Species Accounts - Amphibians

Santa Cruz long-toed salamander

Ambystoma macrodactylum croceum

State	Endangered	1971
	Fully Protected	
Federal	Endangered	1967

General Habitat:

The Santa Cruz long-toed salamander occurs in coastal woodlands and upland chaparral near the ponds and freshwater marshes in which it breeds. This salamander spends a significant portion of its life underground in the burrows of small mammals such as mice, gophers, and moles. It can also be found among the roots of plants in upland and wooded areas. At the onset of the rainy season (November or December), adults begin their annual nocturnal migration from upland habitat to the breeding ponds. As the ponds dry (May-August), young salamanders move at night away from the ponds to subterranean or vegetative cover.

Description:

The Santa Cruz long toed salamander is a relatively small (four to 12 inches), black salamander with yellow orange blotches. Preliminary data from a Doctoral study by Wes Savage at U. C. Davis appears to indicate that the Santa Cruz long-toed salamander is a distinct species.

Status:

The Santa Cruz long-toed salamander is a relict form of a species that was more widespread in California during the last glacial period, 10,000 to 20,000 years ago. It became isolated along the coast as a result of climatic changes. Much of its habitat has been lost to urbanization, agriculture, and highway construction. Currently known from 14 sites in coastal areas of Monterey and Santa Cruz Counties, these populations comprise three metapopulations that inhabit ponds or sloughs and the surrounding uplands. Today, the metapopulations are separated by the Pajaro River and Elkhorn Slough and extensive areas of agriculture. The subpopulations are located around individual breeding ponds or clusters of ponds and adjacent upland habitat.

The northern or Santa Cruz County metapopulation appears to be restricted to the area bounded by Valencia Creek on the north, Corralitos Creek on the east, the Pajaro River on the south, and the Pacific Ocean on the west. The northern metapopulation is extremely fractured and it is unlikely that there is exchange between the ponds, further isolating this metapopulation and increasing the threat of random extinction at one or more ponds. The central or McClusky Slough metapopulation is found in the region between the Pajaro River and Elkhorn Slough, and the southern or Moro Cojo metapopulation located between Elkhorn Slough and the Salinas River. In the central and southern metapopulations, the known breeding sites are very close to each other.

The natural patchy distribution of this salamander renders it especially susceptible to random extinction events resulting from habitat loss and degradation, predation by introduced fishes, bullfrogs, and tiger salamanders, and parasite infection. Other threats include pollution, siltation, and declining water quality in breeding ponds due to nearby development and agricultural activities. Improvements associated with the proposed widening of Highway 1 by Caltrans are intended to encroach only an additional 12 feet beyond the edge of the highway. These improvements, including an off-ramp, will be located within an existing mow strip with no cover or habitat value for the salamander. Previous highway construction near Aptos included breeding pond habitat that is now bordered by housing and may not function adequately for the species. Ellicott Pond was dry during 2002 and 2003, probably destroying each year's cohort. The pond is currently managed to ensure an adequate water supply. Surveys of the pond in 2004 found Santa Cruz long-toed salamanders, as well as California tiger salamanders.

The USFWS released a Draft Revised Recovery Plan in 1999. This plan describes a five-part recovery strategy with specific tasks necessary to maintain healthy aquatic, riparian, and adjacent upland ecosystems that provide habitat for Santa Cruz long-toed salamanders. The plan is currently being revised to incorporate new information on metapopulation models.

In 2002, the Trust for Public Lands (TPL) signed an option agreement to purchase the 289-acre Buena Vista property located between Aptos and Watsonville along Highway 1 in Santa Cruz County. The acquisition was funded by a $540,215 grant. The grant was awarded through the Cooperative Endangered Species Conservation Fund Recovery Land Acquisition Section 6 Program, which is part of the Federal Endangered Species Act. The grant will help project partners, including the DFG and the Trust for Public Lands, acquire and protect the Buena Vista Property, which includes one of only 11 remaining breeding sites of the Santa Cruz long-toed salamander. The property will be managed by the USFWS as an addition to the Ellicott Slough National Wildlife Refuge upon its completion. The acquisition will also help connect habitat the Ellicott Slough National Wildlife Refuge and Santa Cruz Long-toed Salamander State Ecological Reserve. The Buena Vista property also provides habitat for one of the larger of only seven populations of the robust spineflower (*Chorizanthe robusta*), a federally-listed, endangered species, and for the California tiger salamander, a candidate.

Recovery activities have been implemented at the Ellicott Slough National Wildlife Refuge, which was established for the salamander. Dense stands of eucalyptus are being cleared. The Santa Cruz long-toed salamander does not use eucalyptus groves as habitat, and in general eucalyptus provide poor quality habitat for native wildlife. The project area will eventually be planted with native species such as coast live oak, coffeeberry, California blackberry, and sticky monkeyflower.

The status in 2004 of the Santa Cruz long toed salamander: Stable to Declining.

Siskiyou Mountains salamander *Plethodon stormi*

State: Threatened 1971
Federal: None

General Habitat:

The Siskiyou salamander is found Klamath Mixed Conifer Montane Hardwood-Conifer habitat types in north-central Siskiyou County. Habitat includes rock outcrops, talus (rock on rock substrates) and forested rocky soils. This species is known to occur from 1,200 to 6,000 feet in elevation.

Description:

The Siskiyou Mountains salamander has a slender body and short limbs. Its coloration is chocolate-brown to purplish-brown on the back (dorsal side) with varying amounts of light flecking on the head, sides, and limbs. Adults may have a faint brown dorsal stripe, and the lower body (ventral side) color is grayish-purple. Juveniles tend to be black or very dark brown with flecking, often exhibiting a light brown or tan dorsal stripe, and are gray ventrally. Adults reach 5.5 inches in total length.

Status:

Lands administered by the USDA Forest Service (USFS) encompass the majority of the known range of the species. The Siskiyou Mountains salamander is identified as a Survey and Manage species in the USFS Northwest Forest Plan. South of the Siskiyou Crest, the USFS requires buffer zones around occupied habitat and surveys to determine occupancy prior to any habitat disturbance. The survey requirement has been eliminated north of the Siskiyou Crest with management of high priority sites. Timber harvests disturb more ground than any other land use in the known range of the Siskiyou Mountains salamander, and are thought to be the primary threat to the species. However, extant populations are found at sites where disturbances including timber harvest, road and skid trail construction and fire have occurred.

This species was previously thought to primarily inhabit stabilized talus in old-growth forest stands with northern exposures, but recent information indicates that it occupies a wider range of forest types under various overstory canopy densities on all exposures. Surveys conducted by DFG for the current Siskiyou Mountains salamander status review also indicate that the Siskiyou Mountains salamander occupy diverse habitats. The current documented range is approximately 420 square miles, significantly larger than the known range (6 square miles) at the time of listing in 1971.

The USFS has collected tissue samples for genetic analyses, but the results have not been published. However, preliminary results indicate substantial divergence within this group of Plethodontid salamanders.

The status in 2002 of the Siskiyou Mountains salamander: *Increasing*.

Tehachapi slender salamander

Batrachoseps stebbinsi

State Threatened 1971
Federal None

General Habitat:

The Tehachapi slender salamander is restricted to the Caliente Creek drainage in the Tehachapi Mountains in northern Kern County and to sites in southern Kern County in the vicinity of Fort Tejon. It is found in moist drainages and ravines in blue oak and gray pine-oak woodland, usually in rock talus and under logs where leaf litter is deep.

Description:

This relatively large and robust slender salamander grows to about four inches in length. It is distinguished by its relatively broad head, long legs, and broad toes. Its dorsal color is light to dark brown, reddish or with light beige patches.

Status:

The Tehachapi slender salamander is reported from 14 sites, primarily within the Caliente Creek drainage. It also occurs at Fort Tejon State Historic Park and within the Tejon Ranch. The salamander has been observed in 2002 and 2003 at the Tejon Ranch during sensitive species surveys although it is not included as a covered species at this time. The limited number of sites occupied by this species makes it extremely vulnerable to changes in its habitat including trampling by grazing cattle and road construction. Information on the life history of this species is largely lacking. There is no information on population structure and dynamics, or demography, or status of the salamander at this time.

Kern Canyon slender salamander

Batrachoseps simatus

State Threatened 1971
Federal None

General Habitat:

This salamander is found only in the Kern River Canyon from the vicinity of Democrat Hot Springs downstream to Live Oak Picnic Area in Kern County. Most known localities for this species are within Sequoia National Forest. Individuals occur beneath rocks, rotting logs, and other surface material, as well as large rock slides and talus on rather steep north-facing slopes. It has been observed in all successional stages of blue oak savannah.

Description:

This species has relatively long limbs and tail and a narrow head. The color is black on the sides and ventral surface, while the dorsal surface has dashes and patches of bronze and light reddish-brown pigment which may form an imperfect dorsal band. Adults grow to four to five inches.

Status:

The Kern Canyon slender salamander is reported from 12 occurrences. The major threats to this species are construction and highway maintenance along Highway 178. Other potential threats include mining, dam construction, small hydropower development, logging in the lower Kern River Canyon, impacts to habitat by collectors.

No comprehensive surveys for this species have been done since 1979. In-depth surveys and quantitative monitoring may not be feasible since moving rocks or litter to uncover salamanders may damage the salamander's habitat.

The status of the Kern Canyon slender salamander is not known.

Desert slender salamander

Batrachoseps aridus (=Batrachoseps major aridus)

State	Endangered	1971
Federal	Endangered	1973

General Habitat:

The desert slender salamander is found only in the Santa Rosa Mountains of Riverside County. It occurs in crevices of limestone and under limestone slabs and other rocks along the base of cliffs with continuous water seepage. During the late winter and early spring, these salamanders may occasionally be found beneath rocks and other objects on the floor of the canyon. Perennial plants in the canyons from which the species is known include desert fan palm, southern maidenhair fern, narrow-leaved willow, honey mesquite, and sugarbush.

Description:

The desert slender salamander is a moderately small, slender salamander with a short tail. The dorsal surface is blackish, overlaid with an indistinct lighter band. The underside of the body is blackish-maroon and the underside of the tail is flesh-colored. Adults grow to about four inches. The desert slender salamander lacks an aquatic larval stage; instead, eggs are laid in moist soil and hatch as fully developed young.

Status:

The desert slender salamander has been reported in Riverside County from Hidden Palm Canyon, a tributary of Deep Canyon, about 10 miles south of Palm Desert, and in the vicinity of Guadalupe Creek, in a canyon separated from Hidden Palms by 4.5 miles of continuous desert. The species is a relict of cooler, moister climatic regimes. Comparative genetic analysis of the two populations has not been completed but preliminary results have confirmed that the Guadalupe Creek population is a disjunct population of *B. aridus.* Phylogenetic analyses using mitochondrial DNA showed that the desert slender salamander is a subspecies of the garden slender salamander (*Batrachoseps major).* However, it is morphologically and ecologically distinct from other species of *Batrachoseps* and is isolated geographically from them (allopatric).

The major threats to this species are from degradation of habitat and illegal collection. For example, Hidden Palms is very near Highway 74 and is susceptible to vandals. The spring that feeds Hidden Palms is located near Asbestos Mountain. This recharge area includes undeveloped BLM, USFWS and CDFG land, as well as portions of the communities of Pinyon Crest, Royal Carrizo, and Chapman Ranch. Water use by these communities may significantly decrease water available to the salamander and degrade water quality due to septic systems. Invasion of the habitat by exotic plants such as tamarisk is another threat. DFG surveys in 2002 found no salamanders at Hidden Palms; Guadalupe Creek was dry. DFG staff cleared tamarisk from Hidden Palms in 2003. A subsequent survey also

did not locate any salamanders.

The Santa Rosa Mountains also provide habitat for the Peninsular bighorn sheep. Since the desert slender salamander and bighorn rely on springs and seeps, protection of habitat for the sheep would also afford some protection for the salamander. In addition, the Santa Rosa and San Jacinto Mountains were designated a National Monument in 2000 by President Clinton. Mining and off-highway vehicle use are banned under this designation and will further protect habitat for the desert slender salamander. The two populations are entirely within the Coachella Valley MSHCP/NCCP planning area and are covered species in the plan.

Surveys for the desert slender salamander will continue under provisions of the MSHCP/NCCP. Quantitative monitoring may not be feasible since moving rocks or litter to uncover salamanders may damage microhabitat features favored by the salamander. A monitoring well will also be installed to monitor both water quality and quantity on an annual basis.

The current status of the desert slender salamander is unknown.

Shasta salamander *Hydromantes shastae*

State: Threatened 1971
Federal: None

General Habitat:

The Shasta salamander is found in Cismontane Woodland and Lower Montane Conifer Forest in Shasta and Siskiyou Counties. Habitat includes moist limestone fissures and caves, volcanic and other rock outcroppings, and under woody debris and duff in mixed pine-hardwood stands.

Description:

The Shasta salamander has webbed toes and a flattened body. The back (dorsal side) is gray-green, beige, tan or reddish, and usually with yellow on the tail. The lower side (ventral surface) is dark with white flecks or blotches. The young are gray-green, olive, tan or reddish on the body and yellowish on the tail. Adults grow from three to four inches.

Status:

Once thought to primarily inhabit isolated limestone formations in the Shasta Lake area of Shasta County, recent surveys have confirmed that it also inhabits non-limestone habitats with new sites as far north as the McCloud Reservoir. Although this species can be found at any time of year if conditions are wet and mild, it is usually found from November through April. There are currently 61 sites representing 16 to 17 population centers, mostly on USFS land. The Shasta-Trinity National Forest has developed a management plan for this species and has prepared a survey protocol. This species is regularly surveyed for as part of the assessment process for Timber Harvest Plans. Primary threats are timber harvest, due to moisture loss via canopy reduction and ground disturbance, highways that can act as barriers to dispersal, and rock quarries that can remove or disrupt habitat.

The status in 2002 of the Shasta salamander: *Stable.*

Limestone salamander *Hydromantes brunus*

State	Threatened	1971
	Fully Protected	
Federal	None	

General Habitat:
The limestone salamander inhabits mossy limestone crevices and talus in the gray pine-oak woodland and chaparral of the lower Merced Canyon, Mariposa County.

Description:
This salamander has webbed toes and a flattened head and body. Adults are brownish above and pale beneath. Juveniles are yellowish green above and darken with age. Adults grow to three or four inches in length.

Status:
The limestone salamander occurs in the Merced River Canyon in the vicinity of Briceburg and along Bear Creek, a tributary to the Merced River, Mariposa County. It has also been found in Hell Hollow, about four miles above Lake McClure and at the confluence of Hell Hollow Creek with Lake McClure. Little is known about population structure and dynamics, or demography of the limestone salamander.

The DFG's Limestone Salamander Ecological Reserve in Mariposa County protects 120 acres of limestone salamander habitat and BLM has designated an additional 1,600 acres as the Limestone Salamander ACEC. The ACEC encompasses both confirmed and potential limestone salamander habitat. Potential threats include gold mining operations, water development, highway construction, and quarrying for limestone. The South Fork Merced River is also a proposed wilderness area and would provide additional protection to the habitat of this salamander.

Black toad *Bufo exsul*

State: Threatened 1971
Fully Protected
Federal: None

General Habitat:
The black toad is restricted to spring systems and associated wetland habitat in the Deep Springs area and in the Saline Valley, Inyo County.

Description:
The back (dorsal surface) of the black toad often appears shiny and lacquer black. There is a narrow white or cream dorsal stripe, and the underside is white or cream with dense mottling and marbling of black. Dark markings often spot the throat. This small toad rarely exceeds three inches in body length. Adults are more aquatic and diurnal than other toad species in California.

Status:
The range of this species is extremely restricted. It is found only in and around Buckhorn Spring, Corral Spring, Bog Mound Spring, and Antelope Spring in Deep Springs Valley, Inyo County. It inhabits watercourses and marshes adjacent to the springs. This species occurs in a very limited area and is therefore vulnerable to any habitat change. A population of this species, likely introduced, was discovered in 1998 in the Saline Valley area of Death Valley National Park, Inyo County.

Genetic studies on both the Deep Springs and Death Valley NP populations have been conducted by Eric Simandle, Ph.D. candidate, at the University of Nevada, Reno (UNR). His work revealed that Saline Valley toads came from the Buckhorn/Corral springs complex and exhibit significant evidence of genetic bottleneck. A genetic bottleneck refers to a drastic reduction in the size of the original population, usually due to a catastrophic event. The resulting new population will be much less genetically diverse and is often very vulnerable to changes in the environment. Toads from Buckhorn and Corral springs are not genetically distinguishable. However, all other combinations are distinct: Buckhorn/Corral can be differentiated from Bog Mound and Antelope; Antelope is different from Bog Mound and Buckhorn/Corral. None of these populations shows a bottleneck, suggesting that they have been fairly stable and also that the Antelope Springs population is likely natural, as opposed to introduced, which had been speculated.

DFG initiated a population monitoring program in 1999, in cooperation with UNR and Deep Springs College (DSC), the owner of most black toad habitat in the Deep Springs area. The results of this study are in press. Management actions proposed for 2003 by DSC and DFG included partial removal of an exclosure fence at Antelope Springs to allow some grazing activity in the spring area where toad use has declined due to dense vegetation; construction of a culvert or other bridge to prevent vehicle trampling of the remaining black toad breeding area downstream of Antelope Spring on BLM land; fence maintenance along the lake pasture at Corral Springs to prevent future trespass of cattle; and mechanical vegetation removal from currently dry irrigation ditches to allow flow and potentially more open breeding habitat prior to black toad hibernation.

The status in 2002 of the black toad: *Stable.*