



# Aquatic Herpetofauna

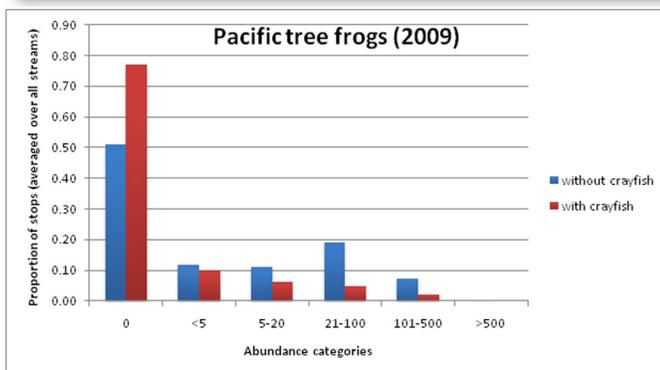
## IMPORTANCE

Urbanization is the most significant source of land use change in southern California. Urban development that results in habitat fragmentation, spread of non-native species, and degraded water and air quality can have measurable impacts on natural open space and the plants and animals that inhabit these areas. Several species of amphibians are widespread throughout the Santa Monica Mountains and Simi Hills. The permeability of their skin and long life (more than 10 years in some species) makes amphibians especially vulnerable to cumulative changes in airborne and waterborne ecosystem stressors.

In 2000, park biologists at the Santa Monica Mountains National Recreation Area began an inventory of aquatic amphibians to assess population status and reproductive success. This inventory effort provided experience and baseline data that guided the development of a long-term monitoring strategy for aquatic amphibians in the Santa Monica Mountains.

## OBJECTIVES

- Determine status and long-term trends in the distribution and relative abundance of aquatic amphibians
- Determine environmental and physical features that may influence amphibian populations in the Santa Monica Mountains



Pacific treefrogs persist in almost all streams in the Santa Monica Mountains, suggesting that non-native predators do not severely affect the distribution of this species. However, the presence of non-native crayfish appears to affect abundance as shown in the graph above depicting the proportion of stops averaged over streams with or without crayfish that contained the various categories of Pacific treefrogs.



The Pacific treefrog (*Pseudacris regilla*) is the most abundant amphibian in the Santa Monica Mountains and can be found in most stream habitats.

## MONITORING EFFORTS

- Ten 'sentinel' sites were retained from the initial inventory effort, conducted between 2000 and 2005, and are sampled annually. In addition, we also sample 36 randomly-selected sites over a three-year rotation (12 per year).
- Sampling occurs from April to July to coincide with the amphibian breeding season. Each sampling location is visited twice during the season: once when a full suite of biological and environmental data are collected, and again to determine the presence or absence of target aquatic amphibians and non-native species.

## MANAGEMENT IMPLICATIONS

- Monitoring the status of native amphibians in the Santa Monica Mountains helps us to detect changes over a broad landscape involving multiple watersheds subjected to various levels of urbanization, pollution and non-native species, which can help to inform resource management decisions and actions.
- Invasive species, such as crayfish, fish, and New Zealand mud snails, have a detrimental effect on our native amphibians. Pacific treefrog tadpole density is severely reduced in streams with crayfish, as compared to streams without.
- New Zealand mud snails have recently invaded many of our streams, and it is unknown how their presence will affect native species. Studies from other areas of the U.S. have shown that native aquatic invertebrates, prey for amphibian larvae,

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