



2009 Wadeable Stream Pilot Project

Why Monitor Streams?

Water quality and aquatic communities were identified as high-priority vital signs. Streams are a dominant feature of the landscape, both aesthetically and functionally, in the parks. Their position in the watershed, integrating upstream watershed processes and disturbances, makes them powerful vital signs for monitoring park conditions.

Objectives of the Pilot Project

In sum, the objectives were to field test the feasibility of adapting protocols developed by the Environmental Protection Agency, Environmental Monitoring and Assessment Program (EMAP). A three person crew was trained in the methodology and trial collections in Redwood National and State Parks occurred from 18th August to 30th September 2009.

Results from Redwood National and State Parks

We were able to sample 22 sites (stream reaches) on 11 streams. Some highlights:

- Protocols were successfully trialed, and showed that a stream reach (150 to 500 meters) could be sampled in a single visit of about 4 to 5 hours.
- We tested two alternative methods for sampling fish, snorkeling, and electrofishing. Results suggest snorkeling consistently missed sculpin and lampreys, and identification of juvenile salmonids proved difficult.
- Macroinvertebrate collections from riffle habitats resulted in the identification of 153 genera taxa from over 17,000 individuals. Indices based on macroinvertebrate to assess stream condition indicated 20 sites were in "Good" condition, while 2 sites were in "Very Good" condition.
- Pacific Giant Salamanders were almost ubiquitous, observed at 17 of the 22 sites. Other amphibians included Tailed Frogs, Western Toads, Foothill Yellow-Legged Frogs, and a single Olympic Salamander.
- Initial site visits included stream reaches of up to 30% gradient, which proved too steep to allow safe crew access and sampling. A limit of 15% for stream gradient resulted in safer sampling for the crew.

Resulting Protocol

The lessons of the pilot project were incorporated into a final draft protocol. The major alteration based on the pilot project was the decision to use a four-person crew, instead of a three-person crew. This allows the implementation of electrofishing at all sites, improving the characterization of the vertebrate assemblage. The draft protocol is available from the Klamath Network Intranet web site at: http://www1.nrintra.nps.gov/im/units/klmn/monitor/mon_waterquality-communities_streams_protos.cfm

Future Work

The Wadeable Streams draft protocol was submitted for peer review on 21st May 2010. We expect comments back from academic, state monitoring specialists, and NPS Water Resource Division personnel in winter 2010. With the revision and approval of this protocol in spring 2011, the first field season for implementation will be 2011.

More Information

Contact Dr. Eric Dinger, Klamath Network Aquatic Ecologist, at Eric_Dinger@nps.gov and (541) 552-8574.



From top to bottom: Crayfish found while snorkeling, field crew leader Charles Stanley sampling macroinvertebrates, and TJ Albert looking/crawling for aquatic vertebrates.