, 15, 16, 28 (note under *Isocoma wrightii*), 43 (062009), 46 (recorded as *Aplopappus tenuisectus* (Greene) Blake, Page 862), 58, 63 (120209), 68, 77, 80 (This species is listed as a Major Poisonous Range Plant. "The poisonous principle of burroweed is the alcohol, tremetol. All parts of the plant are poisonous, although the dried flowers are most often eaten. ... Burroweed produces the affliction called "trembles." Poisoned animals tremble violently when exercised and usually lie down in the normal position. Upon arising, the trembling recurs. Appetite is markedly depressed, and the severely poisoned animal eventually stays down until it dies. Acetonemia, characterized by the odor of acetone in the urine and on the breath, is also a product of burroweed poisoning. ... Burroweed is generally low in palatability, but is eaten in quite large amounts when better forage is not available. Special precautions must be taken with new animals brought into burroweed-infested areas as they are more likely to graze the plants. Native livestock apparently

become sickened from eating the plant and tend to avoid it. An adequate supply of good feed during harsh times when livestock might be more prone to consume burroweed, may reduce its consumption." See text for additional information.), 85 (120309 - color presentation), 115 (color presentation), **HR***

***Lactuca serriola* C. Linnaeus: Prickly Lettuce**

COMMON NAMES: Alface-de-espinho (Portuguese), Alface-silvestre (Portuguese), China Lettuce, Compass Plant, Escarola (Spanish), Horse Thistle, Laitue Sauvage (French), Lechuga Espinaca (Spainish), Milk Thistle, Prickly Lettuce, Stachellattich (German), Wild Lettuce, Wild Opium, Wilder Lattich (German). DESCRIPTION: Terrestrial annual or biennial forb/herb (6 inches to 10 feet in height); the stems are whitish; the leaves are medium green; the ray flowers (no disk flowers) are light blue, greenish-white, lemon-yellow, pinkish, pink-white, purple, rose, whitish, pale yellow or yellow; flowering generally takes place between late May and late October (additional records: one for early February, two for late March and one for mid-December). HABITAT: Within the range of this species it has been reported from mountains; mesas; plateaus; along canyons; bedrock, rocky-gravelly-sandy and rocky-sandy-silty canyon bottoms; clearings in cottonwood forests; meadows; rocky hills; rocky hillsides; bedrock, bouldery, rocky, cindery, gravelly, gravelly-sandy, gravelly-loamy and silty-loamy slopes; bedrock outcrops; lava flows; gravelly-clayey banks; prairies; plains; gravelly, loamy and clayey flats; valley floors; basins; along railroad right-of-ways; along rocky, cindery, gravelly, sandy and sandy-loamy roadsides; along arroyos; draws; gulches; seeps; springs; along streams; along creeks; creekbeds; along and in rocky, sandy and loamy washes; in bedrock drainages; drainage ways; around ponds; cienegas; freshwater marshes; clayey depressions; banks of creeks and rivers; edges of creeks; margins of arroyos, washes and ponds; shores of lakes; gravel bars; loamy benches; terraces; rocky and clayey bottomlands; rocky-gravelly-sandy, gravelly-sandy-loamy, sandy, clayey and silty-loamy floodplains; along canals; along ditches; along ditch banks; bouldery-sandy, cobbly and sandy riparian areas; waste places, and disturbed areas growing in muddy and wet and dry bouldery, bouldery-sandy, rocky, rocky-gravelly-sandy, cobbly, cindery, gravelly, gravelly-sandy and sandy ground; gravelly loam, gravelly-sandy loam, clayey loam, silty loam and loam ground; gravelly clay and clay ground, and rocky-sandy silty and silty ground, occurring from sea level to 9,700 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: EXOTIC Invasive Plant. This plant was reported to have been utilized by native peoples of North America; it was also noted as having been used as a drug or medication. Prickly lettuce may be browsed by Mule Deer (*Odocoileus hemionus*). *Lactuca serriola* is native to northern, middle, eastern and southern Europe; western, middle and southern Asia, and northern and southern Africa. *5, 6, 15, 16, 28 (color photograph), 43 (120309), 46 (Page 966), 58, 63 (120309 - color presentation), 68, 77, 80 (This species is listed as a Rarely Poisonous or Suspected Poisonous Range Plant. "Hungry animals consuming large amounts of this biennial milky-juiced forb may develop pulmonary emphysema. It at also develops toxic levels of nitrate."), 85 (120309 - color presentation), 101 (color photograph), 115 (color presentation), 127, **HR***

***Verbesina encelioides* (A.J. Cavanilles) G. Bentham & J.D. Hooker f. ex A. Gray (subsp. *exauriculata* (B.L. Robinson & J.M. Greenman) J.R. Coleman is the subspecies reported as occurring in Arizona): Golden Crownbeard**

SYNONYMY: (for *V.e.* subsp. *exauriculata*: *Verbesina encelioides* (A.J. Cavanilles) G. Bentham & J.D. Hooker f. ex A. Gray var. *exauriculata* B.L. Robinson & J.M. Greenman). COMMON NAMES: American Dogweed, Butter Daisy, Butter-daisy, Cow Pasture Daisy, Cowpen Daisy, Crown-beard, Crownbeard, Girasolillo, Golden Crown-beard, Golden Crownbeard, Hierba de la Bruja, South African Daisy. DESCRIPTION: Terrestrial annual forb/herb (4 inches to 6½ feet in height, plants 8 inches in height and 12 inches in width were reported); the foliage is bluish-green, gray, gray-green, green, silvery or silvery-green; the disk flowers are gold, deep orange, green-orange, orange-yellow or yellow; the ray flowers are gold, deep orange, orange-yellow, yellow or yellow-orange; flowering generally takes place between early March and mid-December (additional records: two for late January and one for mid-February). HABITAT: Within the range of this species it has been reported from mountains;

mountainsides; rocky-gravelly and sandy mesas; escarpments; sandy canyons; gravelly canyon bottoms; bouldery knobs; sandy ridges; sandy ridgetops; meadows; stony and clayey hills; hilltops; rocky-sandy hillsides; rocky, cindery, sandy, sandy-loamy, loamy and silty-clayey slopes; gravelly alluvial fans; gravelly bajadas; rock outcrops; sand dunes; plains; cindery, gravelly, sandy and clayey flats; basin bottoms; valley floors; sandy coastal dunes; along bouldery-gravelly, cindery, gravelly, gravelly-sandy, gravelly-sandy-clayey-loamy, gravelly-loamy, gravelly-clayey-loamy, sandy, sandy-loamy and sandy-clayey-loamy roadsides; arroyos; along draws; sandy streambeds; along creeks; gravelly creekbeds; along gravelly-sandy rivers; along and in sandy and sandy-loamy riverbeds; along and in rocky-sandy, stony, gravelly-sandy, sandy and clayey washes; along drainages; in drainage ways; around ponds and lakes; cienegas; depressions; sandy swales; sandy and silty banks of rivers; along rocky and gravelly-sandy edges of washes and swales; around margins of playas; marshy areas; along sandy beaches; terraces; sandy bottomlands; lowlands; gravelly and sandy floodplains; mesquite bosques; along ditches; sandy riparian areas; waste places, and disturbed areas growing in moist and dry bouldery, bouldery-gravelly, rocky, rocky-gravelly, rocky-sandy, cindery, gravelly, gravelly-sandy and sandy ground; rocky loam, gravelly loam, gravelly-sandy-clayey loam, gravelly-clayey loam,, sandy loam, sandy-clayey loam and loam ground; silty clay and clay ground, and sandy silty and silty ground, occurring from sea level to 10,000 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant has a rank odor. This plant was reported to have been utilized by native peoples of North America and could be investigated to determine its value as a home garden or commercial food crop (*V.e.* subsp. *exauriculata*); it was also noted as having been used as a drug or medication, insecticide (*V.e.* subsp. *exauriculata*), protection (*V.e.* subsp. *exauriculata*), ceremonial items (*V.e.* subsp. *exauriculata*) and as a commodity used in personal hygiene (*V.e.* subsp. *exauriculata*). *Verbesina encelioides* is native to south-central and southern North America. *5, 6, 16, 28 (color photograph), 43 (062409), 46 (Page 907), 58, 63 (122409 - color presentation), 68 (*Verbesina encelioides* var. *exauriculata* is reported to be an exotic and native to the Old World; however, no other source used reported it as being an exotic.), 77, 80 (This plant is listed as a Rarely Poisonous and Suspected Poisonous Range Plant. This annual forb has been reported to accumulate toxic levels of nitrate.), **85** (122409 - color presentation), 86 (color photograph), 115 (color presentation), 127*

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

SYNONYMY: *Verbesina encelioides* (A.J. Cavanilles) G. Bentham & J.D. Hooker f. ex A. Gray var. *exauriculata* B.L. Robinson & J.M. Greenman. COMMON NAMES: Butter-daisy, Cow Pasture Daisy, Cowpen Daisy, Crownbeard, Girasolillo, Golden Crownbeard, Hierba de la Bruja. DESCRIPTION: Terrestrial annual forb/herb (4 inches to 5 feet in height, plants 8 inches in height and 12 inches in width were reported); the foliage is bluish-green or gray-green, green or silvery; the disk flowers are gold or yellow; the ray flowers are gold, orange-yellow, yellow or yellow-orange; flowering generally takes place between early March and mid-December (additional records: one for late January and one for mid-February). HABITAT: Within the range of this species it has been reported from mountains; mountainsides; sandy mesas; canyons; talus; gravelly and clayey canyon bottoms; bouldery knobs; sandy-loamy meadows; rolling foothills; stony hills; hilltops; rocky-sandy hillsides; canyons; rocky, cindery, sandy, sandy-loamy, loamy and silty-clayey slopes; gravelly bajadas; rocky outcrops; sand hills; sand dunes; plains; cindery, gravelly, sandy and sandy-loamy flats; valley floors; along bouldery-gravelly, rocky, cindery, gravelly, gravelly-sandy-clayey-loamy, gravelly-loamy, sandy-clayey-loamy and sandy-loamy roadsides; along arroyos; sandy bottoms of arroyos; along draws; bottoms of draws; springs; along creeks; gravelly creekbeds; along gravelly-sandy rivers; along and in sandy-loamy riverbeds; in rocky, stony and sandy washes; in drainage ways; around ponds; around lakes; cienegas; sandy swales; sandy and silty banks of rivers; along gravelly-sandy edges of washes and swales; sandy beaches; terraces; sandy bottomlands; lowlands; sandy floodplains; mesquite bosques; silty-loamy stock tanks; along shores of impoundments; along ditches; sandy riparian areas; waste places, and disturbed areas growing in wet, moist and dry bouldery, bouldery-gravelly, rocky, rocky-gravelly, stony, cindery, gravelly, gravelly-sandy

and sandy ground; rocky loam, gravelly loam, gravelly-sandy-clayey loam, sandy loam, sandy-clayey loam, silty loam and loam ground; silty clay and clay ground, and silty ground, occurring from sea level to 10,000 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant has a rank odor. This plant was reported to have been utilized by native peoples of North America and could be investigated to determine its value as a home garden or commercial food crop; it was also noted as having been used as a drug or medication, insecticide, protection, ceremonial items and as a commodity used in personal hygiene. *Verbesina encelioides* subsp. *exauriculata* is native to south-central and southern North America. *5, 6, 15, 28 (color photograph of the species), 43 (062409), 46 (Page 907), 63 (122409 - color presentation), 68 (*Verbesina encelioides* var. *exauriculata* is reported to be an exotic and native to the Old World; however, no other source used reported it as being an exotic.), 80 (This plant is listed as a Rarely Poisonous and Suspected Poisonous Range Plant. This annual forb has been reported to accumulate toxic levels of nitrate.), 85 (122409 - color presentation), 86 (color photograph of the species), 115 (color presentation of species), 127, **HR***

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

Boraginaceae: The Borage Family

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

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

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

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

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

and wetland ecological formations. NOTE: *Amsinckia menziesii* var. *intermedia* is native to west-central and southern North America. *5, 6, 15 (reported as *Amsinckia intermedia* Fisch. & Mey.), 16 (reported as *Amsinckia intermedia* Fisch. & Mey.), 28 (reported as *Amsinckia intermedia*, color photograph), 43 (122609 - no record for var. *intermedia*), 46 (reported as *Amsinckia intermedia* Fisch. & Meyer, Page 723), 58 (reported as *Amsinckia intermedia* Fisch. & Meyer), 63 (122609 - color presentation), 68 ("The mature seeds have been demonstrated to cause hepatic cirrhosis, known as "hard liver disease" of cattle and swine, and the "walking disease" of horses. Sheep are either immune or highly resistant to the poison. The disease is common in the Pacific Northwest, but not in Arizona. This plant also may cause nitrate poisoning."), 77 (reported as *Amsinckia intermedia* F. & M., color photograph labeled *Amsinckia intermedia* #7), 80 (This plant (*Amsinckia intermedia* and others) is listed as a Rarely Poisonous and Suspected Poisonous Range Plant. "Cattle, horses and swine may be poisoned by an unknown liver toxin from eating large amounts of the seeds of this desert annual. Also plants may cause nitrate poisoning."), 85 (122709 - color presentation), 101, 115 (color presentation), **HR***

Brassicaceae (Cruciferae): The Mustard Family

***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***

Cactaceae: The Cactus Family

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

SYNONYMY: *Cereus giganteus* G. Engelmann. COMMON NAMES: Giant Cactus, Giant Cereus, Ha:san (Tohono O'odham), Ha Shun (Pima), Mashad (Tohono O'odham), Pitahaya (Spanish Conquistadors), Sage-of-the-desert, Saguaro (Spanish), Sahuaro. DESCRIPTION: Terrestrial perennial stem-succulent tree (erect stems 5 to 60 feet in height and 6 to 30 inches in diameter); the plants are green; the spines are yellow or reddish-brown aging to gray or gray-black; the flowers (2 to 3 inches in diameter) are a waxy creamy-white opening at about 8 p.m. and closing at about 5 p.m. the next day with around four blooms opening per day over a 30 day period; flowering generally takes place between late April and mid-June (additional records: one for late March, one for early July, one for mid-July, two for early September and one for early October), the ripe fruits (2¼ to 3 inches in length and 1 to 1½ inches in diameter) split into 2 to 6 segments that curl back to reveal the red inner lining of the rinds which are sometimes mistakenly thought to be red flowers. HABITAT: Within the range of this species it has been reported from mountains; mesas; canyons; canyon walls; buttes; ridges; ridgelines; rocky foothills; rocky and gravelly hills; rocky hilltops; rocky hillsides; rocky, gravelly, gravelly-loamy and sandy-clayey-loamy slopes; rocky and gravelly bajadas; rocky outcrops; amongst boulders and rocks; stabilized sandy and sandy-powdery dunes; plains; gravelly and sandy flats; valley floors; along arroyos; along and in riverbeds; within sandy washes; drainages; floodplains, and mesquite bosques growing in dry desert pavement; bouldery, rocky, gravelly, sandy and sandy-powdery ground, and gravelly loam and sandy-clayey loam ground, occurring from sea level to 5,100 feet in elevation in the scrub, grassland and desertscrub ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. This plant was reported to have been utilized by native peoples of North America and could be investigated to determine its value as a home garden or commercial food, fodder (seeds), beverage and/or fiber crop; it was also noted as having been used as tools, ceremonial items and musical instruments, and as an indicator of the changing of the seasons (with the Saguaro harvest marking the beginning of a new year). Saguaros are very slow to establish, a 5 year old plant may be no more than ¼ to ½ inch in height. The growth rate of Saguaros is extremely variable. William G. McGinnies in his book "Discovering the Desert" reports that a plant 36 inches in height may be from 20 to 50 years of age, he also presents a table of typical growth rates reporting the following: 4 inches - 8.0 years, 8 inches - 12.5 years, 16 inches - 19.1 years, 32 inches - 27.3 years, 3.3 feet - 30.3 years, 6.6 feet - 40.5 years, 10 feet - 47.5 years, 13 feet - 54 years, 16 feet - 60.0 years, 18 feet - 74.0 years. 20 feet - 83.0 years, 25 feet - 107.0 years, 30 feet - 131.0 years, and 35 feet - 157.0 years. The growth rate of propagated and cultivated saguaros is much faster. One of the largest known saguaros, located in Saguaro National Monument, was reported to be 52 feet in height, had 52 arms, weighed an estimated 10 tons and was thought to be 235 years of age. Cristate forms have been reported. The Broad-billed Hummingbird (*Cynanthus latirostris*), Broad-tailed Hummingbird (*Selasphorus platycercus*), Costa's Hummingbird (*Calypte costae*), Curved-billed Thrasher (*Toxostoma curvirostre*), Lesser Long-nosed Bat (*Leptonycteris curasoae* subsp. *yerbabuenae*) and Rufous Hummingbird (*Selasphorus rufus*) have been observed visiting the flowers. Coyotes (*Canis latrans*), Desert Mule Deer (*Odocoileus hemionus* subsp. *crooki*), Desert Bighorn Sheep (*Ovis canadensis* subsp. *mexicana*), Javelina (*Peccari tajacu*) and White-winged Doves (*Zenaida asiatica*) as well as other animals and birds feed on the saguaro fruit and seeds. the Gila Woodpecker (*Melanerpes uropygialis*) and Gilded Flicker (*Colaptes chrysoides*) make holes in this plant for their nests which are later utilized by the Ash-throated Flycatcher (*Myiarchus cinerascens*), Cactus Wren (*Campylorhynchus brunneicapillus*), Elf Owl (*Micrathene whitneyi*), House Finch (*Carpodacus mexicanus*), Lucy's Warbler (*Vermivora luciae*), Purple Martin (*Progne subis*) and Cactus Wren (*Campylorhynchus brunneicapillus*). Red-tailed Hawks (*Buteo jamaicensis*), White-winged Doves (*Zenaida asiatica*) and other birds nest on the arms of the plant. *Carnegiea gigantea* is native to southwest-central and southern North America. *5, 6, 12 (recorded as *Cereus giganteus* Engelm., Pages 108-111, color photographs including habitat), 13 (color photographs including habitat with associated species: Plates C.2 and D.3), 15 (color photograph on Page 77 includes habitat and associated species),

16, 18, 26 (color photograph), 27 (recorded as *Cereus giganteus*, Pages 64-65, color photographs: Plates 39, 39A & 39B, Page 102), 28 (recorded as *Cereus giganteus*, color photograph), 38 (color photograph), 43 (011610), 45 (color photograph), 46 (Page 569), 48 (recorded as *Cereus giganteus*), 52 (recorded as *Cereus giganteus*, color photograph), 53 (recorded as *Cereus giganteus* Engelm.), 58 (recorded as *Cereus giganteus* Engelm.), 63 (011610 - color presentation), 77 (color photograph #63), 85 (011610 - color presentation), 86 (recorded as *Cereus gigantea*, color photograph), 91, 107, 115 (color presentation), 119, 127, 134, **HR***

Cereus giganteus (see *Carnegiea gigantea*)

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

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

SYNONYMY: *Opuntia acanthocarpa* G. Engelmann & J. Bigelow var. *major* (G. Engelmann & J. Bigelow) L.D. Benson, *Opuntia acanthocarpa* G. Engelmann & J. Bigelow var. *ramosa* R.H. Peebles. COMMON NAMES: Buckhorn Cholla, Major Cholla. DESCRIPTION: Terrestrial perennial stem-succulent shrub (2 to 7 feet in height, one plant was described as being 2 feet in height and 8 inches in width, one plant was described as being 32 inches in height with a crown 5 feet in width, one plant was described as being 32 inches in height with a crown 6 feet in width, one plant was described as being 4 feet in height and width, one plant was described as being 4 feet in height with a crown 87 inches in width, one plant was described as being 5 feet in height and width, one plant was described as being 5 feet in height with a crown 98 inches in width, one plant was described as being 6 feet in height with a crown 79 inches in width); the stems are grayish-blue-green or dark green; the spines are dark brown, gray with dark brown tips, purple-brown or red-brown; the flowers (1 to 1¾ inches in diameter) may be brick-red, bronze-red, bronze-yellow, brick-orange, golden, magenta, orange, pink, purple, red, red-pinkish or yellow; the anthers are yellow; flowering generally takes place between early March and early June (additional records: two for early January and two for early August); the mature spiny, dry fruits (1/2 to 7/8 inch in length and ½ to 1 inch in diameter) are brown, light charcoal, gray, grey-beige or tan. HABITAT: Within the range of this species it has been reported from mountains; rocky mountainsides; rocky-sandy mesas; buttes; ridges; ridgelines; gravelly hills; hilltops; rocky hillsides; rocky slopes; gravelly-loamy and sandy bajadas; gravelly and sandy flats; basins; along gravelly-sandy washes, and margins of washes growing in dry rocky, rocky-sandy, gravelly, gravelly-sandy and sandy ground and gravelly loam, clayey loam and loam ground, occurring from 800 to 3,800 feet in elevation in the scrub, grassland and desertscrub ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. The species (*Opuntia acanthocarpa*) was reported to have been utilized by native peoples of North America and could be investigated to determine its value as a home garden or commercial food crop. The change in nomenclature in USDA NRCS has not been recognized in BONAP, species remains as *Opuntia acanthocarpa* (accessed 041806). *Cylindropuntia acanthocarpa* var. *major* is native to southwest-central and southern North America. *5, 6, 12 (recorded as *Opuntia acanthocarpa* Engelmann & Bigelow var. *major* (Engelmann & Bigelow) L. Benson, Page 35 & 37), 26 (genus, recorded as *Opuntia*), 27 (Page 19, color photograph: Plates 14 & 14A, Page 96), 28 (recorded as *Opuntia acanthocarpa*, color photograph of species), 43 (011710 - *Cylindropuntia acanthocarpa* (Engelm. & J.M. Bigelow) F.M. Knuth var. *major* (Engelm.) Pinkava, *Opuntia acanthocarpa* Engelm. & J.M. Bigelow var. *major* (Engelm. & J.M. Bigelow) L.D. Benson, *Opuntia acanthocarpa* Engelm. & J.M. Bigelow var. *ramosa* Peebles), 45 (color photograph of species), 46 (recorded as *Opuntia acanthocarpa* Engelm. & Bigel. var. *ramosa* Peebles, Page 585), 48 (genus, recorded as *Opuntia*), 53 (species, recorded as *Opuntia acanthocarpa* Engelm. & Bigel.), 63 (011710 - color presentation), 77 (recorded as *Opuntia acanthocarpa* Engelm. & Bigel. var. *major* (Engelm. & Bigel.) L. Benson, color photograph labeled *Opuntia acanthocarpa* #66), 85 (011710 - color presentation), 115 (color presentation of species), 119 (species, recorded as *Opuntia acanthocarpa* Engelm.), 127, **HR***

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

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

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

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

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

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

SYNONYMY: *Opuntia leptocaulis* A.P. de Candolle. COMMON NAMES: Agujilla, Alfilerillo (Spanish), Catalineria (Spanish), Christmas Cactus, Christmas Cholla, Darning Needle Cactus, Desert Christmas Cactus, Desert Christmas Cholla, Diamond Cactus, Holycross Cholla, Naf (or Nav?, Gila River Pima), Pencil Cactus, Pencil Cholla, Pencil-joint Cholla, Pipestem Cactus, Rat-tail Cactus, Rattail Cactus, Slender-stem Cactus, Tajasilla, Tasajilla (Hispanic), Tasajillo (Spanish), Tasajo (Spanish), Tesajo (Hispanic), Tesajo Cactus (Christmastree Cacti). DESCRIPTION: Terrestrial perennial stem-succulent shrub (1 to 6 feet in height (sometimes becoming vine-like and growing upwards with support 8 to 15 feet in height), one plant was reported as being 2 feet in height and 2 feet in width, one plant was reported as being 30 inches in height and 5 feet in width, one plant was reported as being 40 inches in height and 5 feet in width, one plant was reported as being 4 feet in height and 8 feet in width, one plant was reported as being 5 feet in height and 8¼ feet in width); the stems are gray-green, green, purplish or yellow-green; the spines gray-brown, purple-brown, red-brown or yellow-brown often being paler toward the tip; the glochids are reddish-brown or yellow; the anthers are yellow; the flowers (3/8 to 3/4 inch in diameter) are bronze, cream, light green-cream, cream-yellow, green, green-yellow, greenish-cream, greenish-yellow, pale yellow, yellow or whitish; flowering generally takes place between late March and late June (additional records: two for mid-July, one for late July, one for early August, one for early October, one for mid-October and one for late October); the spineless (with glochids) fleshy fruits (1/2 to 3/4 inch in length and 1/4 to 7/16 inch in diameter) are coral, orange, orange-red, red, reddish-orange, scarlet, scarlet-red or yellow when mature. HABITAT: Within the range of this species it has been reported from mountains; sandy mountainsides; rocky-sandy and silty mesas; along cliffs; rocky canyons; rocky canyon bottoms; rocky talus slopes; rocky ledges; gravelly ridges; foothills; rocky and rocky-gravelly hills; hilltops; rocky hillsides; rocky, gravelly, gravelly-sandy-loamy, sandy and silty-loamy slopes; clayey-loamy alluvial fans; gravelly, gravelly-silty and sandy bajadas; rocky and gypsum outcrops; amongst cobbles; sand hills; sandy lava flows; lava beds; breaks; sandy and clayey-loamy plains; rocky-sandy, gravelly, gravelly-sandy and sandy flats; basins; valley floors; gravelly and gravelly-sandy roadsides; within gravelly and sandy arroyos; bottoms of arroyos; along ravines; riverbeds; along and in rocky, gravelly and sandy washes; sandy drainages; along cobbly-sandy banks of rivers and drainages; edges of arroyos, ravines and washes; rocky and sandy benches; terraces; bottomlands; floodplains; along fencelines; along ditches; riparian areas, and disturbed areas growing in dry desert pavement; rocky, rocky-gravelly, rocky-sandy, cobbly-sandy, gravelly, gravelly-sandy and sandy ground; gravelly-sandy loam, clayey loam, silty loam and loam ground; rocky-sandy clay and loamy clay ground, and gravelly silty and silty ground often found growing within grasses, shrubs or trees, occurring from sea level to

5,900 feet in elevation in the woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. This plant was reported to have been utilized by native peoples of North America and could be investigated to determine its value as a home garden or commercial food crop. The Desert Christmas Cactus is believed to have a life span of about 50 years. A high mortality rate is to be expected with plants coming into contact with fire. Hummingbirds have been observed visiting the flowers; the fruits are eaten by birds and small mammals, and Cochineal Scale (*Dactylophius coccus*) has been observed growing on this plant. The change in nomenclature in USDA NRCS has not been recognized in BONAP, species remains as *Opuntia leptocaulis* (accessed 041806). *Cylindropuntia leptocaulis* is native to southwest-central and southern North America. *5, 6, 12 (recorded as *Opuntia leptocaulis* DC., Pages 56-58), 15 (recorded as *Opuntia leptocaulis* DC.), 16 (recorded as *Opuntia leptocaulis* DC.), 18, 26 (genus, recorded as *Opuntia*), 27 (Page 2, color photograph: Plate 2, Page 94), 28 (recorded as *Opuntia leptocaulis*, color photograph), 43 (011910), 45 (color photograph), 46 (recorded as *Opuntia leptocaulis* DC., Page), 48 (genus, recorded as *Opuntia*), 58 (recorded as *Opuntia leptocaulis* DC.), 63 (011910 - color presentation), 77 (recorded as *Opuntia leptocaulis* DC.), 85 (011910 - color presentation), 86 (recorded as *Opuntia leptocaulis*, color photograph), 91 (recorded as *Opuntia leptocaulis* DC.), 115 (color presentation), 119 (recorded as *Opuntia leptocaulis* DC.), 127, **HR***

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

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

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

Echinocactus wislizeni (see *Ferocactus wislizeni*)

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

SYNONYMY: *Echinocactus wislizeni* G. Engelmann. COMMON NAMES: Arizona Barrel Cactus, Barrel Cactus, Bisnaga, Biznaga, Biznaga de Agua (Spanish), Biznagre, Candy Barrel, Candy Barrel Cactus, Candy Barrelcactus, Compass Barrel, Compass Plant, Fish-hook Barrel, Fishhook Barrel Cactus, Fishhook Cactus, Southwest Barrel Cactus, Southwestern Barrel Cactus, Visnaga, Viznaga Hembra (Spanish), Wislizenus Barrel, Yellow-spined Barrel Cactus. DESCRIPTION: Terrestrial perennial stem-succulent shrub or tree (1 to 11 feet in height and 8 to 40 inches in diameter); the stem is green or blue-gray-green; the central spines and larger radial spines are gray, dull pink, reddish or tan; the smaller radial spines are white; the flowers (1½ to 2½ inches in diameter) are orange, orange-yellow, orange-red, orange-yellow, parchment, pinkish-red, reddish, red-orange, yellow or yellow-orange; flowering generally takes place between mid-July and mid-October (additional records: one for early January, three for early March, five for mid-March, two for late March, one for early April, one for mid-April, one for late April and two for early June); the mature fruits (1¼ to 2 inches in length and 1 to 1½ inches in diameter) are greenish-brown, bright yellow or yellow-green and may remain on the plant until the next flowering period. HABITAT: Within the range of this species it has been reported from mountains; rocky mountainsides; mesas; rocky canyons; canyon walls; sandy canyon bottoms; bluffs; foothills; bouldery, rocky, gravelly and sandy hills; hillsides; rocky, cobbly and clayey-loamy slopes; rocky, gravelly and sandy alluvial fans; bajadas; rocky outcrops; plains; rocky, gravelly and sandy flats; valley floors; along roadsides; arroyos; sandy bottoms of arroyos; along washes; rocky, gravelly and sandy margins of washes; floodplains, and mesquite bosques growing in dry desert pavement; bouldery, rocky, cobbly, gravelly and sandy ground, and sandy-clayey loam and clayey loam ground, occurring from 500 to 5,600 feet in elevation in the woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. This plant was reported to have been utilized by native peoples of North America and could be investigated to determine its value as a home garden or commercial food and/or beverage crop; it was also noted as having been used as a tool (the spines were heated and used to make fishing hooks). Fishhook Barrel Cacti are very slow to establish. A 4 year old plant may be no more than 1½ inches in height and 2 inches in width, and an 8 year old plant may be no more that 4¼ inches in height and 4¾ inches in width. The growth rate of propagated and cultivated barrel cacti is much faster. The life-span of Fishhook Barrel Cacti is reported to be from 50 to over 130 years of age. Some plants tend to lean to the south with age. Cristate forms have been reported. The fruits are eaten by Mule Deer (*Odocoileus hemionus*), Javelina (*Peccari tajacu*) and other animals, and the seeds are eaten by birds and rodents. *Ferocactus wislizeni* is native to southwest-central and southern North America. *5, 6, 12 (Pages 166-170, color photograph), 15, 16, 18, 26 (genus, color photograph of genus), 27 (Page 120, color photographs: Plates 60, 60A, 60B & 60C Pages 106), 28, 43 (063009 - *Ferocactus wislizeni* Britton & Rose), 45 (color photograph), 46 (Page 573), 48 (genus), 58, 63 (012210 - color presentation), 77 (color photograph #10), 85 (012210 - color presentation, also recorded as *Ferocactus wislizeni* var. *wislizeni*), 91, 115 (color presentation), 119, 127, **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* Engelmann var. *oliviae* (Orcutt) L. Benson, Pages 173, color photograph: Plate 95, Page 113, and *Mammillaria microcarpa* Engelmann, Page 179, color photograph: Plate 99, Page 114), 28 (recorded as *Mammillaria microcarpa*, color photograph), 43 (012210), 45 (color photograph), 46 (recorded as *Mammillaria microcarpa* Engelm., Page 578 and *Mammillaria oliviae* Orcutt, Page 578), 48 (genus), 58 (recorded as *Mammillaria microcarpa* Engelm.), 63 (012210 - color presentation), 77 (color photograph #11), 85 (012210 - restricted distribution information, color presentation), 86 (recorded as *Mammillaria microcarpa*, color photograph), 115 (color presentation), 119 (recorded as *Neomammillaria microcarpa* (Engelm.) B. & R., *Neomammillaria milleri* B. & R.), 127, **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*)

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

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

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

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

Opuntia arbuscula (see *Cylindropuntia arbuscula*)

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

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

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

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

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

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

Opuntia leptocaulis (see *Cylindropuntia leptocaulis*)

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

Opuntia spinosior (see *Cylindropuntia spinosior*)

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

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

Chenopodiaceae: The Goosefoot Family

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

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

January, four for mid-November, one for late November and one for early December); the mature four-winged fruits (0.4 to 1 inch square bracts) are green or yellow-green drying to pale brown or tan. HABITAT: Within the range of this species it has been reported from mountains; rocky mountainsides; mesas; rocky plateaus; along rocky, rocky-sandy and sandy rims; cliffs; rocky, sandy and clayey canyons; sandy canyon walls; sandy and clayey canyon bottoms; gorges; rocky scree; talus slopes; along gravelly-sandy bluffs; knolls; rocky ledges; rocky ridges; rocky-sandy, rocky-loamy and sandy ridgetops; meadows; foothills; rocky, gravelly-sandy and silty-loamy hills; rocky-gravelly hilltops; bouldery, rocky, gravelly and clayey hillsides; bedrock, bouldery, rocky, rocky-sandy, shaley, stony-loamy, cindery, sandy, sandy-loamy, sandy-loamy-silty-powdery, sandy-clayey, sandy-silty, clayey and silty-loamy slopes; alluvial fans; sandy bajadas; rocky and gypsum outcrops; amongst rocks; sandy lava flows; sand hills; sand dunes; blow-sand deposits; bouldery debris flows; sandy and sandy-loamy plains; rocky, gravelly, gravelly-loamy, sandy, sandy-loamy and clayey flats; basins; sandy and sandy-loamy valley floors; coastal dunes; sandy coastal plains; coastal flats; coastal saltmarshes; along rocky, gravelly, gravelly-sandy, sandy and sandy-loamy roadsides; arroyos; bottoms of arroyos; draws; gulches; ravines; seeps; around springs; streambeds; along creeks; along sandy creekbeds; along rivers; sandy riverbeds; along rocky and sandy washes; along and in drainages; lakebeds; playas; freshwater and saltwater marshes; around and in swamps; depressions; clayey pans; sinks; swales; along gravelly-sandy, sandy and clayey banks of arroyos, rivers and drainages; cindery edges of washes, ponds, lakes and salt marshes; margins of drainages; gravel bars; beaches; sandy and clayey benches; sandy-loamy terraces; sandy bottomlands; Galleta lowlands; floodplains; mesquite bosques; ditches; sandy riparian areas, and disturbed areas growing in muddy and moist and dry bouldery, rocky, rocky-gravelly, rocky-sandy, shaley, cindery, gravelly, gravelly-sandy and sandy ground; rocky loam, stony loam, gravelly loam, sandy loam, clayey loam, silty loam and loam ground; sandy clay and clay ground; rocky silty, sandy silty and silty ground, and sandy-loamy-silty powdery ground, occurring from sea level to 8,800 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. This plant was reported to have been utilized by native peoples of North America and could be investigated to determine its value as a home garden or commercial food, fodder, cooking agent (ashes used in place of baking soda and also to give a greenish-blue color to dough), spice and/or dye crop; it was also noted as having been used as tools, as a drug or medication, to make ceremonial items (including prayer sticks - pahos) and as a commodity used in personal hygiene. The life span of the Fourwing Saltbush has been reported to be from 29 to over 100 years. Fourwing Saltbush may be useful in controlling erosion. Mule Deer (*Odocoileus hemionus*), White-tailed Deer (*Odocoileus virginianus*), Elk (*Cervus elaphus*), Black-tailed Jackrabbits (*Lepus californicus*), Pronghorn (*Antilocapra americana*), and Bighorn Sheep (*Ovis canadensis*); as well as, other small mammals browse this plant, and Grouse, Gray Partridge (*Perdis perdix*), Scaled Quail (*Callipepla squamata*) and other birds as well as Kangaroo Rats, Pocket Mice and other small rodents feed on the seeds. This plant is a larval food plant for the Pygmy Blue (*Brefidium exile*). Possible predation was reported by the exotic Puncturevine Seed Weevil (*Microlarinus lareynii*). The keying out of Four-wing Saltbushes may be difficult due to intraspecific variation and introgression with other saltbush species. *Atriplex canescens* is native to west-central and southern North America. *5, 6, 13, 15, 16, 18, 26 (color photograph), 28 (color photograph), 43 (012710), 46 (Page 259), 48, 63 (012710 - color presentation), 77, 82, 85 (012710 - color presentation), 91 ("As a secondary or facultative absorber of selenium, *Atriplex canescens* can be mildly poisonous to livestock where selenium occurs in the soil."), 115 (color presentation), 127, **HR***

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

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

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

Salsola australis (see *Salsola tragus*)

Salsola iberica (see *Salsola tragus*)

Salsola kali (see *Salsola tragus*)

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

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

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

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

SYNONYMY: *Salsola australis* R. Brown, *Salsola iberica* (f. Sennen & C. Pau) V.P. Botschantzev ex S.K. Czerepanov, *Salsola kali* C. Linnaeus, *Salsola kali* C. Linnaeus subsp. *tenuifolia* C.H. Moquis-Tandon, *Salsola kali* C. Linnaeus var. *tenuifolia* I.F. Tausch, *Salsola kali* C. Linnaeus subsp. *tragus* (C. Linnaeus) L.J. Čelakovský. COMMON NAMES: Cardo Ruso, Chamiso, Chamiso Valador, Ci Sha Peng (transcribed Chinese), Coast Saltwort, Common Russian Thistle, Hari Hijikii (transcribed Japanese), Leap the Field; Prickly Russian Thistle, Russian-cactus, Russian Thistle, Russian-thistle, Russian Tumbleweed, Soude Epineuse (French), Soude Roulante (French), Spineless Saltwort, Tumbleweed, Tumbling Thistle, Ukraine Salzkraut (German), Volador, Wind Witch. DESCRIPTION: Terrestrial annual forb/herb (2 inches to 7 feet in height, plants were observed that were 4 feet in height and 3 feet in width); the foliage may be blue-green, green, grayish-green, purple or red striped, reddish-purple or yellow-green; the inconspicuous flowers (without petals) are brown, pale green, green, green-red, pink, white, whitish, whitish-green, white-pink, white-yellow or yellowish-green; flowering generally takes place between late April and mid-November (additional records: one for early February, one record

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

Fabaceae (Leguminosae): The Pea Family

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

SYNONYMY: *Vachellia constricta* (G. Bentham) D.S. Seigler & J.E. Ebinger. COMMON NAMES: All-thorn Acacia, Chaparo Prieta, Chaparro Prieto, Common Whitethorn, Garabato, Gidag (Tohono O'odham), Gigantillo, Huisache, Largoncillo, Mescat Acacia, Twinthorn Acacia, Vara Prieta, Vinorama, Whitethorn Acacia, White Thorn, Yellow Cat Claw. DESCRIPTION: Terrestrial perennial deciduous (drought and cold) shrub or tree (1 to 20 feet in height with crowns to about the same in width,

one plant was described as being 8 feet in height with a crown 8 feet in width); the bark may be light gray, mahogany or nearly black; the stems may be red; the spines on the branches and stems are gray or white; the small pinnate leaves are green; the small flowers have been described as being golden, golden-yellow, orange-yellow, light yellow, yellow or yellowish-orange; flowering generally takes place between late March and late October (additional records: two for early March and one for late December); the seedpods are brown, purple-red, reddish or rusty-brown. HABITAT: Within the range of this species it has been reported from mountains; mesas; cliffs; canyons; canyon sides; sandy canyon bottoms; sandy ridges; foothills; rocky and gravelly hills; bouldery hilltops; rocky and gravelly hillsides; escarpments; rocky, rocky-clayey-loamy and clayey-loamy slopes; gravelly bajadas; rocky outcrops; amongst boulders; sandy-loamy plains; gravelly flats; valley floors; coastal plains; along rocky, rocky-gravelly-loamy, rocky-gravelly-clayey loam, rocky-clayey-loamy, gravelly, gravelly-sandy, gravelly-sandy-loamy, gravelly-sandy-clayey-loamy, gravelly-loamy, gravelly-clayey loam and sandy roadsides; along and in rocky arroyos; bottoms of arroyos; rocky gulches; along streambeds; creeks; along and in sandy creekbeds; rivers; along and in gravelly, gravelly-sandy, sandy and silty-clayey washes; drainages; swales; along gravelly-sandy and sandy banks of streams, creeks, rivers and washes; along edges of washes; rocky margins of arroyos and washes; mudflats; benches; alluvial terraces; sandy bottomlands; floodplains; mesquite bosques; riparian areas, and disturbed areas growing in dry bouldery, rocky, rocky-sandy, gravelly, gravelly-sandy and sandy ground; rocky-gravelly loam, rocky-gravelly-clayey loam, rocky-clayey loam, gravelly loam, gravelly-sandy loam, gravelly-sandy-clayey loam, gravelly-clayey loam, sandy loam, sandy-clayey loam, clayey loam and loam ground, and silty clay ground, occurring from 1,100 to 6,500 feet (infrequently as low as 500 feet and as high as 9,200 feet) in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat, plants may live to be more than 72 years of age and the flowers may be fragrant. Whitethorn Acacia is used for food (but not extensively) by the Desert Mule Deer (*Odocoileus hemionus*) and Scaled Quail (*Callipepla squamata*), Merriam's Kangaroo Rats (*Dipodomys merriami*), Bailey's Pocket Mice (*Chaetodipus baileyi*) and Rock Pocket Mice (*Chaetodipus intermedius*) as well as a variety of other birds and mammals feed on the seeds. *Acacia constricta* is native to southwest-central and southern North America. *5, 6, 13 (color photograph), 15, 16, 18, 26 (color photograph), 28 (color photograph), 43 (080409), 46 (Page 399), 48, 53 (note under *Acacia farnesiana*), 63 (020710 - color presentation), 68, 77, 80 (This species is listed as a Major Poisonous Range Plant. "The plants are high in cyanide forming-compounds and have been reported to cause death of cattle in Arizona. In general, the plants are not palatable to livestock although the pods are grazed. However, in the fall of the year at or near frost time, when the range grasses become less palatable, cattle may eat heavily of these plants and death is likely to result. ... Animals should be removed from heavily infested areas during the early frost period or considerable death losses may occur." See text for additional information.), 85 (020710 - color presentation), 91, 115 (color presentation), 134, **WTK** (July 4, 2005)*

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

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

SYNONYMY: *Acacia greggii* A. Gray var. *arizonica* D. Isely. COMMON NAMES: Acacia, Algarroba, Arizona Acacia (applied to var. *greggii*), Cat Claw, Cat Claw Acacia, Catclaw, Catclaw Acacia, Cat's-claw, Devil's Catclaw, Devil's Claw, Devil's-claw, Devilsclaw, Di:s (Seri), Gatuno, Gregg Catclaw, Gregg's Acacia, Tearblanket, Tepame, Tesota, Texas Catclaw, Texas Mimosa, Una de Gato, Wait-a-minute, Wait-a-minute Bush. DESCRIPTION: Terrestrial perennial winter-deciduous shrub or tree (40 inches to 25 feet in height with a broad crown); the bark is gray-black or red-brown; the leaves are gray-green or green; the flowers may be cream, cream-white, cream-yellow, green, greenish-yellow, lemon-yellow, white, yellow, yellow-cream or yellow-green in catkins; flowering generally takes place between early March and mid-July (additional record: one for mid-October); the mature fruits (straight or twisted pods) are brown or brownish-red. HABITAT: Within the range of this species it has been reported from

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

Cercidium floridum (see *Parkinsonia florida*)

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

Cercidium microphyllum (see *Parkinsonia microphylla*)

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

COMMON NAMES: Arizona Ironwood, Comitin, Desert Iron Wood, Desert Ironwood, Ho Id Cam (Pima), Ironwood, Palo de Hierro, Palo-de-hierro, Palo Fierro, Tesota. DESCRIPTION: Terrestrial perennial evergreen shrub or tree (10 to 33 feet in height); the bark is gray; the twigs are gray, green or yellow-green becoming light brown; the leaves are bluish-green, gray or gray-green; the flowers may be (½ inch in length) blue & white, lavender, pink, pink-lavender, purplish, rose-purple & whitish, violet, white or yellowish; flowering generally takes place between early April and late June (additional records: one for early January, one for early March and one for mid-July) with flowering lasting for a few weeks, the mature seedpods (2 to 2½ inches in length) are brown. HABITAT: Within the range of this species it has been reported from mountains; rocky mountaintops; gravelly and sandy mesas; rocky and sandy canyons; canyon bottoms; along bluffs; buttes; ridges; ridgetops; rocky foothills; hills; rocky hillsides; rocky, rocky-sandy and gravelly slopes; bajadas; rocky outcrops; amongst boulders; sand dunes; plains; rocky, gravelly and sandy flats; valley floors; roadsides; rocky and sandy arroyos; around seeping streams; along and in rocky, rocky-sandy, gravelly, gravelly-sandy and sandy washes; along gravelly-sandy and sandy banks of washes; along edges of washes; margins of washes; shores of oceans; benches; terraces; floodplains, and gravelly riparian areas growing in dry desert pavement and bouldery, rocky, gravelly, gravelly-sandy and sandy ground, occurring from sea level to 3,200 feet in elevation in the scrub

and desertscrub ecological formation. NOTES: This plant may be an attractive component of a restored native habitat. This plant was reported to have been utilized by native peoples of North America and could be investigated to determine its value as a home garden or commercial food and/or fiber crop; it was also noted as having been used as fuel, tools, and for musical instruments. The trees are browsed by Bighorn Sheep (*Ovis canadensis*). Hummingbirds including the Costa's Hummingbird (*Calypte costae*), Carpenter Bees (*Xylocopa* spp.) and the Solitary Bee (*Centris pallida*) have been observed visiting the flowers. The seeds are an important food for the Desert Wood Rat (*Neotoma lepida*) and other desert animals. *Olneya tesota* is native to southwest-central and southern North America. *5, 6, 10, 13, 16, 18, 26 (color photograph), 28 (color photograph), 43 (021310), 46 (Pages 442-443), 48, 52 (color photograph), 53, 63 (021310 - color presentation), 77, 85 (021310 - color presentation), 91, 115 (color presentation), 127, **HR***

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

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

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

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

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

SYNONYMY: *Cercidium microphyllum* (J. Torrey) J.N. Rose & I.M. Johnston. COMMON NAMES: Dipua, Foothill Palo Verde, Foothill Paloverde, Hillside Paloverde, Horsebean, Kuk Cehedagi (Tohono O'odham), Little Horsebean, Littleleaf Horsebean, Little Leaf Paloverde, Little-leaf Palo Verde, Little-leaf Palo-verde, Little-leaf Paloverde, Littleleaf Palo Verde, Littleleaf Paloverde, Palo Verde (Spanish for Green Pole, Green Stick or Green Tree), Palo-verde, Paloverde, Yellow-Palo-verde, Yellow Paloverde. DESCRIPTION: Terrestrial perennial drought deciduous shrub or tree (40 inches to 26 feet in height with a crown diameter of 12 to 18, one plant was described as being 6 feet in height and 7 feet in width, one plant was described as being 9 feet in height and width, one plant was described as being 16

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

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

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

SYNONYMY: *Prosopis juliflora* (O. Swartz) A.P. de Candolle var. *velutina* (E.O. Wooton) C.S. Sargent. COMMON NAMES: Algarroba, Chachaca, Fluweelprosopis (Afrikaans), Kvi (or possibly Kui - Tohono O'odham), Mesquite, Mezquite, Mizquitl, Velvet Mesquite. DESCRIPTION: Terrestrial perennial deciduous shrub or tree (2 to 56 feet in height, one plant was reported to be 6½ feet in height with a canopy 6½ feet in width, one plant was reported to be 13 feet in height with a canopy 16½ feet in width, one tree was reported to be 20 feet in height and 40 feet in width); the bark on the trunk and older branches is dark brown, dark brownish-green or dark gray; the leaves are gray-green; the flowers (cylindrical spikes 2 to 5 inches in length) are cream, cream-yellow, green-yellow, greenish-white, pale yellow, yellow, yellow-green or yellowish-green; flowering generally takes place between mid-March and

late August (additional records: one for early October and one for early November); the mature seedpods (3 to 8 inches in length) are red, tan, yellow or mottled. HABITAT: Within the range of this species it has been reported from mountains; mesas; plateaus; canyons; along sandy canyon bottoms; rocky bases of cliffs; buttes; rocky and sandy ridges; foothills; rocky hills; rocky hillsides; rocky and rocky-loamy slopes; alluvial fans; gravelly bajadas; rocky outcrops; rocky plains; gravelly and sandy flats; sandy valley floors; valley bottoms; along rocky-gravelly-loamy, gravelly-clayey-sandy-loamy and silty-clayey roadsides; along and in sandy arroyos; rocky-gravelly-loamy draws; seeps; springs; around seeping streams; along streams; along rocky streambeds; along creeks; creekbeds; along rivers; along rocky-sandy riverbeds; along and in rocky, gravelly-sandy and sandy washes; along drainages; within drainage ways; playas; cienegas; banks of streams, creeks and rivers; gravelly and sandy edges of rivers, washes and ponds; sandy-loamy benches; gravelly and gravelly-sandy terraces; bottomlands; floodplains; mesquite bosques; along fencelines; around stock tanks; around reservoirs; along canals; canal banks; ditches; along ditch banks; riparian areas, and disturbed areas growing in dry rocky, rocky-gravelly, rocky-sandy, gravelly, gravelly-sandy and sandy ground; rocky loam, rocky-gravelly loam, gravelly-clayey-sandy loam, sandy loam, clayey loam and loam ground; silty clay ground, and sandy silty, clayey silty and silty ground, occurring from 100 to 6,300 feet in elevation in the woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat, it may live to be more than several hundred years of age. This plant was reported to have been utilized by native peoples of North America and could be investigated to determine its value as a home garden or commercial food, beverage, fiber and/or dye or paint (boiled resin used as a pottery paint) crop; it was also noted as having been used as fuel, as a tool, as toys, as a drug or medication and as a guide for determining a planting season. The Velvet Mesquite is a common "nurse plant" of the Saguaro or Giant Cactus (*Carnegiea gigantea*). Much of the mesquite forest (bosques) originally found along the desert water courses have been lost to fuel wood cutting and clearing for agricultural fields and commercial and residential development. Velvet Mesquite Bosques were small, open, park-like woodlands with the Velvet Mesquite often occurring in nearly pure stands and interspersed with other common species such as the Netleaf Hackberry (*Celtis laevigata* var. *reticulata*), Catclaw Acacia (*Acacia greggii* var. *greggii*), Mexican Elder (*Sambucus nigra* subsp. *canadensis*), Desert Hackberry (*Celtis ehrenbergiana*), Greythorn (*Ziziphus obtusifolia* var. *canescens*), Wolfberry (*Lycium* spp.), Four-wing Salt-bush (*Atriplex canescens*) and Vine Mesquite Grass (*Panicum obtusum*). The Velvet Mesquite provides food and shelter for many species of wildlife. The plant is a food source for quail, Desert Mule Deer (*Odocoileus hemionus crooki*) and Desert Bighorn Sheep (*Ovis canadensis mexicana*). Coyotes (*Canis latrans*), Round-tailed Ground Squirrels (*Spermophilus tereticaudus*), Desert Cottontails (*Sylvilagus audubonii*) and many other wild animals feed on the seed pods. Velvet Mesquite is the host for a Drywood Termite (*Incisitermes banksi*). Bruchid Beetles feed on the fruits and seeds. *Prosopis velutina* is native to southwest-central and southern North America. *5, 6, 13 (recorded as *Prosopis juliflora* (Swartz) DC. var. *velutina* (Wooton) Sarg., color photograph), 15, 16, 18, 26 (color photograph), 28 (color photograph), 43 (071609), 46 (recorded as *Prosopis juliflora* (Swartz) DC. var. *velutina* (Wooton) Sarg., Page 402), 48, 52 (color photograph), 53 (species: recorded as *Prosopis juliflora* (Sw.) DC.), 58, 63 (021610), 68, 77, 80 (This species is listed as a Rarely Poisonous and Suspected Poisonous Range Plant. "Heavy, long-continued consumption of pods and leaves of these common desert shrubs may cause rumen impaction and poisoning."), 85 (021610 - color presentation), 91), 115 (color presentation), 127, 134, ADS (Arizona Daily Star, Sunday, July 26, 2009, Tucson & Region, B1: Mesquite Pods are of Consuming Interest), **WTK** (July 4, 2005)*

Vachellia constricta (see *Acacia constricta*)

Fouquieriaceae: The Ocotillo Family

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

SYNONYMY: *Fouquieria splendens* G. Engelmann subsp. *splendens* G. Engelmann. COMMON NAMES: Albarda, Barda, Barda, Candle Bush, Candlewood, Coach Whip, Coach-whip, Coachwhip, Coachwhip Cactus, Flamingsword, Jacob's Staff, Monkey-tail, Ocotillo, Ocotillo del Corral, Slimwood, Vine-cactus, Vine Cactus. DESCRIPTION: Terrestrial perennial cold- and drought-deciduous semi- and stem-succulent shrub (5 to 33 feet in height with a crown width of 5 to 15 feet); the stems (cluster of 5 to 100 wand-like stems branching from the base) are gray, gray & dark gray, gray-green or green; the leaves are green; the flowers (2 to 10 inch long clusters at the tips of the stems) may be coral-red, cream, cream-white, orange, orange-red, pinkish-purple, red, reddish-orange, red & yellow, salmon, scarlet, scarlet-coral, white or yellow; flowering generally takes place over a period of 50 to 60 days between early February and early June (additional records: two for late June, two for early July, one for mid-July, one for late July, one for early August, one for late August, two for mid-September, one for late September, one for mid-October, two for late October, two for early November and two for early December); the mature fruits are capsules containing winged seeds. HABITAT: Within the range of this species it has been reported from mountains; mountainsides; gravelly-sandy and sandy mesas; crags; canyon rims; cliffs; bouldery and rocky canyons; crevices in rocks; gravelly ridges; rocky ridgetops; ridgelines; foothills; rocky and rocky-sandy hills; rocky hilltops; rocky and gravelly hillsides; bedrock, bouldery-cobbly, rocky, rocky-gravelly, shaley-sandy, stony, gravelly, gravelly-sandy and gravelly-loamy slopes; alluvial fans; rocky and sandy bajadas; rocky outcrops; amongst boulders; lava flows; sand hills; sand dunes; dune swales; gravelly outwash fans; gravelly and sandy plains; gravelly and gravelly-sandy flats; basins; rocky and sandy valley floors; valley bottoms; along gravelly roadsides; rocky arroyos; gullies; along rivers; along sandy washes; bedrock, bouldery-cobbly and sandy banks of rivers and washes; rocky-sandy shores of lakes; benches; along floodplains and riparian areas growing in dry desert pavement; bouldery, bouldery-cobbly, rocky, rocky-gravelly, rocky-sandy, shaley-sandy, stony, gravelly, gravelly-sandy and sandy ground; gravelly loam ground, and clay ground, occurring from sea level to 7,500 feet in elevation in the woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. This plant was reported to have been utilized by native peoples of North America and could be investigated to determine its value as a home garden or commercial food, beverage and/or fiber crop; it was also noted as having been used as a fuel, tool, drug or medication, ceremonial item and as an ornamental landscape plant. Older plants may be 150 to 200 years of age. This "vase-shaped" plant has been described by Benson and Darrow as being "one of the most distinctive shrubs in the Southwestern Deserts, and it is one of the plants giving outstanding character to the flora of the region". Desert Bighorn Sheep (*Ovis canadensis* subsp. *mexicana*), Mule Deer (*Odocoileus hemionus*) and Whitetailed Deer (*Odocoileus virginianus* subsp. *couesi*) browse this plant. The Broad-billed Hummingbird (*Cynanthus latirostris*), Butterflies, Carpenter Bee (*Xylocopa californica*), Costa's Hummingbird (*Calypte costae*), Finches, Orioles, Rufous Hummingbird (*Selasphorus rufus*), Solitary Bees, Syrphid Flies, Verdins, and Warblers have been observed visiting the flowers. The Ocotillo is a preferred food plant of the Costa's Hummingbird. *Fouquieria splendens* is native to southwest-central and southern North America. *5, 6, 10, 13 (color photograph: Plate N), 15, 16, 18, 26 (color photograph), 28 (color photograph), 43 (080309), 45 (color photograph), 46 (Page 640), 48, 58, 63 (021810 - color presentation), 77 (color photograph #27), 85 (021810 - color presentation), 86 (color photograph), 91, 106 (021810 - color presentation), 107, 115 (color presentation), 127, **HR***

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

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***

Solanaceae: The Potato Family

***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***

***Solanum elaeagnifolium* A.J. Cavanilles: Silverleaf Nightshade**

COMMON NAMES: Arrebenta-cavalo (Portuguese), Bull Nettle, Bull-nettle, Bullnettle, Desert Nightshade, Melãozinho-do-campo (Portuguese), Prairie-berry, Satansbos (Afrikaans), Silver Horse Nettle, Silver Horse-nettle, Silver Horsenettle, Silverleaf Bitter-apple, Silverleaf Nightshade, Silverleaf-nettle, Tomato Weed, Trompillo (Spanish), White Horse Nettle, White Horse-nettle, White Horsenettle. DESCRIPTION: Terrestrial perennial forb/herb or subshrub (8 inches to 2 feet in height, plants were described as being 8 inches in height and 2 to 4 inches in width, plants were observed and described as being 10 to 12 inches in height and width, plants were observed and described as being 16 inches in height and 8 inches in width); the leaves are bluish-gray, gray, grayish-green, greenish-gray or silvery; the star-like flowers (¾ to 1½ inch in diameter) may be light blue, blue, blue-lavender, blue-purple, dark blue,

bluish-purple, bluish-violet, lavender, lavender-purple, light purple, purple, dark purple, violet, deep violet, violet-purple or white; the anthers are yellow; flowering generally takes place between late March and early November (additional records: one for mid-February, one for early March and one for late November); the mature fruits (1/3 to 1/2 inch in diameter) are a golden, golden-brown, orange, orange-yellow or yellow berry. HABITAT: Within the range of this species it has been reported from mountains; mountaintops; sandy mesas; sandy plateaus; tablelands; rocky-sandy rims of craters; rocky canyons; canyonsides; along bouldery-sandy, rocky and sandy canyon bottoms; chasms; rocky-sandy and sandy ridges; sandy-loamy bosques; sandy meadows; rocky foothills; hills; rocky and gravelly hillsides; along rocky, rocky-gravelly, gravelly-sandy and sandy slopes; sandy-clayey-loamy bajadas; sandy lava flows; sand dunes; prairies; plains; gravelly-loamy, sandy, loamy, clayey and silty flats; basins; shaley-silty valley floors; along railroad right-of-ways; in roadways; along rocky, gravelly, gravelly-sandy, gravelly-sandy-clayey-loamy, gravelly-loamy, sandy and clayey roadsides; arroyos; clayey bottoms of arroyos; silty bottoms of draws; springs; sandy streambeds; along creeks; rocky-gravelly-sandy and sandy creekbeds; along rivers; bouldery-cobbly-sandy and rocky-sandy riverbeds; along and in rocky, gravelly, gravelly-loamy and sandy washes; along pebbly-sandy, sandy and clayey-loamy drainages; along drainage ways; cienegas; swampy areas; swales; sandy and clayey banks of arroyos and rivers; clayey edges of playas and cienegas; margins of rivers; rocky-sandy, gravelly and sandy-loamy shores of ponds, lakes and playas; sandy beaches; benches; sandy terraces; sandy bottomlands; sandy floodplains; mesquite bosques; along stony fencelines; around stock tanks; clayey levees; along ditches; along stony ditch banks; bouldery-cobbly-sandy and sandy riparian areas; waste places, and disturbed areas growing in moist and dry bouldery-cobbly-sandy, bouldery-sandy, rocky, rocky-gravelly, rocky-gravelly-sandy, rocky-sandy, stony, gravelly, gravelly-sandy, pebbly-sandy and sandy ground; gravelly loam, gravelly-sandy-clayey loam, gravelly-clayey loam, gravelly-silty loam, sandy loam, sandy-clayey loam, clayey loam and loam ground; sandy clay and clay ground, and rocky silty, shaley silty and silty ground, occurring from sea level to 7,200 feet in elevation in the woodland, scrub; grassland, desertscrub and wetland ecological formations. NOTES: The Silverleaf Nightshade may or may not be native to either Arizona or North America. This plant was reported to have been utilized by native peoples of North America; it was noted as having been used as a food (berries used as a rennet to curdle milk), as a drug or medication and the dried berries were worn as jewelry. The green fruits may be poisonous. *Solanum elaeagnifolium* is native to southern South America. *5, 6, 15, 16, 18 (genus), 28 (color photograph), 43 (073009), 46 (Page 758), 58, 63 (050610 - color presentation), 68, 77, 80 (This species is listed as a Secondary Poisonous Range Plant. "The toxic principle in these species is a glycoalkaloid to which the name solanine is applied. The toxicity of a given species may vary considerably. ... Poisoning by *Solanum* species does not always terminate in death. In the acute poisoning, nervous symptoms rapidly build to a maximum, and death or recovery occurs within a few hours to one or two days. Death is the result of paralysis. ... Where the plants are known to exist, animals should be watched closely for symptoms. The best control is to grub out the plants and remove them from the area. This should be done prior to seed development to prevent additional seeding."), 85 (050610 - color presentation), 86 (color photograph), 97, 101 (color photograph), 115 (color presentation), 127, **HR***

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 Velvet Mesquite, and commonly reported as growing on: *Acacia spp.* (*Acacia constricta*, Whtitethorn Acacia; *Acacia farnesiana*, Sweet Acacia, and *Acacia greggii*, Catclaw Acacia); *Condalia spp.* (*Condalia globosa*, Bitter Snakewood and *Condalia warnockii*, Kearney Snakewood); *Larrea tridentata*, Creosote Bush; *Olneya tesota*, Desert Ironwood; *Parkinsonia spp.* (*Parkinsonia aculeata*, Jerusalem Thorn; *Parkinsonia florida*, Blue Palo Verde; *Parkinsonia microphylla*, Yellow Palo Verde, and *Parkinsonia praecox*, Sonoran Palo Verde); *Prosopis spp.* (*Prosopis glandulosa*, Honey Mesquite; *Prosopis pubescens*, Screwbean Mesquite, and *Prosopis velutina*, Velvet Mesquite); *Simmondsia chinensis*, Jojoba, and *Ziziphus obtusifolia*, Lotebush, occurring from sea level to 5,100 feet in elevation in the woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant was reported to have been utilized by native peoples of North America; it was noted as having been used as a food (berries) and as a drug or medication. When removing the Mesquite Mistletoe from the trees and shrubs on your property don't remove all of it, consider leaving some of the plants for the wildlife. The Phainopepla (*Phainopepla nitens*) feeds on the berries and disperses the seeds to other host plants and Verdins nest in the stems. *Phoradendron californicum* is native to southwest-central and southern North America. *5, 6, 13 (color photograph), 15, 16, 28 (color photograph), 43 (051710 - *Phoradendron californicum* var. *distans* Trel. in Trel.), 46 (recorded as *Phoradendron californicum* Nutt., Page 224 and *Phoradendron californicum* Nutt. var. *distans* Trelease, Page 224), 58, 63 (051410 - color presentation), 77, 80 (Species of the genus *Phoradendron* are considered to be Rarely Poisonous and Suspected Poisonous Range Plants. "Cattle may be killed by browsing these parasitic forbs, but plants are unpalatable and poisoning is rare. Also children may be poisoned by eating the berries."), 85 (051410 - color presentation), 97, 115 (color presentation), 127, **WTK** (July 4, 2005)*

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

Zygophyllaceae: The Creosote-bush Family

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

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

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

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

rocky-sandy silty and silty ground, occurring from below sea level to 5,000 feet in elevation in the woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: This plant may be an attractive component of a restored native habitat. This plant was reported to have been utilized by native peoples of North America; it was noted as having been used as a building material, as tools, in the making of brooms, brushes and musical instruments, as a drug or medication and in body art. Older stems of the Creosote Bush may be 40 to 90 years of age. Using Creosote Bush in the restoration of disturbed sites may increase water infiltration and storage, transplants recommended over spot-seeding and rodent protection for the transplanted seedlings is necessary. When planting a Creosote Bush consider planting a small Desert Night-blooming Cereus (*Peniocereus greggii* var. *transmontanus*) at the base of the plant. The branches will provide support and the roots will protect the tuber of the cereus from hungry Javelinas. The Creosote Bush is the characteristic plant of the southwestern deserts in North America with its distribution very closely delineating the desert regions. As the Creosote Bush ages the older central stems of the plant die off and new stems form at the outer edge of the crown. New stems are not created at the center of the plant. As the crown of the plant expands a "clonal ring", made up of genetically identical individual shrublets, develops which continues the outward expansion of the ring eventually reaching several yards in diameter. It has been estimated that some of the older rings approach from 9,400 to 11,700 years of age. The Creosote Bush provides cover for many animals; Lac Scale insects (*Tachardiella larreae*), jackrabbits, desert woodrats and other small mammals feed on this plant; stem galls are produced in response to the Creosote Gall midge (*Asphondylia* sp.), and the Desert Tortoise (*Gopherus agassizi*) often digs its shelter under the base of the plant where the roots help to stabilize the soil. *Larrea tridentata* var. *tridentata* is native to southwest-central and southern North America. *5, 6, 13 (color photograph), 16, 18, 26 (species, recorded as *Larrea tridentata*, color photograph of species), 28 (species, recorded as *Larrea tridentata*, color photograph of species), 43 (051710 - *Larrea tridentata* Coville, *Larrea divaricata* Cav. subsp. *tridentata* (Sessé & Moc. ex DC.) Felger), 46 (species, recorded as *Larrea tridentata* (DC.) Coville: "An outstanding xerophyte and a very important element of the perennial desert flora in southern and western Arizona. ... Creosote-bush has a strong characteristic odor, especially noticeable when the foliage is wet. The plant is ordinarily not touched by livestock, although it is reported that sheep, especially pregnant ewes, have been killed by partaking of it. This plant is reported to cause dermatitis in exceptional persons who are allergic to it.", Page 491), 48, 63 (051610 - color presentation), 77 (color photograph #101), 80 (This species is listed under Rarely Poisonous and Suspected Poisonous Range Plants. "Early reports accusing this common desert shrub of being poisonous have been proven wrong."), 85 (051610 - color presentation), 91, 101 (species, color photograph of species), 107, 115 (color presentation), 127, **WTK** (July 4, 2005)*

***Tribulus terrestris* C. Linnaeus: Puncturevine**

COMMON NAMES: Abrojos (Spanish), Abrojo de Flor Amarilla, Bemo K'yatchipba (Zuni - "grass round' refers to the rounded spiny fruits), 'Bull-head, Bullhead, Bur-nut, Burnut, Cadillo, Caltrop, Cat's-head, Common Doubletjie, Devil's-thorn, Devil's-weed, Espigón (Spanish), Goathead, Goat-heads, Goat's Head, Gokhru (India), Ground Bur-nut, Ji Li (transcribed Chinese), Mexican Sandbur, Puncture Vine, Puncture-vine, Puncturevine, Puncture Weed, Tackweed, Texas Sandbur, Toboso, Torito, Torrito, Tribule Terrestre (French), Tribulus. DESCRIPTION: Terrestrial annual forb/herb (prostrate, mat forming stems to 2 inches in height and 6 inches to 8 feet in length); the stems may be reddish; the foliage is green or dark green; the small flowers (¼ to ½ inch in diameter) may be greenish-yellow, orange or yellow; flowering generally takes place between late April and early November (additional records: one for early January (southern hemisphere), two for early February, one for mid-March, two for early April, one for early December and one for late December); the star-shaped seedpod is made up of 5 nutlets which separate ate maturity, each of the nutlets having two very sharp, stout, vicious spines. HABITAT: Within the range of this species it has been reported from mountains; mountainsides; sandy mesas; rocky canyons; talus; ridge crests; gravelly hills; rocky hillsides; rocky, sandy, sandy-loamy and clayey slopes; rocky alluvial fans; sand dunes; sand hummocks; sandy and clayey prairies; gravelly, sandy, clayey and clayey-loamy flats; cobbly-loamy and loamy hollows; clayey and silty valley floors; coastlines; island

beaches; along cindery railroad right-of-ways; rocky roadways; along gravelly, gravelly-loamy, sandy and clayey roadsides; within rocky-sandy-clayey arroyos; sandy bottoms of arroyos; within ravines; springs; along creeks; creekbeds; along rivers; along rocky-cobbly-sandy and sandy riverbeds; along and in gravelly. gravelly-sandy and sandy washes; lakes; silty lakebeds; sinks; swales; banks of creeks, rivers; riverbeds and washes; margins of washes; sandy-loamy shores of ponds; mudflats; sand bars; sandy beaches; benches; rocky-sandy-clayey, sandy-loamy and sandy terraces; bottomlands; floodplains; lowlands; shores of reservoirs; within ditches; along gravelly and clayey-loamy ditch banks; sandy riparian areas; waste places, and disturbed areas growing in dry rocky, rocky-cobbly-sandy, cindery, gravelly, gravelly-sandy and sandy ground; cobbly loam, gravelly loam, sandy loam, clayey loam and loam ground; rocky-sandy clay, gravelly clay and clay ground, and sandy silty and silty ground, occurring from sea level to 10,000 feet in elevation in the forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: EXOTIC Invasive Plant. This plant was reported to have been utilized by native peoples of North America; it was noted as having been used as ceremonial medicine. *Tribulus terrestris* is native to central, eastern and southern Europe; Asia; Africa, and Australia; however, the exact native range is obscure. *5, 6, 15, 16, 28 (color photograph), 43 (051710), 46 (Page 491), 58, 63 (051610 - color presentation), 68, 77, 80 (This species is listed as a Secondary Poisonous Range Plant. "Puncturevine has caused extensive losses of sheep in South Africa, Australia, and the United States due to photosensitization or bighead. In addition, the plant has caused nitrate poisoning in both sheep and cattle and the burs have produced lesions of the mouth and feet. Symptoms of photosensitization observed in the United States include the typical swelling of the head, blindness, dying of the skin, loss of lips and ears, and high mortality among young animals. Losses may be reduced by removing animals from infested ranges, providing shade, feed and water, and keeping the animals quiet."), 85 (051610 - color presentation), 86 (color photograph) 101 (color photograph), 115 (color presentation), 127, **HR***

LISTING OF ANIMALS

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

Operation GAME THIEF: 602-942-3000

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

CLASS MAMMALIA: The MAMMALS

Antilocapridae: The Pronghorn Family

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

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

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

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

Bovidae: The Cow, Sheep and Allies Family

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

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

***Ovis canadensis* subsp. *mexicana* C.H. Merriam: Desert Bighorn Sheep**

COMMON NAMES: Berrego Cimarron (Hispanic), Berrego Cimarron del Desierto (Hispanic), Bighorn, Bighorn Sheep, Desert Bighorn, Desert Bighorn Sheep, Mountain Sheep, Rocky Mountain Bighorn Sheep. HABITS: The species feeds on agave, brittle bush, bursage, bush muhly, cacti, catclaw, cholla, coffeeberry, desert fluffgrass, desert ironwood, desert thorn, fairy duster, filaree, galleta, grama, jojoba, mesquite, mallow, Nevada joint fir, plantain, prickly-pear, ratany, ricegrass, saguaro, saltbush,

threeawn and turpentine broom; young are dropped in small scraped out depressions located in protected places on inaccessible peaks. HABITAT: Within the range of this species it has been reported from the tundra, forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. *14, 55 (species: recorded as *Ovis canadensis* Shaw. Bighorn. Probably formerly statewide in mountainous or rocky situations; presently restricted to scattered low desert mountains."), 65 (species), 73 (species), 100 (color photograph of species, species record), 106 (072306), **118** (recorded as *Ovis canadensis mexicana* Merriam - Distribution: Probably formerly statewide in mountainous situations. Figure 112, Page 257)*

Canidae: The Dog and Allies Family

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

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

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

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

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

Cervidae: The Deer and Allies Family

***Odocoileus hemionus* (C.S. Rafinesque-Schmaltz): Mule Deer**

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

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

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

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

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

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

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

Felidae: The Cat Family

***Felis concolor* (C. Linnaeus): Mountain Lion**

SYNONYMY: *Puma concolor* (C. Linnaeus). COMMON NAMES: American Lion, Brown Tiger, California Lion, Cat-a-Mountain, Catamount, Catamount Cat (a mountain Red Tiger), Cougar, Deer Tiger, El Leon (Mexico), Florida Panther, Ghost Cat, Indian Devil, King Cat, Leon de Montana (Hispanic), Mexican Lion, Mountain Lion, Mountain Screamer, Painted Cat, Painter, Panther; Puma (Indian), Ted Tiger (Belize), Silver Lion, Sneak Cat, Sucuarana (Brazil), Yuma Mountain Lion. HABITS: Feeds on beavers, bighorn sheep, birds, black bears, bobcats, cottontail rabbits, coyotes, deer (its major prey species in Arizona), elk, jackrabbits, javelina, livestock, porcupines, pronghorn, raccoons, skunks and small mammals. Kittens are born in dens located in protected areas such as shallow caves, crevices, downed logs, rock shelters and impenetrable thickets. HABITAT: Within the range of this species it has been reported from the tundra, forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: Running should be curtailed in areas where Mountain Lions are known to frequent, a person running may elicit an attack response from a nearby Mountain Lion. Mountain Lions are extremely agile and have great jumping power and have been reported as being able to leap to a height of 18 feet into a tree. *8 (*Puma concolor* (Linnaeus)), 14 (091108 - *Puma concolor* subspp. *azteca* (Merriam); *hippolestes* (Merriam); *kaibabensis* (Nelson and Goldman), and *stanleyana* (Goldman). The Yuma Mountain Lion (*Felis concolor browni*) is included as a separate record.), **55** (recorded as *Felis concolor* Linnaeus. Mountain Lion. Statewide (200 - 8,000 feet).), 65, 73, 100 (color photograph), 106 (052906), **118** (recorded as *Felis concolor azteca* Merriam - Distribution: Statewide except extreme

western and northwestern parts; *Felis concolor browni* (Merriam) - Distribution: Southwestern part of the state, and *Felis concolor kaibabensis* Nelson and Goldman - Distribution: Northwestern Arizona, north and west of the Colorado River. Figure 105, Page 245), **ADS** (Sunday, April 13, 2008, Section A, Pages 1 and 10, includes a map of recent sightings)*

Felis 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*)

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

***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 - subspp. *estor* Merriam, *hudsonica* (Richardson) and *varians* (Gray)), **55** (recorded as *Mephitis mephitis* (Schreber). Striped Skunk. Statewide (300 - 9,000 feet).), 65 (color photograph), 73, 100 (color photograph), 106 (053006 - genus), 118 (recorded as *Mephitis mephitis estor* Merriam - Distribution: Statewide. Figure 100, Page 239)*

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

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

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

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

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

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

Molossidae: The Free-tailed Bat Family

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

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

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

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

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

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

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

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

(recorded as *Tadarida brasiliensis mexicana* (Saussure) - Distribution: Probably statewide in some part of the year. Figure 26, Page 62)*

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

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

Tadarida femorosacca (see *Nyctinomops femorosacca*)

Tadarida macrotis (see *Nyctinomops macrotis*)

Tadarida molossa (see *Nyctinomops macrotis*)

Muridae: The Mouse and Rat Family

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

Sciuridae: The Squirrel and Allies Family

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

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

Citellus harrisii (see *Ammospermophilus harrisii*)

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

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

Citellus tereticaudus (see *Spermophilus tereticaudus*)

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

Citellus variegatus (see *Spermophilus variegatus*)

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

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

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

dens in underground burrows. HABITAT: Within the range of this species it has been reported from the desertscrub ecological formation. *14, 55 (recorded as *Citellus tereticaudus* Baird. Round-tailed Ground Squirrel. Lower Sonoran Life-zone of the western part of the state (below 3,200 feet).), 65, 73, 100 (color photograph), 106 (053106 - genus), **118** (recorded as *Citellus tereticaudus neglectus* (Merriam) - Distribution: Lower Sonoran Life Zone of southwestern Arizona. Figure 39, Page 90)*

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

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

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

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

Soricidae: The Shrew Fmaily

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

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

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

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

riparian situations.), 65 (species), 73 (species), 100 (species, color photograph of species), 106 (051107 - species), **118** (recorded as *Notiosorex crawfordi crawfordi* (Coues) - Distribution: Probably occurs statewide at elevations below 6000 feet. Figure 5, Page 30)*

Tayassuidae: The Javelina Family

Dicotyles tajacu 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. *horribilus* Ord: Grizzly Bear**

SYNONYMY: *Ursus horribilus* Ord. COMMON NAMES: Apache Grizzly, Arizona Grizzly, Grizzly Bear, Navajo Grizzly, New Mexico Grizzly, Oso Gris (Hispanic), Silvertip Bear, Sonora Grizzly, Texas Grizzly. HABITS: The species feeds on berries, carrion, fish (bass, salmon, trout), fungi, grasses,

insects (Army Cutworm moths), leaves, large mammals (Bison, Black Bear, Caribou, Deer, Elk, Moose, Mountain Goats) and small mammals (rodents), nuts (Whitebark Pine nuts), roots and sprouts. The Grizzly Bear beds down in depressions in thickets. Dens are excavated from under rocks or located in caves, crevices or hollow trees. HABITAT: Within the range of this species it has been reported from tundra, forest, woodland, scrub, grassland, desertscrub and wetland ecological formations. NOTES: The last confirmed "kill" in Arizona was made on the slopes of Mount Baldy (Apache County) in the summer of 1939. Grizzly Bears were killed-off by American immigrants because of the risks posed to humans and livestock. The Grizzly Bear has been EXTIRPATED from Arizona. *14 (050907 - *Ursus arctos* subspp. *horriaeus* (Baird) and *perturbans* (Merriam)), 39 (*Ursus horribilus* - included the following note when referring to Grizzly Bears in the Tucson Area "Jack O'Connor told us of a kill in the Catalinas in 1915. Up until 1912, there were quite a few grizzly bears in the Catalinas and also the Galiuros. The Santa Cruz River bottom was a favorite hangout of these bears, all the way from Nogales to the Tucson area. We have a few authentic reports of desert grizzlies, but Jack talked with some old timers who hunted them in the river bottom." The following dates of last known "kills" were provided: Arizona on September 13, 1935 (however, there was a possible sighting in 1936); California in August 1922; New Mexico has two "last" kills one in the spring of 1923 and the other in 1933; Texas on November 2, 1890, and Utah on August 22, 1923. A grizzly bear was killed in the Sierra del Pinitos in Sonora Mexico, a few miles southeast of Nogales, Arizona, on June 18, 1955. This booklet included the listing of six subspecies taken in Arizona: *Ursus horribilus apache*, the Apache Grizzly; *Ursus horribilus arizonae-merriam*, the Arizona Grizzly; *Ursus horribilus baird*, the New Mexico Grizzly; *Ursus horribilus kennerlyi*, the Sonora Grizzly; *Ursus horribilus navajo*, the Navajo Grizzly, and *Ursus horribilus texensis*, the Texas Grizzly), 40 (*Ursus arctos* - Grizzly Bears were historically present in the Rincon and Santa Catalina Mountains and along the Santa Cruz River bottom from Nogales to Tucson), 55 (*Ursus horribilus* Ord. Grizzly Bear. Formerly throughout the mountainous areas of the state, now extinct in Arizona.), 73 (*Ursus horribilus*), 100 (species: *Ursus arctos*, color photograph), 106 (051207 - *Ursus arctos* subsp. *horribilus* Ord), **118** (*Ursus horribilus* - Distribution: Formerly statewide, now extinct in Arizona. Figure 92, Page 225)*

Ursus arctos (see footnotes 14 and 100 under *Ursus arctos* subsp. *horribilus*)

Ursus horribilus (see *Ursus arctos* subsp. *horribilus*)

Ursus horribilus apache (see footnote 39 under *Ursus arctos* subsp. *horribilus*)

Ursus horribilus arizonae-merriam (see footnote 39 under *Ursus arctos* subsp. *horribilus*)

Ursus horribilus baird (see footnote 39 under *Ursus arctos* subsp. *horribilus*)

Ursus horribilus kennerlyi (see footnote 39 under *Ursus arctos* subsp. *horribilus*)

Ursus horribilus navajo (see footnote 39 under *Ursus arctos* subsp. *horribilus*)

Ursus horribilus texensis (see footnote 39 under *Ursus arctos* subsp. *horribilus*)

Vespertilionidae: The Plain-nosed Bat Family

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

COMMON NAMES: Murcielago Palid (Hispanic), Pallid Bat. HABITS: Feeds on flightless arthropods on the ground, insects, lizards and nectar. Roosts under bridges, buildings, in caves, crevices in cliffs, rocky outcrops, under slabs of rocks, hollow trees and tunnels. HABITAT: Within the range of this species it has been reported from forest, woodland, scrub, grassland, desertscrub and wetland ecological

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

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

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

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

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

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

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

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

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

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

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

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

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

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

(species, color photograph of species), 106 (053106 - genus), **118** (recorded as *Pipistrellus hesperus apus* Elliot - Distribution: Southeastern Arizona. Figure 19, Page 49)*

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

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

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

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

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FOOTNOTES and REFERENCES
for the Species Distribution Listings compiled for Arizona

(1) General Mapping:

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

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

Silver Bell Peak, Arizona – 15 Minute Series Topographic 1959

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

(2) Physiographic Province Mapping:

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

(3) Soils Mapping:

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

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

(4) Biotic Communities Mapping and Definitions

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

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

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

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

(5) Nomenclature:

for Plants:

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

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

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

for Vertebrate Animals:

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

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

for Invertebrate Animals:

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

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

(6) Growth Habits of Plants:

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

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

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

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

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

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

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

Arachnids: 2004. *Albiorix anophthalmus*, a cave obligate Pseudoscorpion.

Birds: 2003. *Accipiter gentilis*, American Goshawk; 2003. *Aimophila quinquestriata*, Five-striped Sparrow; 2002. *Aimophila ruficeps* subsp. *rupicola*: Yuma Rufous-crowned Sparrow; 2001. *Ammodramus bairdii*, Baird's Sparrow; 2001. *Ammodramus savannarum* subsp. *ammolequs*, Arizona Grasshopper Sparrow; 2001. *Anthus spragueii*, Sprgaue's Pipit; 2002. *Aquila chrysaetos*, Golden Eagle; 2000. *Asturina nitida*, Northern Grey Hawk; 2001. *Athene cunicularia* subsp. *hypugaea*, Western Burrowing Owl; 2001. *Buteo regalis*, Ferruginous Hawk; 2001. *Buteo swainsoni*, Swainson's Hawk; 2005. *Buteogallus anthracinus*, Common Black-hawk; 2003. *Caracara cheriway*, Crested Caracara; 2002. *Ceryle alcyon*, Belted Kingfisher; 2001. *Chloroceryle americana*, Green Kingfisher; 2002. *Coccyzus americanus* subsp. *occidentalis*, Western Yellow-billed Cuckoo; 2001-08-27. *Colinus virginianus* subsp. *ridgwayi*, Masked Bobwhite; 2002. *Dendrocygna autumnalis*, Black-bellied Whistling-duck; 2001. *Dendrocygna bicolor*, Fulvous Whistling-duck; 2002. *Dolichonyx oryzivorus*, Bobolink; 2002. *Egretta thula*, Snowy Egret; 2002. *Elanus leucurus*, White-tailed Kite; 2003 *Empidonax fulvifrons* subsp. *pygmaeus*, Northern Buff-breasted Flycatcher; 2003. *Empidonax hammondii*, Hammond's Flycatcher; 2002. *Empidonax traillii* subsp. *extimus*, Southwestern Willow Flycatcher; 1998. *Falco peregrinus* subsp. *anatum*, American Peregrine Falcon; 2001. *Glaucidium brasilianum* subsp. *cactorum*, Cactus Ferruginous Pigmy-owl; 2002. *Haliaeetus leucocephalus*, Bald Eagle; 2004. *Lanius ludovicianus*, Loggerhead Shrike; 2005. *Otus flammeolus*, Flammulated Owl; 2002. *Pandion haliaetus*, Osprey; 2002. *Plegadis chihi*, White-faced Ibis; 2002. *Polioptila nigriceps*, Black-capped Gnatcatcher; 2001. *Rallus longirostris* P. Boddaert subsp. *yumanensis*, Yuma Clapper Rail; 2002. *Setophaga ruticilla*, American Redstart; 2005. *Strix occidentalis* subsp. *lucida*, Mexican Spotted Owl; 2001. *Trogon elegans*, Elegant Trogon; 2003. *Tyrannus melancholicus*, Tropical Kingbird, and 2002. *Vireo bellii* subsp. *arizonae*, Arizona Bell's Vireo.

Dicots: 2000. *Abutilon parishii*, Pima Indian Mallow; 2004. *Ammoselinum giganteum*, Sand Parsley; 2003. *Amoreuxia gonzalezii*, Saiya; 2003. *Amsonia kearneyana*, Kearney's Blue Star; 2004. *Arenaria* aberrans, Mt. Dellenbaugh Sandwort; 1995. *Aster potosinus*, Lemmon's Aster; 2004. *Berberis harrisoniana*, Kofa Barberry; 2000. *Boerhavia* megaptera, Tucson Mountain Spiderling; 2004. *Bursera fagaroides*, Torch Wood Copal; 2003. *Capsicum annuum* var. *glabriusculum*, Chiltepin; 2005. *Castela emoryi*, Crucifixion Thorn; 2004. *Cirsium mohavense*, Mohave Thistle; 2001. *Cleome multicaulis*, Playa Spider Plant; 2001. *Colubrina californica*, California Snakewood; 2001. *Coryphantha scheeri* var.

robustispina, Pima Pineapple Cactus; 2005. *Coryphantha scheeri* var. *valida*, Slender Needle Corycactus; 2004. *Croton wigginsii*, Dune Croton; 2005. *Cryptantha ganderi*, Gander's Cryptantha; 2001. *Dalea tentaculoides*, Gentry Indigo Bush; 2005. *Desmanthus covillei*, Coville Bundleflower; 2004. *Echinocactus horizonthalonius* var. *nicholii*, Nichol Turk's Head Cactus; 2005. *Echinocactus polycephalus*, Cotton-top Cactus; 2005. *Echinocereus fasciculatus*, Magenta-flower Hedgehog Cactus; 2003. *Echinocereus triglochidiatus* var. *arizonicus*, Arizona Hedgehog Cactus; 2004. *Echinomastus erectocentrus* var. *acunensis*, Acuna Cactus; 2003. *Echinomastus erectocentrus* var. *erectocentrus*, Needle-spined Pineapple Cactus; 2001. *Erigeron arisolius*, Arid Throne Fleabane; 2003. *Eriogonum capillare,* San Carlos Wild-buckwheat; 2005. *Eriogonum ericifolium* var. *ericifolium*, Heathleaf Wild-buckwheat; 2004. *Euphorbia gracillima*, Mexican Broomspurge; 2005. *Euphorbia platysperma*, Dune Spurge; 2005. *Ferocactus cylindraceus* var. *cylindraceus*. California Barrel Cactus; 2001. *Graptopetalum bartramii*, Bartram Stonecrop; 2000. *Hackelia ursina*, Chihuahuan Stickseed; 2000. *Hedeoma dentata*, Mock-pennyroyal; 2000. *Hermannia* pauciflora, Sparseleaf Hermannia; 2001. *Heterotheca rutteri*, Huachuca Golden Aster; 2005. *Ibervillea tenuisecta*, Texas Globe Berry; 2000. *Ipomoea tenuiloba*, Trumpet Morning-glory; 2003. *Lilaeopsis schaffneriana* var. *recurva*, Huachuca Water Umbel; 2000. *Lupinus huachucanus*, Huachuca Mountain Lupine; 2004. *Mammillaria mainiae*, Counter Clockwise Fishhook Cactus; 2004. *Matelea cordifolia*, Sonoran Milkweed Vine; 2006. *Passiflora arizonica*, Arizona Passionflower; 2003. *Pectis imberbis*, Beardless Chinch Weed; 2005. *Peniocereus striatus*, Dahlia Rooted Cereus; 2004. *Penstemon superbus*, Superb Beardtongue; 2005. *Perityle ajoensis*, Ajo Rock Daisy; 2005. *Petalonyx linearis*, Longleaf Sandpaper-plant; 2004. *Pholisma sonorae*, Sand Food; 2004. *Plagiobothrys pringlei*, Pringle Popcorn-flower; 2005. *Rhus kearneyi*, Kearney Sumac; 2005. *Stenocereus thurberi*, Organ Pipe Cactus; 2005. *Stephanomeria schottii*, Schott Wire Lettuce; 2004. *Stevia lemmonii*, Lemmon's Stevia; 2004. *Tragia laciniata*, Sonoran Noseburn; 2004. *Tumamoca macdougalii*, Tumamoc Globeberry; 2005. *Vauquelinia californica* subsp. *sonorensis*, Sonoran Mountain Rosewood, and 2004. *Viola umbraticola*, Shade Violet.

Ferns: 1997. *Cheilanthes pringlei*, Pringle Lip Fern and 2003. *Notholaena lemmonii*, Lemmon Cloak Fern.

Fishes: 2002. *Agosia chrysogaster*, Longfin Dace; 2002. *Catostomus clarki*, Desert Sucker; 2002. *Catostomus insignis,* Sonora Sucker; 2001. *Cyprinodon eremus*, Quitobaquito Pupfish; 2001. *Cyprinodon macularius*, Desert Pupfish; 2002. *Gila intermedia*, Gila Chub; 2002. *Gila robusta*, Roundtail Chub; 2001. *Poeciliopsis occidentalis* subsp. *occidentalis*, Gila Topminnow, and 2001. *Poeciliopsis occidentalis* subsp. *sonorensis*, Yaqui Topminnow.

Gastropods: 2003. *Tryonia quitobaquitae*, Quitobaquito Tryonia.

Insects: 2001. *Agathymus aryxna*, Arizona Giant Skipper; 2001. *Agathymus polingi*, Poling's Giant Skipper; 2004. *Anthocharis cethura*, Desert Orangetip; 2001. *Calephelis rawsoni* subsp. *arizonensis*, Arizona Metalmark; 2002. *Heterelmis stephani*, Stephan's Heterelmis Riffle Beetle; 2001. *Limenitis archippus* subsp. *obsoleta*, Obsolete Viceroy Butterfly, and 2001. and *Neophasia terlootii*, Chiricahua Pine White.

Mammals: 2002. *Antrozous pallidus*, Pallid Bat; 2002. *Antilocapra americana* subsp. *mexicana*, Chihuahuan Pronghorn Antelope; 2002. *Antilocapra americana* subsp. *sonoriensis*, Sonoran Pronghorn Antelope; 2004. *Bassariscus astutus*, Ringtail; 2001. *Canis lupus baileyi*, Mexican Gray Wolf; 2003. *Choeronycteris mexicana*, Mexican Long-tongued Bat; 2004. *Eptesicus fuscus*, Big Brown Bat; 2003. *Euderma maculatum*, Spotted Bat; 2002. *Eumops perotis* subsp. *californicus*, Greater Western Bonneted Bat; 2003. *Eumops underwoodi*, Underwood's Mastiff Bat; 2004. *Herpailurus yaguarondi*, Jaguarundi; 2004. *Lasionycteris noctivagans*, Silver-haired Bat; 2003. *Lasiurus blossevillii*, Western Red Bat; 2004. *Lasiurus cinereus*, Hoary Bat; 2004. *Leopardus pardalis* subsp *sonoriensis*, Ocelot; 2003. *Leptonycteris*

curasoae subsp. *yerbabuenae*, Lesser Long-nosed Bat; 2002. *Lontra canadensis* subsp. *sonora*, Southwestern River Otter; 2001. *Macrotus californicus*, California Leaf-nosed Bat; 2003. *Myotis auriculus*, Southwestern Myotis; 2004. *Myotis californicus*, California Myotis; 2003. *Myotis ciliolabrum***,** Western Small-footed Myotis; 2003. *Myotis occultus*, Fringed Myotis; 2003. *Myotis yumanensis*, Yuma Myotis; 2003. *Nyctinomops femorosacca*, Pocketed Free-tailed Bat; 2003. *Nyctinomops macrotis*, Big Free-tailed Bat; 2003. *Myotis thysanodes*, Fringed Myotis; 2002. *Myotis velifer*, Cave Myotis; 2004. *Panthera onca*, Jaguar; 2004. *Pipistrellus hesperus*, Western Pipistrelle; 2007. *Puma concolor*, Mountain Lion; 2005. *Sciurus arizonensis*, Arizona Gray Squirrel; 2003. *Sigmodon ochrognathus*, Yellow-nosed Cotton Rat, and 2004. *Tadarida brasiliensis*, Brazilian Free-tailed Bat.

Monocots: 2005. *Agave* x *ajoensis*, Ajo Agave; 2003. *Agave murpheyi*, Hohokam Agave; 1994. *Agave parviflora* subsp. *parviflora*, Santa Cruz Striped Agave; 2005. *Agave schottii* var. *treleasei*, Trelease Agave; 2005. *Agave utahensis* var. *kaibabensis,* Kaibab Agave; 2005. *Allium bigelovii*, Bigelow Onion; 1999. *Allium gooddingii*, Goodding Onion; 2005. *Allium parishii*, Parish Onion; 2004. *Carex chihuahuensis*, Chihuahuan Sedge; 2000. *Carex ultra*, Arizona Giant Sedge; 2004. *Cathestecum erectum*, False Grama; 2004. *Hexalectris revoluta*, Chisos Coral-root; 2005. *Hexalectris spicata*, Crested Coral Root; 2001. *Lilium parryi*, Lemon Lily; 2005. *Listera convallarioides*, Broadleaf Twayblade; 2000. *Muhlenbergia xerophila*, Weeping Muhly, and 2005. *Schiedeella arizonica*, Fallen Ladies'-tresses.

Reptiles: 2001. *Aspidoscelis burti* subsp. *stictogrammus*, Giant Spotted Whiptail; 2003. *Aspidoscelis burti* subsp. *xanthonotus*, Redback Whiptail; 2002. *Chionactis occipitalis* subsp. *klauberi*, Tucson Shovel-nosed Snake; 2003. *Chionactis palarostris* subsp. *organica*, Organ Pipe Shovel-nosed Snake; 2001. *Crotalus lepidus* subsp. *klauberi*, Banded Rock Rattlesnake; 2001. *Gopherus agassizi*, Desert Tortoise; 2002. *Heloderma suspectum* subsp. *cinctum*, Banded Gila Monster; 2002. *Heterodon nasicus* subsp. *kennerlyi*, Mexican Hog-nosed Snake; 2005. *Kinosternon sonoriense*, subsp. *longifemorale*, Sonoyta Mud Turtle; 2003. *Lichanura trivirgata* subsp. *gracia*, Desert Rosy Boa; 2003. *Phrynosoma mcallii*, Flat-tailed Horned Lizard; 2005. *Sauromalus ater*, Common Chuckwalla; 2001. *Thamnophis eques* subsp. *megalops*, Mexican Garter Snake; 2003. *Uma rufopunctata*, Yuma Desert Fringe-toed Lizard, and 2003. *Xantusia arizonae*, Arizona Night Lizard.

(9) Arizona Rare Plant Committee. Arizona Rare Plant Field Guide, A Collaboration of Agencies and Organizations.

(10) Arizona Sonora Desert Museum, Migratory Pollinators Program, Spring 2003 Update, Table 3. Plants Visited by Hummingbirds in Sonora
http://desertmuseum.org/pollination/table_3.html

(11) Barnes, Will C. 1988. Arizona Place Names, The University of Arizona Press, Tucson, Arizona.

(12) Benson, Lyman. 1981. The Cacti of Arizona, The University of Arizona Press, Tucson, Arizona.

(13) Benson, Lyman and Robert A. Darrow. 1981. Trees and Shrubs of the Southwestern Deserts, The University of Arizona Press, Tucson, Arizona.

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

(15) Bowers, Janice E. and Steven P. McLaughlin. 1987. Flora and Vegetation of the Rincon Mountains, Pima County, Arizona. Desert Plants, Vol. 8, No. 2, pp. 50-95, 1987.

(16) Bowers, J.E., and R.M. Turner. 1985. A Revised Vascular Flora of Tumamoc Hill, Tucson, Arizona. Madrono, Vol.32, No.4, pp. 225-252, 20 December 1985.

(17) Breitung, August J., The Agaves, The Cactus and Succulent Journal 1968 Yearbook, Abbey Garden Press, Reseda, California.

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

(19) Brown, David E. 1982. Biotic Communities of the American Southwest – United States and Mexico, Desert Plants, Volume 4, Numbers 1-4, Published by the University of Arizona for the Boyce Thompson Southwestern Arboretum, and associated map: Brown, David E. and Lowe, Charles H., Biotic Communities of the Southwest, August 1980, General Technical Report RM-78, United Stated Department of Agriculture, Forest Service, Rocky Mountain Forest and Range Experiment Station Revised June 1983.

(20) Bull, John and John Farrand, Jr. 1977. The Audubon Society Field Guide to North American Birds: Eastern Region, Alfred A. Knopf, Inc., New York, New York.

(21) Catalogue of New World Grasses
http://mobot.mobot.org/W3T/Search/index/nwgctA.html

(22) Chambers, Nina – Sonoran Institute & Hawkins, Trica Oshant - Environmental Education Exchange. Invasive Plants of the Sonoran Desert, A Field Guide.

(23) Checklist of North American Butterflies Occurring North of Mexico
http://www.naba.org/pubs/enames2.html

(24) Checklist of Plants, Organ Pipe Cactus National Monument, August 2005.

(25) Dollar, Derrick; Scott Richardson and Erin Deely. 2000. Mammal Survey for the Mason Audubon Center, Tucson, Arizona USA.

(26) Duffield, Mary Rose and Warren D. Jones. 1981. Plants for Dry Climates, HP Books, Los Angeles, California.

(27) Earle, W. Hubert. 1963. Cacti of the Southwest, Rancho Arroyo book distributors, Tempe, Arizona.

(28) Epple, Anne Orth. 1995. A Field Guide to the Plants of Arizona, Falcon Press Publishing Co., Inc., Helena, Montana.

(29) Erickson, Jim. 1998. 2 Areas Near Santa Ritas Sought for Conservation, Park, the Arizona Daily Star, Tuesday, 17 November 1998.

(30) Especies con Usos No Maderables en Bosques de Encino, Pino y Pino-Encino en los Estados de Chihuahua, Durango, Jalisco, Michoacan, Guerrero y Oaxaca.
http://www.semarnat.gob.mx/pfnm/indices.htm

(31) Felger, Richard S. 1997. Checklist of the Vascular Plants of Cabeza Prieta National Wildlife Refuge, Arizona, Drylands Institute, Tucson, Arizona.

(32) Florida Nature
http://www.floridanature.org/
http://www.floridanature.org/copyright.asp

(33) Gould, Frank W. 1951. Grasses of Southwestern United States, University of Arizona Press, Tucson, Arizona.

(34) Hawksworth, Frank G. and Delbert Wiens. March 1996. United States Department of Agriculture, Forest Service. Agricultural Handbook 709 - Dwarf Mistletoes: Biology, Pathology, and Systematics.
http://www.rmrs.nau.edu/publications/ah_709/index.html

(35) Haynes, Lisa and Susan Schuetze. 1997. Pamphlet: A Sampler of Arizona's Threatened and Endangered Wildlife, Arizona Game and Fish Department and Arizona Department of Agriculture.

(36) The Hermannia Pages: American Species
http://www.meden.demon.co.uk/Malvaceae/Hermannia/American.html

(37) Heymann, M.M. 1975. Reptiles and Amphibians of the American Southwest, Doubleshoe Publishers, Scottsdale, Arizona.

(38) Hodge, Carle. 1991. All About Saguaros, Arizona Highways Magazine, Arizona Department of Transportation, Phoenix, Arizona.

(39) Hoffmeister. 1980. *Ursus arctos*, Specimens in Collections

(40) Housholder, Bob. 1966. The Grizzly Bear in Arizona

(41) Howery, Larry D. and Gina Ramos. Arizona's Invasive Weeds, The University of Arizona, Cooperative Extension Service and United States Department of the Interior, Bureau of Land Management.

(42) Integrated Taxonomic Information System (ITIS) on-line database:
http://www.itis.usda.gov.

(43) The International Plant Names Index (2004), accessed 2005 and 2005, published on the Internet:
http://www.ipni.org

(44) Jepson Flora Project
http://ucjeps.berkeley.edu/
http://ucjeps.berkeley.edu/copyright.html

(45) Johnson, Matthew Brian. 2004. Cacti, other Succulents, and Unusual Xerophytes of Southern Arizona, Boyce Thompson Southwestern Arboretum / Arizona Lithographers, Tucson, Arizona.

(46) Kearney, Thomas K., Robert H. Peebles and collaborators. 1960. Arizona Flora. Second Edition with Supplement by John Thomas Howell and Elizabeth McClintock and collaborators, 4th printing 1973, University of California Press, Berkeley, Los Angeles, California.

(47) Krausman, Paul R. and Michael L. Morrison. 2003. Wildlife Ecology and Management, Santa Rita Experimental Range (1903 to 2002), USDA Forest Service Proceedings RMRS-P-30.2003 Pages 59 thru 67.

(48) Landscaping with Native Arizona Plants. 1973. Natural Vegetation Committee, Arizona Chapter, Soil Conservation Society of America, The University of Arizona Press, Tucson, Arizona.

(49) Las Cienegas National Conservation Area - Records and Reports.

(50) Laymon, Stephen A. Paper: Yellow-billed Cuckoo.

(51) Lellinger, David B. 1985. A Field Manual of the Ferns and Fern-Allies of the United States and Canada, Smithsonian Institution Press, Washington, D.C.

(52) Little, Elbert L. 1980. The Audubon Society Field Guide to North American Trees – Western Region, Alfred A. Knopf, New York, New York.

(53) Little, Elbert L., Jr. December 1950. Southwestern Trees - A Guide to the Native Species of New Mexico and Arizona, Agriculture Handbook No. 9, United State Department of Agriculture, Forest Service, U.S. Government Printing Office, Washington 25 D.C.

(54) Lowe, Charles H., Cecil R. Schwalbe and Terry B. Johnson. 1986. The Venomous Reptiles of Arizona, Arizona Game and Fish Department, Phoenix, Arizona.

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

(56) Maus, Kathryn. October 12, 2001. Plants of the West Branch of the Santa Cruz River, The West Branch Flora, Arid Lands Resource Sciences, University of Arizona, Tucson, Arizona.
http://www.co.pima.az.us/cmo/sdcp/sdcp2/reports/WB/pflora.htm

(57) Maus, Kathryn. September 9, 2002. "Checklist for the Plants of the West Branch of the Santa Cruz, Tucson, Arizona..
http://eebweb.arizona.edu/HERB/WESTBRANCH/westbranch.html

(58) McLaughlin, Steven P. July 18, 1990. Flora of Buenos Aires National Wildlife Refuge (including Arivaca Cienega), Office of Arid Land Studies, University of Arizona.

(59) Medina, Alvin L. 2003. Historical and Recent Flora of the Santa Rita Experimental Range, USDA Forest Service Proceedings RMRS-P-30.2003 Pages 141 thru 148.

(60) Milne, Lorus and Margery. 1980. The Audubon Society Field Guide to North American Insects and Spiders, Alfred A. Knopf, New York, New York.

(61) Minckly, W.L. 1973. Fishes of Arizona, Sims Printing Company, Inc., Phoenix, Arizona.

(62) Missouriplants.com
http://www.missouriplants.com/index.html

(63) National Plants Database: USDA, NRCS. 2004. The PLANTS Database, Version 3.5, National Plant Data Center, Baton Rouge, LA 70874-4490 USA.

http://plants.usda.gov

with links to the following sites:

USDA, ARS, National Genetic Resources Program.
Germplasm Resources Information Network (GRIN) [Online Database].
National Germplasm Resources Laboratory, Beltsville, Maryland.
URL: http://www.ars-grin.gov/cgi-bin/npgs/html/taxon.pl?447394 (29 November 2008)
http://www.ars-grin.gov/npgs/aboutgrin.html

Flora of North America
www.efloras.org

United State Department of Agriculture Forest Service, Fire Effects Information System
http://www.fs.fed.us/database/feis/index.html

Grass Manual on the Web

The Center for Plant Conservation

Kemper Center for Home Gardening
http://www.mobot.org/gardeninghelp/plantinfo.shtml

Burke Museum of Natural History and Culture
http://www.washington.edu/burkemuseum/

(64) Native Grasses from South Texas, Texas A&M University System, Agricultural Program.
http://uvalde.tamu.edu/herbarium/grasses.htm

(65) Olin, George. 1975. Mammals of the Southwest Deserts, Popular Series No. 8, Southwest Parks and Monuments Association.

(66) Owensby, Clenton. 2002. Line Drawings of Kansas Grasses
http://spuds.agron.ksu.edu/ksgrasskey/linedraw.htm

(67) Page, Lawrence M. and Brooks M. Burr. 1991. A Field Guide to Freshwater Fishes – North America North of Mexico, Peterson Field Guides, Houghton Mifflin Company, Boston, Massachusetts.

(68) Parker, Kittie F. 1982. An Illustrated Guide to Arizona Weeds, University of Arizona Press, Tucson, Arizona.

(69) Peterson, Roger Tory. 1961. A Field Guide to Western Birds, Houghton Mifflin Company, Boston, Massachusetts.

(70) Pima Community College – Desert Ecology of Tucson, Arizona
http://wc.pima.edu/Bfiero/tucsonecology/plants/wflow_heri.htm

(71) Pima County Parks and Recreation Department, Cienega Creek Natural Preserve Bird Checklist, Tucson, Arizona.

(72) Pima County Sonoran Desert Conservation Plan Threatened and Endangered Species

http://www.pima.gov/cmo/sdcp/sdcp2/fsheets/facts.html

(73) Ransom, Jay Ellis. 1981. Harper and Row's Complete Field Guide to North American Wildlife, Western Edition, Harper and Row, New York, New York.

(74) Raven, Peter H., Ray F. Evert and Helena Curtis. 1976 Biology of Plants, Second Edition, Worth Publishers, Inc.

(75) Richardson, M.L. and M.L. Miller. March 1974. United States Department of Agriculture, Soil Conservation Service in cooperation with The Pima County Natural Resource Conservation District, Reports and Interpretations for the General Soil Map of Pima County, Arizona and General Soil Map Pima County Arizona.

(76) Richmond, D.L. and M.L. Richardson. January 1974. United States Department of Agriculture, Soil Conservation Service in cooperation with the Natural Resource Conservation Districts in Mohave County, General Soil and Interpretations, Mohave County, Arizona and General Soil Map Mohave County, Arizona.

(77) Rondeau, Renee, Thomas R. Van Devender, C. David Bertelson, Philip Jenkins, Rebecca K. Wilson, Mark A. Dimmitt. December, 1996. Annotated Flora of the Tucson Mountains, Pima County, Arizona, Desert Plants, Volume 12, Number 2.
http://eebweb.arizona.edu/herb/TUCSONS/tucsonsA-C.html

(78) Rosen, Philip C. 15 October 2001. Biological Values of the West Branch of the Santa Cruz River, With an Outline for a Potential River Park or Reserve, Including a Preliminary Flora by Kathryn Maus (Plants of the West Branch of the Santa Cruz , The West Branch Flora has been recorded separately as Footnote 56), School of Renewable Natural Resources, University of Arizona, Tucson, Arizona.
http://www.co.pima.az.us/cmo/sdcp/sdcp2/reports/WB/WestB.htm

(79) Rosenberg, Gary H. and Russel, Ruth. 1999. Checklist of North American Birds United States and Canada Including Hawaii 2000, Tucson Audubon Society.

(80) Schmutz, Ervin M., Barry N. Freeman, Raymond E. Reed. 1968. Livestock- Poisoning Plants of Arizona, The University of Arizona Press, Tucson, Arizona.

(81) School of Botanical Medicine - Checklist of the Vascular Plants of Arizona (excluding grasses and their allies)
http://www.ibiblio.org/london/alternative-healthcare/Southwest-School-of-Botanical-Medicine/HOMEPAGE/Floras/AZchklst.txt

(82) Southeast Arizona Butterfly Association (SEABA), Plant List - SEABA's Butterfly Garden at the Tucson Audubon Society's Mason Center
http://www.naba.org/chapters/nabasa/home.html

(83) Southwest Parks and Monument Association. 1991. A Checklist of Mammals, Amphibians and Reptiles of Organ Pipe Cactus National Monument, Tucson, Arizona.

(84) Southwest Parks and Monument Association. 1999. A Checklist of the Birds of Organ Pipe Cactus National Monument, Tucson, Arizona.

(85) Southwest Environmental Information Network (SEINet)

http://seinet.asu.edu/collections/selection.jsp?cat=plantae

(86) Spellenberg, Richard. 1979. The Audubon Society Field Guide to North American Wildflowers - Western Region, Alfred A. Knopf, New York, New York.

(87) Stebbins, Robert C. 1985. A Field Guide to Western Reptiles and Amphibians, Peterson Field Guides, Houghton Mifflin Company, Boston, Massachusetts.

(88) Texas Native Shrubs
http://aggie-horticulture.tamu.edu/ornamentals/nativeshrubs/indexscientific.htm

(89) Thornber, J.J. Vegetation Groups in the Desert Laboratory Domain *in* Spalding. 1909. The Distribution and Movements of Desert Plants, Carnegie Institution of Washington, Publication No. 113: 103 - 112.

(90) Tohono Chul Park, Field Checklist of Birds, Tucson, Arizona.

(91) Turner, Raymond M., Janice E. Bowers and Tony L. Burgess. 1995. Sonoran Desert Plants An Ecological Atlas, The University of Arizona.

(92) Tuttle, Merlin D. 1988. America's Neighborhood Bats, University of Texas Press, Austin, Texas.

(93) Udvardy, Miklos D.F. 1977. The Audubon Society Field Guide to North American Birds: Western Region, Alfred A. Knopf, Inc., New York, New York.

(94) United States Fish and Wildlife Service, Cabeza Prieta National Wildlife Refuge: Listing of Amphibians (April 15, 2002 Update), Listing of Birds (March 2004), Listing of Mammals (April 15, 2002 Update), Listing of Plants (April 15, 2002 Update) and Listing of Reptiles (April 15, 2002 Update).
http://www.fws.gov/southwest/refuges/arizona/cabeza.html

(94 ES 1998) United States Department of the Interior, Endangered Species on Cabeza Prieta National Wildlife Refuge (October 1998).

(94 ETCS 1994) United States Department of the Interior, Endangered, Threatened and Candidate Species Cabeza Prieta National Wildlife Refuge (June 1994).

(95) University of Arizona

> Herbarium, P.O. Box 210036 Herring Hall, 1130 East South Campus Drive, Tucson, Arizona 85721; 520-621-7243; FAX: 520-621-7186
> http://ag.arizona.edu/herbarium/
>
> Department of Entomology, Forbes 410, PO Box 2100: (36), Tucson, Arizona 85721-0036; 520-621-1151; FAX: 520-621-1150
> http://ag.arizona.edu/ento/insectid.htm

(96) University of Michigan, Animal Diversity Web
http://animaldiversity.ummz.umich.edu/

(97) Venomous Creatures of the Southwest, Arizona-Sonora Desert Museum and the Arizona Poison Control System. University of Arizona, Poison and Drug Information Center, College of Pharmacy,

Tucson 1-800-222-1222, and the Samaritan Regional Poison Center, Good Samaritan Medical Center - Phoenix and the Arizona Department of Health Services - Emergency Medical Services Division.
http://www.pharmacy.arizona.edu/outreach/poison/
http://www.pharmacy.arizona.edu/outreach/poison/venom.php
http://www.pharmacy.arizona.edu/outreach/poison/plants.php

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

(99) Walters, James W. R3 78-9, A Guide to Forest Diseases of Southwestern Conifers, Forest Insect and Disease Management, State and Private Forestry, Southwestern Region, Forest Service, United States Department of Agriculture, Albuquerque, New Mexico.

(100) Whitaker, John O., Jr. 1996. National Audubon Society Field Guide to North American Mammals, Alfred A. Knopf, New York, New York.

(101) Whitson, Tom D., Larry C. Burrill, Steven A. Dewey, David W. Cudney, B.E. Nelson, Richard D. Lee, Robert Parker. 1996. Weeds of the West, Pioneer of Jackson Hole, Jackson, Wyoming.

(102) Wiens, John F. Vascular Plants of Ragged Top, compiled by John F. Wiens from 1987 - 2000, The Arizona Native Plant Society, The Plant Press, Volume 25 Number 1, Spring 2001.

(103) Wildflowers and Other Plants of Southern California, with Photographs by Michael L. Charters
http://www.calflora.net/bloomingplants/index.html

(104) Lehr, J. Harry. 1978. A Catalogue of the Flora of Arizona, Desert Botanical Garden, Phoenix, Arizona. Northland Press, Flagstaff, Arizona.

(105) Humphrey, Robert H., Albert L. Brown and A.C. Everson. April 1956. Bulletin 243, Common Arizona Range Grasses, Agricultural Experiment Station, University of Arizona, Tucson, Arizona.

(106) Wikipedia, The Free Encyclopedia
http://en.wikipedia.org/wiki/Main_Page

(107) McGinnies, William G. 1981. Discovering the Desert, Legacy of the Carnegie Desert Botanical Laboratory, The University of Arizona Press, Tucson, Arizona.

(108) Dodge, Natt N. 1964. Organ Pipe Cactus National Monument / Arizona, Natural History Handbook Series, No. 6, Washington, D.C.

(109) Grow Native! Don't Plant a Pest, A Guide to Invasive Landscape Plants and Their Native Alternatives - Southeastern Arizona. Arizona Native Plant Society.
www.aznps.org

(110) United States fish and Wildlife Service, Ecological Services Field Office, Endangered and Threatened Species of Arizona - Summer 1991.

(111) California Register of Big Trees
http://www.ufei.org/BigTrees/index.html

(112) Kitt Peak Handouts: Common Trees and Shrubs on Kitt Peak; Common Birds of Kitt Peak; Common Mammals of Kitt Peak, and Common Reptiles and Amphibians of Kitt Peak.

(113) Halbedel, E. June 2005. The Birds of Kitt Peak, Revised 3rd Edition.

(114) Nearctica.com, Inc. 1999, The Natural World of North America.
http://www.nearctica.com/
http://www.nearctica.com/nomina/nomina.htm

(115) The Firefly Forest
http://fireflyforest.net/firefly/
and Wildflowers of Tucson, Arizona
http://www.fireflyforest.com/flowers/index.html

(116) Krausman, Paul R. and Michael L. Morrison, Wildlife Ecology and Management, Santa Rita Experimental Range (1903 to 2002), USDA Forest Service Proceedings RMRS-P-30.2003: 59 - 67.

(117) Medina, Alvin L., Historical and Recent Flora of the Santa Rita Experimental Rage, USDA Forest Service Proceedings RMRS-P-30.2003: 141 - 148.

(118) Cockrum, E. Lendell. 1960. The Recent Mammals of Arizona: Their Taxonomy and Distribution, The University of Arizona Press, Tucson, Arizona.

(119) Stockwell, William Palmer and Lucretia Breazaele. April 1, 1933. Arizona Cacti, University of Arizona Bulletin, Vol. 4, No. 3, Biological Science Bulletin No. 1, University of Arizona, Tucson, Arizona.

(120) Duncan, Russell B. Two Rare Plants and the Warm Season Flora of a Unique Habitat in Pima County, Arizona: The Pantano Formation, Claystone Member Deposits, The Arizona Native Plant Society, The Plant Press, Autumn 2003: 7-14.

(121) Reichhardt, Karen. *Triteliopsis palmeri* - Blue Sand Lily, an Elusive Plant of the Sand Dunes, The Arizona Native Plant Society, The Plant Press, Volume 30 Number 2, October 2006: 10-11.

(122) Kaiser, Jack. Common Ferns of Southern Arizona, The Arizona Native Plant Society, The Plant Press, Volume 18 Number 2, Spring 1994: 5-12.

(123) McDonald, Christopher. Pima Pineapple Cactus, The Arizona Native Plant Society, The Plant Press, Volume 31 Number 1, April 2007: 1-4.

(124) Historical Common Names of Great Plains Plants
http://www.unl.edu/agnicpls/gpcn/index.html

(125) Munson, T.V. Foundations of American Grape Culture, T.V. Munson & Son, Denison, Texas, 1909.

(126) Adams, Robert P. *Juniperus* of Canada and the United States: Taxonomy, Key and Distribution, Biology Department, Baylor University, Box 727, Gruver, TX 79040 USA, December 2008.
Robert_Adams@baylor.edu
http://www.juniperus.org/AdamsPapersPDFFiles/218-Phyto90(3)255-314AdamsKeytoJuniperusCanadaandUS.pdf

(127) Native American Ethnobotany, University of Michigan. A database of plants used as drugs, foods, dyes, fibers and more, by native peoples of North America.
http://herb.umd.umich.edu/

(128) Desert-Tropicals.com, Philippe Faucon
http://www.desert-tropicals.com/index.html

(129) Plants of the Southwest, Santa Fe, New Mexico 87501 U.S.A.
http://www.plantsofthesouthwest.com/

(130) Little, V.A. 1963. General and Applied Entomology, Harpers and Row, Publishers, Inc. New York, N.Y.

(131) The University of Arizona, Cooperative Extension, Pima county Home Horticulture.
http://ag.arizona.edu/pima/gardening/gardening.html

(132) The Gymnosperm Database
http://www.conifers.org/index.html

(132) PIER, Pacific Island Ecosystems at Risk, Plant threats to Pacific ecosystems
http://www.hear.org/pier/index.html

(133) USDA, ARS, National Genetic Resources Program. Germplasm Resources Information Network (GRIN) [Online Database]. National Germplasm Resources Laboratory, Beltsville, Maryland.URL: http://www.ars-grin.gov/cgi-bin/npgs/html/taxon.pl?447394 (03 October 2009)
http://www.ars-grin.gov/npgs/aboutgrin.html

(134) Austin, Daniel F. Baboquivari Mountain Plants, The Plant Press, The Arizona Native Plant Society, Volume 33, Number 2, Fall 2009: 1-4.

(135) Encyclopedia of Life. Available from http://www.eol.org. Accessed 19 December 2009, 25 January 2010

(136) Flora of North America
www.efloras.org

(137) Kleinman, Dr. Russ, Associate Botanist, Dale A. Zimmerman Herbarium. Vascular Plants of the Gila Wilderness
http://www.wnmu.edu/academic/nspages2/gilaflora/index.html

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

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

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

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

(AHS) Arizona Historical Society

(ANN) Anonymous

(JFW) John F. Wiens

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

(PCM) Personal Communication (Date)

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

(RGM) G. Meades

(TBL) Township Bird Listing

(WTK) William T. Kendall

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

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

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

(MIX FM) 94.9 MIX fm (Month Day, Year & Program)