Southwest Alaska Network
Inventory & Monitoring Program

National Park Service
U.S. Department of the Interior

Alagnak **Aniakchak** **Katmai** **Kenai Fjords** **Lake Clark**

SWAN Field Season Highlights 2010

Eagle Nest Survey - KEFJ

As predators, bald eagles serve a vital ecological role in freshwater and marine coastal systems. Thus, their nest occupancy and reproductive rates may be useful indicators of both current condition and long-term change in these ecosystems.

- Observers detected 29 active nests during the May 2010 survey, 16 of which had not been previous detected. The survey covered approximately 225 mi (360 km).
- During the July 2010 survey, 66% of the nests contained at least 1 nestling.
- Information gathered during these surveys will be used to design a long-term program for monitoring nest occupancy and productivity of bald eagles in KEFJ.

Bald eagle nest observed during aerial survey in KEFJ. Most nests are located within 20 m of the shoreline.

Bear Surveys - LACL

Black and brown bear serve important ecological roles as top predators influencing the population dynamics of other species as well as acting a means of transferring nutrients from aquatic to terrestrial systems.

Park pilot, Leon Alsworth, looks for bears during an aerial survey of the coastal region of LACL, May 2010.

- Conducted black and brown bear aerial surveys along LACL coastline.
- Bear groups were counted and identified along 229 transects; 156 groups (206 animals) were black bears and 79 groups (113 individuals) were brown bears.
- SWAN and US Fish & Wildlife Service staff will use these data to update models that will estimate total abundance for each species.

Sea Otter Survey - KEFJ

Sea otters can dramatically affect the structure and complexity of their nearshore environment through their predation practices. Sea otters prey on sea urchins that feed on kelp resulting in cascading effects on the nearshore community structure.

- The third aerial survey of sea otters was completed in KEFJ. Previous surveys were conducted in 2002 and 2007.
- The 2010 population estimate is 1322 individuals down slightly from the 2007 estimate of 1522 individuals. Mean density of the three surveys is 0.82/km^2, slightly lower than in neighboring Prince William Sound.
- Sea otters were found in waters ranging in depth from 0 m to 40 m. These habitat areas are limited in KEFJ due to the steep rugged nearshore terrain.

Sea otters observed during aerial survey in KEFJ, June 2010. Otters are often observed in groups.

SWAN Field Season Highlights 2010 Continued

Time-lapse Cameras Installed - LACL / KATM

Time-lapse camera systems are increasingly being used to document the timing of seasonal events, including the start and end of the growing season (leaf emergence and senescence), at fine spatial scales. Digital camera images captured through time can be analyzed to quantify stages of phenology.

SWAN physical scientist, Chuck Lindsay, installs a time-lapse camera on a RAWS in KATM. Archived photos will be used to monitor changes in phenology and snowpack at the site.

- In 2010, SWAN and park staff installed time lapse cameras at three remote automated weather stations (RAWS) stations in LACL and KATM.
- SWAN will partner with the PhenoCam network, a collaborator with the USA-National Phenology Network (NPN), to analyze the photos.
- The images will be used to monitor phenology and snowpack dynamics at the RAWS sites, as well as to validate, and potentially scale up to, satellite-derived (i.e., MODIS) seasonal metrics.

Ground-based Vegetation Monitoring - LACL

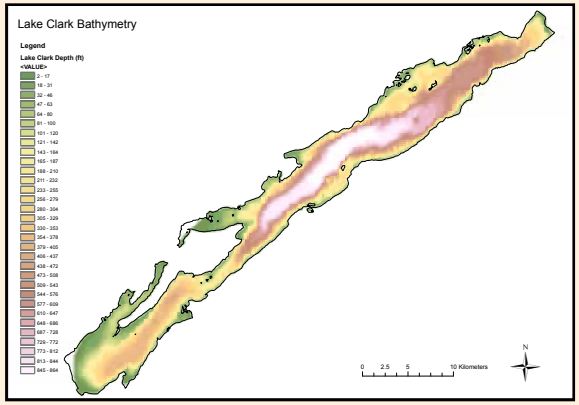
Vegetation is integral to ecosystem function and element cycling, and is a sensitive indicator of environmental change. Ground-based monitoring is intended to target changes in vegetation structure, and species composition that are too subtle spectrally, or occur at too fine a scale, to monitor through remote sensing techniques.

- A 4-person crew completed baseline monitoring on 37 vegetation plots in LACL in low and mid-elevation spruce woodland, low elevation closed spruce forest, and mid- and high elevation dwarf shrub tundra.
- Soil temperature dataloggers were installed in the root zone at 12 sites along an elevation gradient.
- Dr. Rosemary Sherriff joined the crew again in 2010 to establish long-term plots in forested sites affected by the spruce bark beetle (*Dendroctonus rufipennis*). A comparable set of sites was established in KATM in 2009.

SWAN ecologist, Amy Miller, records species presence (frequency) in an alpine monitoring plot, LACL.

Bathymetry Mapping - LACL

LACL staff completed bathymetry mapping for several lakes in Lake Clark in 2010. These maps will provide a detailed depth contour profile of each lake basin, allowing resource managers to quantify habitat features and monitor changes in lake volume as physical and chemical attributes (e.g. lake elevation and water temperature) fluctuate over time.



Preliminary bathymetry map for Lake Clark based on results of 2010 lake survey. The mapping effort involved over 90 hours of boating time, 150 transects, and 261,000 data points (depth, water temperature, and latitude / longitude).

To learn more about SWAN's monitoring projects, or to download reports, please visit our website at:

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

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