



Fresh Water Quality

IMPORTANCE

The Santa Monica Mountains and Channel Islands are graced with numerous streams that support a diverse aquatic community. However, human disturbances, both direct and indirect have altered the natural quality of many of these streams. On the Channel Islands, past agricultural practices such as cattle grazing and the introduction of feral pigs have resulted in the destruction and degradation of the riparian habitat along some streams. Since removal of cattle and pigs, though, substantial improvement in water quality and riparian vegetation has been observed.

In the Santa Monica Mountains, runoff associated with urban development has resulted in significant increases in stream flow. Several formerly intermittent or ephemerally flowing streams now flow perennially, increasing the availability and consistency of aquatic habitats. However, habitat and water quality is compromised by the generally poor quality of this runoff and the colonization of non-native invasive species such as crayfish, bass, carp, sunfish, the giant reed *Arundo donax*, and, most recently, New Zealand mudsnail (*Potamopyrgus antipodarum*) which require perennial flow for their survival.

OBJECTIVES

- Document the condition and trends in condition of water quality
- Provide correlative data on water quality for evaluating trends in amphibian populations
- Provide data to support advocacy for improving the quality in impaired or threatened streams



Despite the presence of invasive species and water quality degradation from urban runoff, streams in the Santa Monica Mountains support small but robust populations of the steelhead trout (*Oncorhynchus mykiss*), a Federal- and State-listed Endangered Species.



Malibu Creek and its major tributaries form the largest watershed in the Santa Monica Mountains.

MONITORING EFFORTS

Logistical challenges at the Channel Islands has limited initial water quality monitoring planning and implementation to the Santa Monica Mountains. Once monitoring has been implemented in the Santa Monica Mountains, the program will be expanded to the Channel Islands to a selected set of streams of significant management concern.

In the Santa Monica Mountains, monitoring sites were chosen using a combination of judgemental selection (where specific water bodies and locations are targeted based on proximity to known pollution sources or on identified ecological concerns e.g., declining species populations or diversity) and random design, where streams, stream reaches, or specific sampling locations are selected using a randomization process.

- A minimum of 31 stations are to be sampled three times a year. Ten 'sentinel' stream monitoring stations in addition to thirty-six additional random locations from the aquatic amphibian monitoring program. The random sites will be monitored following a rotating panel design with twelve sites sampled each year over a three year period. An additional nine judgemental stations will also be sampled each year.
- Each stream will be sampled three times a year ("first flush", mid-late spring, and end of the wet season) following standard procedures.
- Three independent samples will be collected at each site each visit. The suite of parameters that will be monitored include dissolved oxygen, specific conductance, pH, temperature, discharge, ammonia, nitrate, orthophosphate and chloride.

For more information:

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