



Sensitive Species of the Santa Ana Watershed Series

Southwestern Arroyo Toad (*Bufo microscaphus californicus*)



Photo by Kerwin Russell

The southwestern arroyo toad (*Bufo microscaphus californicus*) is a relatively small toad at about 2-3 inches in length. Its coloration varies from olive green or gray to light brown. The skin is warty with dark spots. The belly is buffy-white and usually lacks spots. A light colored crescent crosses the top of the head between the eyes. The arroyo toad lacks a dorsal stripe, which helps to distinguish it from the more common western toad (*Bufo boreas*). The arroyo toad moves around by hopping rather than walking or taking large jumps (SDNHM 2001). Adult toads consume a wide variety of insects and arthropods including ants, beetles, spiders, larvae and caterpillars, while the juvenile's diet consists almost entirely of ants.

The arroyo toad is found along the coast from the Salinas River Basin in Monterey and San Luis Obispo Counties, south to Arroyo San Simeon in northern Baja California, Mexico. It has lost approximately 75% of its historical range and is now found primarily in the headwaters of large streams in small isolated populations. As a result, the southwestern arroyo toad was listed as an endangered species (USFWS 1999).

Habitat

The arroyo toad is said to have one of the most specialized habitat requirements of any amphibian in California. They spend the breeding season in riparian habitats consisting of low gradient sandy or gravelly streambeds that contain shallow breeding pools with little or no vegetation and adjacent sandy terraces for burrowing. Following the breeding season, the toads leave the riparian area for a variety of different habitats including coastal sage scrub, chaparral, and grassland. These upland habitats are necessary to the existence of the arroyo toad for foraging and over-wintering. Adults are known to move up to one kilometer or more from their primary water source (SDNHM 2001).

Breeding

Six to eight weeks prior to mating, the toads increase their food intake to prepare for the next few months. Breeding usually occurs from March to mid-June depending on annual rainfall and other weather conditions. The arroyo toad will lay 2,000 to 10,000 eggs per season. The eggs are small, dark and laid in double strands along the edge of pools. They begin to hatch within 10-14 days. The tadpoles then spread out in the pool and feed on detritus (organic matter). Breeding pools must be open and shallow with minimal currents, have a sandy or gravelly substrate with little to no vegetation and be overlain with silt. Algal mats serve as cover for the tadpoles (Dudek 2002). The tadpoles metamorphose in 65-85 days (depending on water temperature and food source), during which time they are extremely susceptible to mortality by predation and dehydration. The juveniles are diurnal and spend anywhere from several weeks to a couple of months near the pool where they developed.

Status and Distribution

The southwestern arroyo toad was listed as an endangered species by the United States Fish and Wildlife Service (FWS) on December 16, 1994. Critical habitat was designated on February 2, 2001. The California Department of Fish and Game (DFG) considers the arroyo toad a Species of Special Concern. This species has already been extirpated from over 75% of its historical range. Historical accounts suggest that arroyo toads occurred in most of the drainages throughout its range. Specific accounts were noted in Temescal Wash, southwest of Lake Elsinore. Current populations within the Santa Ana watershed include two small, isolated populations in the San Jacinto River from the Sand Canyon confluence to below the Indian Creek confluence and in Bautista Creek (Dudek 2002). In 2005 arroyo toads were reported from Silverado Creek in Orange County but the sightings could not be re-confirmed.

Threats

Approximately 25% of the arroyo toad's habitat within its historic range remains and much of that is unoccupied. There are several factors that have contributed to the decline of the arroyo toad. The primary factor is destruction and degradation of habitat caused by human activities, such as mining, agriculture, urbanization and dam construction (FWS 1999). Additionally, an excessive amount of tadpoles and some adults are lost to exotic species such as bullfrogs (*Rana catesbeiana*), crayfish (*Astacus* or *Procambus* spp.), and many non-native predatory fish species. Other exotic species such as Argentine ants (*Iridomyrmex humilis*) are quick to move into newly disturbed areas and spread into any nearby riparian habitat causing a decline in, or extirpation of the native ants, which are a major food source for the arroyo toad (USFS 2003). Non-native invasive plant species, such as salt cedar (*Tamarix sp.*) and giant reed (*Arundo donax*) quickly colonize newly created flood terraces, forming dense masses of vegetation that choke out the native flora. These invaders also utilize much more water than native species, which decreases the amount of surface water available for the toads. Some other threats include off-road vehicle use and grazing.

Research and Management Needs

The recovery plan approved by the FWS lists five types of actions that are needed to recover this species. The actions include, protection of breeding and adjacent upland habitat, monitoring existing populations, identifying and securing additional habitat, public education, and further research (FWS 1999). Particular focus should be spent on acquisition of privately owned lands that contain isolated populations or suitable habitat for preservation in perpetuity (Dudek 2002).

SAWA Contact

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Photo credit

Russell, K. April 2003. Contact: Riverside Corona Resource Conservation District (RCRCD).

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