



## Arctic Landscape Conservation Cooperative

### Fall 2017 Newsletter

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## LCC Future Scenarios

As you know, the President's 2018 budget request for the Department of the Interior (DOI) proposed reductions to the 2018 budget for the U.S. Fish and Wildlife Service (USFWS), relying primarily on eliminating funding for staff and science support for the Science Applications program, which includes the 22 Landscape Conservation Cooperatives (LCCs). On the other hand, the U.S. House of Representatives drafted an Interior Appropriations bill that provides continued funding for "cooperative landscape conservation" and "science support" at approximately FY2017 levels. The new Assistant Director for Science Applications, Dr. Benjamin Tuggle, is committed to ensuring that if the LCCs are funded, that they meet the needs of the Department of the Interior and USFWS under the current administration. Thus, we are working to develop operational scenarios that vary from closure to a variety of reduced, re-programed or non-DOI lead partnerships. Regardless of the outcome, the USFWS remains committed to working collaboratively with all partners. We welcome your thoughts and ideas on what is important to your work and agency and how we might work together to maintain momentum.

We see a great opportunity to assist in landscape analyses that help federal agencies, the State of Alaska, and North Slope governments, communities and industries with responsible resource development and evaluating the impacts and benefits of a warming Arctic on both natural resources and infrastructure.

## Evaluating the Effects of Climate and Development on Arctic Ecosystems

The North Slope of Alaska is one of the areas receiving increased attention by the Department of Interior for expanded resource development. Specifically, areas inside the northeastern section of the National Petroleum Reserve –Alaska (NPR) are projected to contain large deposits of economically recoverable resources. This area is also critical calving and insect-relief habitat for the Teshekpuk caribou herd as well as important molting grounds for Pacific Blank Brant and other geese. The Arctic LCC is well situated to contribute unique analyses and visualizations that may help inform oil and gas development scenarios around and inside the Teshekpuk Lake Special Area that protects critical habitat as well as infrastructure investment. These data include high-resolution landform, lake and landcover mapping, downscaled-climate information, susceptibility to changes in thermokarst, and nesting shorebird phenology.

Based on initial manager input and a survey of available data, we propose to synthesize information from the North Slope Science Initiative's Development Scenarios and NPR 2013 Integrated Activity Plan coupled with new LCC and other science products to investigate cumulative impacts of climate change and development. Paul Leonard, Arctic LCC Science Coordinator, will lead the spatial analyses. We are in the process of reaching out to technical experts to bring together data and hope to schedule a working group session in late August or early September. Please contact us if you would like to be engaged or have ideas to share.

## Data Management

USFWS leadership has made data curation, archiving, and management a top priority for LCCs and the region leading into the end of the fiscal year. The Arctic LCC is working to finish documenting and uploading information from over 60 projects sponsored since its inception in 2010, including properly cataloged metadata. The Arctic LCC data manager, Josh Bradley, is leading a national effort to develop tools and software for data management and sharing, and has been working closely with all LCCs to ensure methods and protocols become standardized.

All projects and product data funded by the 22 LCCs will be included in the new LCC Network Science Catalog. The Science catalog will be hosted on ScienceBase, a cataloging and collaborative data management platform managed by the U.S. Geological Survey. Where appropriate, data products will also be listed on data.gov in compliance with federal requirements. Information in the Science Catalog will be available for download and query on [lccnetwork.org](http://lccnetwork.org).

## New Products from LCC Funded Research

Millions of shorebirds migrate thousands of miles to spend the summer in the Arctic. There they feed in some of the most productive and pristine coastal wetlands and estuaries on Earth. With so much food available, they choose the Arctic for nesting and raising their young, a process repeated every year. The Arctic LCC partnership is interested in understanding how climate change might affect shorebird populations, and has supported research into how the timing of insects they eat may be changing as spring arrives earlier.

Towards filling this information need, we received two final reports from Rebecca Shaftel (UAA) and Dan Rinella (FWS) on their collaborative project with the Shorebird Demographic Network. In *Climate Effects on Arctic Food Resources: Predictive Models for Surface-Available Invertebrate Biomass*, the researchers describe the diversity and mean annual modeled biomass of invertebrates that shorebirds consume across 9 sites from Nome, Alaska (USA) to East Bay, Nunavut (Canada). Warmer temperatures had a positive effect on this food resource availability, with earlier spring warming resulting in earlier insect abundance. Increased wind had a negative effect on invertebrate availability. In a follow-up report, *Climate Effects on Arctic Food Resources: Retrospective Analysis of Rate of Advancement of Invertebrate Phenology*, they used the same models to look back ~60 years to understand how invertebrate food sources for shorebirds have changed across 6 of the shorebird monitoring sites. Changes in hind-casted invertebrate abundance were greatest at the northernmost camps and were on the order of 1 to 3 days earlier per decade.

## Upcoming Steering Committee and Partners Meeting

Steering Committee meetings can resume after September 1st! We will be sending out a poll to find a good date to meet in late September with partners interested in joining in the conversation about the future of the LCCs and hopefully how the partnership will proceed in the future. In the meantime, feel free to contact us directly with ideas or updates.





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## Informing Responsible Resource Development

### Reducing Risk - Permafrost Mapping

Permafrost is found across the Arctic. Thawing permafrost under warmer conditions will cause subsidence, surface water redistribution, changes to groundwater and vegetation and habitat use changes. Knowing the depth and ice content of permafrost is critical for both understanding how Arctic ecosystems will be affected by climate change and also how infrastructure will be damaged. Arctic LCC-supported research produced a detailed map of permafrost characteristics to inform regional planning as well as climate and development impact assessments. [More](#)



As permafrost thaws, the ground under a home in Shishmaref, Alaska collapses from erosion.

### Forecasting Changes to Wildlife, Habitat, and Infrastructure



Construction of ice roads is crucial for Alaskan North Slope operators to gain access for exploration in an economic and environmentally sound manner.  
Photo: DOE

Smart investments depend on understanding what's ahead. The Arctic LCC initiated the Terrestrial Environmental Observation Network (TEON) to meet the need for a sustainable environmental observing network for northern Alaska. TEON is designed to follow water from the northernmost mountains to the sea. By monitoring snowmelt, streamflow and temperatures and using these data forecast changes in river flow and permafrost stability, we support management of fish and wildlife and inform infrastructure management and design in northern Alaska. [More](#)

### Allowing Exploration, Avoiding Den Disturbance

The Arctic LCC partnership, including the Alaska Department of Fish and Game and industry, developed a desktop application that helps biologists map polar bear denning habitat on the Arctic coast. The app quickly identifies areas likely to have polar bear dens to help guide winter exploration and development activities. [More](#)



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## Yukon North Slope Management Plan

### Where do plans come from?

Natural resource managers and native communities have expressed a need for effectively synthesizing traditional knowledge and western science data. Often wildlife management plans are based on remotely sensed data and data collected by wildlife biologists. These data may not reflect the variables that are important to the local users, including the scale of information, names describing places or habitats, or how seasonality affects the wildlife available for harvest.

### Local knowledge to drive regional management

The Inuvialuit residing on the North Slope of the Yukon Territory have long used their lands and waters for hunting, trapping, and fishing. Their Wildlife Advisory Council, a co-management body, comprised of federal, territorial, and Inuvialuit representatives, is working closely with researchers from the Round River Organization to develop a management plan that reflects how the Inuvialuit use Arctic resources and their understanding of seasonal habitat use by fish and wildlife.

This process for integrating Traditional and Western science in the Inuvialuit Settlement Area will provide an important example for how other scientists and managers can work with native communities to fulfill the need for wildlife and management plans in other places.



Inuvialuit Settlement Region

‘Participants emphasized that caribou winter habitat selection focuses on areas where the wind will blow snow off of vegetation, making foraging easier, and that they will be found on different aspects based on wind direction.’

### Interviews, workshops and reporting back

Researchers reviewed existing local knowledge publications and recorded information from local workshops and interviews to develop detailed maps and descriptions habitat for caribou, moose, grizzly and polar bears, Dolly Varden Char, Broad Whitefish, geese, muskox and Dall’s sheep. Changes in distribution patterns and impacts from climate change have also been observed, especially for caribou. These changes include different migration routes and timing of migration. A report describing the knowledge gathered was submitted to the communities for review and use in the next phase of developing the management plan.

### A management plan for the people, by the people

Documenting local knowledge of wildlife habitat and distribution promises to be useful and effective in managing wildlife by local users. This baseline wildlife assessment will inform multiple products including habitat models and connectivity mapping based on traditional knowledge and Western science data.

**The Inuvialuit Traditional Knowledge of Wildlife Habitat on the Yukon North Slope  
Final Report can be found at: [ArcticLCC.org](http://ArcticLCC.org)**