

California Wildlife Habitat Relationships System
California Department of Fish and Wildlife
California Interagency Wildlife Task Group

SOUTHERN LONG-TOED SALAMANDER
Family: AMBYSTOMATIDAE
A003b

Ambystoma macrodactylum sigillatum
Order: CAUDATA

Class: AMPHIBIA

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DISTRIBUTION, ABUNDANCE, AND SEASONALITY

The long-toed salamander is uncommon to common in preferred habitats in the Sierra from Tuolumne County near the Stanislaus River, north through the mountains of the state, and east of the Cascades in Modoc and Lassen Counties. Preferred habitats include arid grasslands and sagebrush communities, dry woodlands, coniferous forests and alpine meadows adjacent to ponds, springs, and lakes (Ferguson 1961, Petranka 1998, Pilliod and Fronzuto 2005, Nafis 2018). Found at elevations from near sea level to 3,000 m. (9,842 ft.) (Stebbins 1966, Nussbaum et al. 1983).

SPECIFIC HABITAT REQUIREMENTS

Feeding: During dry periods adults feed primarily on arthropods, especially spiders, insects and isopods. During wetter months, when breeding occurs, aquatic dipterans and terrestrial insects are taken. The aquatic larvae of this species feed mostly on small aquatic crustaceans (cladocerans, copepods and ostracods), aquatic dipterans, and tadpoles (Anderson 1968).

Cover: Adults of this species are subterranean during most of the year, utilizing mammal burrows, rock fissures, and occasionally human-made structures. During breeding migrations they may be found under surface objects such as rocks or logs near the breeding pond. Terrestrial juveniles may spend the entire first summer of life in mammal burrows or under surface objects in the immediate vicinity of the breeding pond (Anderson 1967). Aquatic larvae prefer shallow water, less than 30 cm (12 in) in depth, and utilize clumps of vegetation or other bottom debris as cover.

Reproduction: Breeds in a wide range of aquatic habitats including temporary ponds, springs, meadow pools, and large lakes (Pilliod and Fronzuto 2005, Thomson et al. 2016). Some populations, especially those occurring at high elevations, require permanent ponds because of slow developmental rates of larvae (Anderson 1967). Eggs are deposited on vegetation, rocks, sticks, or directly the bottom of the breeding pond (Anderson 1961, Stebbins 2003).

Water: Rainfall and snowmelt are important in the formation and maintenance of breeding ponds. Spring-fed pools also seem to be important breeding habitats. Most surface movements such as migration to and from breeding ponds, and the dispersal of juveniles away from ponds, are associated with sustained rainfall, especially at night. They are more likely to be present in habitats with fishless sites (Leyse 2005).

Pattern: Wide variety of habitats. Found primarily in yellow pine, mixed conifer, and red fir forests associated with mountain meadows.

SPECIES LIFE HISTORY

Activity Patterns: Adults are subterranean most of the year. Nocturnal surface activity in the periods preceding and following breeding and during nocturnal rainfall events.

Seasonal Movements/Migration: Salamanders emerge and migrate to breeding ponds as soon as springtime temperatures are warm enough to reduce snow cover and open ponds. Return migrations may occur immediately after breeding, or may not take place until several weeks after the cessation of breeding activities.

Home Range: Little movement during most of the year. Breeding migrations probably less than 1,000 m. (3,280 ft.) in most localities.

Territory: Not known to be territorial.

Reproduction: Period of breeding variable, depending on snowpack, but usually occurs in late May or June in the Sierra (Anderson 1967), but as late as mid-July in Lassen National Park. Eggs usually are laid in loose clusters, 8 to 10 eggs per cluster (Stebbins 1954), on the underside of logs and slabs of bark in water between 27 and 75 cm (11 and 30 in) in depth. The larval period can be as short as 50 days in low elevation temporary ponds or as long as two years in permanent high elevation pools (Pilliod and Fronzuto 2005).

Niche: Larvae may compete with other larval amphibians where they are sympatric, and are probably preyed upon by aquatic invertebrates, garter snakes, and possibly by other vertebrates. Adults appear to be protected by noxious skin secretions (Anderson 1963).

General Comments: Existing populations are very restricted, and exist in ecologically fragile locations. Most localized changes in distribution appear to be related to the widespread introduction of fishes (brook trout, rainbow trout, and brown trout) in mountain lakes of California. In the Klamath-Siskiyou Mountains, southern long-toed salamanders are 44 times more likely to be present in lakes without trout than in lakes with trout (Welsh et al. 2006). A similar pattern occurs in the north central Sierra Nevada where long-toed salamanders are present in 92.3% of fishless sites, but only 37.5% of fish-containing sites (Leyse 2005). Gene flow between populations appears highly restricted (Savage et al. 2010). With minimal dispersal between ponds, remaining local populations are semi-isolated over ecological and evolutionary time scales even in regions where habitat condition remains high (Savage et al. 2010).

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