



U.S. Fish & Wildlife Service
Sacramento Fish & Wildlife Office
Species Account
CALIFORNIA TIGER SALAMANDER
Ambystoma californiense



CLASSIFICATION: Threatened/Endangered

Main (Central Valley) population - Threatened

Sonoma population – Endangered

Santa Barbara population - Endangered

On 8/4/04, we listed the CA tiger salamander as threatened throughout its range. In doing so, we changed the status of the Santa Barbara and Sonoma county populations from endangered to threatened. Federal Register 69:47212 (PDF), August 4, 2004.



On 8/19/05 U.S. District Judge William Alsup vacated the Service's downlisting of the Sonoma and Santa Barbara populations from endangered to threatened.

In May, 2009, the Service agreed to re-propose critical habitat for the population.

For all Federal Register documents about this species, visit the ECOS, the national Environmental Conservation Online System profile.

CRITICAL HABITAT: Designated

In Federal Register Notice 70:49379, August 23, 2005, we designated 199,109 acres of critical habitat in 19 counties for the central population.

In Federal Register Notice 70:74137 (PDF 262 KB), December 14, 2005, we concluded that the designation of critical habitat for the Sonoma County distinct population segment of the CA tiger salamander would have negative impacts on the finalization and implementation of the Santa Rosa Plain Conservation Strategy. Avoiding these negative impacts is a benefit of excluding these lands from the final critical habitat designation.

8-17-2009 Update:

The Service is re-proposing 74,223 acres of the Santa Rosa Plain as critical habitat for the Sonoma County population of the California tiger salamander, opening a 60-day public comment period that closes on Oct. 17, 2009. The Service agreed to re-propose critical habitat in settlement of a lawsuit, and further to complete its rule-making by July 1, 2011.

The proposed critical habitat is the same area proposed in 2005, and includes most of the Santa Rosa Plain. The western limit is Laguna de Santa Rosa, and the proposal extends east to approximately the 200-foot elevation in the foothills. From north to south the proposal extends from Windsor Creek to Skillman Road.

RECOVERY PLAN: Under development

The Santa Rosa Conservation Strategy for recovery planning was completed but has not yet been implemented.

DESCRIPTION

The California tiger salamander (*Ambystoma californiense*) is an amphibian in the family Ambystomatidae. It is a large, stocky, terrestrial salamander with a broad, rounded snout. Adult males are about 20 centimeters (8 inches) long, females a little less than 18 centimeters (7 inches).

Coloration consists of white or pale yellow spots or bars on a black background on the back and sides. The belly varies from almost uniform white or pale yellow to a variegated pattern of white or pale yellow and black. The salamander's small eyes protrude from their heads. They have black irises.

Males can be distinguished from females, especially during the breeding season, by their swollen *cloacae*, a common chamber into which the intestinal, urinary, and reproductive canals discharge. They also have more developed tail fins and, as mentioned above, larger overall size.

The species is restricted to grasslands and low (typically below 2000 feet/610 meters) foothill regions where lowland aquatic sites are available for breeding. They prefer natural ephemeral pools or ponds that mimic them (stock ponds that are allowed to go dry).

Larvae require significantly more time to transform into juvenile adults than other amphibians such as the western spadefoot toad (*Scaphiopus hammondi*) and Pacific tree frog (*Pseudacris regilla*).

Compared to the western toad (*Bufo boreas*) or western spadefoot toad, California tiger salamanders are poor burrowers. They require refuges provided by ground squirrels and other burrowing mammals in which to enter a dormant state called *estivation* during the dry months.

DISTRIBUTION

This species is restricted to California and does not overlap with any other species of tiger salamander. California tiger salamanders are restricted to vernal pools and seasonal ponds, including many constructed stock ponds, in grassland and oak savannah plant communities, predominantly from sea level to 2,000 feet, in central California.

In the Coastal region, populations are scattered from Sonoma County in the northern San Francisco Bay Area to Santa Barbara County (up to elevations of 3,500 feet/1067 meters), and in the Central Valley and Sierra Nevada foothills from Yolo to Kern counties (up to 2,000 feet/610 meters).

The Sonoma population appears to have been geographically isolated from the remainder of the California tiger salamander population by distance, mountains and major waterway barriers for more than 700,000 years.

THREATS

The primary cause of the decline of California tiger salamander populations is the loss and fragmentation of habitat from human activities and the encroachment of nonnative predators. Federal, State and local laws have not prevented past and ongoing losses of habitat. All of the

estimated seven genetic populations of this species have been significantly reduced because of urban and agricultural development, land conversion, and other human-caused factors.

A typical salamander breeding population in a pond can drop to less than twenty breeding adults and/or recruiting juveniles in some years, making these local populations prone to extinction. California tiger salamanders therefore require large contiguous areas of vernal pools (vernal pool complexes or comparable aquatic breeding habitat) containing multiple breeding ponds to ensure recolonization of individual ponds.

A strong negative association between bullfrogs and California tiger salamanders has been documented. Although bullfrogs are unable to establish permanent breeding populations in vernal pools, dispersing immature frogs from permanent water bodies within two miles take up residence and prey on adult or larval salamanders in these areas during the rainy season. Louisiana swamp crayfish, mosquito fish, green sunfish and other introduced fishes also prey on adult or larval salamanders.

A deformity-causing infection, possibly caused by a parasite in the presence of other factors, has affected pond-breeding amphibians at known California tiger salamander breeding sites. This same infection has become widespread among amphibian populations in Minnesota and poses the threat of becoming widespread here.

Reduction of ground squirrel populations to low levels through widespread rodent control programs may reduce availability of burrows and adversely affect the California tiger salamander. Poison typically used on ground squirrels is likely to have a disproportionately adverse effect on California tiger salamanders, which are smaller than the target species and have permeable skins. Use of pesticides, such as methoprene, in mosquito abatement may have an indirect adverse effect on the California tiger salamander by reducing the availability of prey.

Various nonnative subspecies of the tiger salamander within the *Ambystoma tigrinum* complex have been imported into California for use as fish bait. The introduced salamanders may out-compete the California tiger salamanders, or interbreed with them to create hybrids that may be less adapted to the California climate or are not reproductively viable past the first or second generations.

Automobiles and off-road vehicles kill a significant number of migrating California tiger salamanders, and contaminated runoff from roads, highways and agriculture may adversely affect them.

REFERENCES FOR ADDITIONAL INFORMATION

ECOS (Environmental Conservation Online System) Species Profile

Anderson, J.D., D.D. Hassinger and G.H. Dalrymple. 1971. Natural Mortality of Eggs and Larvae of *Ambystoma t. tigrinum*. *Ecology* 52(6):1108-1112.

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Cook, D.G., P.C. Trenham and P.T. Northern. 2006. Demography and breeding phenology of the California tiger salamander (*Ambystoma californiense*) in an urban landscape. *Northwestern Naturalist*, 87:215-224.

Feaver, Paul E. 1971. Breeding pool selection and larval mortality of three California amphibians: *Ambystoma tigrinum californiense* Gray, *Hyla regilla* Baird and Girard and *Scaphiopus hammondi hammondi* Girard. Master's thesis, Dept. Of Biology, Fresno State College, Fresno, California.

Fisher, R., and H. Bradley Shaffer. 1996. The decline of amphibians in California's Great Central Valley. *Conservation Biology*, 10:1387-1397.

Holland, R.F. and S. Jain. 1977. Vernal pools. Pages 515-533. In: M.E. Barbour and J. Major, eds. Supplement to terrestrial vegetation of California (new expanded edition). California Native Plant Society Special Publication 9.

Holland, D.C., M.P. Hayes and E. McMillan. 1990. Late summer movement and mass mortality in the California tiger salamander (*Ambystoma californiense*). *The Southwestern Naturalist* 35(2):217-220.

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Morey, S.R., and D.A. Guinn. 1992. Activity patterns, food habits, and changing abundance in a community of vernal pool amphibians. In: D.F. Williams, S. Byrne, and T.A. Rado (editors), *Endangered and sensitive species of the San Joaquin Valley, California: Their biology, management, and conservation*. The California Energy Commission, Sacramento, California, and the Western Section of the Wildlife Society. 149-158.

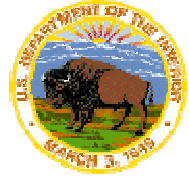
Photo Credit: Cathy Johnson, U.S. Fish & Wildlife Service

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Last updated July 29, 2009



U.S. Fish & Wildlife Service
Sacramento Fish & Wildlife Office
Species Account
BURKE'S GOLDFIELDS
Lasthenia burkei



CLASSIFICATION: Endangered
Federal Register Notice 56:61173; December 2, 1991

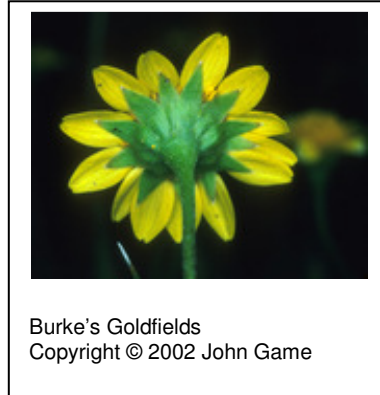
STATE LISTING STATUS AND CNPS CODE:
This species was listed as endangered by the California Department of Fish and Game in September 1997. The California Native Plant Society has placed it on List 1B (rare or endangered throughout its range).

CRITICAL HABITAT: None designated

RECOVERY PLAN: None

5-YEAR REVIEW: Completed 10/8/2008. No change.

DESCRIPTION:



Burke's goldfields is a small, slender annual herb in the sunflower family (Asteraceae). It has narrow, opposite leaves. The plant can be easily confused with other goldfields such as Contra Costa goldfields (*L. conjugens*) by people not trained in botany.

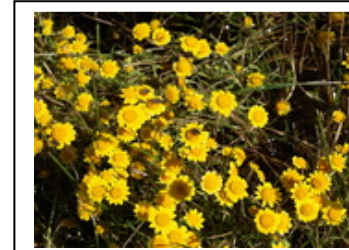
Both the ray and disk flowers of *L. burkei* are bright yellow, while the pappus of the species usually consists of one long bristle and several short bristles. In similar members of the genus, the pappus (seed appendage that aids dispersal by acting like a little parachute) usually is absent or consists of two or more long bristles.

See Hickman (1993) in General Information about California Plants, below, for a detailed description of Burke's goldfields and other goldfields (*Lasthenia*) species.

Flowers bloom from April until June.

VERNAL POOLS:

Vernal pools are a unique kind of wetland ecosystem. Central to their distinctive ecology is their ephemeral nature. Vernal pools fill with water temporarily, typically during the winter and spring, and then disappear until the next rainy season.



Burke's Goldfields
Copyright © 2009 Heather Davis

In California, where extensive areas of vernal pool habitat developed over a long geological timeframe, unique suites of plants and animals have evolved that are specially adapted to the unusual conditions of vernal pools. Fish and other predators are among species that have been excluded evolutionarily by annual filling and drying cycles of vernal pools.

The prolonged annual dry phase of the vernal pool ecosystem also has prevented the establishment of plant species typical of more permanent wetland ecosystems.

DISTRIBUTION:

This vernal pool species is known only from southern portions of Lake and Mendocino counties and from northeastern Sonoma County. Historically, 39 populations were known from the Cotati valley, 2 sites in Lake County, and one site in Mendocino County. The occurrence in Mendocino County is most likely extirpated. From north to south in the Cotati Valley, the species ranges from north of the community of Windsor to east of the city of Sebastopol.

Other endangered plants found in the Cotati Valley include Sonoma Sunshine or Baker's Stickseed (*Blennosperma Bakeri*) and Sebastopol meadowfoam (*Limnanthes vinculans*).

U.S. Geological Survey 7.5 Minute Quads: Santa Rosa (501B) 3812246, Cotati (501C) 3812236, Sebastopol (502A) 3812247, Calistoga (517D) 3812255, Jimtown (518A) 3812267, Healdsburg (518D) 3812257, Lower Lake (533A) 3812285, Clearlake Highlands (533B) 3812286, Middletown (533D) 3812275, Kelseyville (534A) 3812287, The Geysers (534D) 3812277, Ukiah (550B) 3912322.

THREATS:

Primary threats to the species consist of activities that result in the destruction of the plants or hydrologic changes in their vernal pool habitats. Such activities include urbanization, industrial development, agricultural land conversion, off-highway vehicle use, horseback riding, trampling by grazing cattle, and road widening. Damage or destruction of vernal pool habitat happens quickly and easily due to the extremely friable nature of the soil and the dependency of the pool upon an intact *durapan* (impermeable subsurface soil layer).

REFERENCES FOR ADDITIONAL INFORMATION:

Contact the Sacramento Fish and Wildlife Office.

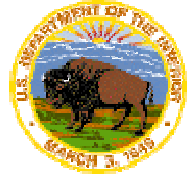
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U.S. Fish & Wildlife Service
Sacramento Fish & Wildlife Office
Species Account
SONOMA SUNSHINE
Blennosperma bakeri

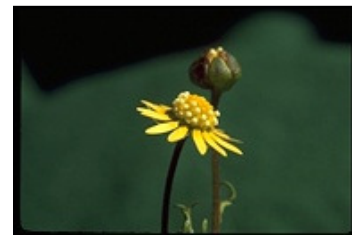


CLASSIFICATION: Endangered
Federal Register Notice 56:61173; December 2, 1991

STATE LISTING STATUS AND CNPS CODE:
This species was listed as endangered by the California Department of Fish and Game in September 1997. The California Native Plant Society has placed it on List 1B (rare or endangered throughout its range).

CRITICAL HABITAT: None designated

RECOVERY PLAN: None



Sonoma Sunshine
J. E. (Jed) and Bonnie McClellan
© 1999 California Academy of Sciences

5-YEAR REVIEW: Completed 10/8/2008. No change.



Sonoma Sunshine
J. E. (Jed) and Bonnie McClellan
© 1999 California
Academy of Sciences

DESCRIPTION:

Sonoma sunshine, which is also known as Baker's stickyseed, is a small (up to 12 inches in height), annual herb in the aster family (Asteraceae). The plant has alternate, narrow, hairless leaves, 2 to 6 inches long. The upper ones have 1 to 3 lobes, the lower ones none.

From March through April, the species produces yellow daisy-like flowers. The yellow disk flowers have white pollen and stigmas. Sterile ray flowers, which are yellow or sometimes white, have red stigmas. The lobe pattern of the leaves and the color of ray stigmas separate this species from other in the genus.

See Hickman (1993) in General Information about California Plants, below, for a detailed description of this species.

VERNAL POOLS:

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In California, where extensive areas of vernal pool habitat developed over a long geological timeframe, unique suites of plants and animals have evolved that are specially adapted to the unusual conditions of vernal pools. Fish and other predators are among species that have been excluded evolutionarily by annual filling and drying cycles of vernal pools.

The prolonged annual dry phase of the vernal pool ecosystem also has prevented the establishment of plant species typical of more permanent wetland ecosystems.

DISTRIBUTION:

Sonoma sunshine is found in grasslands and vernal pools. The species is restricted to the Laguna de Santa Rosa and Sonoma areas in Sonoma County.

U.S. Geological Survey 7.5 Minute Quads: Sears Point (483B) 3812224, Sonoma (500C) 3812234, Santa Rosa (501B) 3812246, Cotati (501C) 3812236, Glen Ellen (501D) 3812235, Sebastopol (502A) 3812247, Healdsburg (518D) 3812257.

THREATS:

Approximately 30 percent of the historic occurrences have been eliminated or seriously damaged. Most of the remaining sites are threatened by urbanization, wastewater effluent irrigation, and agricultural land conversion. Westward expansion of the City of Santa Rosa threatens at least half the remaining habitat.

REFERENCES FOR ADDITIONAL INFORMATION:

Contact the Sacramento Fish and Wildlife Office.

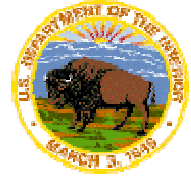
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Species Account
SEBASTOPOL MEADOWFOAM

Limnanthes vinculans

CLASSIFICATION: Endangered
Federal Register Notice 56:61173; December 2, 1991

STATE LISTING STATUS AND CNPS CODE:
This species was listed as endangered by the California Department of Fish and Game in November 1979. The California Native Plant Society has placed it on List 1B (rare or endangered throughout its range).

CRITICAL HABITAT: None designated

RECOVERY PLAN: None

5-YEAR REVIEW: Completed 10/8/2008. No change.



Sebastopol Meadowfoam
Copyright © 1994 Dean Wm. Taylor
Jepson Herbarium

DESCRIPTION:



© Mark W. Skinner

Close-Up of Sebastopol Meadowfoam
Mark W. Skinner @ USDA-NRCS PLANTS
Database

Sebastopol meadowfoam is a small (up to 12-inch tall), multi-stemmed herb of the false meadowfoam family (Limnanthaceae). Although the first leaves are narrow and undivided, leaves on the mature plant have three to five undivided leaflets along each side of a long stalk (petiole). The shape of the leaves distinguishes Sebastopol meadowfoam from other members of the *Limnanthes* genus.

Small, bowl-shaped, white flowers appear April through May. The white flowers are born singly at the end of stems.

See Hickman (1993) in General Information about California Plants, below, for a detailed description of this species.

VERNAL POOLS:

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In California, where extensive areas of vernal pool habitat developed over a long geological timeframe, unique suites of plants and animals have evolved that are specially adapted to the unusual conditions of vernal pools. Fish and other predators are among species that have been excluded evolutionarily by the annual filling and drying cycles of vernal pools.

The prolonged annual dry phase of the vernal pool ecosystem also has prevented the establishment of plant species typical of more permanent wetland ecosystems.

DISTRIBUTION:

The species has not been recorded outside southwestern Cotati Valley, where it occurs in less than thirty locations. It is found in seasonally wet meadows, swales and vernal pools in the Laguna de Santa Rosa, Sonoma County. The species ranges from the city of Graton, east to Santa Rosa, southeast to Scenic Avenue, and southwest to the community of Cunningham, largely surrounding the northern and western perimeter of the city of Sebastopol.

U.S. Geological Survey 7.5 Minute Quads: Sears Point (483B) 3812224, Yountville (500A)? 3812243, Santa Rosa (501B) 3812246, Cotati (501C) 3812236, Sebastopol (502A) 3812247, Camp Meeker (502B)* 3812248, Two Rock (502D) 3812237, Mount St. Helena (517B) 3812266, Healdsburg (518D) 3812257 (* Presumed extirpated)

THREATS:

Primary threats to the species consist of activities that result in the destruction of the plants or hydrologic changes in their habitats. Such activities include urbanization, industrial development, agricultural land conversion, off-highway vehicle use, horseback riding, trampling by grazing cattle and road widening.

REFERENCES FOR ADDITIONAL INFORMATION:

General references about California plants

Contact the Sacramento Fish and Wildlife Office.

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Last updated February 23, 2010



U.S. Fish & Wildlife Service
Sacramento Fish & Wildlife Office
Species Account
MANY-FLOWERED NAVARRETIA
Navarretia leucocephala ssp. *plieantha*



CLASSIFICATION: ENDANGERED
Federal Register Notice 62:33029; June 18, 1997

STATE LISTING STATUS AND CNPS CODE:
This species was listed as endangered by the California Department of Fish and Game in November 1979. The California Native Plant Society has placed it on List 1B (rare or endangered throughout its range).

CRITICAL HABITAT: None designated

RECOVERY PLAN: Recovery Plan for Vernal Pool Ecosystems of California and Southern Oregon; December 15, 2005.

5-YEAR REVIEW: Completed January 2009. No change.

DESCRIPTION



Many-Flowered Navarretia
Copyright © Rick York and CNPS

Many-flowered navarretia (*Navarretia leucocephala* ssp. *plieantha*) is a prostrate annual herb in the phlox family (Polemoniaceae). This plant forms small mats that can range from 2-8 inches wide. The leaves are about 1 inch long, linear and have a few lobes.

The plant flowers in May to June. The flowers are clustered in a head at the end of stems. The head is composed of 20-50 white to blue flowers.

Many-flowered navarretia grows with and can be easily confused with several other navarretias. Among the closely related ones are the endangered few-flowered navarretia (*Navarretia leucocephala* ssp. *pauciflora*) and Baker's navarretia (*Navarretia leucocephala* spp. *bakeri*).

Many-flowered navarretia forms hybrids with few-flowered navarretia. The hybrids do not fit well into any established subspecies. See Hickman (1993) in General Information about



Many Flowered Navarretia
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Jepson Herbarium

California Plants, below, for a detailed description of the various subspecies of *Navarretia leucocephala*.

DISTRIBUTION

Many-flowered navarretia is found in dry meadows, along the margins of volcanic ash vernal pools and lakes and in open wet ground in forest openings. Only a few locations of this species are known from Lake and Sonoma counties. The plant grows in a 400 square mile area, at elevations from 1,800 to 2,800 feet.

U.S.G.S. 7.5 Minute Quads: Kenwood (501A)* 3812245, Santa Rosa (501B) 3812246, Mark West Springs (517C) 3812256, Healdsburg (518D) 3812257, Clearlake Highlands (533B) 3812286, Whispering Pines (533C) 3812276, Middletown (533D) 3812275, Kelseyville (534A) 3812287 (* Presumed extirpated)

THREATS

The primary threats to vernal pool species are activities that result in the direct destruction of the plants and their habitats or hydrologic changes in their vernal pool habitats. Damage or destruction of vernal pool habitat happens quickly and easily due to the extremely crumbly nature of the soil and the dependency of the pool upon an intact durapan or impermeable subsurface soil layer. Attempted drainage of a pool in Lake County containing many-flowered navarretia resulted in the invasion of two competitive weeds, yellow star-thistle (*Centaurea solstitialis*) and medusahead (*Taeniatherum caput-medusa*).

Off-highway vehicle use has resulted and continues to result in the destruction of plants and habitat at four population sites in Lake County. The California Department of Fish and Game has provided fencing at the Loch Lomond site to prevent off-highway vehicle entry into the area.

REFERENCES FOR ADDITIONAL INFORMATION

McCarten, N. 1985. A survey of *Navarretia pauciflora* and *Navarretia plieantha* (Polemoniaceae): Two rare endemics plant species from the vernal pools of the California North Coast Ranges. Endangered Plant Program, Dept. Fish and Game.

For larger images and permission information see CalPhotos <http://calphotos.berkeley.edu/>.

VERNAL POOLS:

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