Statewide Perennial Streams Assessment/Bioassessment Monitoring Program

What is it?

SWAMP is in its 10th year of conducting a statewide assessment of perennial streams (streams that flow year round). The Perennial Streams Assessment (PSA) program is a probabilistic monitoring program that builds upon earlier programs, namely US EPA's Environmental Monitoring and Assessment Program (EMAP) and California's Monitoring and Assessment Program (CMAP). It is designed to answer the question of how many of California's streams are in good, fair, or poor condition. The main tool for PSA is bioassessment. Bioassessment is the use of resident aquatic biota as direct indicators of the biological integrity of waterbodies. Benthic macroinvertebates are the predominant aquatic organism used for these studies. Benthic macroinvertebrates live on the bottom of streams and include the larval stages of insects such as the dragonfly and the damselfly, crustaceans like the crayfish, worms, and snails. Since some benthic macroinvertebrates are sensitive to pollution, the type of organism and its number can tell us about the health of a stream.

The current PSA program assesses selected water quality measures plus the biological and physical habitat conditions in streams that flow year-round (termed perennial streams). The water quality portion of the program monitors for constituents such as nutrients, salinity, suspended solids, and dissolved organic carbon. The biological portion of the program primarily uses benthic macroinvertebrates (insects that are large enough to be seen by the naked eye), because the science is well established for detecting them and tools are available for their "scoring". Tools (such as Indices of Biological Integrity (IBI) and Observed/Expected models) are used to produce single numeric scores that are easier to interpret for site conditions than are the counts of many individual macroinvertebrate samples from a site. Physical habitat measures taken include thalwag profile, channel and riparian cross-section characteristics, and flow.

Another important component of PSA that cannot be overlooked is the development of reference conditions. Reference conditions are critical to the interpretation of biological data. To address this,

SWAMP has developed a Reference Condition Management Program (RCMP). The goal of the SWAMP RCMP is to provide an objective system for defining the expected biological and physical condition for wadeable streams and rivers in California.

Some Regional Water Boards (e.g., Santa Ana, San Diego, and Los Angeles) have contributed additional resources to augment the monitoring conducted by the statewide program to provide a more complete regional perspective. While these Regional Water Boards publish these data separately, all the data are combined when the assessments are conducted.

Why is it important to the State?

The State is required by federal law to assess the condition of its waters biennially. The data for this program are key to conducting a comprehensive and meaningful assessment of California waters.

Why is it important to me?

Clean and healthy streams and rivers support aquatic life by providing habitat, spawning grounds, food and shelter for fish, birds, and other wildlife. Impairment of water quality reduces the ability of a waterbody to provide these functions. This program provides valuable information on the health of our streams – both on a statewide and local level.

How will the information be used?

Data collected through this program will be used to assess the health of streams in California. Hence, the data will have applications for the general status assessments required by Clean Water Act Sections 303(d) and 305(b), as well as to all Water Board programs including permitting, non-point source, and total maximum daily loads. These programs rely on monitoring and assessment information to provide an accurate and complete delineation of waterbody impairments and their associated causes. This information also will be used in the development of biological objectives. Furthermore, they will be incorporated into the California Environmental Data Exchange Network (CEDEN) and available for use by the public and other agencies.

SWAMP Partners: US EPA, State Water Resources Control Board Nonpoint Source Program, California Department of Fish and Game Aquatic Bioassessment Laboratory, Southern California Monitoring Coalition, Moss Landing Marine Laboratories