



Soundkeeper

Ensuring a positive, lasting legacy for Prince William Sound

Citizen Environmental Monitoring in Prince William Sound, Alaska



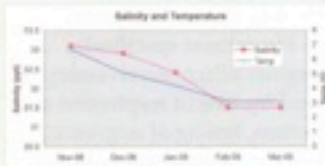
Citizen Environmental Monitoring

Prince William Soundkeeper's Citizen Environmental Monitoring Program (CEMP) engages students and adult volunteers in scientific monitoring of their environment. Monitoring activities encourage participants to more carefully examine their surroundings and introduce them to the scientific method. Under the supervision and training of CEMP program manager Kirsti Jurica, participants learn first-hand to collect data following appropriate scientific protocols.

Harbor Monitoring

This past winter, PWSK in partnership with Prince William Sound Science Center, conducted a harbor monitoring program with 5th graders. Students were introduced to visual monitoring exercises and collection of water quality data, such as pH, salinity and (cont'd over)

CEMP Student Data Studies



A basic relationship between the temperature and salinity is illustrated above. Cold water holds less dissolved salts than warm water.



pH measurement is important in determining the water's ability to neutralize acidic pollution. Healthy estuarine waters typically have pH readings between 7.0-8.5. Petroleum spills, bacterial activity, and chemically contaminated runoff can affect the pH. The lowest reading, more acidic, collected in Cordova's boat harbor was 6.99 in March 2009. This correlated well to the spike observed in the estimated area of visible petroleum sheen in March, represented in the next graph.

Eyak Lake Study

PWSK's Eyak Lake Community Monitoring Project (ELCMP), in collaboration with the Prince William Sound Science Center, is a three-year study of water quality and seasonal variation in Eyak Lake. Eyak Lake was selected as a monitoring site because it provides critical spawning and rearing habitat for Pacific salmon, which are an important natural resource and a keystone species in the ecosystem that may be threatened by climate change and increased human activities. The Eyak Lake Community Monitoring Project will engage community members and students in long-term ecosystem research to increase their understanding of the ecosystem upon which the region's traditional subsistence lifestyle and commercial fishery depend; and to involve them in a practical, place-based application of the scientific method.

ELCMP participants will be trained to collect hydrologic data such as water temperature, (cont'd over)

CEMP Student Data Studies

(cont'd from page 1)



Students visually estimated square footage of visible petroleum sheen on the K float and J float in Cordova's harbor.

Life in the Harbor!

Photos by 5th Grade CEMP Students



Sugar Kelp



Sea Otter



Nudibranch



Red-breasted merganser

Citizen Environmental Monitoring (from page 1)

water temperature. Students visited the small boat harbor in Cordova once a month and collected water quality data and made observations concerning petroleum contamination, marine debris, and presence of biological species in the harbor.

Harbor Monitoring Results: Species observed: Sea otter, merganser, bufflehead, goldeneye, mallard, greater scaup, surf scoter, oldsquaw, cormorant, great blue heron, bald eagle, gull, raven, blue mussel, hermit crab, nudibranch, and kelp.

Stream Temperature Monitoring: Water temperature influences virtually every biotic component of stream ecosystems and is crucial in maintaining stream ecosystem health. For salmon specifically, temperature affects survivorship of eggs and fry, rate of respiration and metabolism, timing of migration, resistance to disease and pollution, and availability of oxygen and nutrients. Despite the association between warm water temperatures and reduced salmonid survivorship, there are only inconsistent, longterm water temperature data sets for salmon streams in Alaska. Without such basic information, it is impossible to gauge the health of salmon habitats and resources, and equally difficult to develop management responses to improve watershed resiliency to climate and land-use change.

Prince William Soundkeeper will train CEMP participants to deploy stream temperature data loggers with a goal of establishing baseline data regarding the possible impacts

of climate change on salmon spawning and rearing habitats.



CEMP participants on Eyak River are the first to assist PWSK by deploying data loggers to establish baseline data regarding possible impacts of climate change on salmon spawning and rearing habitats.

Eyak Lake Study (from page 1)

turbidity, total suspended solids, pH, and dissolved oxygen measurements. Nitrogen and phosphorus will also be monitored to detect changes in nutrient levels in Eyak Lake. In addition to collecting water quality baseline data, climate and weather data will also be monitored. Climate and weather ultimately affects water quality. Daily weather observations will be recorded. Student participants will be engaged in a synthesis of historical climate data and data analysis to possibly show climate linkages with salmon escapement data.

ELCMP will produce a model of community-based research and an educational curriculum that can be applied in other communities, as well as provide quality baseline data that will be use to future researchers to assess seasonal variation and the effects of ecosystem changes as a result of climate change on juvenile salmon rearing habitat.

PWSK's CEMP program is made possible with the support of our members and The Ocean Foundation, North Pacific Research Board and True North Foundation.

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