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

NORTHWESTERN SALAMANDER *Ambystoma gracile*
Family: AMBYSTOMATIDAE Order: CAUDATA Class: AMPHIBIA
A002

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DISTRIBUTION, ABUNDANCE, AND SEASONALITY

The Northwestern salamander occurs in northwestern California south to the mouth of the Gualala River, Sonoma Co. (Stebbins 1951, Snyder 1963), primarily in humid coastal forests. The elevation range extends up to 3110 m (10200 ft) (Stebbins 1985). They are most common in moderate to dense redwood, Douglas fir, red fir, valley-foothill riparian, montane riparian, and montane hardwood-conifer habitats and associated ponds, lakes, and streams. They are resident year-round but adults are rarely seen except during breeding migrations from January to July.

SPECIFIC HABITAT REQUIREMENTS

Feeding: Larvae and neotenic adults feed on aquatic invertebrates. Terrestrial adults feed on terrestrial invertebrates.

Cover: Non-breeding adults are found in damp places in litter, slash, logs, stumps, brush piles and other objects.

Reproduction: Courtship and egg-laying occur in ponds, lakes and streams, and egg masses are attached to sticks, plant stems and other objects.

Water: Ponds, lakes, or streams are necessary for reproduction.

Pattern: Ponds, lakes, or streams must be accessible from the terrestrial forest habitat.

SPECIES LIFE HISTORY

Activity Patterns: Nocturnal. Adults are rarely seen except during breeding migrations, in January to July (depending on elevation and latitude), and may be inactive during part of the nonbreeding season.

Seasonal Movements/Migration: Migrate to water source during the January to July breeding season.

Home Range: No data.

Territory: Not known to defend territories.

Reproduction: Time of egg deposition varies with elevation and latitude, ranging between January and July. Eggs number 30-270 per mass (Stebbins 1951). Larvae may transform after 1 year or may remain as neotenic adults.

Niche: These salamanders are probably eaten by snakes, although they will secrete a sticky, white irritating substance from glands on the head, body, and tail. As larvae, they are preyed upon by rainbow

trout and diving bugs (Neish 1971).

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Stebbins, R C. 1985. A field guide to western reptiles and amphibians. Houghton Mifflin Company, Boston, Massachusetts. 336 pp.stmetamorphic 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.

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). 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.

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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.