



ASSESSING ECOLOGICAL HEALTH OF THE SAN MATEO WATERSHED

MONITORING & ASSESSMENT
SAN DIEGO WATER BOARD
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San Mateo Watershed quick facts:

- 139 square miles
- One of the least-developed watersheds on California's south coast, and among the last unchannelized streams
- Drains portions of the Cleveland National Forest and Camp Pendleton
- Home to several threatened and endangered animal species: arroyo toad; steelhead trout and tidewater goby (fish); least Bell's vireo and southwestern willow flycatcher (birds)

BENEFITS OF WATERSHED ASSESSMENT

Watershed assessment helps managers understand the status of aquatic resources and stressors across the landscape and efficiently allocate efforts toward improvement. The Water Board's [Surface Water Ambient Monitoring Program](#) (SWAMP), along with the southern California [Stormwater Monitoring Coalition](#) (SMC), sampled instream biological communities over several years at various stations within the San Mateo watershed (Figure 1). This fact sheet summarizes the ecological health of the watershed based on available biological and habitat data. As one of the least-developed watersheds in coastal southern California, it is crucial to characterize baseline conditions in the San Mateo to ensure that they do not degrade over time, as well as to establish and track expectations for local healthy stream communities in the absence of major anthropogenic stressors. Results indicate that ecosystem conditions are generally healthy throughout the San Mateo watershed.

San Mateo Watershed



A sampling station in the upper San Mateo Creek watershed.
(photo: E. Thomas)

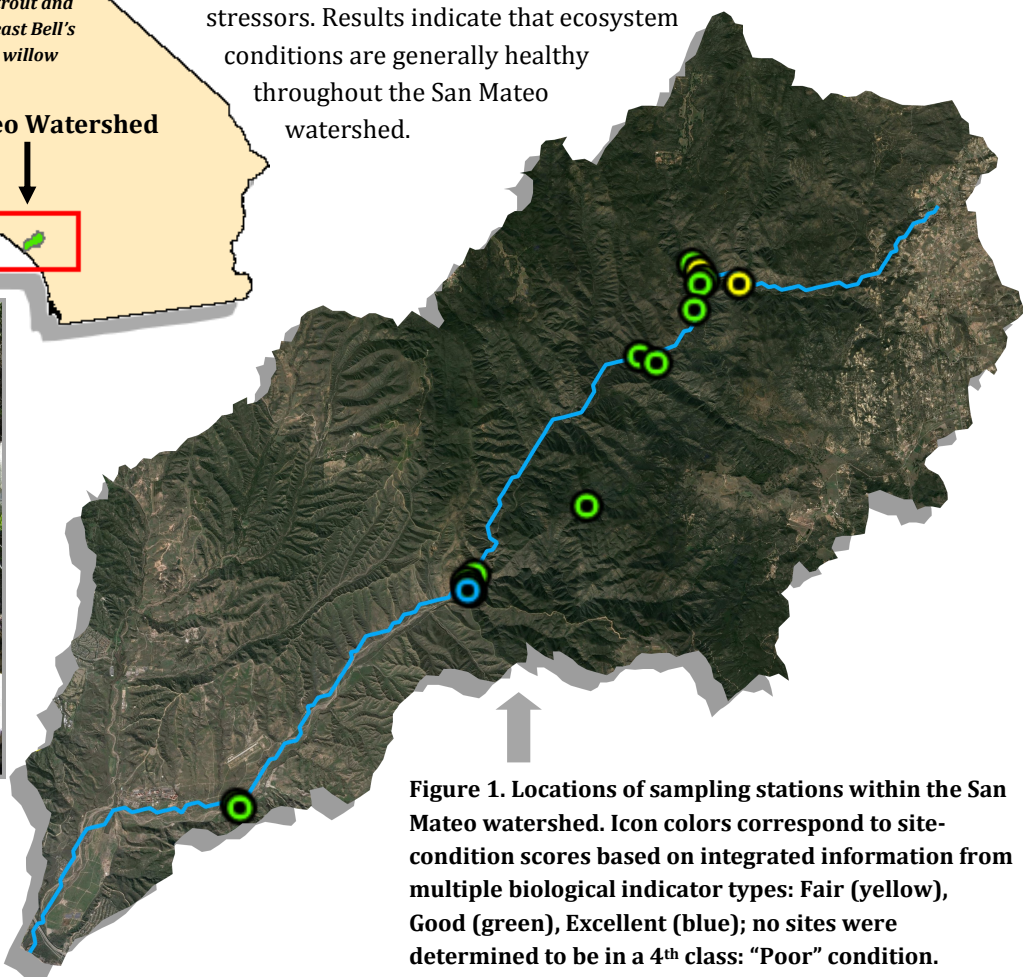


Figure 1. Locations of sampling stations within the San Mateo watershed. Icon colors correspond to site-condition scores based on integrated information from multiple biological indicator types: Fair (yellow), Good (green), Excellent (blue); no sites were determined to be in a 4th class: "Poor" condition.

CONTACT:
Betty Fetscher, Ph.D., Senior Environmental Scientist
betty.fetscher@waterboards.ca.gov

Project
partners:



California Department of
Fish and Wildlife

MULTIPLE INDICATORS OF ECOSYSTEM HEALTH, TOGETHER AND SEPARATELY

The composition of stream biological communities, which may include animals and plants, can reveal stream condition because it reflects the negative effects of various human activities (i.e., “stressors”) over time and space. Several biological community types have been sampled for use as ecosystem-condition indicators in the San Mateo watershed:

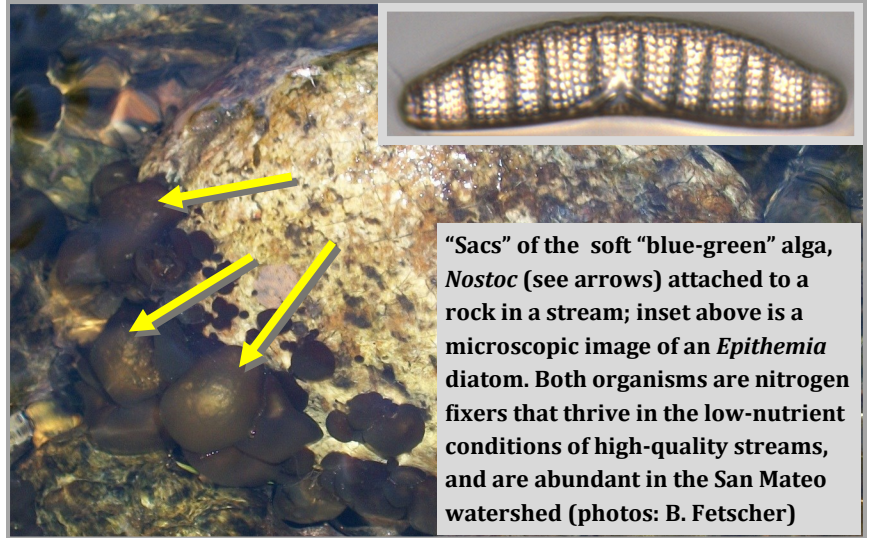
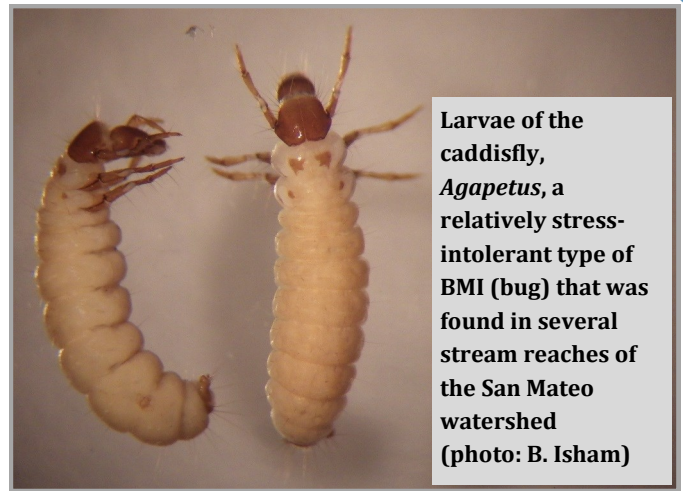
1. benthic (i.e., bottom-dwelling) macroinvertebrates (“BMIs”, or informally, “bugs”, which include insects, snails, crustaceans),
2. diatoms (single-celled algae encased in ornamented, glass-like structures), and
3. non-diatom (or “soft”) algae.

In addition, wetland habitat condition has been assessed in the watershed using the California Rapid Assessment Method (CRAM).

75% of stream kilometers in the San Mateo watershed are estimated to be in Good or Excellent condition, based on survey data combining the biological indicator types.

Taken separately, the indicators provide complementary perspectives on stream health, because different indicators respond somewhat differently (e.g., in terms of magnitude of response)

to various stressors. Figure 2 shows how ambient survey results in the San Mateo watershed compare with analogous results across coastal southern California streams, overall, as well as with a collection of statewide “Reference” streams that are exposed to minimal anthropogenic stress, thus providing two “meter sticks” against which to gauge the San Mateo results. From the standpoint of BMIs (bugs), the condition within San Mateo watershed is better, on average, than that of streams across the rest of the region, although not quite as good as conditions among the Reference streams. In the case of CRAM (habitat) and soft algae, San Mateo results exceeded those of even the Reference collection. Diatoms were the only indicator for which San Mateo performed subpar. The observed differential results among the biological indicators can be used as a first step in identifying likely stressors in San Mateo watershed.



The California Rapid Assessment Method (CRAM) uses “guided, best-professional judgment” for determining the condition of wetlands, including stream riparian habitat. Practitioners collect observational data in the field and calculate an overall condition score based on metrics reflecting 1) habitat buffer/landscape context, 2) hydrology, 3) physical structure, and 4) biotic structure. Many sites in the San Mateo received perfect scores for a number of CRAM metrics (photo E. Thomas)

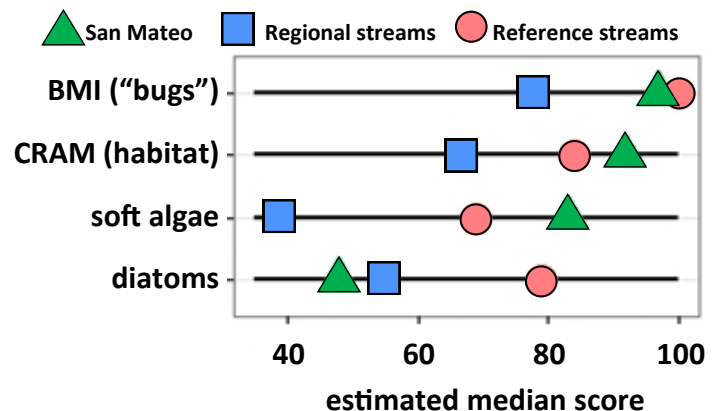


Figure 2. Estimated median biological indicator scores for San Mateo watershed, relative to southern California streams as a whole and minimally disturbed “Reference” streams.