

# Southwest Alaska Network Inventory and Monitoring Program National Park Service



## Field Season Highlights 2008

### Breeding Bird Survey - ANIA

Aniakchak National Monument and Preserve (ANIA) is one of the most remote and least-visited park units in the NPS. Scientific research in ANIA has primarily been focused on the geology of the region; there has never been a systematic survey of breeding birds in this park unit.

- Biologists from USGS Alaska Science Center, KATM and SWAN conducted ground-based bird surveys in ANIA during 5/31-6/8.
- 68 species were detected, including seven not previously recorded in ANIA: Gadwall, Golden Eagle, Merlin, Marbled Godwit, Downy Woodpecker, Horned Lark, and Hoary Redpoll.
- First ever observation of an active nest for this subspecies of Marbled Godwit.



KATM Interpretive Ranger Michael Fitz records bird survey data in the Meshik River Valley (ANIA), June 2008. Inset: Rock Ptarmigan.

### Rapid Vegetation Change - KEFJ

Rates of community change are generally thought to decrease over the course of succession. In Kenai Fjords National Park (KEFJ), rapid glacial recession has left behind large areas of exposed substrate that are being colonized by early successional species.



Alaska Natural Heritage Program ecologist Tina Boucher resurveys an inventory plot measured in 1993, Aialik Bay (KEFJ).

- Botanists from UAA-Alaska Natural Heritage Program and SWAN relocated, re-measured, and photographed 26 plots originally inventoried in 1993.
- Plot data and photographic records will be used to interpret rates and magnitude of vegetation change across the successional sequence.

### Marine Nearshore

These highly productive nearshore habitats provide a link between the terrestrial and aquatic ecosystems. They provide feeding and nesting grounds for a host of marine birds and large mammals, and nursery sites for marine organisms.

- Refined SOPs for monitoring suite of marine nearshore vital signs in KATM (year 3) & KEFJ (year 2). Conducted sea otter aerial surveys in KATM.
- Modified and implemented new eelgrass and mussel bed monitoring SOPs using an underwater camera and surface transects.
- Surveyed marine birds and mammals in KEFJ (Mar. 08) to characterize density and distribution in over-wintering marine ducks.



James Bodkin, Research Wildlife Biologist (USGS) samples mussel bed in proximity to a rocky inter-tidal site (KATM, July 2008).

### Weather and Climate

Basic climatological data are necessary to help understand why ecosystems are changing – from retreating glaciers to changes in the distribution, abundance, growth, and productivity of plant and animal communities.



Chuck Lindsay and Michael Shephard install sensors on the Hickerson Lake weather station (LACL, June 2008).

- Installed 6 weather stations in 3 parks (KATM-3, LACL-2, KEFJ-1).
- Performed station maintenance at the Harding Icefield station (KEFJ), which has operated for 4 years under very harsh conditions.
- Weather data are transmitted via satellite and are archived by the Western Region Climate Center (WRCC).
- Data can be viewed at WRCC's website (<http://www.raws.dri.edu/akF.html>) and some popular commercial weather service websites (e.g. <http://www.wunderground.com/weatherstation/index.asp>)

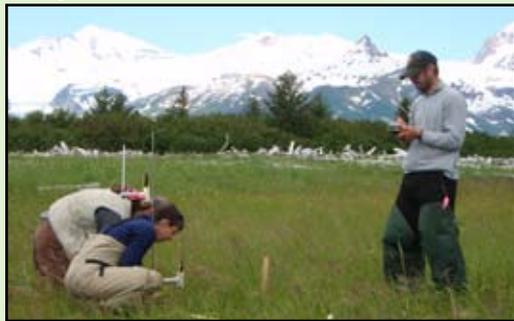
# SWAN Field Season Highlights 2008

## Continued

### Salt Marsh Monitoring - KATM

Multiple environmental drivers, including seismic uplift, storm surges, ice scour, and sea-level rise, shape the character of salt marshes in the Southwest Alaska Network (SWAN). These habitats provide critical foraging habitat for brown bears, nursery areas for fish and shellfish, and staging grounds for migrating waterfowl.

- Biologists from ABR, Inc. and SWAN established 4 permanent monitoring transects and 56 vegetation plots at a salt marsh site in Hallo Bay. Soil temperature probes (2) and a level logger with salinity probe were installed on one transect. Microtopography and soil characteristics were recorded along all transects.
- Water level and salinity data (2007-2008) were retrieved from two sites in LACL. Salinity concentrations will provide information on the source and magnitude of water moving through tidal guts.
- Photointerpretation of 1950s, 1980s, and 2000-era images from LACL has indicated that approximately 26% of the coastal landscape has changed since 1955.



SWAN ecologist Amy Miller and ABR, Inc. biologist J.J. Frost measure species cover in a vegetation plot. LACL wildlife biologist Buck Mangipane records.

### Freshwater Chemistry and Surface Hydrology

Aquatic systems in SWAN park units form the physical template upon which nearly all biological systems are organized, and comprise some of the largest and most pristine freshwater resources in the national park system. Hydrology and water quality monitoring (WQ) are fundamental to understanding the biophysical characteristics of these vast aquatic resources.

- Collected 98 vertical lake profiles measuring core WQ parameters (water temperature, pH, dissolved oxygen, specific conductivity) in Lake Clark.
- Monitored core WQ parameters and river discharge fluctuations associated with glacial melt in Exit Creek (KEFJ).
- Deployed 2 temperature arrays in Naknek Lake (KATM) at depths of 300 ft and 100 ft.



SWAN aquatic ecologist Jeff Shearer deploys Naknek Lake temperature array (KATM August 2008).



Vertical lake profiles were collected from a series of sample points in Lake Clark during May through August 2008.

- Reviewed Lake Clark water level data. Evidence of ice up and breakup events in winter 2008 were highly correlated with similar events documented in MODIS satellite imagery.

### Air Quality & Contaminants

Air quality in SWAN parks is considered pristine by national standards, but airborne pollutants associated with increasing global and regional industrialization, and increased particulate loads associated with wildfire and volcanic activity, have the potential to affect climatic conditions and ecological processes in the SWAN park units.

- The National Atmospheric Deposition Program (NADP) approved the establishment of a wet deposition site in King Salmon. The site is expected to be installed in November 2008.
- Weekly precipitation samples will be collected and analyzed for pH, conductivity, nitrates and sulfates, and major ions.
- Collected moss samples (*Hylocomium splendens*) in LACL, ANIA and KEFJ to assess the feasibility of widespread baseline sampling for airborne contaminants across the SWAN. Samples will be analyzed for heavy metals, N and S.
- Established a CESU agreement to analyze lake sediment cores for historic concentrations of Hg and other metals in Lakes Clark and Kontrashibuna (LACL), and Naknek and Idavain Lakes (KATM).

National Park Service  
U.S. Department of Interior

Southwest Alaska Network  
Inventory & Monitoring Program  
240 West 5th Avenue  
Anchorage, Alaska 99501



<http://science.nature.nps.gov/im/units/swan/>