# ARIZONA GAME AND FISH DEPARTMENT
# HERITAGE DATA MANAGEMENT SYSTEM

**Plant Abstract** **Element Code:** PDPAP02010
**Data Sensitivity:** No

## CLASSIFICATION, NOMENCLATURE, DESCRIPTION, RANGE

**NAME:** *Arctomecon californica* Torrey & Fremont
**COMMON NAME:** Las Vegas bearpoppy, California bearpoppy, California bear poppy, Yellow-flowered desert-poppy, Golden bear claw poppy, Golden bear-claw poppy
**SYNONYMS:**
**FAMILY:** Papaveraceae

**AUTHOR, PLACE OF PUBLICATION:** *Arctomecon californica* Torrey & Fremont, Report of the exploring expedition to the Rocky Mountains in the year 1842 312(174), pl. 2. 1845.

**TYPE LOCALITY:** United States of America, Utah, Las Vegas, near the Rio Virgin, in southern Utah. Notes by S.L. Welsh, 1990, "The camp at Las Vegas, present Clark Co. Nevada, was on 3 May 1844, where it was taken 'on the bank of a creek'. Two huge springs coalesced into a stream – the only one in the vicinity."

**TYPE SPECIMEN:** HT: NY-387532. J.C. Fremont 429, 3 May 1844. Verified by S.L. Welsh, 9 Sep 1990.

**TAXONOMIC UNIQUENESS:** The species *californica* is distinct and 1 of 3 in the genus *Arctomecon*, which in turn is 1 of 19 genera in the Family Papaveraceae.

**DESCRIPTION:** A short-lived perennial herb, 8-24 inches high (20-60 cm), with stout taproot, rather numerous grayish-blue basal leaves, and large bright-yellow flowers. Leaf blades are wedge-shaped, broadest above the middle, shallowly to deeply 3-7 lobed distally, up to 15 cm long (6 in; FNA 1993+ reports 3-20 cm (1.2-8 in)) and 5 cm (2 in) wide distally, covered with long white, shaggy hairs, sometimes also minutely hirsute, narrowed at the base to a stalk about as long as the blade. Upper leaves may be sessile, lack the three-toothed blunt apex. Inflorescences 3-20 flowered, branching, glabrous throughout or long-pilose proximally; stems leafless; buds glabrous. Flower petals caduceus, usually 6 (sometimes 4 or up to 8), deep yellow, 1-2 inches long; stamens numerous; style absent. Sepals 2 or 3, glabrous, falling soon after the flowers open. Fruit form as egg-shaped persistent capsules up to 1 inch long, upright, 6-ribbed, opening at the top by flaps that develop as the fruit dries; dehiscing not more than ¼ length. Seeds usually at least 100 (up to 160) per fruit, shiny black. (Mistretta et al. 1996; FNA 1993+; Falk and Jenkins et al. 2001)

**AIDS TO IDENTIFICATION:** *Arctomecon californica* closely resembles *A. merriami* (from Nevada) and *A. humilis* (from Utah), but is easily separated by presence of yellow (not white) flowers that are clustered at the top of the flowering stalks (Brian, 2000). Plants in the Grand Canyon populations are generally larger and occur on a different substrate and in a different habitat from those around Lake Mead (gypsum-rich clay soils), and may merit separate taxonomic treatment (Falk and Jenkins et al., 2001).

**ILLUSTRATIONS:** Color photos of plant and flower (SNWA 2003, http://www.snwa.com/html/env_bearpoppy.html)
Color photo of flower (http://www.nvwf.org/nevada/plants/bearpop.htm)
Color photos of plant and flowers (Carol Bruce 1998-2000, *in* CalPhotos http://elib.cs.berkeley.edu/cgi/
Color photo (Keir Morse, *in* http://www.keiriosity.com/papaveraceae/arctomecon_california3.htm)
Color photo (Christopher Christie, *in* http://www.rangenet.org/directory/christiec/plants/papaveraceae/ARCA4.jpg)
Color photo of flower (K. Schulz, *in* http://www.cemml.colostate.edu/floristics/te9.htm)
B&W line drawing (Falk and Jenkins et al., 2001)
Color photo of plant (Barb Phillips, *in* Falk and Jenkins et al., 2001)
Color photo of habitat (Art Phillips, *in* Falk and Jenkins et al., 2001)
Color photos of plant and habitat (A.M. Phillips, III, *in* Brian 2000)
Color photo of Holotype including drawing (NY-387532, NYBG, *in* http://207.156.243.8/emu/vh/specimen.php?irn=110850)
Line drawing (*in* FNA 1993+, at http://www.efloras.org/florataxon.aspx?flora_id=1&taxon_id=233500118)
Color photo of specimen (ASU-91500, *in* http://seinet.asu.edu/collections/TaxaDetails.jsp)

**TOTAL RANGE:** Most populations occur in east central Clark County, Nevada, and are associated with the Las Vegas Valley and on gypsum soils associated with the Colorado River drainage. There is also a small population in northwestern Arizona, in Mohave County. Reported from a single collection in Washington County, Utah, which apparently occurred in cultivation on private property (Welsh et al., 1993).

**RANGE WITHIN ARIZONA:** Lake Mead, Pierce Ferry, near Rampart Cave, Detrital Valley, and Lower Granite Gorge in Mohave County.

## SPECIES BIOLOGY AND POPULATION TRENDS

**GROWTH FORM:** Perennial forb/herb.

**PHENOLOGY:** Flowers mid spring from April – May, and fruiting early summer from May - June; rosettes present all year.

**BIOLOGY:** Short lived (3-10 years), hardy plant that lives in areas with seasonal temperature extremes and low rain fall (<10 inches annually). It can withstand summer temperatures that regularly exceed 120ºF and winter temperatures that may reach as low as 20ºF. Large populations have been observed to suddenly die off (1973, 1991 and 1992). Although die-offs will occur, mature plants will often be replaced by new cohorts. This trait underscores the need to protect large habitat areas, allowing cohorts to die off and return in the same place or elsewhere. Plants contain several alkaloids, and if eaten freely, are said to be poisonous to sheep, less so to cattle. Common pollinators of this species include bees, butterflies, humming birds, and even flies.

**HABITAT:** Barren, gravelly desert flats, shale, hummocks and slopes in the creosote bush zone, that are heavily gypsiferous or otherwise chemically unusual (borate-bearing, lithium-bearing); 500-1000 m. Per Morgan (1995), "It tends to occur predominantly on the Moenkopi and Horse Springs geological formations in association with desert washes where cryptogrammic crust has developed." In Arizona, found in Mohave desertscrub within the Grand Canyon, on narrow gravelly Formation and Devonian limestone shelves high on the slopes of side canyons, 1,600-2,200 ft (480-670 m) elevation (Falk and Jenkins et al., 2001).

A resent study (Childers 2004), using observational data (2,575 observations) and GIS compatible data to characterize *A. californica* habitat, indicated that 34.6% of populations occur on limestone soils. This result contradicts previous research, which characterized this species as a gypsic obligate species. However, these findings need to be reinforced by on the ground field research.

**ELEVATION:** 1,246 – 4,000 ft. (380-1220 m). FNA (1993+) reports elevations of 500-1000 m (1,639-3,279 ft); Falk and Jenkins et al. (2001), reports elevation from 1,600-2,200 ft (480-670). One report of species along Lake Mead at 515 ft (157 m) according to AGFD HDMS (unpublished record accessed 2003).

**EXPOSURE:** In Arizona, collected on slope of 20-60%. (SEINet accessed 2005).

**SUBSTRATE:** Very pure (98%) gypsum. Derived from the Muddy Creek geologic formation. For a discussion of ecology of gypsophile endemisim, see Meyer 1986. The Grand Canyon populations are found on limestone substrates (uncharacteristic for this species). Collected on rocky loam (SEINet accessed 2005).

**PLANT COMMUNITY:** Mohave desertscrub. Associated species (also edaphically specialized) include: *Anulocaulis leiosolenus* (Chihuahuan ringstem), *Enceliopsis covillei* (panamint daisy), *Ephedra torreyana* (Torrey's Mormon-tea), *Petalonyx parryi* (Parry sandpaper-plant), *Phacelia palmeri* (Palmer's scorpion-weed), and *Lepidium fremontii* (Fremont's pepper-grass). *Larrea-Ambrosia* associations surround these edaphic islands.

Dominants in the western end of Grand Canyon may include: *Gutierrezia microcephala* (small-head snakeweed), *Sclerocactus johnsonii* (Johnson barrel cactus), *Sphaeralcea ambigua* (desert globemallow), and *Stephanomeria exigua* (small skeletonplant). According to records in SEINet (accessed 2005), associated species in Arizona include: *Acacia*, *Agave utahensis* (Utah agave), *Atriplex confertifolia* (shadscale), *Dalea* (prairie-clover), *Echinocactus*, *Echinocereus* (hedgehog-cactus), *Ephedra torreyana*, *Fouquieria splendens* (Ocotillo), *Gutierrezia microcephala*, *Larrea tridentata* (creosotebush), *Lepidium fremontii*, *Mortonia*, *Neolloydia* (=*Sclerocactus*), *Opuntia*, *Stanleya pinnata* (desert prince-plume), and *Yucca*. (SEINet accessed 2005).

**POPULATION TRENDS:** According to Hiatt (post 1995), "The Las Vegas bearpoppy was once widespread and abundant on its special gypsum soils, but urban development and other land uses have extirpated nearly 50 populations in the western portion of its distribution. Most of the habitat loss has occurred in the last several decades. The populations on private lands have sustained the heaviest habitat losses, especially in the Las Vegas Valley."

Based on a report by Mistretta et al. (1996), "The total surviving documented population in Nevada now comprises about 580,000 plants on less than 21,000 acres divided among 91 populations between 1221 and 3150 feet (372-960 meters) elevation. Four other populations remain poorly documented. In Arizona, 8 sites under NPS and Hualapai Indian Reservation management are now reported but are largely unquantified. Four of these sites in the Grand Canyon are probably an undescribed taxonomic variant." In Nevada, the eastern half of the species' range is large, remote, and relatively secure under Federal management, rendering extinction of the species highly unlikely in the short term. In the western half, however, populations and genetic diversity are rapidly being lost, potentially posing a long-term threat of extinction. (Mistretta et al., 1996). Threats to the Arizona sites appear much lower, and past impacts have resulted mainly from impoundment of water behind Hoover Dam, inundating portions of 2 sites (Mistretta et al., 1996).

## SPECIES PROTECTION AND CONSERVATION

**ENDANGERED SPECIES ACT STATUS:** None (USDI, FWS 1996)
[Category 2 USDI, FWS 1983]
[Category 1 USDI, FWS 1980]

**STATE STATUS:** Salvage Restricted (ARS, ANPL 1999)
[Salvage Restricted (ARS, ANPL 1993)]

**OTHER STATUS:** Critically Endangered (State of Nevada)

**MANAGEMENT FACTORS:** Need to manage because of very desirable gypsum deposits. Threatened by collection from roadside flower-pickers, and by off-road vehicles. Many populations are quickly becoming extirpated as result of increased development in the Las Vegas Valley. Additional potential threats in Nevada include threats from Air Force bombing and gunnery range, development, mining for gypsum, etc. (NatureServe 2005).

**PROTECTIVE MEASURES TAKEN:** In Arizona, this species does obtain some protection by growing mostly within the Lake Mead National Recreation Area, under National Park Service protection.

**SUGGESTED PROJECTS:** Conservation strategy should not focus on just this plant but would cover the "unusual plant community on the gypsum beds." Thorough surveys are needed to determine the complete range of this species in Arizona. Studies are needed to resolve the taxonomy (through genetic studies) of populations in the Grand Canyon, assess their status (through surveys), and pursue any necessary conservation or recovery measures for the taxon.

**LAND MANAGEMENT/OWNERSHIP:** BLM – Kingman Field Office; NPS – Grand Canyon National Park and Lake Mead NRA; State Land Department; and possibly BIA – Hualapai Nation and Private.

## SOURCES OF FURTHER INFORMATION

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**ADDITIONAL INFORMATION:**

Plants cannot be transplanted and apparently no one has been able to grow plants successfully from seed to maturity. Known populations of this taxon should be monitored (Mozingo and Williams 1980).

The name *Arctomecon* is from either the Greek word *arktos* meaning bear or the Latin word *arcto* meaning close or tight and the Greek word *mecon* meaning poppy (Brian, 2000). The name *californica* was named for the Mexican territory of Alta California, where this plant was found in 1844 by John Charles Frémont. Alta California historically included the area of present Las Vegas, Nevada.

**Revised:** 1995-05-22 (DBI)
2003-08-14 (SMS)
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