

Alaska's Landscape Conservation Cooperatives

Climate Impacts

Wetlands and estuaries critical to shorebirds, waterfowl, and salmon may be affected by sea-level rise and coastal erosion.

The reduction in sea-ice is bringing new opportunities for shipping routes that would cross through the Alaska LCCs, but also threatens many ice-dependent species.

Changing ocean temperatures, circulation patterns and acidity may alter the entire marine ecosystem, affecting, among other things, the availability of prey for seabirds, marine mammals, and important commercial and subsistence fisheries.

Coastal erosion, accelerated by increased storm activity, is already forcing some villages in Alaska to relocate.

Warming and melting permafrost will change the landscape, altering the distribution and abundance of wetlands and some vegetation communities. The stability of village infrastructure and services such as water treatment facilities and roads are uncertain.

Increased wildfire, with potential increases in pests and diseases, are expected throughout the boreal regions of the state.



Landscape Conservation Cooperatives in Alaska:

Alaska overlaps five LCCs: Aleutians and Bering Sea Islands, Arctic, North Pacific, Northwest Interior Forest, and Western Alaska. Each LCC is in a different stage of development. The Arctic LCC was the first LCC to be established in Alaska. In 2010, steps were taken to pilot both Western Alaska and North Pacific. Both the Aleutians and Bering Sea Islands and Northwestern Interior Forest are still in the early stages of initiation.

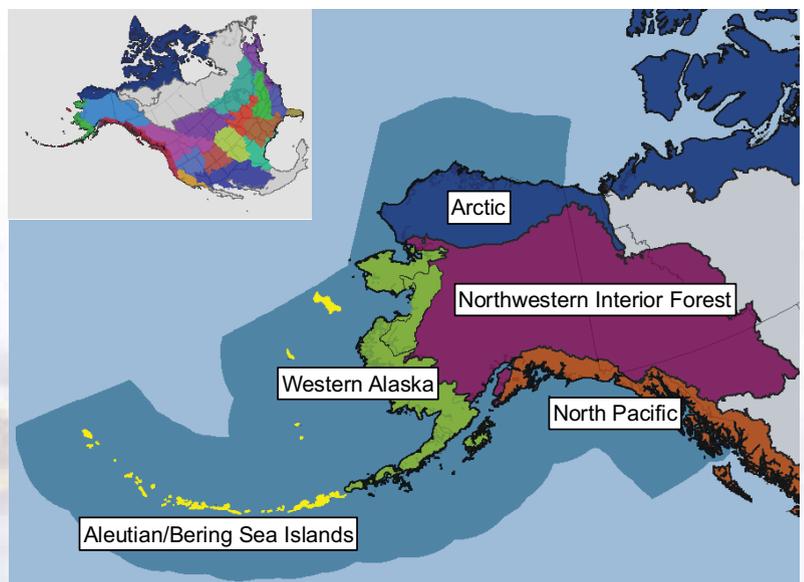
The Conservation Challenge

Climate change is one of the greatest environmental and conservation challenges of the 21st century. The impacts of climate change are already being felt in Alaska. Coastal erosion is accelerating, threatening homes and infrastructure, and as a result, entire communities may need to be relocated. Changing migration patterns of waterfowl, terrestrial and marine mammals, and fluctuations in the movement of fish stocks have influenced subsistence harvest. Warm, dry summers are producing drought conditions over much of the state, altering the landscape by drying wetlands, slowing the growth of trees, and producing more frequent wildland fires.

Understanding and responding to the many facets of environmental change will require unprecedented collaboration and communication among researchers, public agencies, and private organizations.

Landscape Conservation Cooperatives

Landscape Conservation Cooperatives (LCCs) are self-directed partnerships that link science with conservation actions to address climate change and other stressors within and across landscapes. They compliment and build upon existing science and conservation efforts – such as fish habitat partnerships and migratory bird joint ventures – as well as water resources, land, and cultural partnerships. While LCCs will not assume other partner responsibilities or supersede agency decision-making, they will provide the scientific information needed to help inform the development of strategic conservation actions.



Terrestrial boundaries of the five LCCs within Alaska; marine boundary of Alaska LCCs shown in teal blue. Inset shows distribution of LCCs across the North American continent.



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Arctic LCC

Contact:
Greg Balogh
Arctic LCC Coordinator
greg_balogh@fws.gov
(907) 786-3605

The geographic scope of the Arctic LCC spans the northern portion of Alaska and Canada. Within Alaska, the landscape is characterized by rugged mountains, large expanses of tundra, and abundant wetlands and ponds. Arctic Alaska provides breeding grounds for millions of birds from more than 100 species, including species that breed nowhere else in the U.S. The area also provides habitat for threatened Steller's eiders, spectacled eiders, and polar bear as well as other species of conservation concern, including yellow-billed loon, Kittlitz's murrelet, Pacific black brant, and Pacific walrus.

The cultural identity of Alaska Natives and arctic rural residents is closely tied to their environment, and subsistence harvest continues to provide a large portion of the food consumed in arctic communities. Important subsistence resources include marine mammals, caribou, fish, and waterfowl. Climate change is already affecting access to some of these species.

The Arctic LCC was established in 2009. The Arctic Steering Committee has developed a charter and identified a set of common conservation goals. Projects funded in 2010, focus on modeling ecosystem transitions, understanding the arctic hydrologic systems, and improving access to geospatial data. The geographic scope of this LCC creates additional collaboration opportunities with Canada and potentially other arctic nations.



Bill Hinkey/USFWS

Western Alaska LCC

Contact:
Karen A. Murphy
Western Alaska LCC Coordinator
karen_a_murphy@fws.gov
(907) 786-3501

The Western Alaska LCC covers a wide diversity of ecological conditions including permafrost dominated landscapes, complex river deltas, abundant volcanoes, and forests. Western Alaska streams are home to the world's largest natural runs of Pacific salmon and the adjacent marine waters support the largest commercial fisheries in the U.S. They support local communities both as a source of income and as a key component of a subsistence lifestyle.

The Western Alaska LCC is home to Pacific walrus, threatened sea otters, and spectacled and Steller's eiders. Steller sea lions, short-tailed albatrosses, and eight species of whales in this region are endangered. Millions of seabirds breeding along the shore form a strong link between land and sea. Astounding numbers of waterfowl and shorebirds use these areas for breeding, migration, and wintering habitat. Caribou roam the land, as do populations of moose, bears and wolves.

In 2010, the first steps were taken to pilot the Western Alaska LCC. Representatives from State and Federal agencies have recently begun discussing how to convene the partnerships. We are meeting throughout the region to speak with potential partners from the local borough governments, Alaska Native organizations and tribes, other government and nongovernment organizations and academia. A climate change state-of-the-science workshop to help this new LCC identify initial science needs and collaboration opportunities is being scheduled for 2011.



Steve Hillebrand/USFWS

Steve Hillebrand/USFWS

North Pacific LCC

Contact:

Mary Mahaffy
Interim NPLCC Coordinator
mary_mahaffy@fws.gov
(360) 753-7763

The North Pacific LCC stretches from the eastern half of the Kenai Peninsula south to northern California. The marine, estuarine, freshwater, and terrestrial habitats of this LCC support a rich diversity of species. They have cultural significance to Native Americans throughout the region. Marine and coastal island habitats are essential to sea birds, shorebirds and other Pacific Flyway migratory species. Highly productive nearshore marine ecosystems are key to sustaining healthy populations of marine mammals, Pacific salmon, forage fish, and shellfish. Forested habitats in the Pacific Coast mountain ranges support many resident and migratory birds including species of conservation concern such as

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marbled murrelets, and Queen Charlotte goshawks. Prairie habitats in the southern regions of this LCC are host to numerous species of imperiled plants, birds, mammals, and butterflies.

In 2010, the first steps were taken to pilot the North Pacific LCC. This LCC area already has a number of partnerships focused on large-scale biological planning and conservation design. We will work

closely with these existing partnerships and provide a forum that encourages continuous exchange of information and feedback and enhances understanding among resource managers, scientists, and stakeholders. The geographic scope of this LCC creates additional collaboration opportunities with Canada and the other states within the LCC.

U.S. Forest Service



Aleutian/Bering Sea Islands LCC

Contact:

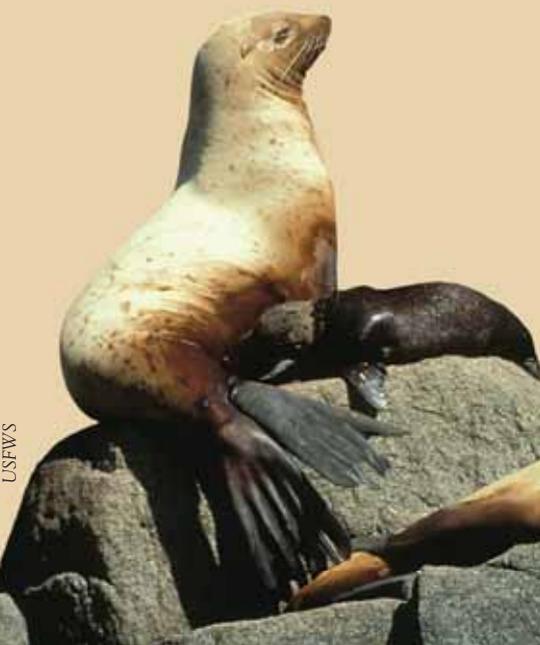
Steve Delehanty
steve_delehanty@fws.gov
(907) 235-6546

The Aleutians and Bering Sea Islands area supports an extraordinarily productive marine ecosystem. Pollock, cod, flatfish, halibut, crab, and salmon are abundant, and these fisheries provide more than half of the seafood consumed in the U.S. In addition to providing jobs and income through the commercial fishing industry, the region supports the subsistence lifestyle of many communities within the LCC. About 100 million seabirds from more than 30 different species breed and summer here. Nearly half of Alaska's seabirds breed in 10 large colonies in the Bering Sea. Tens of thousands of marine mammals including Steller sea lions, sea otters, seals, Pacific walrus, and whales depend on this important region.

There are already a number of strong conservation and management

partnerships operating within the boundary of the Aleutian/Bering Islands LCC. The challenge will be to bring these existing partnerships together to identify shared goals and consider how climate change may add new dimensions to existing resource challenges and to seek ways to appropriately integrate this science with on-going marine partnerships.

In 2010, the Aleutian/Bering Islands LCC established an initial partnership of interested agencies and organizations.



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Northwestern Interior Forest LCC

Contact:
Mike Spindler
(907) 456-0331
mike_spindler@fws.gov

The geographic scope of the Northwestern Interior Forest LCC includes south central and interior Alaska, most of the Yukon Territory, and the northern portion of British Columbia. The LCC is dominated by a patchwork of spruce and hardwood forests, regions of extensive wetlands and numerous lakes, and rugged alpine tundra. In more mountainous areas, ice fields and glaciers are interspersed among the tundra and forested lowlands. Frequent wildland fires continually reshape the mosaic of vegetation communities.

The boundary of the LCC encompasses large portions of the Yukon, Kuskokwim, Susitna, and Copper River watersheds. The landscape remains largely undeveloped and supports health populations of large and small mammals, resident fish, Pacific salmon, and upland birds. During summer, the region provides valuable breeding habitat for millions of migratory waterfowl. All of these resources are critical to the cultural heritage of Alaska Natives and support a subsistence lifestyle.



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In 2011, early initiation steps for the Northwestern Interior Forest LCC will begin and a partnership of interested agencies and organizations will be established. There are already a number of conservation and management partnerships operating in the area and the Northwestern Interior Forest LCC will identify ways to contribute to those efforts by addressing their science needs. By virtue of its geographic scope, this LCC creates additional opportunities for collaboration with Canada.

Facilitating Collaborative Action on Climate Change within Alaska

The Alaska Climate Change Executive Roundtable (ACCER), established in 2007, is comprised of both federal and non-federal senior level agency executives from throughout Alaska. The ACCER will provide the oversight necessary to ensure coordination and integration of activities within the five Alaska LCCs, as well as coordination among the LCCs, the USGS Climate Science Center, and NOAA's Climate Service for Alaska.

LCC Contributions to Conservation

- Articulate priority science needs of the partnerships and find ways to address those needs.
- Help partners design and implement science-based monitoring programs.
- Work with partners to improve access to natural resources spatial data.
- Form a link between research communities and resource managers.

Alaska Region LCC Contact

Cynthia Jacobson, Ph.D.

Assistant Regional Director, Science Applications

U.S. Fish and Wildlife Service

1011 E. Tudor Road, MS-281

Anchorage, AK 99503

907-786-3508

cynthia_jacobson@fws.gov