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Habitat Highlights: Regional Stream Monitoring in Southern California

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2.2.1 Regional Stream Monitoring in Southern California

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There are over 4,200 stream-miles in the coastal watersheds[2] of Southern California. These streams are important resources for wildlife, as well as drinking water, recreation, agriculture, and many other uses. Despite the beneficial uses of these streams, Southern California's burgeoning population may stress coastal watersheds because of habitat alteration, flood control, water augmentation and diversion, discharge of treated and industrial wastewaters, and urban or agricultural runoff. In 2008, the Stormwater Monitoring Coalition (SMC), a partnership of stormwater agencies, State and Regional Water Quality Control Boards, United States Environmental Protection Agency, CalTrans, and SCCWRP initiated a regional monitoring program to address the following three questions:

1) What is the condition of Southern California streams?
2) What stressors affect stream condition?
3) Is stream condition changing over time?

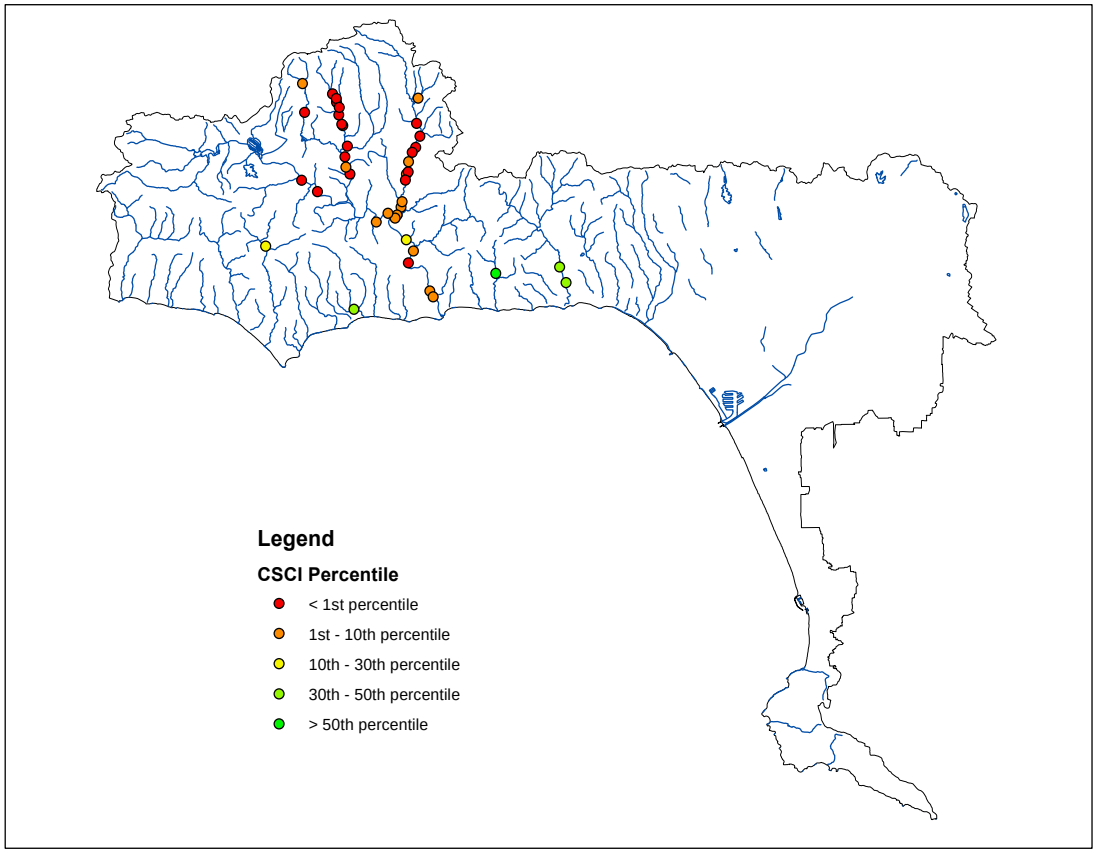
The SMC program uses a probability-based approach whereby overall condition in the region can be inferred from samples collected at a relatively modest (i.e. around 500) randomly selected locations. Condition assessment is based on three indicators: benthic invertebrates, algae, and the California Rapid Assessment Method (CRAM). In addition, a variety of "stressors" related to water chemistry, toxicity, and physical habitat are also measured to help explain potential causes of poor condition, where it exists.

The first five years of monitoring show that approximately 25-30% of the stream miles in Southern California coastal watersheds are in reference or near-reference condition, while another 25-40% are substantially degraded depending on the indicator. The stressors that are most associated with poor biological condition are physical degradation (such as erosion, sedimentation, and physical alteration of the stream channel) and nutrients (Mazor 2015).

For the streams in the Santa Monica Mountains watersheds, approximately 43% of stream miles were in reference or near reference condition, while only 20% were substantially degraded (Figure 2.2.1-1). Sites in the Malibu Creek watershed were generally within the lowest 10% of condition relative to regional reference criteria based on the benthic invertebrate index. Sites in other locations in the Santa Monica Mountains were generally healthier. Similar to the region as whole, the primary stressors associated with poor condition are nutrients, sediments, and high primary productivity (as indicated by chlorophyll concentrations).

[1] Southern California Coastal Water Research Project
[2] All watersheds in Southern California that drain to the ocean

Figure 2.2.1-1. California Stream Condition Index (CSCI) scores for condition based benthic macroinvertebrates for sites within the Santa Monica Bay watersheds. Percentile scores are relative to the distribution of scores at reference sites. Green dots correspond to a CSCI score of 1.0, which is the mean of the reference distribution. Other dots represent CSCI score cutoffs of 0.92 (30%ile), 0.79 (10%ile), and 0.63 (1%ile) of the reference distribution. *Data Source: Stormwater Monitoring Coalition and Southern California Coastal Water Research Project.*



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