



NOTE TO FILE

Project: Draft Environmental Assessment, Airport Traffic Control Tower (ATCT) and Base Building Construction and Operation, McCarran International Airport, Las Vegas, Nevada

Re: Section 7 Consultation

Date: March 20, 2009

From: Joelle Dickson, Project Manager

To eliminate duplication in this Environmental Assessment, all attachments included with the original consultation packet sent to the USFWS are not included in this Appendix (F). Please refer to the following table to locate the original attachments listed on the last page of the consultation letter from the FAA to the USFWS.

Original Attachment	Location in EA
Figures 1-3	Figures 1-5 Tab
Appendix A – Site Photos	Appendix A Tab

Additionally, the following Agency/Tribal Consultation Contact List documents attempts by the FAA to contact agencies and Tribes to inform them of an addition of 0.3 acre to the APE for the proposed new ATCT.

Agency/Tribal Consultation Contact List

Agency/Tribe	Contact Name	Contact Number	Date Contacted	Comments
NV SHPO	Mr. Ronald James	775-684-3448	1/7/09 lft msg	Spoke by phone and email multiple times. Concurrence letter received 3/16/09.
NV USFWS	Ms. Janet Bair	702-515-5230 Janet_bair@fws.gov	1/7/09 lft msg 1/12/09	Emailed figure depicting expanded APE w/ additional 0.3 acre.
Las Vegas Paiutes	Mr. Kenny Anderson	702-645-4826	1/7/09 lft msg	No response
Moapa Band of Paiutes	Ms. Diana Domingo	702-864-0334	1/7/09 lft msg	Ms. Domingo left a vm indicating she would email a concurrence letter on 3/10/09. JC followed up via email 3/17/09. No response.
Paiute Tribe of Utah	Ms. Lora Tom	435-586-1112	1/7/09 lft msg	No response
Kaibab Band of Paiutes	Mr. Charlie Bullets	928-643-7245	1/7/09 lft msg	Concurrence letter received by email 2/18/09.
Ft. Mojave Tribe	Ms. Elda Butler	520-768-4475	Attempted 1/7/09 Wrong number.	
Hualapai Tribe	Ms. Dawn Hubs	928-769-2234 Dawn4light@hotmail.com	1/7/09	Ms. Hubs gave verbal determination of no adverse effect, site location not pertinent to the Tribe.
Colorado River Tribes	Mr. Michael Tsosie	928-669-1272	1/7/09 lft msg	No response



United States Department of the Interior



FISH AND WILDLIFE SERVICE

Nevada Fish and Wildlife Office

4701 North Torrey Pines Drive

Las Vegas, Nevada 89130

Ph: (702) 515-5230 ~ Fax: (702) 515-5231

October 27, 2008

File No. 84320-2009-TA-0013

Ms. Janelle Cass
Environmental Engineer
Federal Aviation Administration
1601 Lind Avenue Southwest
Renton, Washington 98057

Dear Ms. Cass:

Subject: Request for Informal Consultation for the Replacement Air Traffic Control Tower (ATCT), Administrative Base Building and Parking Structure Construction at McCarran International Airport, Las Vegas, Nevada

This responds to your request for informal consultation for the replacement ATCT, administrative base building and parking structure construction at McCarran International Airport, Las Vegas, Nevada. Your letter, dated September 15, 2008, was received by the Fish and Wildlife Service's (Service) Nevada Fish and Wildlife Office in Las Vegas on September 19, 2008. The Federal Aviation Administration (FAA) has requested concurrence for the subject project with the determination of "may affect, not likely to adversely affect" for the candidate Las Vegas buckwheat (*Eriogonum corymbosum* var. *nilesii*), in accordance with section 7(a)(2) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*). The FAA also requests concurrence with the determination of "no effect" for the threatened desert tortoise (*Gopherus agassizii*) (Mojave population) and candidate yellow-billed cuckoo (*Coccyzus americanus*) (Western U.S. DPS).

Based on project location and information contained in your letter, we believe that no listed or candidate species occur in the project area and agree with the no effect determination for these species. We do not consult on candidate species but provide technical assistance to minimize project impacts on these species. Based on the existing development and previous land clearing activities in the project area, we believe that there should be no impacts to the Las Vegas buckwheat.

We appreciate your correspondence regarding potential impacts to listed and candidate species. In the future we recommend that you first contact the Service for a list of federally listed species that may occur in the project area prior to requesting consultation, pursuant to section 7(c) of the Act. If you have any questions or comments regarding this correspondence, please contact Amy LaVoie in the Nevada Fish and Wildlife Office in Las Vegas at (702) 515-5230.

Sincerely,

A handwritten signature in black ink, appearing to read "R. D. Williams".

For Robert D. Williams
Field Supervisor



U.S. Department
of Transportation
**Federal Aviation
Administration**

September 15, 2008

Nevada Fish & Wildlife Office
Janet Bair, Assistant Field Supervisor
4701 North Torrey Pines Drive
Las Vegas, Nevada 89130

RE: Section 7 Consultation for proposed Replacement Airport Traffic Control Tower, Administrative Base Building and Parking Structure Construction at McCarran International Airport (LAS), Las Vegas, Nevada

The FAA, in accordance with the Section 7 consultation process under the Endangered Species Act (ESA) would like to invite you to participate in consultation for the aforementioned project. The proposed actions are summarized below:

Site Location and Description

The proposed action (including demolition of the existing ATCT) would occur within LAS in Section 34, Township 21 South, Range 61 East, Mt. Diablo Baseline and Meridian as shown on the United States Geological Survey (USGS) *Las Vegas SW Quadrangle, Nevada 7.5 Minute Series Topographic* maps, dated 1984 (See Figures 1 and 2).

Proposed Action and Area of Potential Effect (APE)

The FAA is proposing to build and operate an ATCT, Base Building and Parking Structure at LAS at the southwest corner of Flight Path Avenue and Kelly Lane, east of Terminal 1 and southwest of the new Terminal 3 site on the northeast side of the airport (See Figures 2 and 3). The proposed ATCT will allow visibility for airport traffic control of all currently existing runways and future planned movement areas both in the air and on the ground at McCarran International Airport.

The proposed action consists of construction and operation of an approximately 372-foot high ATCT, a 40,000 square foot multi-story Administrative Base Building and a multi-story parking structure with approximately 150 parking spaces. Site access would be from Kelly Lane. The current ATCT would be demolished after construction of the new ATCT and Base Building is completed.

Construction of the proposed ATCT and Base Building would occur within the developed airport property on a site currently being used as a concrete batch plant for an airport expansion project. The proposed site is located approximately 1,750 feet northwest of the "D" passenger gates and 2,500 feet north of Taxiway C. The site is bounded by Flight Path

Avenue to the north and Kelly Lane to the east. A public airport parking lot is currently located north of Flight Path Avenue. The area east of Kelly Lane is currently vacant but is being used as a construction staging area for an airport expansion project. South of the proposed ATCT site is a large underground water reservoir constructed in the late 1980s that is maintained as a public drinking water supply. The surface of this tank has been paved and is used for parking. West of the proposed ATCT site lies a vacant lot that provides access to the reservoir's pump house and water lines. There are no permanent structures located on the proposed ATCT site.

The design intention for the proposed ATCT and base building is to create an efficient, low maintenance facility which meets the operational requirements of the airport, harmonizes with the surrounding environment, and is consistent in character with the existing and proposed airport facilities. Special attention will be given to the aesthetic appearance of the ATCT to provide a dynamic contemporary image that clearly expresses its functional role, and yet establishes a progressive architectural direction.

The FAA requests concurrence with the following proposed Areas of Potential Effect (APE):

1. The APE for the construction of the proposed ATCT includes an approximately 3.5-acre area around the proposed ATCT, Base Building, Parking Structure, utility lines and driveways where construction, maintenance, and usage effects may occur (See Figure 3). New utilities would be connected to existing lines located along Kelly Lane from the southeast corner of the site. Existing public access roads would be used for construction and maintenance traffic.
2. The APE for the demolition of the existing ATCT includes an approximately 2.3-acre area around the current structure.

Threatened, Endangered and Candidate Species

There are three species listed by the United States Fish and Wildlife Service in the vicinity of McCarran International Airport, Las Vegas, Nevada. Listed species include: the threatened amphibian species desert tortoise (*Gopherus agassizii*); the candidate bird species western yellow-billed cuckoo (*Coccyzus americanus occidentalis*); and the candidate plant species Las Vegas buckwheat (*Eriogonum corymbosum* var. *nilesii*).

Desert Tortoise (*Gopherus agassizii*) – Threatened

The desert tortoise lives in a variety of habitats, from sandy flats to rocky foothills, including alluvial fans, washes, and canyons where suitable soils for den construction may be found. They depend on shrub cover for shade and protection from predators (USFWS 2008). Shrub species that distinguish tortoise habitat include creosote bush, burrobush, Mojave yucca, blackbrush, and Joshua trees (USGS 2008). The presence of soil suitable for burrowing is a limiting factor to desert tortoise distribution (DesertUSA 1996).

The current level of disturbance within the APE for the proposed ATCT and its vicinity is such that it does not include any suitable habitat for the desert tortoise. Most of the site is devoid of any vegetation due to its prior use as a compressed natural gas (CNG) fueling station for Clark County vehicles and is subject to frequent truck traffic due to its current use as a concrete batch plant for nearby construction at the airport (see Site Photos). The APE for the existing ATCT is entirely covered with asphalt, concrete, buildings, and landscaped gardens (see Site Photos) which do not constitute suitable habitat for the species. No individuals of the species were observed in the vicinity of the existing ATCT or proposed ATCT site during a site visit on August 1, 2008 and the list of At Risk Taxa Recorded Near the McCarran Airport Project Area includes no occurrences of the desert tortoise (NNHP 2008). Therefore, we recommend a finding of no effect to the desert tortoise for the proposed action.

Western yellow-billed cuckoo (*Coccyzus americanus occidentalis*) – Candidate

In the western United States, the western yellow-billed cuckoo occurs primarily in mature cottonwood and willow stands. To a lesser extent, the species occurs in willows or isolated cottonwood trees within tall mesquite stands. Western yellow-billed cuckoos are rarely observed as transients in xeric desert or urban settings (AZGFD 2002), which are unsuitably dry environments for the species. Western yellow-billed cuckoos are obligate riparian nesters and breed only in streamside forests with dense willow understories in combination with cottonwood overstory for foraging (CBD 1998).

The APEs for the proposed actions at LAS do not include any suitable habitat for western yellow-billed cuckoos. No riparian forest plant communities supporting stands of willows or cottonwoods occur within the project area or in the vicinity of the project area. The list of At Risk Taxa Recorded Near the McCarran Airport Project Area includes only one observation of the species from the general vicinity of the APEs (the location of the occurrence was given as T21S R61E) in 1984 (NNHP 2008). Some documents describe the species as extirpated from the state of Nevada (CBD 1998). Therefore, we recommend a finding of no effect to the western yellow-billed cuckoo for the proposed action.

Las Vegas buckwheat (*Eriogonum corymbosum* var. *nilesii*) – Candidate

Las Vegas buckwheat grows on or near gypsum soils in areas of generally low relief, including low mounds or outcrops in washes and drainages. The species often occurs in association with other gypsum-tolerant plant species, such as the Las Vegas bearpoppy, surrounded by saltbush and creosote bush plant associations (NNHP 2004). The list of At Risk Taxa Recorded Near the McCarran Airport Project Area (NNHP 2008) includes seven occurrences of Las Vegas buckwheat, some of which are located within one mile of the airport.

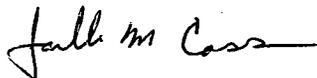
The McCarran Series soils that are characteristic of the APE for the proposed ATCT are gypsum soils on topography of low relief (USDA-NRCS 2008a;b). Most of the site, however, is devoid of any vegetation due to its prior use as a CNG station for Clark County vehicles and current use of the site as a concrete batch plant for nearby construction at the

airport (see Site Photos). The sparse vegetation that does occur in the vicinity of the APE for the proposed ATCT was inspected during a field visit on August 1, 2008 during the flowering period for the species and no individuals of the species were observed. The current level of disturbance within the APE for the proposed ATCT and its vicinity is such that it does not include any suitable habitat for the Las Vegas buckwheat. The APE for the existing ATCT is entirely covered with asphalt, concrete, buildings, and landscaped gardens (see Site Photos) which do not constitute suitable habitat for the species. No individuals of the species were observed in the vicinity of the existing ATCT during a field visit on August 1, 2008. Therefore, we recommend a finding of not likely to adversely effect due to discountable effects to the Las Vegas buckwheat from the proposed action due to the level of disturbance of any potential habitat for the species on the proposed ATCT site.

Based on the evaluation of the species found in the vicinity of McCarran International Airport which are currently federally listed as Threatened, Endangered, or Candidate species, we recommend a finding of *no effect to the desert tortoise and western yellow-billed cuckoo and not likely to adversely affect to the Las Vegas buckwheat* for the proposed action.

We would appreciate a response within 30 days. If you need further information or wish to discuss the project, please contact Janelle Cass at (425)227-1340 or janelle.cass@faa.gov.

Respectfully submitted,



Janelle Cass
FAA Environmental Engineer

Attachments: **Figures 1-3**
Appendix A – Site Photographs

References

- Arizona Game and Fish Department (AZGFD). 2002. *Coccyzus americanus occidentalis*. Unpublished abstract compiled and edited by the Heritage Data Management System, Arizona Game and Fish Department, Phoenix, AZ. 5 pp.
- Center for Biological Diversity (CBD). 1998. Petition to list the yellow-billed cuckoo *Coccyzus americanus* as a Federally Endangered Species. Endangered Species Report No. 36. Center for Biological Diversity.
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- DesertUSA. 1996. The Desert Tortoise. *Gopherus agassizii*.
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- Nevada Natural Heritage Program (NNHP). 2004. Rare Plant Fact Sheet: *Eriogonum corymbosum* var. *nilsii* Reveal, Las Vegas buckwheat. In: Nevada Rare Plant Atlas. Compiled 19 November 2004.
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- Nevada Natural Heritage Program (NNHP). 2008. At Risk Taxa Recorded Near the McCarran Airport Project Area. Compiled by the Nevada Natural Heritage Program for Natural Resources Consulting, 07/29/08.
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- United States Department of the Interior, Fish and Wildlife Service (USFWS). 2008. Desert Tortoise Habitat and Life History, Status of Species. Desert Tortoise Recovery Office. U.S. Fish and Wildlife Service.
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<http://geochange.er.usgs.gov/sw/impacts/biology/tortoise1/>. Accessed 8/27/08.

ALLEN BIAGGI
Director

Department of Conservation
and Natural Resources

JENNIFER E. NEWMARK
Administrator

JIM GIBBONS
Governor



Nevada Natural Heritage Program
Richard H. Bryan Building
901 S. Stewart Street, suite 5002
Carson City, Nevada 89701-5245
U.S.A.

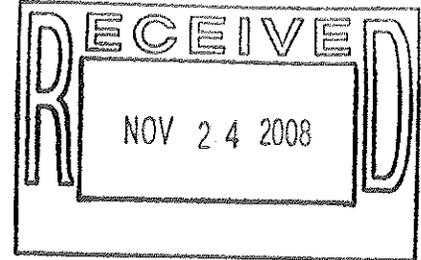
tel: (775) 684-2900
fax: (775) 684-2909



STATE OF NEVADA
DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES
Nevada Natural Heritage Program
<http://heritage.nv.gov>

29 July 2008

Michael Jablon
Natural Resources Consulting
165 E 500S
River Heights, UT 84321



RE: Data request received: 23 July 2008

Dear Mr. Jablon:

We are pleased to provide the information you requested on endangered, threatened, candidate, and/or at risk plant and animal taxa recorded within or near the McCarran Airport project area. We searched our database and maps for the following, a ten kilometer radius around:

Township 21S Range 61E Sections All

The enclosed printout lists the taxa recorded within the given area. Please be aware that habitat may also be available for: the yellow twotone beardtongue, *Penstemon bicolor* ssp. *bicolor*, a Nevada Bureau of Land Management (BLM) Sensitive Species; the Parish phacelia, *Phacelia parishii*, a Nevada BLM Sensitive Species; the Littlefield milkvetch, *Astragalus preussii* var. *laxiflorus*, a Taxon determined to be Critically Imperiled by the Nevada Natural Heritage Program; the Mojave gypsum bee, *Andrena balsamorhizae*, a Nevada BLM Sensitive Species; and the desert tortoise, *Gopherus agassizii*, a Federally Threatened Taxon. We do not have complete data on various raptors that may also occur in the area; for more information contact Ralph Phenix, Nevada Division of Wildlife at (775) 688-1565. Note that all cacti, yuccas, and Christmas trees are protected by Nevada state law (NRS 527.060-.120), including taxa not tracked by this office.

Please note that our data are dependent on the research and observations of many individuals and organizations, and in most cases are not the result of comprehensive or site-specific field surveys. Natural Heritage reports should never be regarded as final statements on the taxa or areas being considered, nor should they be substituted for on-site surveys required for environmental assessments.

Thank you for checking with our program. Please contact us for additional information or further assistance.

Sincerely,

A handwritten signature in black ink, appearing to read "Eric S. Miskow".

Eric S. Miskow
Biologist/Data Manager

At Risk Taxa Recorded Near the McCarran Airport Project Area
 Compiled by the Nevada Natural Heritage Program for Natural Resource Consulting
 29 July 2008

Scientific name	Common name	Usfws	Blm	Usfs	State	Srank	Grank	Lat	Long	Prec	Last observed
Plants											
<i>Arctomecon californica</i>	Las Vegas bearpoppy	xC2	S		CE	S3	G3	361022N	1151117W	S	2005-06-07
<i>Arctomecon californica</i>	Las Vegas bearpoppy	xC2	S		CE	S3	G3	360435N	1151023W	G	1934-05-03
<i>Arctomecon californica</i>	Las Vegas bearpoppy	xC2	S		CE	S3	G3	360605N	1150820W	S	1968-04-25
<i>Arctomecon californica</i>	Las Vegas bearpoppy	xC2	S		CE	S3	G3	360512N	1150806W	S	1997-04-15
<i>Arctomecon californica</i>	Las Vegas bearpoppy	xC2	S		CE	S3	G3	360532N	1151149W	S	1996-12-17
<i>Arctomecon californica</i>	Las Vegas bearpoppy	xC2	S		CE	S3	G3	360850N	1150705W	S	1938-05-08
<i>Arctomecon californica</i>	Las Vegas bearpoppy	xC2	S		CE	S3	G3	361000N	1151037W	S	1994-04-21
<i>Arctomecon californica</i>	Las Vegas bearpoppy	xC2	S		CE	S3	G3	360332N	1150737W	S	1963-05-06
<i>Arctomecon merriamii</i>	white bearpoppy	xC2	N	S		S3	G3	360836N	1151312W	M	1978-05-04
<i>Arctomecon merriamii</i>	white bearpoppy	xC2	N	S		S3	G3	361032N	1151124W	S	1998-07-17
<i>Arctomecon merriamii</i>	white bearpoppy	xC2	N	S		S3	G3	360943N	1151247W	S	1980-04-10
<i>Eriogonum corymbosum</i> var. <i>nilesii</i>	Las Vegas buckwheat	C	N			S1S2	G5T2	360607N	1151250W	S	2006-11-11
<i>Eriogonum corymbosum</i> var. <i>nilesii</i>	Las Vegas buckwheat	C	N			S1S2	G5T2	360520N	1151225W	S	1998-10-06
<i>Eriogonum corymbosum</i> var. <i>nilesii</i>	Las Vegas buckwheat	C	N			S1S2	G5T2	360442N	1150528W	S	1998-10-14
<i>Eriogonum corymbosum</i> var. <i>nilesii</i>	Las Vegas buckwheat	C	N			S1S2	G5T2	360547N	1151142W	S	2004-05-11
<i>Eriogonum corymbosum</i> var. <i>nilesii</i>	Las Vegas buckwheat	C	N			S1S2	G5T2	360539N	1151052W	S	1998-10-06
<i>Eriogonum corymbosum</i> var. <i>nilesii</i>	Las Vegas buckwheat	C	N			S1S2	G5T2	360446N	1150810W	S	1998-10-05
<i>Eriogonum corymbosum</i> var. <i>nilesii</i>	Las Vegas buckwheat	C	N			S1S2	G5T2	360627N	1150856W	S	1974-10-07
Amphibians											
<i>Bufo microscaphus</i>	Arizona toad		N			S2	G3G4	360810N	1150441W	S	1998-PRE
<i>Bufo microscaphus</i>	Arizona toad		N			S2	G3G4	360810N	1150441W	G	1923-03-23
Reptiles											
<i>Heloderma suspectum cinctum</i>	banded Gila monster	xC2NL	N;C		YES	S2	G4T4	T21S R61E		S	1965-06-14
Mammals											
<i>Choeronycteris mexicana</i>	Mexican long-tongued bat					SNA	G4	T21S R62E		G	1983-09-08
<i>Euderma maculatum</i>	spotted bat	xC2	S	S	YES	S2	G4	360750N	1150958W	S	1977-06
<i>Euderma maculatum</i>	spotted bat	xC2	S	S	YES	S2	G4	360925N	1151319W	G	1964-09-05
<i>Euderma maculatum</i>	spotted bat	xC2	S	S	YES	S2	G4	360637N	1150838W	S	1961-09-15
<i>Euderma maculatum</i>	spotted bat	xC2	S	S	YES	S2	G4	360636N	1150510W	G	1983-08-29
<i>Eumops perotis</i>	western mastiff bat				YES	S1	G5	360922N	1150611W	S	1966-03-01
<i>Lasionycteris noctivagans</i>	silver-haired bat		N			S3	G5	360614N	1150958W	S	1965-01-07
<i>Lasiurus cinereus</i>	hoary bat		N			S3	G5	360559N	1150708W	S	1964-05-12

Scientific name	Common name	Usfws	Blm	Usfs	State	Srank	Grank	Lat	Long	Prec	Last
Mammals (cont.)											observed
<i>Tadarida brasiliensis</i>	Brazilian free-tailed bat		N		YES	S3S4	G5	361023N	1150600W	G	1965-04-22
<i>Tadarida brasiliensis</i>	Brazilian free-tailed bat		N		YES	S3S4	G5	360607N	1151200W	S	1960-04-12
<i>Tadarida brasiliensis</i>	Brazilian free-tailed bat		N		YES	S3S4	G5	360637N	1150838W	S	1963-11-15
<i>Tadarida brasiliensis</i>	Brazilian free-tailed bat		N		YES	S3S4	G5	360930N	1150904W	S	1959-11-15
<i>Tadarida brasiliensis</i>	Brazilian free-tailed bat		N		YES	S3S4	G5	361060N	1151044W	M	1965-04-15
<i>Tadarida brasiliensis</i>	Brazilian free-tailed bat		N		YES	S3S4	G5	360750N	1150958W	S	1969-04-28
Birds											
<i>Coccyzus americanus occidentalis</i>	Western Yellow-billed Cuckoo	C	S	I	YES	S1B	G5T3Q	T21S R61E		G	1984-07-14
<i>Falco peregrinus</i>	Peregrine Falcon		N	E	YES	S2	G4	360810N	1150904W	S	1990-06-15

U. S. Fish and Wildlife Service (Usfws) Categories for Listing under the Endangered Species Act:

- C Candidate
x C2 Former Category 2 Candidate, now species of concern
NL Not Listed (no status) in a portion of the species' range

Bureau of Land Management (Blm) Species Classification:

- S Nevada Special Status Species - USFWS listed, proposed or candidate for listing, or protected by Nevada state law
N Nevada Special Status Species - designated Sensitive by State Office
C California Special Status Species (see definition S and N)

United States Forest Service (Usfs) Species Classification:

- S Region 4 (Humboldt-Toiyabe NF) sensitive species
I Region 5 (Inyo NF) sensitive species
E Region 4 and/or Region 5 Endangered species

Nevada State Protected (State) Species Classification:

- Fauna:
YES Species protected under NRS 501.
Flora:
CE Critically endangered - species whose survival requires assistance because of overexploitation, disease or other factors, or because their habitat is threatened with destruction, drastic modification or severe curtailment (NRS 527.260-.300)

Precision (Prec) of Mapped Occurrence:

Precision, or radius of uncertainty around latitude/longitude coordinates:

- S Seconds: within a three-second radius
M Minutes: within a one-minute radius, approximately 2 km or 1.5 miles
G General: within about 8 km or 5 miles, or to map quadrangle or place name

Nevada Natural Heritage Program Global (Grank) and State (Srank) Ranks for Threats and/or Vulnerability:

- G Global rank indicator, based on worldwide distribution at the species level
T Global trinomial rank indicator, based on worldwide distribution at the infraspecific level
S State rank indicator, based on distribution within Nevada at the lowest taxonomic level
1 Critically imperiled and especially vulnerable to extinction or extirpation due to extreme rarity, imminent threats, or other factors
2 Imperiled due to rarity or other demonstrable factors
3 Vulnerable to decline because rare and local throughout its range, or with very restricted range
4 Long-term concern, though now apparently secure: usually rare in parts of its range, especially at its periphery
5 Demonstrably secure, widespread, and abundant
A Accidental within Nevada
B Breeding status within Nevada (excludes resident taxa)
H Historical; could be rediscovered
N Non-breeding status within Nevada (excludes resident taxa)
Q Taxonomic status uncertain
U Unrankable
Z Enduring occurrences cannot be defined (usually given to migrant or accidental birds)
? Assigned rank uncertain


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peregrine falcon



SCIENTIFIC NAME:

Falco peregrinus

CLASSIFICATION:

Raptor or bird of prey

SIZE:

The body is 13 inches tall for the male and 19 inches tall for the female. The wingspan is about 40 inches and they weigh approximately one and a half pounds.

DESCRIPTION:

Large short-tailed falcon. The male is slate-gray above, black on head like a helmet, whitish neck, buff underneath with lightly barred breast. The female is browner and juveniles have a dark buff with heavy streaking on the breast and belly.

LIFE SPAN :

They can live up to 18 to 20 years, though the average life span in the wild is much shorter.

HABITAT:

Peregrines live mostly along mountain ranges, river valleys and coastlines.

RANGE:

Historical range is from the arctic tundra through Canada, U.S., Mexico and some birds migrate into South America. It is found on all of the continents of the world except Antarctica.

NATURAL HISTORY:



courtesy of Nova Scotia Department of Natural Resources and Mark Elderkin

Peregrines are territorial during the breeding season and they mate for life, though they don't stay together except during nesting season. It is an incredibly fast bird. They acquire their adult plumage in their second year, but reach sexual maturity until the age of three.

FOOD HABITS:

Its diet consists primarily of birds, though it may eat insects and small mammals.

BREEDING:

Peregrines don't build nests, but lay two to four reddish dark flecked eggs in a hollow or depression on a cliff. They are incubated for approximately 28 days by both parents and leave the nest after five to six weeks after hatching.

STATUS:

It was listed as endangered in North America, but is now delisted due to reintroduction into many areas. They are protected by the International Migratory Bird Treaty Act.

REASON FOR STATUS:

The use of pesticides, such as DDT, caused bio-contaminated birds to either not lay eggs or produce thin shelled eggs that broke during incubation. In 1972 DDT was banned and re-introduction programs have slowly brought their numbers back.

MANAGEMENT & CONSERVATION:

Between 1988 and 1993, NDOW re-introduced 48 birds into the wild. Currently it is estimated that there may be 20 nesting pairs in Nevada, though due to their solitary nature, they are difficult to account for. In the summer of 2003 a nesting pair was discovered in the White Pine Range in eastern Nevada, which is the northernmost nesting pair found in over 30 years. NDOW is monitoring existing nesting pairs and is looking for others.

FUN FACTS:

The peregrine is the fastest bird documented with level sustained flight of over 60 mph. In a dive to capture its prey, it may reach speeds of almost 200 mph. Peregrines have found new homes in cities, like Las Vegas, with high rise buildings which act like cliffs. They nest on building ledges and with an abundance of pigeons associated with cities, they have plenty of food. In Las Vegas, peregrine falcons have been seen hunting bats around the neon lights. Apparently the bats are hunting insects which are attracted to the lights.

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Nevada Fauna Facts



furry, fishy, feathery & fantastically coldblooded



yellow-billed cuckoo



Photo by J. A. Spendelow

SCIENTIFIC NAME:

Coccyzus americanus

CLASSIFICATION:

bird

SIZE:

Body length - about 11 inches

Weight - about 65 grams

DESCRIPTION:

The upper parts are grayish brown, lower parts white, and the body is slender with a long tail. The underside of the tail is black with white at the base of each tail feather, forming conspicuous white spots on a black background. Rufous colored shading is visible on the center of the primaries. The lower part of the slightly curved bill is yellow while the upper part is black, and the eye ring is yellow.

LIFE SPAN :

HABITAT:

Yellow-billed cuckoos live in cottonwood and willow riparian and other woodland habitats and prefer dense under-stories in Nevada.

RANGE:

The breeding range extends from southern Canada south to Mexico. The birds winter further south to Argentina. Yellow-billed cuckoos have been found mainly in the western and southern portions of Nevada.

NATURAL HISTORY:

The yellow-billed cuckoo is a diurnal, migratory bird. It is difficult to view yellow-billed cuckoos in the wild due to their generally secretive behavior.

FOOD HABITS:

Yellow-billed cuckoos eat mainly large invertebrates including grasshoppers, caterpillars, cicadas, and other insects. Small frogs and lizards, bird eggs, seeds, and fruits are also sometimes eaten. The cuckoos generally glean from tree parts or catch food in the air.

BREEDING:

Breeding occurs in spring or early summer when food is abundant. The nest is usually well hidden in a tree or shrub at about 3 to 20 feet above ground. 1 to 5 eggs are laid and incubated for 9 to 11 days by both parents (mainly the male at night). The young are cared for by both parents and fledged in about 7 to 9 days. Two and occasionally three clutches may be laid in years with abundant prey.

STATUS:

Yellow-billed cuckoos are very rare in Nevada. They are a candidate species for listing as "Endangered" under the federal Endangered Species Act. Also, the yellow-billed cuckoo receives federal and state protection under the Migratory Bird Treaty Act.

REASON FOR STATUS:

Numbers of yellow-billed cuckoos are declining in western North America due to loss, degradation, and fragmentation of riparian habitat, drought, predation, pesticide accumulation and impacts on prey, and deforestation in their tropical winter habitat.

MANAGEMENT & CONSERVATION:

Preservation, restoration and expansion of riparian habitat supporting large cottonwood and willow trees are essential to the conservation of yellow-billed cuckoos. Biologists are working with landowners regarding land management practices that impact yellow-billed cuckoo habitat, as much of this habitat in Nevada is found on private land. Breeding season surveys are being conducted by the Nevada Department of Wildlife yearly to determine distribution and abundance of yellow-billed cuckoos in southern Nevada. Further surveys are needed in other areas of Nevada, in particular, western Nevada.

FUN FACTS:

Unmated yellow-billed cuckoos will say their own name during their soft, coo call in which they repeat "coo-coo-coo-coo".

Yellow-billed cuckoos are unique in that they have zygodactyl feet, two toes facing forward and two toes backward.

Western Bat Working Group

<http://www.wbwg.org>

Species Accounts

Developed For the 1998 Reno Biennial Meeting

Updated at the 2005 Portland Biennial Meeting

Choeronycteris mexicana

MEXICAN LONG-TONGUED BAT

2005 Update by: Paul Cryan

Original account by: Debra Noel

I. DISTRIBUTION: *Choeronycteris mexicana*, a member of the Family Phyllostomidae (leaf-nosed bats), is found in the southwestern United States through Mexico to El Salvador and Honduras. In the United States, it occurs primarily in southern California (the San Diego area), southern Arizona, southwestern New Mexico, and the southern tip of Texas (Figure 1). Extralimital records exist from Grand Canyon National Park in northern Arizona and Las Vegas, Nevada. This bat occurs in a variety of habitats, including thorn scrub, Palo Verde-saguaro desert, semi-desert grassland, oak woodland and tropical deciduous forests. In the southwestern United States, *Choeronycteris* is typically observed in oak-conifer woodlands and semi desert grasslands. Most of the historical sites occupied by this species in southern Arizona and New Mexico were associated with streams and riparian vegetation.



Figure 1: Distribution of *C. mexicana*.

II. STATUS: Global Rank - G4. State Ranks: AZ - S1S2; CA - S2; NM - S1; NV - SA; TX - S1. The Mexican long-tongued bat is currently listed by the U.S. Fish and Wildlife Service as a Species of Concern. This classification describes an entire realm of taxa whose conservation status may be of concern to the Service (former C2 species). This designation carries with it no official status. This species is also considered Sensitive by the U.S. Forest Service, is considered to be Rare in Mexico, is proposed as a Species of Special Concern in California, and is included in Arizona Game and Fish Department's Wildlife of Special Concern in Arizona. Fewer than 1,500 individuals of this species have been documented since its discovery. In Arizona, all bats are protected from take by Arizona Game and Fish Commission Order #14.

III. IDENTIFYING CHARACTERISTICS AND LIFE HISTORY: Like other phyllostomid (=leaf-nosed) bats, C. mexicana has a leaf-like projection at the tip of its nose. It can be distinguished from other phyllostomid bats occurring in the U.S. by its relatively shorter ears, longer and narrower rostrum, and the presence of a tail. This species typically roosts in twilight areas near the entrances of caves, mines, rock crevices, and abandoned buildings. Roosting groups are usually comprised of < 15 individuals, but some colonies may reach 40-50 individuals. During the spring and summer, they rarely cluster and typically roost 1-2 inches apart. In the autumn when temperatures drop below 70oF, they have been observed to cluster in groups of 5-6. These bats are wary of intrusion and tend to fly out of the roost when disturbed. However, multiple roost sites are usually located within close proximity of each other and bats often return to roosts shortly after a disturbance stops. Choeronycteris mexicana forages primarily on nectar and pollen of night-blooming flowers such as species of Agave and columnar cacti. It also may eat the fruit of columnar cacti, along with incidental insects found on the fruit or flowers. Hummingbird feeders may help sustain individuals that arrive in Arizona early in the year, or remain into winter when natural food sources are not available. However, sugar water lacks essential nutrients (e.g., protein, vitamins) required for long-term survival. There is also evidence that they will forage on ornamental vegetation, such as Mexican bird-of-paradise. Very little is known about the migratory movements of this species. Over the past few years, these bats have arrived in Arizona as early as May. Apparently only females come north into the United States to birth and raise their young. The young are typically born in late June to early July, but reports of early-spring and late-autumn births indicate variation in parturition time. The young can fly within 2-3 weeks of birth. In October and November, they depart their maternity roosts for Mexico and Central America, where they remain active during the winter. Evidence suggests that some individuals may over-winter in warmer areas of Arizona and autumn and/or winter records exist for southern California and Texas.

IV. THREATS: Possible threats to this species include recreational caving; natural or intentional mine closures, renewed mining, mine reclamation, and loss of food resources. Long-term sustainability of food plants may be extremely important to this species. Anthropogenic activities such as development, prescribed fire, or grazing could potentially have negative impacts on food plants. In addition, direct disturbance and loss of riparian habitat brought about by such activities may also adversely affect this species in the southern United States.

In general, the long term persistence of North American bat species is threatened by the loss of clean, open water; modification or destruction of roosting and foraging habitat; and, for hibernating species, disturbance or destruction of hibernacula. Chemicals in the environment that affect bats or their prey are also a threat. Because of low fecundity and long generational turnover, many bat populations may be vulnerable to human-induced pressures.

V. SURVEY METHODS: Morphologically distinct. Roosts are difficult to find, but bats are easy to detect in roost. Effectiveness of netting depends on habitat type. This species is difficult to detect acoustically and is indistinguishable from Leptonycteris species in flight, except at very close range (e.g. hummingbird feeders).

VI. GAPS IN KNOWLEDGE: More information is needed to delineate the distribution of this species and better understand its seasonal movement patterns throughout its range. Studies are needed to clarify roosting and foraging requirements. This species may be amenable to mark-recapture methods for assessing population trends.

VII. SELECTED LITERATURE:

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furry, fishy, feathery & fantastically coldblooded



spotted bat

photo by Scott Altenbach



SCIENTIFIC NAME:

Euderma maculatum

CLASSIFICATION:

Mammal - bat

SIZE:

Body length – 4 ¼ to 4 ½ inches

Wingspan – about 14 inches

Weight – 16 to 20 grams

DESCRIPTION:

The spotted bat is a black bat with very large, pink ears. Conspicuous white spots mark each shoulder, the rump, and the base of each ear.

LIFE SPAN :

HABITAT:

Spotted bats can be found in wetland, riparian, rock, cliff, desert, shrubland, grassland, or woodland habitats usually near a permanent water source. They roost in caves and rock crevices mainly, but may also occasionally use mines, caves, and buildings as roost sites.

RANGE:

The range extends from British Columbia south through the western United States and Mexico. The distribution is scattered in Nevada and is tied to availability of cliff, roosting-habitat near or adjacent to riparian areas.

NATURAL HISTORY:

Spotted bats are generally solitary and hunt alone, although they may hibernate in small groups. They arouse periodically from their hibernation to forage for food or to drink. The bats may be seen hanging by their feet with their heads down while roosting.

FOOD HABITS:

Spotted bats forage for insects, primarily moths, high in the air or rarely near the ground.

BREEDING:

A single young is born in June or July to an attentive mother. The mother nurses the young almost constantly for the first two days, even while flying.

STATUS:

Spotted bats are State Protected in Nevada and are further classified as "Threatened". They are also on the Bureau of Land Management Sensitive Species list.

REASON FOR STATUS:

Little is known about the population sizes and needs of spotted bats. They are rare and patchy in distribution in Nevada. Habitat loss, collection, recreational rock climbing, water impoundments, grazing, mining operations, and pesticide use threaten this species.

MANAGEMENT & CONSERVATION:

More information is needed on the habits, habitat requirements, and abundance of spotted bats. Recent survey efforts have revealed additional needs of spotted bats in Nevada.

FUN FACTS:

Unlike the higher frequency echolocation calls of other bats, the spotted bat's echolocation call is actually audible to humans, even from quite a distance away.

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... the pallid bat of western North America is immune to the stings of scorpions and even the seven-inch centipedes upon which it feeds.



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Lasionycteris noctivagans

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Common Name: Silver-haired bat



Lasionycteris
Vesper bats (Vespertilionidae)
Lasionycteris noctivagans
Silver-haired bat

Family: Vespertilionidae **Genus:** Lasionycteris **Species:** noctivagans

Pronunciation: *lay-zee-oh-nick-ter-is nock-ti-vah-gans*

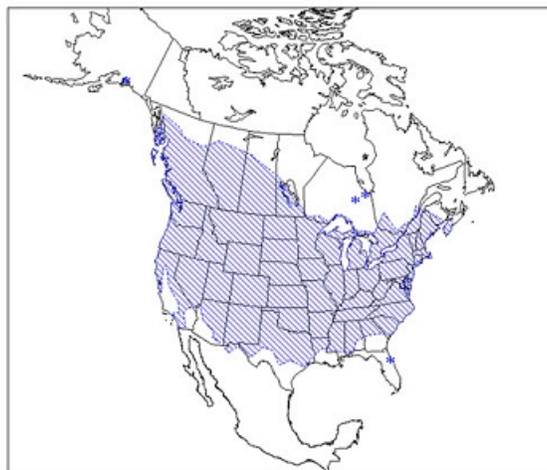
Common name: silver-haired bat

Silver-haired bats are among the most common bats in forested areas of America, most closely associated with coniferous or mixed coniferous and deciduous forest types, especially in areas of Old Growth. They form maternity colonies almost exclusively in tree cavities or small hollows. And like many forest-roosting bats, silver-haired bats will switch roosts throughout the maternity season. Because silver-haired bats are dependent upon roosts in Old Growth areas, managing forests for diverse age structure and maintaining forested corridors are important to these bats.

It is estimated that these bats require snag densities of at least 21 per hectare and often forest management practices have fallen far short of this figure. Unlike many bat species, silver-haired bats also appear to hibernate mainly in forested areas, though they may be making long migrations from their summer forest to a winter forest site. Typical hibernation roosts for this species include small tree hollows, beneath exfoliating bark, in wood piles, and in cliff faces. Occasionally silver-haired bats will hibernate in cave entrances, especially in northern regions of their range. Like big brown bats, the silver-haired bats have been documented to feed on many insects perceived as pest species to humans and/or agriculture and forestry.

Even though they are highly dependent upon Old Growth forest areas for roosts, silver-haired bats feed predominantly in disturbed areas, sometimes at tree-top level, but often in small clearings and along roadways or water courses. Though their diets vary widely, these bats feed chiefly on small, soft-bodied insects. Silver-haired bats have been known to take flies, midges, leafhoppers, moths, mosquitoes, beetles, crane flies, lacewings, caddisflies, ants, crickets, and occasional spiders.

Approximate North American Range



To learn more, read about this bat at our [BATS magazine archive](#).

[Bats and Old-Growth Forests: Are Both Vanishing?](#)
[Hide and Seek: In Search of Forest Bats](#)

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... vampire bats adopt orphans and have been known to risk their lives to share food with less fortunate roost-mates.



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Lasiurus cinereus

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Common Name: Hoary bat



Lasiurus

Vesper bats (Vespertilionidae)

Lasiurus cinereus

Hoary bat

Family: Vespertilionidae **Genus:** Lasiurus **Species:** cinereus

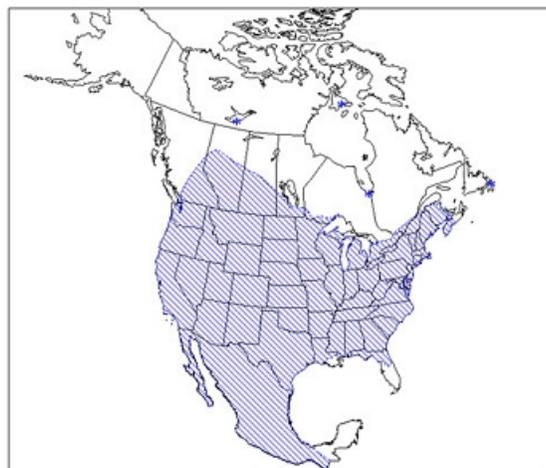
Pronunciation: *lay-zee-your-us sa-near-ee-us*

Common name: hoary bat

Hoary bats are one of America's largest and most handsome bats. With their long, dense, white-tipped fur, they have a frosted, or hoary, appearance. Humans rarely get the chance to see these magnificent bats; they are not attracted to houses or other human structures, and they stay well-hidden in foliage throughout the day. They typically roost 10-15 feet up in trees along forest borders. In the summer, hoary bats don't emerge to feed until after dark, but during migration, they may be seen soon after sundown. They sometimes make round trips of up to 24 miles on the first foraging flight of the night, then make several shorter trips, returning to the day roost about an hour before sunrise. Between late summer and early fall, they start their long journey south, migrating to subtropical and possibly even tropical areas to spend the winter.

Traveling in waves, they are often found in the company of birds, who also migrate in groups. For the rest of the year, however, hoary bats remain solitary. They are among the most widespread of all bats, found throughout most of Canada and the United States and south into Central and South America. The hoary bat is Hawaii's only native land mammal. Stray individuals have been found from Iceland to Orkney Island as well as in Bermuda and the Dominican Republic.

Approximate North American Range:



To learn more, read about this bat in the BATS magazine archive:

The Little-known World of Hoary Bats
 How North America's Bats Survive the Winter
 'Ope'ape'a: Hawaii's Elusive Native Bat
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Eumops perotis

Western Mastiff Bat

Order: Chiroptera
Family: Molossidae



[Click to play \(0:10, 870 kb\)](#)

Credit: New Mexico Bat Call Library, W. L. Gannon



Eumops perotis - upper left (with *E. underwoodi*)

[Click to enlarge. \(78 kb\)](#)

Western mastiff bats live in rugged, rocky canyons typical of the arid Southwest, where they inhabit crevices in vertical cliffs. Because of their relatively large body size and narrow wings, these bats are unable to take off from a flat surface, and must instead freefall from a height to initiate flight. Hanging upside-down in a crevice, it can let go, gain airspeed as it drops, and flap away for its nightly hunt for insect prey. If an individual is on the ground, it will scramble up a tree or other object to get high enough to be able to launch itself into flight. In the early 1900s, they often roosted in buildings in southern California, but this may not be the case today.

Also known as:

Greater Mastiff Bat, Bonnetted Bat

Sexual Dimorphism:

Males are larger than females.

Length:

Average: 175 mm

Range: 159-187 mm

Weight:

Range: 45.5-73 g

References:

Schinz, H.R., 1821. *Das Thierreich eingetheilt nach dem Bau der Thiere als Grundlage ihrer Naturgeschichte und der vergleichenden*



[Click to enlarge. \(132kb\)](#)

Anatomie von dem Herrn Ritter von Cuvier.
Stuttgart, Germany, 1:870.

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Banded Gila Monster

(pronounced HEE-lah)



SCIENTIFIC NAME:

Heloderma suspectum
 Family: *helodermatidae*

CLASSIFICATION:

Reptile - lizard

SIZE:

9-14 inches (22-35 cm) plus the tail

DESCRIPTION:

The Gila monster is distinctive among other reptiles. It is a large, heavy-bodied lizard with a massive head, a short, swollen sausage-shaped tail and a mottled pattern of black and pink, orange, or yellow beadlike scales. Its dark forked tongue flicks out in snake-like fashion. The legs are short and appear set too far apart to support the lengthy body. The feet have strong curved claws used for digging.

LIFE SPAN :

May live 20 to 30 years

HABITAT:

The Gila monster is found in most habitats throughout its range. It is common in areas with Saguaro cactus and along washes at elevations from near sea level to 4,100 feet. Its range is limited to regions that receive several inches of rain during the summer months and have mild winters and hot summers.

RANGE:

The Gila monster is primarily a desert species. It occurs in extreme southwestern Utah, the southern tip of Nevada, southwestern New Mexico, Arizona, and Sonora.

NATURAL HISTORY:

The Gila monster and the closely related Mexican beaded lizard are the world's only known venomous lizards. They are also the largest lizards in North America. Venom is produced in glands in the lower jaw. From 41 to 45 sharp teeth line the upper and lower jaws. Gila monsters lack hollow fangs like those found in rattlesnakes. Instead, their front teeth have grooves which facilitate the movement of venom through their saliva as the lizard chews. The venom is used in subduing some prey and also as a defense against some predators such as owls, kit foxes, coyotes and rattlesnakes. A bite from a Gila monster is powerful and painful but rarely fatal to humans.

The food-acquiring methods of the Gila monster are a deadly combination of powerful digging limbs and powerful jaws combined with especially keen senses of smell, hearing, and the sensing of ground vibrations. These soil diggers are opportunists that occasionally eat birds and lizards, and the eggs of birds and reptiles. They are highly successful carnivores that swallow their prey whole.

The Gila monster's tail is a good indicator of its physical condition. A plump, well-rounded tail is the sign of a well-fed, healthy animal. A skinny, triangular-shaped tail indicates the Gila monster may be starving and dehydrated. Serving as a fat storage-locker, the Gila monster's tail is not detachable as is the tail of many other species of lizards. Gila monsters can survive several years on the stored fat in their tails.

The growth rate of the wild adult Gila monster is slow and averages from 1/10th-1/5th of an inch a year, depending on the animal's size and condition. Young Gila monsters grow at a faster rate than the adults. Hatchlings may grow two inches or more a year in the first three years or so.

Gila monsters may be observed both during the day and at night. They are most active in April and May when their chances of securing food are best, and at night during the summer rainy season. In November they enter hibernation and are not seen on the surface again until March.

FOOD HABITS:

Gila monsters eat small mammals; eggs, chiefly of ground-nesting birds (quail and mourning dove) and reptiles, lizards, insects and carrion (dead animals).

BREEDING:

Gila monsters reach sexual maturity in four to five years at which time they are 14-16 inches in length and weigh 1-1½ pounds. Females lay a clutch of 1-8 eggs (possibly to around a dozen) July to August. The hatchlings are about 6-6½ inches and weigh just over one ounce.

STATUS:

State protected but not listed as threatened and endangered. Utah and Arizona also classify the Gila monster as protected.

REASON FOR STATUS:

Reasons for status include: habitat loss due to urbanization and some agricultural uses; illegal collection; restricted range in Nevada; and limited knowledge and information. CITES (Convention on International Trade in Endangered Species) refers to the Gila monster as being "a species not currently threatened, but may become so unless trade is regulated..." Occasionally it is killed out of fear since it is venomous.

MANAGEMENT & CONSERVATION:

Currently collection (commercial or personal) of Gila monsters is prohibited in Nevada. Nevada Department of Wildlife supports on-going Gila monster research projects conducted by the University of Nevada Reno and other individuals and agencies.

FUN FACTS:

The Gila monster is one of the most misunderstood, maligned, molested, and mythologized animals in the world.

Their scientific name (*Hemidactylus*, "helo, "warty"; derma "skin") describes the beaded or warty look of their bright-colored skin—pink, orange or yellow with black banding.

The Gila monster is the largest lizard or "saurian" native to the U.S. (Alligators are not considered lizards but crocodilians.)

Gila monsters are the slowest lizards.

Gila monsters are the only lizards, living or extinct, to possess grooved teeth and venom glands.

Occasionally the brick-red and black male chuckwalla is misidentified as a Gila monster, and people commonly mistake banded geckos for baby Gila monsters.

Gila monsters are weak but persistent swimmers and take to the water without hesitation.

More than 99% of a Gila monster's life is spent underground and out of sight.

A Gila monster is most likely to be seen in the month of May than any other time of the year.

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Nevada Fauna Facts



furry, fishy, feathery & fantastically coldblooded



desert tortoise



SCIENTIFIC NAME:

Gopherus agassizii

CLASSIFICATION:

Reptile - lizard

SIZE:

Adult carapace length – 20 to 36 centimeters

Adult weight – 10 to 17 pounds

DESCRIPTION:

The brown carapace, or top part of the shell, is highly domed and flattened dorsally with prominent growth lines. The plastron, or bottom part of the shell, is yellowish. Thick, scaly limbs, the tail, and the head can be pulled inside the shell. The hind limbs are elephant-like and the forelimbs are shovel-like for digging. Males are larger and have longer gular shields, or projections of the plastron extending below the throat, and larger chin glands than females. The plastrons of males are concave as opposed to flat in females. Juveniles are smaller and lighter in color than adults.

LIFE SPAN :

Desert tortoises are long-lived, reaching 80 years or more, although 30 to 45 years is more common for adults. Only about 2 percent of hatchlings reach adulthood. Sexual maturity is reached at approximately 15 years of age.

HABITAT:

Desert tortoises are found in desert shrubland habitat in the Mojave Desert at about 1000 to 4000 feet in elevation.

RANGE:

The range extends from the southwestern United States, (Nevada, California, Arizona, Utah, and New Mexico) south to Mexico.

NATURAL HISTORY:

Desert tortoises dig burrows in the ground in which they spend the major portion of their lives. A shallower, summer burrow is constructed as an escape from heat. They hibernate in their deeper (up to 30 feet), winter burrows. Winter burrows are often communal. Desert tortoises may use multiple burrows in the summer, while the winter burrow is usually used year after year. The desert tortoise is diurnal and can be seen out of its burrow most often in the mornings. The tortoises are able to store water in their bladder for months at a time without voiding and their waterproof skin and shell reduce evaporation. Also, they can switch from excreting urea, which contains a lot of water, to excretion of uric acid crystals when necessary.

FOOD HABITS:

The desert tortoise is an herbivore. Its diet includes grasses, cacti, and forbs as well as some insects, caterpillars, and insect larvae. Most of the desert tortoises' water is obtained from the vegetation they eat since water is rarely available to drink.

BREEDING:

During the breeding season, males bob their heads and ram each other to establish dominance and compete for females. Females lay a clutch of up to 15 eggs (usually 4 to 12) in May to July and 0 to 3 clutches may be laid per year. The eggs are laid in a shallow hole near the entrance to the burrow. Hatchlings emerge in the late summer or fall. The shells of hatchlings are leathery and may take 5 years or more to fully harden, making them vulnerable to predators.

STATUS:

Desert tortoises are currently listed as a Threatened species under the Endangered Species Act. In Nevada, they are classified as a State Protected and Threatened species.

REASON FOR STATUS:

Numbers of desert tortoises in the wild are declining due to habitat loss, fragmentation, and degradation. The spread of easily transmitted diseases, road kills, and illegal collection from wild populations further contribute to the range-wide declines. High levels of predation on juveniles as well as their slow maturation rate make it difficult for populations to recover.

MANAGEMENT & CONSERVATION:

Habitat protection is crucial for the recovery and continued existence of the desert tortoise. Large tracts of undisturbed, undeveloped land have been protected for the benefit of desert tortoises. Numerous federal, state, and local agencies are working cooperatively to protect the desert tortoise, and extensive research is being conducted in the areas of tortoise diseases and biology. Desert tortoise populations are continuously monitored in Nevada.

FUN FACTS:

The desert tortoise is the Nevada state reptile.

The temperature at which desert tortoise eggs are incubated determines whether the hatchling will be male or female. At lower temperatures most hatchlings will be male, while at higher temperatures most hatchlings will be female.

Desert tortoises have existed on earth for millions of years.

The desert tortoise is the largest reptile living in the Mojave Desert.

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Description: Individual bee species can be distinguished from each other by the hairiness of their body, by the first segment (tarsus) of the hind leg which is generally enlarged and flattened, and their wings. Length of female Mojave gypsum bee 11 - 13 mm (to 0.5 in.), wing length 4 mm (0.16 in.). Specific diagnostic features for females are red abdomen, short dense body hairs, and high vertex (top of head between eyes). Length of male bee 9 - 12 mm (to 0.47 in.), wing length 4 mm (0.16 in.), vertex high, and yellow spot in the eye. Wing membranes of both sexes are hyaline (transparent, colorless) with dark-red to reddish brown veins. Outer coverings mostly black except features described above. Flight period of Mojave gypsum bee is from March to early May.

Diet: Mojave gypsum bee collects pollen from a single plant species, the sunray (*Enceliopsis argophylla*), which is also the sole source of pollen for its offspring.

Habitat: Bees occur in various habitats, and nest on the ground (a characteristic of the Andrenidae family), or in various natural cavities. Mojave gypsum bees are restricted to the habitat of its host plant, sunray.

Range: Endemic to Clark County, Nevada, and the Arizona side of Lake Mead. Occurs in areas around Lake Mead and the Las Vegas basin where it is restricted to the gypsum soils associated with its host plant.

Comments: Mojave gypsum bee is considered a High Priority Evaluation Species. It is one of over 30 rare bee species in Clark County, Nevada, and of over 600 bee species in the Mojave Desert.

Jeff Knight, Nevada Division of Agriculture

Mammal Links

Bird Links

Reptile Links

Amphibian Links

Fish Links

Invertebrates Links

Plant Links

[Back to Invertebrates](#)

Arctomecon californica Torrey & Fremont**LAS VEGAS BEARPOPPY**

FAMILY: *Papaveraceae*, the poppy family.

STATUS: **Heritage Program SENSITIVE LIST, ranks: G3 S3**

USFWS/ESA: species of concern. **STATE OF NEVADA:** FULLY PROTECTED. **BLM:** Special Status Species in Nevada. **USFS:** none. **NNNPS:** THREATENED.

POPULATION CENSUS (NEVADA): **63 extant occurrences mapped** at 1.0 km (0.6 mi) separation, **OR 92 extant and 22 extirpated occurrences mapped** at 0.16 km (0.1 mi) separation; total estimated **individuals 445,000+**, total estimated **area 8342+ ha (20,614+ ac)**. **TREND:** DECLINING RAPIDLY.

IMPACTS AND MAJOR THREATS (NEVADA): Habitat clearing for urban and residential development, highway construction and maintenance, flood control, gypsum mining, etc., off-road vehicle use, dumping, pollinator declines due to habitat fragmentation. Impoundment of Lake Mead inundated a large area of habitat, but the remaining populations there are large and relatively well-protected.

INVENTORY EFFORT (NEVADA): Surveys are substantially complete. Most recent entered survey 2000, average year of last survey 1992. **Years since last entered survey** (percent of mapped records at various survey ages): **0-5 yrs:** 35.9%; **6-10 yrs:** 55.6%; **11-20 yrs:** 2.6%; **21-30 yrs:** .9%; **31-50 yrs:** 1.7%; **51+ yrs or unknown:** 3.4%.

LAND MANAGEMENT (NEVADA) in decreasing predominance: U. S. Bureau of Land Management, private lands, National Park Service, Nevada state lands, U. S. Department of Defense, U. S. Fish and Wildlife Service (?).

RANGE: Clark County, Nevada; also in AZ and UT (introduced). Maximum Nevada **range dimension 97.7 km (60.7 mi)** excluding most disjunct record.

ELEVATIONS RECORDED (NEVADA): 1060-3642 feet (323-1110 meters).

HABITAT (NEVADA): Open, dry, spongy or powdery, often dissected ("badland") or hummocked soils with high gypsum content, often with well-developed soil crust, in areas of generally low relief on all aspects and slopes, with a sparse cover of other gypsum-tolerant species surrounded by *Larrea tridentata*, *Atriplex*, and *Coleogyne ramosissima* associations. On appropriate soil types, will often revegetate disturbances that have been allowed to recover if a soil seedbank remains.

PHENOLOGY: flowering spring. Range of most frequent **survey months:** February-July.

LIFE-FORM AND HABIT: evergreen perennial cushion.

DESCRIPTION: A short-lived perennial herb with showy yellow flowers in bloom April-May. Flower stalks are 2-4 dm tall.

PHOTOGRAPHS: Mistretta et al. (1996); Nevada Natural Heritage Program images web page (1998-present), slide collection (1986-present), and files.

ILLUSTRATIONS: Flora of North America editorial Committee (1997), Mozingo and Williams (1980).

OTHER GENERAL REFERENCES (listed separately): Holland et al. (1979), Holland et al. (1980), Niles et al. (1997), Niles et al. (1996).

SPECIFIC REFERENCES:

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***Eriogonum corymbosum* Bentham var. (unnamed) Reveal LAS VEGAS BUCKWHEAT**

FAMILY: *Polygonaceae*, the buckwheat family. **SYNONYMS:** *E. c.* var. *glutinosum* (misapplied), *E. c.* var. *aureum* (misapplied). **OTHER COMMON NAME:** golden buckwheat.

STATUS: **Heritage Program SENSITIVE LIST, ranks: G5 T2T3 S2**

USFWS/ESA: none. **STATE OF NEVADA:** recommended for full protection. **BLM:** Special Status Species in Nevada. **USFS:** none. **NNPS:** THREATENED.

POPULATION CENSUS (NEVADA): **15 occurrences mapped** at 1.0 km (0.6 mi) separation, **OR 29 occurrences mapped** at 0.16 km (0.1 mi) separation; total estimated **individuals 5188+**, total estimated **area 420+ ha (1038+ ac)**. **TREND:** DECLINING RAPIDLY.

IMPACTS AND MAJOR THREATS (NEVADA): Conversion of habitat for residential and urban development, off-road vehicle use, trash dumping, flood control, road and utility corridors, gypsum mining.

INVENTORY EFFORT (NEVADA): Surveys are ongoing and becoming relatively complete. Most recent entered survey 2004, average year of last survey 1999. **Years since last entered survey** (percent of mapped records at various survey ages): **0-5 yrs:** 13.8%; **6-10 yrs:** 86.2%. **Earliest entered record:** 3 October 1997.

LAND MANAGEMENT (NEVADA) in decreasing predominance: private lands, U. S. Bureau of Land Management, Nevada state lands (?), U. S. Department of Defense (?).

RANGE: Clark County, Nevada; also in UT (?). Maximum Nevada **range dimension 60.6 km (37.6 mi)** excluding most disjunct record. **Type specimen** collected in Clark County.

ELEVATIONS RECORDED (NEVADA): 1900-3839 feet (579-1170 meters).

HABITAT (NEVADA): On and near gypsum soils, often forming low mounds or outcrops in washes and drainages, or in areas of generally low relief, often with *Arctomecon californica* and other gypsum-tolerant species, surrounded by *Ambrosia dumosa*, *Stanleya pinnata*, *Atriplex canescens*, *Ephedra torreyana*, *Larrea tridentata*, *Acacia greggii*, *Suaeda torreyana*, *Psorothamnus fremontii*, etc.

PHENOLOGY: flowering summer to fall, August to November. Range of most frequent **survey months:** September-November.

LIFE-FORM AND HABIT: long-lived shrub.

DESCRIPTION AND IDENTIFICATION: Shrubs 0.3-1.2 m high, 0.4-2.3 m across, leaves and flowering branches with silvery tufts of cobwebby hairs, leaves oval, stalked, 1-4 cm long, flowers numerous in masses along upper branches, 6-parted, bright to pale yellow (rarely whitish), 2-3 mm long, seeds triangular, 2-2.5 mm long, light brown.

Distinguishing features: Distinguished from other yellow-flowered varieties by the sparse silvery tufts of cobwebby hairs on the flowering branches and upper leaf surfaces.

PHOTOGRAPHS: Niles *et al.* (1999); Nevada Natural Heritage Program images web page (1998-present) and files.

ILLUSTRATIONS: none known.

OTHER GENERAL REFERENCES (listed separately): Niles *et al.* (1997), Reveal (1985), Welsh *et al.* (1993).

SPECIFIC REFERENCES:

Reveal, J. L. 2002. A review of *Eriogonum corymbosum* Benth with emphasis on the species in southern Nevada. Montrose, CO: Spring Canyon Enterprises, prepared for the U. S. Fish and Wildlife Service, Las Vegas, NV. 39 pages.

OF FURTHER INTEREST: The flowers are visited by a wide variety of insects. Reveal's (2002) field study concluded that the Nevada populations are distinct from vars. *aureum* and *glutinosum*. Publication as a variety new to science (var. *nilesii*) is expected in December 2004. Molecular studies are underway at Utah State University to determine its genetic significance.

Penstemon bicolor (Brandegee) Clokey & Keck **ssp. *bicolor*****YELLOW TWOTONE BEARDTONGUE**

FAMILY: *Scrophulariaceae*, the figwort family.

SYNONYMS: *Penstemon palmeri* var. *bicolor*
Penstemon pseudospectabilis ssp. *bicolor*
Penstemon bicolor (?)

STATUS:

Heritage Program SENSITIVE LIST, ranks: G3 T2Q S2

USFWS/ESA: species of concern. **STATE OF NEVADA:** none. **BLM:** Special Status Species in Nevada.

USFS: Humboldt-Toiyabe NF Sensitive Species. **NNNPS:** watch list.

POPULATION CENSUS: **31 occurrences mapped** at 1.0 km (0.6 mi) separation, OR **34 occurrences mapped** at 0.16 km (0.1 mi) separation; total estimated **individuals 784+**, total estimated **area unknown**. **TREND:** DECLINING.

IMPACTS AND MAJOR THREATS: Urban expansion of Las Vegas.

INVENTORY EFFORT: Surveys have been extensive and are ongoing. Most recent entered survey 1999, average year of last survey 1980. **Years since last entered survey** (percent of mapped records at various survey ages): **0-5 yrs:** 2.9%; **6-10 yrs:** 42.9%; **11-20 yrs:** 11.4%; **21-30 yrs:** 25.7%; **31-50 yrs:** 2.9%; **51+ yrs or unknown:** 14.3%.

LAND MANAGEMENT in decreasing predominance: U. S. Bureau of Land Management, private lands, Nevada state lands (?), Humboldt-Toiyabe National Forest (?), National Park Service (?).

RANGE: Clark County, Nevada; also in CA (?). Possible or probable **Nevada endemic**. Maximum **range dimension 95.8 km (59.5 mi)** excluding most disjunct record. **Type specimen** collected in Clark County.

ELEVATIONS RECORDED (NEVADA): 2500-5480 feet (762-1670 meters).

HABITAT: Calcareous or carbonate soils in washes, roadsides, rock crevices, outcrops, or similar places receiving enhanced runoff, in the creosote-bursage, blackbrush, mixed-shrub, and lower juniper zones.

PHENOLOGY: flowering spring. Range of most frequent **survey months:** April-May.

LIFE-FORM AND HABIT: perennial herb.

DESCRIPTION: not available (see references).

PHOTOGRAPHS: Weixelman and Atwood (1990); Nevada Natural Heritage Program images web page (1998-present), slide collection (1986-present), and files.

ILLUSTRATIONS: Mazingo and Williams (1980), Weixelman and Atwood (1990).

OTHER GENERAL REFERENCES (listed separately): Clokey (1951), Hickman (1993), Niles et al. (1998), Niles et al. (1999).

SPECIFIC REFERENCES:

Clokey, I. W. and D. D. Keck. 1939. Reconsideration of certain members of *Penstemon* subsection *Spectabiles*. *Bulletin of the Southern California Academy of Sciences* 38: 8-13.

Keck, D. D. 1937. Studies in *Penstemon* V. The section *Peltanthera*. *American Midland Naturalist* 18: 790-829.

Morefield, J. D. 1992. Status report for *Opuntia whipplei* Engelman and Bigelow var. *multigeniculata* (Clokey) L.

Benson. Carson City: Nevada Natural Heritage Program, prepared for the U. S. Fish and Wildlife Service, Reno.

Phacelia parishii A. Gray**PARISH PHACELIA**

FAMILY: *Hydrophyllaceae*, the waterleaf family.

STATUS: **Heritage Program SENSITIVE LIST, ranks: G2G3 S2S3**

USFWS/ESA: species of concern. **STATE OF NEVADA:** none. **BLM:** Special Status Species in Nevada.

USFS: none. **NNNPS:** watch list.

POPULATION CENSUS (NEVADA): **16 occurrences mapped;** total estimated **individuals 37,000,000+**, total estimated **area 1860+ ha (4596+ ac).** **TREND:** DECLINING.

IMPACTS AND MAJOR THREATS (NEVADA): No summary available (see references).

INVENTORY EFFORT (NEVADA): Surveys in Nevada are largely complete. Most recent entered survey 1998, average year of last survey 1989. **Years since last entered survey** (percent of mapped records at various survey ages): **0-5 yrs: 5.9%; 6-10 yrs: 88.2%; 51+ yrs or unknown: 5.9%.**

LAND MANAGEMENT (NEVADA) in decreasing predominance: U. S. Bureau of Land Management, private lands, U. S. Fish and Wildlife Service, U. S. Department of Defense, Nevada state lands.

RANGE: Clark, Lincoln, Nye, and White Pine counties, Nevada; also in AZ and CA. Maximum Nevada **range dimension 378.7 km (235.3 mi)** excluding most disjunct record.

ELEVATIONS RECORDED (NEVADA): 2190-5922 feet (668-1805 meters).

HABITAT (NEVADA): Moist to superficially dry, open, flat to hummocky, mostly barren, often salt-crustated silty-clay soils on valley bottom flats, lake deposits, and playa edges, often near seepage areas, sometimes on gypsum deposits, surrounded by saltbush scrub vegetation but with few immediate associates such as *Atriplex confertifolia*, *A. canescens*, *A. argentea*, *Poa secunda*, *Monolepis nuttalliana*, *Phacelia fremontii*, *Lepidium flavum*, *Sarcobatus vermiculatus*, etc. Aquatic or wetland-dependent in Nevada.

PHENOLOGY: flowering late-spring. Range of most frequent **survey months:** April-August.

LIFE-FORM AND HABIT: small annual.

DESCRIPTION: not available (see references).

PHOTOGRAPHS: Blomquist et al. (1995), Knight and Smith (1996), Knight et al. (1997), Smith (1997); Nevada Natural Heritage Program files.

ILLUSTRATIONS: Cronquist et al. (1984).

OTHER GENERAL REFERENCES (listed separately): Beatley (1976), Cochrane (1979), Hickman (1993), Niles et al. (1998).

SPECIFIC REFERENCES:

Harrison, B. F. 1980. Botanical survey of threatened and endangered plants Schell Resource Area. Ely, Nevada: Bureau of Land Management.

Howell, J. T. 1943. Studies in *Phacelia* - A revision of species related to *P. pulchella* and *P. rotundifolia*. *American Midland Naturalist* 29: 1-26.

Smith, F. 1997. Current knowledge and conservation status of *Phacelia parishii* A. Gray (*Hydrophyllaceae*) in Nevada, September 1996 (second draft 1/17/97). Carson City: Nevada Natural Heritage Program, DRAFT status report prepared for the U. S. Fish and Wildlife Service, Reno.



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[View Glossary](#)***Astragalus preussii* var. *laxiflorus*** - Gray

Lancaster Milkvetch

Related ITIS Name(s): *Astragalus preussii* var. *laxiflorus* Gray (TSN 192701)

Unique Identifier: ELEMENT_GLOBAL.2.138949

Element Code: PDFAB0F721

Informal Taxonomy: Plants, Vascular - Flowering Plants - Pea Family



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Kingdom	Phylum	Class	Order	Family	Genus
Plantae	Anthophyta	Dicotyledoneae	Fabales	Fabaceae	Astragalus

Check this box to expand all report sections: **Concept Reference****Concept Reference:** Kartesz, J.T. 1994. A synonymized checklist of the vascular flora of the United States, Canada, and Greenland. 2nd edition. 2 vols. Timber Press, Portland, OR.**Concept Reference Code:** B94KAR01HQUS**Name Used in Concept Reference:** *Astragalus preussii* var. *laxiflorus***Taxonomic Comments:** Nevada-Arizona and California occurrence clusters may be two distinct taxa; reports from Utah are likely erroneous (J. Morefield, pers. comm. 2008).**Conservation Status****NatureServe Status****Global Status:** G4T2**Global Status Last Reviewed:** 16Apr2008**Global Status Last Changed:** 16Apr2008**Rounded Global Status:** T2 - Imperiled**Reasons:** Known only from the area around Lake Mead (Nevada-Arizona) in the lower Muddy and Virgin valleys, and disjunctly in northeastern Los Angeles County (Lancaster), California. Approximately 13 occurrences are believed extant, 7 in Nevada, 3 in Arizona, and 3 in California. Likely declining in the California portion of the range, but not precipitously. This taxon is also potentially in Utah (near the NV-AZ sites).**Nation:** United States**National Status:** N2?

U.S. & Canada State/Province Status	
United States	Arizona (S1), California (S1), Nevada (S1S2)

Other Statuses

NatureServe Conservation Status Factors

Global Abundance Comments: Generally uncommon, although Nevada botanists are seeing it frequently in the Lake Mead area (J. Morefield, pers. comm. 2008).

Estimated Number of Element Occurrences: 6 - 20

Estimated Number of Element Occurrences Comments: Approximately 13 occurrences are believed extant, 7 in Nevada, 3 in Arizona, and 3 in California. Some Nevada occurrences have not be revisited recently, but they are located in remote areas where they are likely to persist, and so are presumed extant. It is believed that a few, but not many, additional EOs might be found with intensive survey of suitable habitat in range.

Global Short Term Trend: Declining (decline of 10-30%)

Global Short Term Trend Comments: Likely declining in the California portion of the range.

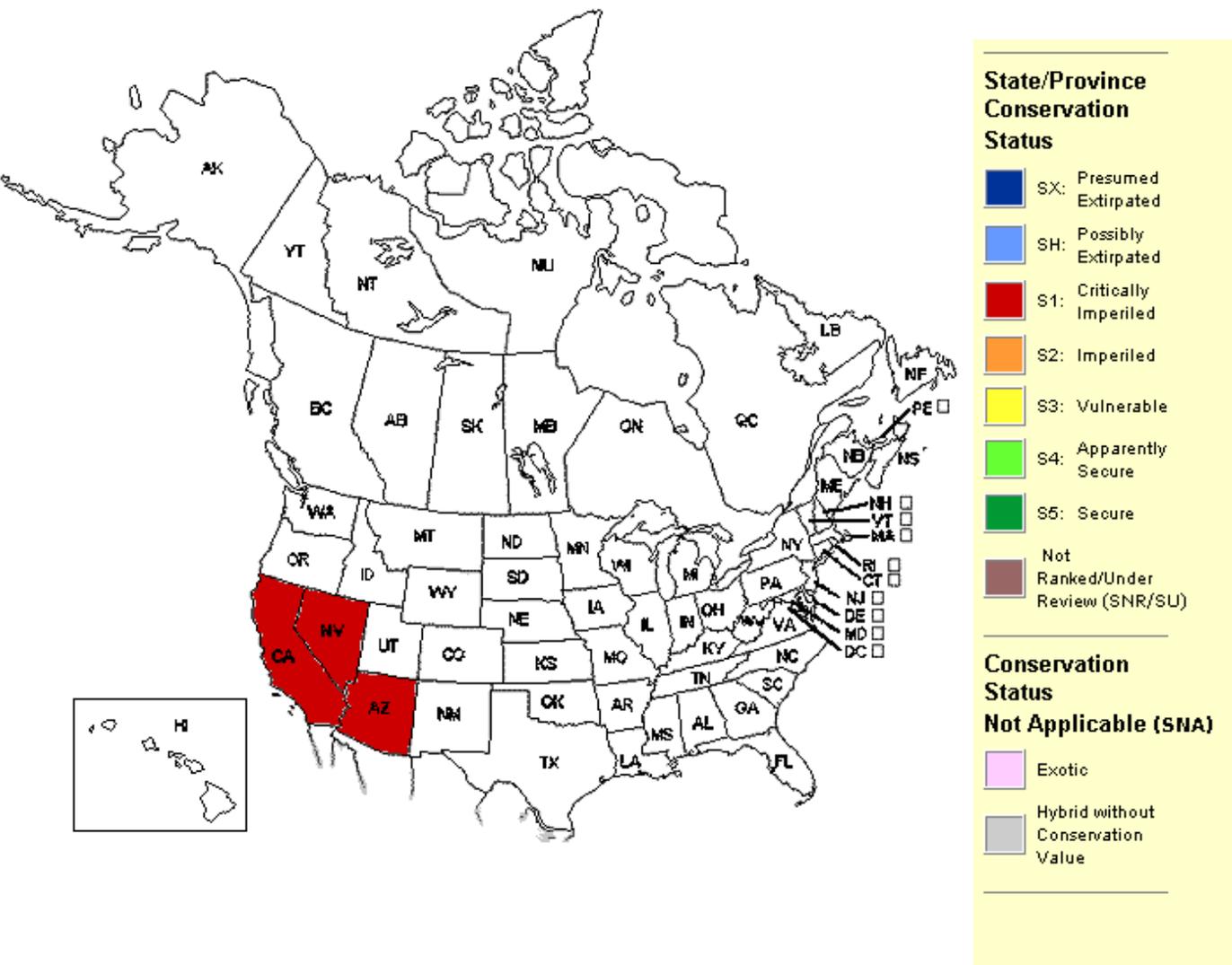
Global Long Term Trend: Relatively stable (+/- 25% change)

Global Long Term Trend Comments: Probably declining somewhat, but long-term trend believed relatively stable.

Distribution

U.S. States and Canadian Provinces





U.S. & Canada State/Province Distribution	
United States	AZ, CA, NV

Range Map
No map available.

Global Range Comments: Known only from the area around Lake Mead (Nevada-Arizona) and disjunctly in northeastern Los Angeles County (Lancaster), California. This taxon has also been reported from Utah (near the NV-AZ sites), but these reports may be erroneous (J. Morefield, pers. comm. 2008). Range extent is approximately 1000-2000 square km, not including the area between the NV-AZ cluster of occurrences and the CA occurrences (which is not considered to be suitable habitat).

Natural heritage records exist for the following U.S. counties ?	
State	County Name (FIPS Code)
CA	Kern (06029)*, Los Angeles (06037)*
NV	Clark (32003)*

* Extirpated/possibly extirpated

U.S. Distribution by Watershed (based on available natural heritage records) ?	
Watershed Region ?	Watershed Name (Watershed Code)
15	Lake Mead (15010005)+, Havasu-Mohave Lakes (15030101)+
18	Antelope-Fremont Valleys (18090206)+

+ Natural heritage record(s) exist for this watershed

* Extirpated/possibly extirpated

Ecology & Life History

Basic Description: An ill-scented, pink-flowered locoweed (Fabaceae).

Technical Description: Perennial but sometimes flowering the first season, rather coarse and robust, glabrous or nearly so below the inflorescence, the few hairs when present, either filiform or scalelike, appressed up to 0.1-0.5 mm. long, confined to the margins and midrib of the leaflets, the malodorous herbage green or yellowish-green, somewhat leathery; stems several, erect and ascending, (0.7) 1-3.5 dm long, simple or few-branched below the middle. Leaves (3.5) 4.5-18 cm long, shortly petioled or the uppermost sessile, with stiff rachis and (7) 11-25 rather distant leaflets 1.5-27 mm long, these varying in shape from suborbicular-obcordate through oblong-obovate to linear-elliptic, narrowly lanceolate, or linear and acute. Inflorescence open; racemes loosely (3) 4-16 (22)-flowered, the axis 4-23 cm long in fruit; bracts membranous, pallid or purplish, ovate or lanceolate, 1.5-4mm long; pedicels ascending, straight, at anthesis (1) 1.5-2.8 mm; bracteoles nearly always 2, sometimes minute; calyx (6.4) 8-9.4 mm long, thinly strigulose with black or mixed black and white hairs. Flowers pink or when dried bluish-purple, sometimes pallid but distally suffused with lilac-purple, banner about 14 mm. Pod sessile or nearly so, oblong-ellipsoid; more or less round in cross-section, stiffly papery. Ovules smooth or nearly so, sometimes mottled with dull purple, 2.4-3.7 mm long.

Diagnostic Characteristics: Fruit base not stalk-like; inflorescence open, axis in fruit 4-23 cm; banner more or less 14 mm.

Duration: PERENNIAL

Ecology Comments: Gravelly or sandy washes and along gullied badlands from 1200-2500 feet. Also grows on alkaline clay flats in the southwest Mohave Desert. May prefer selenium rich soils.

Habitat Comments: Gravelly or sandy desert washes, alkaline desert playas. 360 - 750 m.

Economic Attributes

Economically Important Genus: Y

Management Summary

Stewardship Overview: This very rare native plant has had very little research done on its basic biology and its needs are almost completely unknown.

Preserve Selection & Design Considerations: Requires sandy or gravelly washes along draws in gullied badlands. Often grows in selenium rich soils.

Monitoring Requirements: Historic and potential habitat of species, particularly in the California portion of its range, should be surveyed.

Management Research Needs: All aspects of the basic biology of this species require more research.

Population/Occurrence Delineation

Alternate Separation Procedure: [Use the Habitat-based Plant Element Occurrence Delimitation Guidance \(2004\).](#)

Date: 01Oct2004

Population/Occurrence Viability

Justification: [Use the Generic Element Occurrence Rank Specifications \(2008\).](#)

[Key for Ranking Species Element Occurrences Using the Generic Approach \(2008\).](#)

U.S. Invasive Species Impact Rank (I-Rank)

Authors/Contributors

NatureServe Conservation Status Factors Edition Date: 05May2008

NatureServe Conservation Status Factors Author: Gravuer, K.

Management Information Edition Date: 06Jul1995

Management Information Edition Author: Michael Schindel

Element Ecology & Life History Edition Date: 05Jul1995

Element Ecology & Life History Author(s): Michael Schindel

Botanical data developed by NatureServe and its network of natural heritage programs (see [Local Programs](#)), The North Carolina Botanical Garden, and other contributors and cooperators (see [Sources](#)).

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Note: This report was printed on **March 25, 2009**

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NatureServe. 2009. NatureServe Explorer: An online encyclopedia of life [web application]. Version 7.1. NatureServe, Arlington, Virginia. Available <http://www.natureserve.org/explorer>. (Accessed: March 25, 2009).

Citation for Bird Range Maps of North America:

Ridgely, R.S., T.F. Allnutt, T. Brooks, D.K. McNicol, D.W. Mehlman, B.E. Young, and J.R. Zook. 2003. Digital Distribution Maps of the Birds of the Western Hemisphere, version 1.0. NatureServe, Arlington, Virginia, USA.

Acknowledgement Statement for Bird Range Maps of North America:

"Data provided by NatureServe in collaboration with Robert Ridgely, James Zook, The Nature Conservancy - Migratory Bird Program, Conservation International - CABS, World Wildlife Fund - US, and Environment Canada - WILDSPACE."

Citation for Mammal Range Maps of North America:

Patterson, B.D., G. Ceballos, W. Sechrest, M.F. Tognelli, T. Brooks, L. Luna, P. Ortega, I. Salazar, and B.E. Young. 2003. Digital Distribution Maps of the Mammals of the Western Hemisphere, version 1.0. NatureServe, Arlington, Virginia, USA.

Acknowledgement Statement for Mammal Range Maps of North America:

"Data provided by NatureServe in collaboration with Bruce Patterson, Wes Sechrest, Marcelo Tognelli, Gerardo Ceballos, The Nature Conservancy-Migratory Bird Program, Conservation International-CABS, World Wildlife Fund-US, and Environment Canada-WILDSPACE."

Citation for Amphibian Range Maps of the Western Hemisphere:

IUCN, Conservation International, and NatureServe. 2004. Global Amphibian Assessment. IUCN, Conservation International, and NatureServe, Washington, DC and Arlington, Virginia, USA.

Acknowledgement Statement for Amphibian Range Maps of the Western Hemisphere:

"Data developed as part of the Global Amphibian Assessment and provided by IUCN-World Conservation Union, Conservation International and NatureServe."

NOTE: Full metadata for the Bird Range Maps of North America is available at:

<http://www.natureserve.org/library/birdDistributionmapsmetadatav1.pdf>.

Full metadata for the Mammal Range Maps of North America is available at:

<http://www.natureserve.org/library/mammalsDistributionmetadatav1.pdf>.

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Version 7.1 (2 February 2009)
Data last updated: February 6, 2009