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

CALIFORNIA TIGER SALAMANDER *Ambystoma californiense*
(Santa Barbara County DPS)
Family: AMBYSTOMATIDAE Order: CAUDATA CLASS: AMPHIBAS
A001a

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DISTRIBUTION, ABUNDANCE, AND SEASONALITY

The California tiger salamander, Santa Barbara County DPS, is most commonly found in annual grassland habitat, but also occurs in the grassy understory of valley-foothill hardwood habitats, and uncommonly along stream courses in valley-foothill riparian habitats. The species is restricted to Santa Barbara County, within the Santa Maria Basin Geomorphic Province; which occurs between the westernmost extent of the east-west trending Transverse Ranges and the southernmost extent of the north-south trending Coast Ranges (USFWS 2016). They occur at low elevations generally under 475 m (1,500 ft) (Shaffer et al. 1993, Sweet 1993).

SPECIFIC HABITAT REQUIREMENTS

Feeding: Little is known specifically of the food habits of *A. californiense*. Postmetamorphic juveniles and adults of the closely related *A. tigrinum* appear to be "sit-and-wait" predators (Lindquist and Bachmann 1980), taking earthworms, snails, insects, fish, and even small mammals (Stebbins 1972). Aquatic larvae feed on littoral, benthic, and planktonic arthropods. Larvae less than 2 cm (1 in) in length eat zooplankton almost exclusively, while larger individuals consume zooplankton, amphipods, mollusks, and insect larvae (Dodson and Dodson 1971).

Cover: Adults spend most of the year in subterranean refugia, especially burrows of California ground squirrels (*Spermophilus beecheyi*) and occasionally man-made structures (Stebbins 1972, Shaffer et al. 1993). During breeding migrations, individuals are sometimes found under surface objects such as rocks and logs. Postmetamorphic juveniles retreat to small-mammal burrows after spending a few hours or days in mud cracks near water or tunnels constructed in soft soil. Aquatic larvae seek cover in turbid water, clumps of vegetation, and other submerged debris.

Reproduction: Tiger salamanders breed and lay eggs primarily in vernal pools and other temporary rainwater ponds following relatively warm rains in November to February (Shaffer and Fisher 1991). They sometimes use permanent human-made ponds if predatory fishes are absent; streams are rarely used for reproduction. Eggs are laid singly or in clumps on both submerged and emergent vegetation and on submerged debris in shallow water (Stebbins 1972, Shaffer and Fisher 1991, Barry and Shaffer 1994, Jennings and Hayes 1994).

Water: Rainfall is important to the formation and maintenance of breeding ponds. Most surface migrations and other movements by adults are associated with sustained rainfall, especially at night. In some localities, dispersal of post-metamorphic juveniles from breeding ponds is not associated with rainfall. In such cases, desiccation can cause significant mortality. Apparently desiccating individuals aggregate to reduce water loss (Alvarado 1967); *A. tigrinum* conserves water by tolerating high blood urea concentrations (Romspert and McClanahan 1981).

Pattern: Prime habitat in California is annual grassland, but seasonal ponds or vernal pools are crucial to breeding. Permanent ponds or reservoirs are sometimes used as well. The habitats inhabited in Santa Barbara County have several unique soil formations: dune fields, folded and faulted ridges, and adjacent valleys (Hunt 1993, Ferren and Hecht 2003).

SPECIES LIFE HISTORY

Activity Patterns: Adults exist in subterranean refugia most of the year (Stebbins 1972, Shaffer and Fisher 1991, Jennings and Hayes 1994). Before and after breeding, they emerge at night during rains. During breeding, some diurnal activity occurs. In late spring or early summer, postmetamorphic juveniles disperse from breeding sites at night.

Seasonal Movements/Migration: The first rains of November usually initiate adult migration to breeding ponds (Stebbins 1972, Shaffer and Fisher 1991, Jennings and Hayes 1994). They usually stay at the ponds a few days, but some individuals may remain up to several weeks after breeding is completed. Larvae transform during late spring or early summer, usually by the first week of July. They disperse from the breeding sites after spending a few hours or days near the pond margin (Jennings and Hayes 1994).

Home Range: Few movements occur during most of the year. Migrations to and from breeding ponds occasionally exceed 1,000 m (3,300 ft) (Shaffer and Fisher 1991).

Territory: Not territorial.

Reproduction: Breeding and egg-laying normally occur from December through early February. Females lay numerous small clusters of eggs, each containing from 1 to over 100 eggs (Stebbins 1972). Individual females may lay more than 1,000 eggs, deposited on both submerged and emergent vegetation and on submerged debris.

Niche: Larvae may compete with or prey upon other amphibian larvae. Adults are probably not subject to heavy predation by other species due to their secretive behaviors and the brief period of activity at breeding ponds. Long (1964) reported a single *A. tigrinum* in the stomach contents of a badger (*Taxidea taxus*). Large numbers of aquatic larvae are taken by wading birds, particularly herons and egrets. Garter snakes (*Thamnophis spp.*) also may prey on larvae. Larvae of California tiger salamanders are rarely found in ponds with predatory fish (Shaffer and Fisher 1991, Shaffer et al. 1993).

General Comments: The California tiger salamander was given specific status separating it from other tiger salamanders in western North America because of its consistent differentiation from them (Jones 1989, Jennings and Hayes 1994). This supports earlier taxonomy identifying them as a full species (Storer 1925). Little, if any, gene flow occurs between the Santa Barbara County DPS and the other populations (Shaffer et a;. 2004, 2013). Introduced fishes in breeding ponds can reduce the survival of tiger salamander larvae. Even temporary fish introductions are detrimental, as salamander populations can be eliminated within a few years. Aquatic larvae imported from other states are transported by fishermen for bait. Therefore, any new locality records should be viewed with caution. USFWS released a recovery plan for the Santa Barbara County DPS of the California tiger salamander in 2016 (USFWS 2016).

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Life history accounts for species in the California Wildlife Habitat Relationships (CWHR) System were originally published in: Zeiner, D.C., W.F.Laudenslayer, Jr., K.E. Mayer, and M. White, eds. 1988-1990. California's Wildlife. Vol. I-III. California Depart. of Fish and Game, Sacramento, California. Updates are noted in accounts that have been added or edited since original publication.