



AKMAP

ALASKA MONITORING AND ASSESSMENT PROGRAM

Freshwater Coastal



www.dec.state.ak.us/water/akmap

AKMAP is about understanding the overall condition of Alaska's water quality...on a very large scale. Our interest is two fold:

- Reporting the overall condition of all Alaskan waters is DEC's responsibility under the Clean Water Act.
- DEC uses this information to make sound scientific decisions about our laws and regulations that protect half the Nation's water resources.

The U.S. Environmental Protection Agency provides partial funding for AKMAP.

Partnerships with the University of Alaska, NOAA and other entities are also a vital part of these explorations.

They lend expertise and add to the holistic picture of water quality in Alaska.

GETTING THE BIG PICTURE OF ALASKA'S WATER QUALITY...

The Department of Environmental Conservation's Alaska Monitoring and Assessment Programs uses a probabilistic sampling design developed by the Environmental Protection Agency. DEC randomly selects locations to sample water and aquatic life across a large region of Alaska. AKMAP is a cost-effective means of obtaining baseline information for Alaska's 47,000 miles of coastal waters and huge freshwater resources. As Alaska's population grows and development continues, DEC will use this baseline to better manage and protect Alaska's waters. Repeat AKMAP sampling in the future can help determine when and what changes are occurring in the environmental condition of Alaska's waters.



DEC staff Doug Dasher, Jim Gendron and Terri Lomax retrieve a water sample from the icy Aleutian waters. The R/V Norseman is in the background. Photo by Paul Tate

THE 2006-2007 ALEUTIAN SURVEY

The Aleutian Islands are home to a plethora of wildlife and activity. A major international shipping route crosses through the Aleutian Islands. Only 35 years ago the largest U.S. underground nuclear test was conducted in the Aleutians and 60 years ago major World War II battles occurred in the region. Localized contaminants remain from these major events. Global atmospheric and oceanic pathways transport pollutants, such as pesticides and mercury into this region which



Photo by Reid Brewer

bi-sects the North Pacific Ocean and the Bering Sea. The Aleutian Islands and the nearby oceans contain one of the most productive halibut, cod and crab fisheries in the world. Aleuts and other Alaska Natives depend on the rich biology, including Steller Sea Lions, seals and migratory birds, to sustain their culture. The Aleutians offer much for Alaskans in resources and resource management challenges. *(Continued on Page 2)*

WHAT WERE WE LOOKING FOR?

In the summer of 2006, the first AKMAP coastal Aleutian assessment began to provide a better understanding of the nearshore environmental conditions around the islands from Unimak to Attu Island. The work contributes to the EPA National Coastal Assessment Program. The field work was conducted in two parts, with the eastern half of the Aleutians surveyed in 2006 and the western half in 2007. The work was conducted to answer these questions:

- Are the waters meeting the Alaska Water Quality Standards?
- What is the baseline water quality in the region?
- What species and biodiversity are present in the region?



Photo by Roger Clark

HOW WERE THE WATERS TESTED?

Divers from the UAF School of Fisheries and Ocean Sciences joined DEC marine chemists, algae scientists and other researchers on the R/V Norseman exploring the Aleutian Islands' near shore environment. The group traveled hundreds of miles from the western half of Unimak to Attu Island. These environments included rocky and sedimentary habitat, including extensive kelp beds. Team members collected biological samples; conducted dive transects and gathered physical and chemical water quality data at 23 sites in 2006 and 27 sites in 2007. This collection will be analyzed by scientists for contaminants, physical and chemical water quality and to evaluate biodiversity. Biological specimens, as well as underwater photographs and videos, will be cataloged to document the diversity of the near shore environments.

WHAT TESTS WERE DONE?

- Water chemistry: dissolved oxygen, salinity, pH, temperature, light penetration, turbidity, total suspended solids, nitrogen/phosphorus content, and dissolved carbon.
- Sediments: (when encountered) grain size, total organic carbon, and silt/clay percent.
- Living resources: Chlorophyll *a*, benthic/epifauna community composition and abundance, and observed fish pathologies or parasites.
- Habitat: type, occurrence of macroalgae.
- Contaminants: fish and algae for metals and organics, sediments for metals/organics content and sediment toxicity.

WHAT'S NEXT?

Sample analysis, data entry and interpretation is ongoing. Findings from this project will be reported in forums such as the Alaska Forum on the Environment, the Aleutian community meetings, by reports and publications, and EPA National Coastal Assessment reports.

The 2007 voyage ended the Aleutians expedition, but it marks the continuation of DEC efforts to complete the first baseline water quality survey of all of Alaska's five coastal eco-regions.

The Beaufort/Chuckchi Sea and Bering Sea will be the focus of future AKMAP coastal assessments. AKMAP will survey lakes in the Cook Inlet region in 2008.

To learn more about AKMAP and previous sampling, along with freshwater sampling efforts log onto our web site at: www.dec.state.ak.us/water/akmap

*RESEARCH is an ORGANIZED & SYSTEMATIC WAY of
FINDING ANSWERS to QUESTIONS.*



ALASKA MONITORING AND ASSESSMENT PROGRAM IS ADMINISTERED BY
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