Marine Water Chemistry

Resource Brief

Importance

Water quality measurements, including temperature and salinity, are critical to intertidal fauna and flora and are likely to be important determinants of both long-term and short-term fluctuations in the intertidal biotic community. Basic water chemistry parameters provide a record of environmental conditions at the time of sampling and are used in assessing the condition of biological assemblages. Water quality (especially levels of contaminants such as heavy metals and organic pollutants) is also critical in structuring nearshore marine ecosystems and can cause both acute and chronic changes in nearshore populations and communities.

www.planet-ocean.co.uk/Star-Oddi/accessories/index.htm

NPS

Upper Left: Star-Oddi DST CD (conductivity, temperature and depth) data logger with housing.
Right: Hobo temperature logger in housing. One temperature logger is deployed at each rocky intertidal sampling site.

Long-term Monitoring

Water quality measurements are collected at each rocky intertidal site in Katmai NPP (KATM) and Kenai Fjords NP (KEFJ). HOBO temperature loggers are deployed at each site and record hourly water temperature data throughout the year. Two salinity loggers were deployed in 2008, one each in KATM and KEFJ. Additional salinity monitors will be co-located at all rocky intertidal sites in both parks in 2009. The loggers are downloaded annually during the site visits. Mussels were collected in 2007 for contaminant analysis at each rocky site.

Discussion

Results from contaminant analysis suggests that total polycyclic aromatic hydrocarbon and metal concentrations in mussel tissues collected in 2007 from KATM and KEFJ were generally at the lower end of the ranges reported for other sites in the Gulf of Alaska, and are at or below "background" levels representative of contaminant free sites. Organochlorine concentrations, including DDTs, PCBs, and a variety of organic pesticides were also low at sites in both parks. Generally, levels were similar to those observed elsewhere in Alaska and well below the national median for tissue of mussels or oysters. The lone exception was at Amalik Bay where the household pesticide Chlordane, which has not been manufactured since the mid 1980s, was above the national median and higher than previously measured in Alaska. This site will be resampled in 2009. Intertidal temperature data from KATM show a wide range of temperatures between June '06 and June '07 (figure 1); the maximum yearly range was over 40° C (< -10° C to > 30° C). Colder temperatures are recorded during spring tides when the 0.5m tidal elevation is exposed to air. Temperature data collected from both parks are still being evaluated.

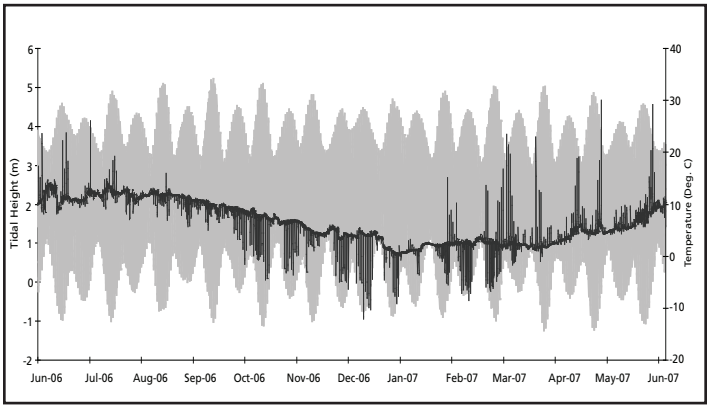

Figure 1. Tidal height and temperature data collected at 0.5 m MLLW (Kinak Bay, KATM).

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