

# North Slope Science Initiative



## North Slope Facts:

- The North Slope is bordered by the foothills of the Brooks Range to the south and the Arctic Ocean to the north.
- The region encompasses roughly 89,000 square miles.
- The North Slope is thought to have the greatest remaining oil potential of any onshore area in the United States.
- The Trans-Alaska Pipeline System is about 800 miles long and runs all the way from Prudhoe Bay, on the North Slope, to Valdez., in south central Alaska

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December 2006

End of the Year Newsletter

Alaska's North Slope is bordered by the foothills of the Brooks Range to the south and the Arctic Ocean to the north. The North Slope Science Initiative (NSSI) was established to develop a collaborative science based program that integrates inventory, monitoring, and research activities to enhance the quality and quantity of the scientific information available for aquatic, terrestrial, and marine environments on the North Slope of Alaska, and make this information available to decision-makers, government agencies, industry, and the public.

NSSI was formally established by Congress in the National Energy Policy act of 2005 and is comprised of local, state, and federal land and resource agencies. The head of each agency comprise the Oversight Group which is the governing body of the NSSI.

The North Slope encompasses 233,500 square kilometers of diverse and unique ecosystems rich in natural resources. This area, however, is most well known for its oil fields, which are among the largest in the United States. Both onshore and offshore the North Slope of Alaska is thought to have the greatest remaining oil potential of any area in the United States.



Caribou are one of the many species impacted by development on Alaska's North Slope.

## 2006 Activities

NSSI was very busy during 2006. An appropriation for the NSSI was included in the President's 2007 budget. The Science Technical Group, a requirement of the Energy Policy Act of 2005, was appointed by the Secretary of the Interior in January. The selected members convened with the Oversight Group for the first time and determined the direction the Science Technical Group should head and the priorities NSSI should initially address. Some of the specific and immediate functions of the Science Technical Group were identified as monitoring review, application of GIS and remote sensing technologies, and incorporating local and traditional knowledge in the land-use decision making process.

The North Pacific Research Board (NPRB) agreed to work collaboratively with NSSI to develop an online project database for the numerous scientific studies being conducted on the North Slope. This database will offer a thorough collection of the (cont'd on next page)



Polar bears occur in the ice-covered portions of the Bering, Chukchi and Beaufort seas adjacent to Alaska. Their dependence upon drifting ice makes polar bears an important indicator of arctic warming and its effects on the landscape (info USGS, photo courtesy of USFWS).

**NSSI is an inter-agency effort designed to provide a consistent approach to high-caliber science across the North Slope.**



Spectacled Eider on the North Slope (photo courtesy of USFWS).

### **...continued, 2006 Activities**

current research, inventory, and monitoring efforts and allow users to easily browse these projects. This database will increase data management and stakeholder knowledge of North Slope activities by providing access to current project reports and project contact information.

Another big project that NSSI spearheaded in 2006 was to create an online GIS data management system with the Geographic Information Network of Alaska (GINA) at UAF. While this project is still in the early developmental phase, the stage has been set to create a GIS system that can serve as a "one-stop-shop" available to the various North Slope stakeholders. Having this information collected in one location that is easy to access can greatly reduce the amount of time it takes for users to collect useful GIS data.

A cooperative baseline study was developed and implemented in August that used robotic technology to measure water quality and watershed evaluation (see ALWAS article). Finally, NSSI will be sponsoring a North Slope Caribou Research/Monitoring Workshop in early 2007 (for more information see 2007 Priorities article).

### **Using ALWAS to Measure Water Quality in North Slope Lakes**



ALWAS Standard Buoy (photo courtesy of Michigan Tech).

The Automated Lagrangian Water Quality Assessment System or ALWAS is an inexpensive, automated, free-floating, sail-powered or jet-driven water quality measuring and watershed evaluation system. It is capable of making a wide range of measurements as rapidly as every 40 seconds. Data collected by the buoy can be transmitted in real-time or stored for later retrieval and analysis.

ALWAS was developed as the result of a partnership between Michigan Tech (formerly Alatum Institute) and the University of Michigan, College of Engineering. ALWAS II is the latest version of the technology and there are two ALWAS II buoy configura-

tions: standard and experimental. The sensor package collects GPS information and water properties including depth, temperature, conductivity/salinity/total dissolved solids (TDS), turbidity/optical density, pH, oxidation reduction potential (ORP), dissolved oxygen (DO), nitrates/chlorides/ammonium, chlorophyll-A, and barometric pressure (for accurate DO calculation).

In the summer of 2006 NSSI worked collaboratively with Michigan Tech, University of Michigan, Bureau of Land Management, Department of Energy, and ConocoPhillips to conduct baseline studies to assess water quality with ALWAS. One goal was to demonstrate the utility of a (cont'd on next page)



ALWAS Experimental Buoy (photo courtesy of Michigan Tech).

## ...continued, ALWAS

cost-effective, autonomous water quality measurement system for use by local, state, federal, industry, and academia on the North Slope of Alaska. 16 North Slope lakes and the Colville River were sampled providing over 3,576 individual data values.

This information courtesy of Shuchman et al 2006, Michigan Technical Research Institute. For more information contact Dr. Robert Shuchman, [Robert.Shuchman@mtri.org](mailto:Robert.Shuchman@mtri.org).

## 2007 Priorities

If 2006 seemed like a busy year, NSSI has big plans in 2007. NSSI will be sponsoring a North Slope Caribou Research/Monitoring Workshop, in Fairbanks on February 21-22 at UAF. The purpose for this workshop is to look at current caribou monitoring and research efforts related to mitigating effects from oil and gas development, identifying data gaps and priority information needs, and other issues that relate to managing the North Slope herds. A workshop of this type has not been held since January 2002. This workshop will focus on identifying monitoring needs and increase interagency cooperation regarding all of the North Slope Caribou herds.

Also in 2007, based on the ALWAS study, NSSI plans to expand its water quality studies by establishing long-term hydrologic gauging stations east of the Sagavanirktok River. Furthermore, NSSI will work to ensure the completion of the hydrography classification for North Slope watersheds, an essential GIS data layer.

In addition to the water studies, NSSI is working to establish GINA as a functional multi-agency GIS system that will be housed at UAF. This system will also expand information available on the NSSI web portal, maintaining its "one-stop-shop" appeal (for more information on the web portal see A "One-stop-shop" for North Slope Information article). NSSI also hopes to expand its online project database by incorporating NSF and university studies. NSSI will promote studies regarding landscape change and bird disturbance within the northeast NPR-A area. Finally, while the above information touches on the priorities of NSSI in 2007, there are still many possibilities that will be addressed in the upcoming year, including prioritizing information needs for funding.

## A "One-stop-shop" for North Slope Information

The purpose of the web portal is to serve as a consolidated and centralized source of reference information for all stakeholders, including land and resource managers, scientists, and the general public. This "One-Stop Shop" is designed to facilitate collaboration and information sharing by bringing together various information in one easily accessible location. The portal serves as a tool to organize and standardize information and is invaluable for communication, education, and outreach. We hope that the web portal provides stakeholders enhanced research and collaboration opportunities and relevant information on North Slope issues and its environment.

The NSSI web portal can be found at: [www.northslope.org](http://www.northslope.org). Please contact Adam Mehlhorn, [amehlhor@blm.gov](mailto:amehlhor@blm.gov), with any suggestions for improvements to the site.



More than half the caribou in Alaska are found in four herds on the North Slope the Western Arctic, Teshekpuk, Central Arctic, and Porcupine (caribou photo courtesy of USFWS).

**ALWAS is  
capable of  
making a wide  
range of  
measurements  
as rapidly as  
every 40  
seconds.**



Bowhead whales are the only baleen whales that spend their entire lives near sea ice and do not migrate to temperate or tropical waters to calve (info ADF&G, photo courtesy of NOAA).

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### North Slope Science Initiative

## Useful Websites for North Slope Information

- **NSI:** [www.northslope.org](http://www.northslope.org)
- **Barrow Arctic Science Consortium (BASC):** [www.arcticsscience.org](http://www.arcticsscience.org)
- **Arctic Research Consortium of the United States:** [www.arcus.org](http://www.arcus.org)
- **Arctic Slope Regional Corporation:** [www.asrc.com](http://www.asrc.com)
- **North Slope Borough:** [www.north-slope.org](http://www.north-slope.org)
- **University of Alaska-Fairbanks:** [www.uaf.edu](http://www.uaf.edu)
- **Alaska Natural Heritage Program (AKNHP):** <http://aknhp.uaa.alaska.edu>
- **North Pacific Research Board:** [www.nprb.org](http://www.nprb.org)
- **Alaska Oil and Gas Conservation Commission:** [www.aogcc.alaska.gov](http://www.aogcc.alaska.gov)
- **Alyeska Pipeline:** [www.alyeska-pipe.com](http://www.alyeska-pipe.com)
- **BP in Alaska:** [alaska.bp.com](http://alaska.bp.com)
- **ConocoPhillips Alaska:** [www.conocophillipsalaska.com](http://www.conocophillipsalaska.com)
- **Conservation of Arctic Flora and Fauna:** [www.caff.is](http://www.caff.is)
- **CircumArctic Rangifer Monitoring & Assessment:** [www.rangifer.net](http://www.rangifer.net)



## Polar Bear Population Declines in the South Beaufort Sea



Iceberg in the Beaufort Sea off the coast of Alaska's North Slope (photo courtesy of NOAA).

According to a USGS report released in November 2006, a decline in sea-ice in the South Beaufort sea, is likely attributing to lower survival rates in polar bear cubs and smaller stature in male adults. Polar bears depend entirely on sea ice for survival. In recent years, a warming climate has caused major changes in the Arctic sea ice environment, leading to concerns regarding the status of polar bear populations.

The report charts a change in the Beaufort Sea polar bear population to 1,526 from previous estimates of 1,800, a 15 percent decline. While these differences could also be tied to different counting methods used for population estimates, scientists are projecting further declines in sea ice. The Beaufort Sea polar bears are one of two of Alaska's population stock, so monitoring is vital for management and conservation of polar bear populations (For more information and the complete USGS report see Regehr et al 2006, <http://pubs.usgs.gov/of/2006/1337>).



[www.northslope.org](http://www.northslope.org)