2013 Annual Report

Northwest Boreal Landscape Conservation Cooperative

NORTHWEST BOREAL
Landscape Conservation Cooperative

Northwest Boreal LCC Steering Committee Members

- Alaska Climate Science Center
- British Columbia Ministry of Forest, Lands, and Natural Resource Operations
- Bureau of Indian Affairs
- Bureau of Land Management
- Canadian Forest Service
- Council of Athabascan Tribal Governments
- Ducks Unlimited Canada
- Environment Yukon
- Kenai Watershed Forum/Alaska National Fish Habitat Partnerships
- National Park Service
- Natural Resources Conservation Service
- NOAA National Weather Service
- Northwest Territories Department of Environment and Natural Resources
- Tanana Chiefs Council
- UAF Cooperative Extension Service
- University of Northern British Columbia
- US Army
- US Forest Service
- US Fish & Wildlife Service
- US Geological Survey
- Wildlife Conservation Society Canada
- Yukon River Intertribal Watershed Council
- Yukon Climate Change Secretariat
- Yukon Research Center of Yukon College
- Yukon Territory Parks

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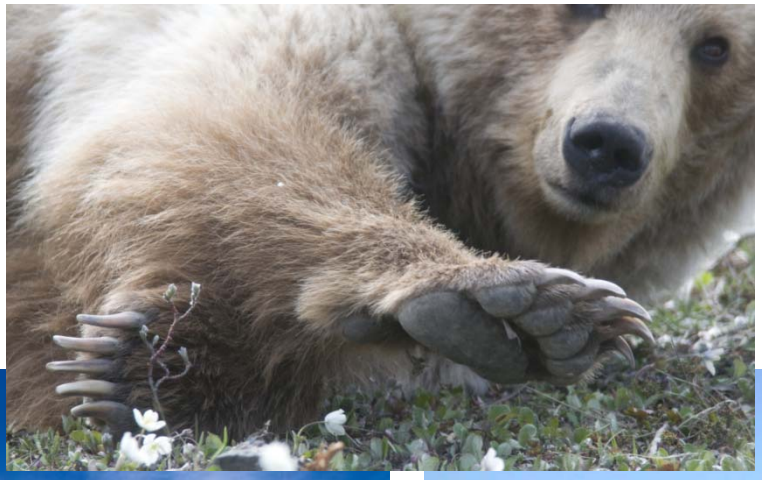


Northwest Boreal LCC
2013 Annual Report

Introduction

The Northwest Boreal Landscape Conservation Cooperative (NWB LCC), is one of the nation's largest LCCs, consisting of more than 330 million acres of boreal forests, alpine habitat, wetlands and rivers, spanning an altitudinal range from sea level to the highest point in North America. The LCC includes the major metropolitan hubs and transportation infrastructure of the region, including the two largest cities in Alaska and the largest city in the Yukon Territory. The geographic region of the NWB LCC includes the boreal and boreal transition zones of Alaska, Yukon Territories, northern British Columbia and westernmost Northwest Territories (Figure 1). As a true international collaboration, the NWB LCC is a growing partnership among more than twenty-five U.S. and Canadian federal and provincial/territorial agencies, nongovernmental organizations, Tribes/First nations, and institutions of higher education.

If the NWB LCC were a country, it would be the 20th largest in the world. This vast area is underlain with discontinuous permafrost, which contains enormous deposits of immobilized organic carbon, and is a major determinant on vegetation type, hydrologic regimes, and species distributions. Permafrost is clearly sensitive to climate warming and is also impacted by changing fire regimes throughout the region. There is a strong interplay in the landscape-scale dynamics between wildfire distribution, frequency and intensity, the depth of soil active layers and change in permafrost distribution. This interplay has ecosystem-scale effects such as wetland shrinking and formation, sedimentation and soil nutrient leaching, and drastic effects on vegetation type (to the level of shifting biomes) all of which will likely have significant effects on wildlife, subsistence resources, and the global carbon cycle.

Over the last 100 years, recorded air temperature within the NWB LCC region has warmed 2.52 °F, twice the global average. The growing season length has increased by 50% and although precipitation is expected to moderately increase, an increase in evapotranspiration, caused by higher temperatures and longer growing seasons, is expected to result in an overall drying trend in the region. These factors, combined with melting permafrost, are expected to have drastic impacts on the boreal ecosystems within NWB LCC. Predicted impacts include a transition from conifer-dominated forests to deciduous-dominated forests or non-forested ecosystems such as grass/shrublands. This is coupled with an increase in the number and extent of invasive species and insect pest outbreaks associated with a warming climate. Land and resource managers from various agencies and organizations within the NWB LCC struggle with how to incorporate climate change-related projections into management strategies, primarily due to lack of information and high uncertainties associated with modeling and predictions.

Climate change and other landscape stressors have the potential to drastically reshape the region's biota, ecosystem services, and human infrastructure, including the TransAlaska pipeline. Advances in road construction and building technology have increased the safety

margins of infrastructure within the region, however, landscape-scale changes in parameters such as permafrost and wildfire are projected to result in billions of dollars of damage to infrastructure in the next century.

The need for large-scale collaborations and directed, applied science to inform management decisions within in the NWB LCC region has never been greater. Land and resource managers are in need of decision support tools, coordinated monitoring, and the latest results from climate and ecosystem models. Northwest Boreal LCC is a vehicle to provide the cross-agency communication and information exchange that is necessary for conservation and sustainable management in the context of an uncertain future.

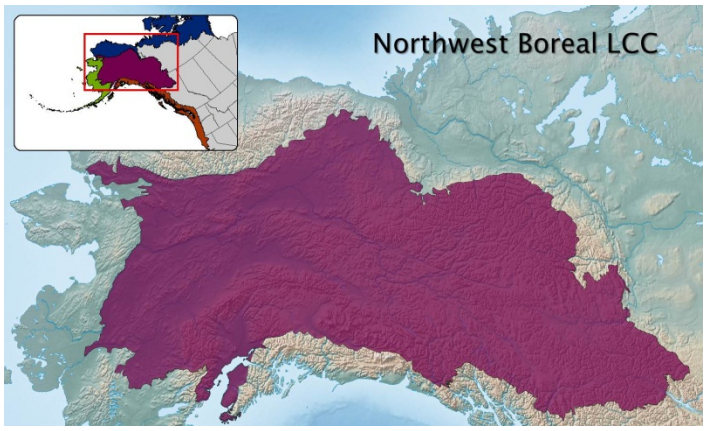


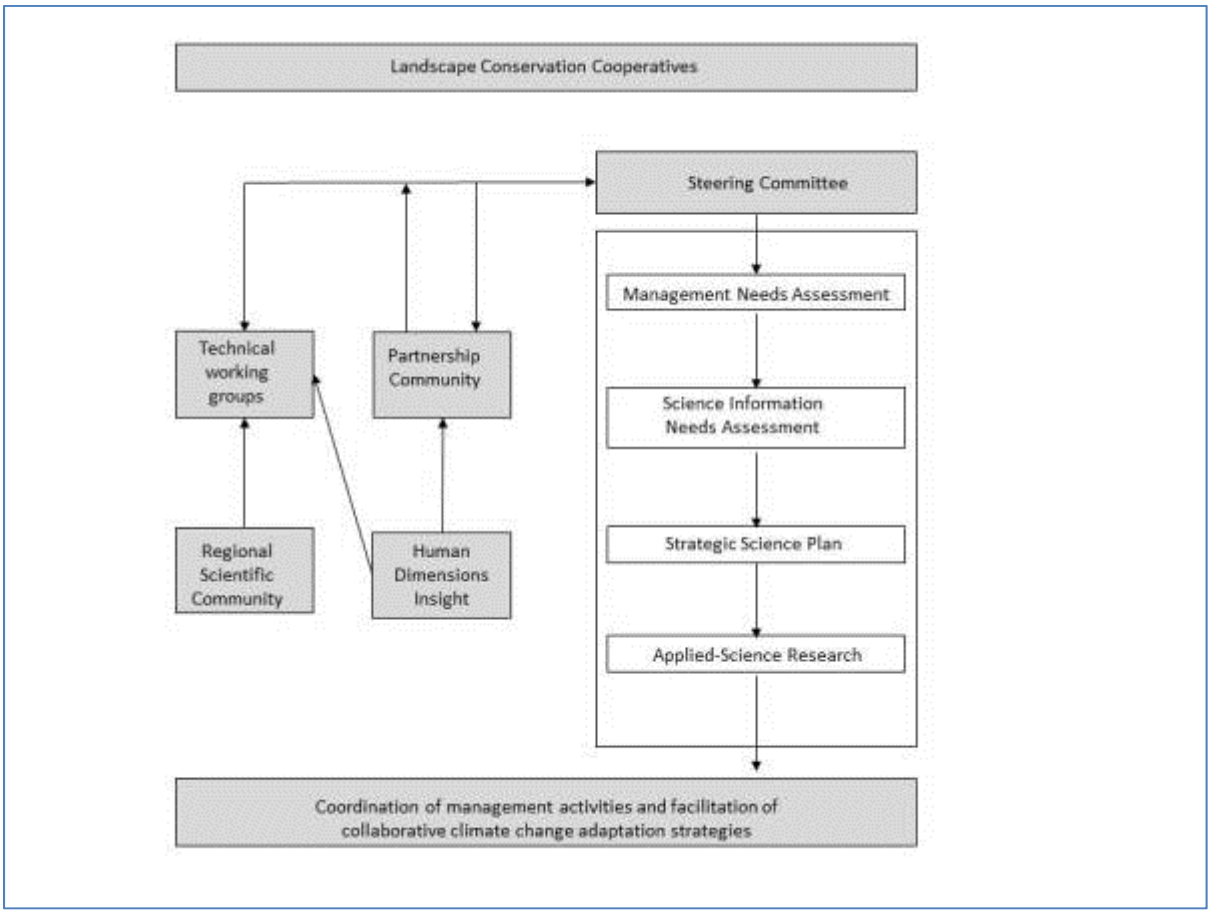
Figure 1. The geographic area of the Northwest Boreal LCC is shown in purple. The LCC includes the boreal forests of Alaska, Yukon Territory, Northern British Columbia, and the western mountains of the Northwest Territories.

Development of the NWB LCC

Although a young LCC, initiated in 2012, the NWB LCC continues to mature into a significant member of the region's conservation and natural resource community. There are high levels of excitement among partner agencies and organizations, partly due to the successes of previously established LCCs of the region. The NWB LCC will pursue its mission and goals as described in the Landscape Conservation Cooperative depicted in Figure 2 below.

The extensive geography of such a large international LCC demands an innovative approach to Steering Committee participation. Steering Committee members are based in communities scattered across more than 1,500 miles, making it a challenge to participate in person at each meeting. In an effort to fully accommodate all participants and to minimize our carbon footprint, all Steering Committee meeting content is transmitted via webex and teleconference, with groups of participants gathering in Anchorage, Fairbanks, and Whitehorse as appropriate. In an effort to engage the Canadian members of the Cooperative, Alaska-based participants are committed to traveling for at least one in-person meeting in Canada each year. In an effort to minimize our carbon footprint, we make every effort to travel the 1,600 miles round trip from Fairbanks to Whitehorse as a group, making use of Bureau of Land Management vans. During our most recent trip, our total carbon footprint for travel was approximately 250 pounds of carbon per person. Had we chosen to fly that distance, our carbon footprint would have been more than 1,005 pounds per person.

Figure 2. A conceptual model of the structure and function of the NWB LCC.



Staffing

LCC core staff consists of John DeLapp as LCC coordinator and Amanda Robertson as science coordinator. In addition to coordinating the day to day activities of the LCC, in 2013 LCC staff worked with partnership members to produce a number of key documents, including a revised charter, the NWB LCC website (nwblcc.org), the NWB LCC Management Framing Workshop report (http://nwblcc.org/resources-2/workshop-reports), the development and prioritization of management information needs for the region, and a tribal/first nations fact sheet. The LCC science coordinator is also initiating the development of a reference source geared towards land/resource managers, policy makers and the general public that will synthesize the latest information about landscape drivers of change, and their implications, across the NW boreal region. These efforts, paired with the results of the LCC's Landscape Conservation Design Workshop in November of 2013, will guide the development of a scientific framework for proactive landscape conservation and planning across the northwest boreal landscape. LCC staff have conducted a comprehensive information needs assessment to begin to prioritize biological and cultural resources, management objectives, and information needs of the LCC Steering Committee partners and the broader partnership community across this large region. These products and activites provide the foundation on which LCC staff and Steering Committee members draft a strategic plan to guide the activities of the LCC for up to the next ten years.

Core staff also served as an information clearing house for new funding and educational opportunities in support of LCC and LCC partnership mission and goals. Staff support also included improved information exchange on aquatic invasive species across Yukon Territory and Alaska; the

coordination of fire and permafrost research opportunities with USGS, NRCS, FWS NWR, UAF; and the development of Alaska/Canada trans-boundary geospatial datasets. To disseminate information on LCC priorities and products to the academic communities, LCC staff has presented at professional meetings and conferences. In an effort to communicate with land/resource managers, the LCC holds periodic workshops and supports communities of practices, the proceedings of which are available on our website (e.g., our Landscape Planning Workshop, November 2013). A comprehensive reference for policy makers, managers, and interested public is under development that will synthesize the latest information on the drivers of landscape change across the NWB region. This will be available online as well as in hard copy. The LCC is also hosting an online, spatially explicit database of literature (peer-reviewed and gray) that is relevant to the priority information needs of the NWB LCC. The LCC is working with the Conservation Biology Institute to develop a conservation planning atlas (Databasin) for Alaska, supported by with funding from a national LCC grant. Quarterly newsletters are delivered a broad set of stakeholders that point to LCC information, products or tools, as well as relevant information from partners. Moreover, the NWB LCC hosts regular webinars in an effort to communicate tools, products, and information (both created by the LCC as well as those available externally) for use by the broader partnership community.

Steering Committee

The Northwest Boreal LCC Steering Committee meets at least quarterly to discuss opportunities for coordination, collaboration, and to work towards articulating common goals and measurable objectives. The Steering Committee, currently consisting of 25 organizations, includes representatives from the Alaska National Fish Habitat Partnerships, US and Canadian federal, provincial and territorial governments, environmental NGOs, and Tribes. The Steering Committee members (http://nwblcc.org/partners), regularly serve on Subcommittees based on specific interests or expertise. Subcommittees have included Canadian outreach, Tribal and First Nations outreach, Information Needs Assessment, Baseline Data Working Group, Synthesis of the drivers of landscape change in the NW boreal, Landscape Assessment Working Group, Strategic Planning working group, science synthesis working group, project prioritization working group, and landscape conservation design workshop planning group.

As interest in the LCC has increased, participation on the Steering Committee has grown over the past year. Table 1 lists the agencies/organizations currently represented on the NWB LCC Steering Committee.

Table 1. Current list of agencies/organizations represented on NWB LCC Steering Committee

Agency/Organization	Nationality	Federal	State/Provincial	NGO/other
Alaska Climate Science Center	US	X		
British Columbia Ministry of Forests, Lands & Natural Resource Operations	CA		X	
Bureau of Indian Affairs	US	X		
Bureau of Land Management	US	X		
Canadian Forest Service	CA	X		
Council of Athabascan Tribal Governments	US			X
Ducks Unlimited Canada	CA			X
Environment Yukon	CA		X	

Kenai Watershed Forum / Alaska National Fish Habitat Partnerships	US			X
National Oceanic and Atmospheric Administration National Weather Service	US	X		
National Park Service	US	X		
Natural Resources Conservation Service	US	X		
Northwest Territories Dept. of Environment and Natural Resources	CA		X	
Tanana Chiefs Conference	US			X
United States Army	US	X		
United States Fish & Wildlife Service	US	X		
United States Forest Service	US	X		
United States Geological Survey	US	X		
University of Alaska Cooperative Research Service	US			X
University of Northern British Columbia				X
Wildlife Conservation Society Canada	CA			X
Yukon Research Center of Yukon College	CA			X
Yukon River Intertribal Watershed Council	US/CA			X
Yukon Territory Climate Change Secretariat	CA		X	
Yukon Territory Parks & Protected Areas	CA		X	

The Northwest Boreal LCC Steering Committee had its first meeting of the year on February 27-28, 2013, with members participating remotely via teleconference and webex from Anchorage, Fairbanks, Whitehorse, Smithers, and Yellowknife. NOAA's National Weather Service joined the Steering Committee, represented by John Lingaas (NWS Meteorologist) and Rick Thoman (NWS Alaska Climate Science and Services Manager). During that meeting, three new organizations were nominated and accepted as Steering Committee members – University of Northern British Columbia (Dr. Phil Burton), Kenai Watershed and the Alaska Fish Habitat Partnerships (Robert Ruffner), and University of Alaska Fairbanks Cooperative Extension Service (Dr. Val Barber). The LCC charter was modified to 1) reflect the change in LCC name to "Northwest Boreal LCC" and to 2) clarify that each member agency is entitled to a single vote in all decisions. The Steering Committee reviewed the 104 priority information needs that were identified at the 2012 Management Framing Workshop and refined them further into 19 priority information needs categorized into five broad categories – 1) Baseline, 2) Monitoring, 3) Understanding Relationships, 4) Projecting Future System States, and 5) Adaptation Planning and Best Management Practices. (http://nwblcc.org/wp-content/uploads/2013/01/NWBLCC_RankedInformationNeeds_3-8-13.pdf). Staff initiated discussions with Steering Committee members to develop a process by which the identified information priorities will guide the identification and selection of priority projects to be supported by the LCC in FY13.

The LCC held its second Steering Committee meeting of the year on April 13, 2013, with members again participating remotely via teleconference and webex. The primary purpose of the meeting was to select projects for FY13 LCC project funding, with approximately $145,000 available. Eleven projects were considered and ranked, with six ultimately selected for funding (see LCC Projects

section below).

The LCC summer meeting was held in Fairbanks on July 24, 2013. The focus of this meeting was to share news of recent LCC actions; discuss multi-LCC project needs in Alaska; to discuss potential FY14 project funding mechanisms; and to plan for the November 2013 Landscape Planning Workshop in Fairbanks. The Steering Committee heard from the Data Management Working Group and discussed how to best integrate the LCC's data management with other LCCs in the region, the USGS and USGS Climate Science Centers, and how to ensure compatibility with the Alaska Data Integration Working Group (ADIwg). The LCC agreed to adopt a Data Management Plan that outlines how data will be transferred to the LCC after project completion, the format and standards of data, including metadata standards, ownership of data, treatment of culturally sensitive data, and how data will be stored by the LCC. The Steering Committee also discussed and agreed to the principles expressed in the US National Fish, Wildlife and Plants Climate Adaptation Strategy, as presented by the LCC Coordinator.

Figure 3. Member organizations of the Northwest Boreal LCC Steering Committee

Also in the summer of 2013, LCC staff participated in the Yukon River Intertribal Watershed Council's ninth Biennial Summit in Mayo, Yukon Territory Canada. The Summit brought together delegates from 70 signatory Tribes & First Nation governments and other participants from across North America to take part in three full days of trainings, working sessions, and speakers. The Summit was an opportunity to discuss the LCC's goals and objectives within the diverse Yukon River watershed and to formally introduce the LCC to interested Alaska Native and First Nations members. We conducted semi-structured interviews with 43 participants and share outreach materials with many other attendees. Discussions included priority natural and cultural resources, an exploration of desired roles in LCC participation, and the most appropriate means of communications.

The Northwest Boreal Landscape Conservation Cooperative (NWB LCC) hosted a three-day workshop retreat for Steering Committee members and invited guests on November 19-21 in Fairbanks, Alaska, with significant in-person participation by our Canadian members. The workshop discussed various approaches to landscape conservation planning and science to support the development of a landscape conservation foundation, or long-term strategic plan for

the LCC. This strategic plan will provide the context, or 'blueprint', for integrating our priority information needs into a comprehensive plan for landscape conservation and facilitate strategic prioritization of our activities over time. The strategic plan will also guide us in identifying key science gaps that link our priority information needs in a landscape conservation plan. Drawing on the knowledge of experts, participants learned about and discussed topics in landscape conservation, climate change adaptation, scenario planning, ecosystem stewardship, transparent and participatory engagement in planning and decision-making, and planning for rapid environmental, economic and social change in the northwest boreal. Workshop topics included the following:

- Overview of ecosystem stewardship and planning for change;
- Setting conservation goals in an era of change;
- The changing role of science and scientific institutions;
- Challenging conventional conservation paradigms;
- Visions of the Northwest Boreal ecosystem;
- Assessing vulnerability and identifying trajectories of change;
- Exploring proactive strategies to address directional changes;
- Embracing and reducing uncertainty;
- Planning for resilience and adaptation.

Over the course of three days, the NWB LCC Steering Committee discussed these diverse approaches, opportunities and challenges to landscape conservation as they relate to the northwest boreal region. Workshop outcomes are as follows:

- Ecosystem Stewardship was embraced as an umbrella model for the LCC:
    - E.S. is a framework linking the social, ecological and political components of a system – the sustainability and integrity of ecosystems and human society are both essential goals; neither can be achieved without the other;
    - E.S. explicitly enables us to prepare for change at multiple scales by:
        - Identifying trajectories of change and intervention opportunities;
        - Embrace uncertainty by maintaining flexibility and fostering adaptive learning;
        - Engaging key stakeholders to consider opportunities and risks associated with scenarios and management options;
        - Foster opportunities for adaptive capacity (through increasing resilience of natural, human, social and cultural capital) and empower communities and organizations to take stewardship action.
- LCCs are more than a source of funding, but the NWB LCC in particular, can have a conservation impact by strengthening the communication and collaboration among partner organizations and by providing the information needed to plan proactively and adapt to change within the region. This is a distinct divergence from focusing on annual projects and requests for funding.
- Communication is an important role for the NWB LCC. Climate-change science is complicated and uncertain; the LCC can develop narratives describing scenarios of future

change that resonate with the public.
    - Science translation is a crucial role of the LCC – taking complicated science and making it accessible to diverse audiences. Narratives and storytelling are compelling approaches to communicate complicated interactions and their impacts.
    - The LCC links broader landscapes – our individual land and resource management actions affect others, e.g., water quality downstream, movement of fish and wildlife. Land-use planning should be approached from broader scales. This is a rare opportunity to support communication across international borders or even across jurisdictions within a state or province
- Institutional and political challenges are the largest challenges to climate-change adaptation. Government agencies need to be more nimble, and are currently restricted by mandates and strict policies that do not allow for the flexibility required to deal with uncertainty and learning. The NBW LCC can provide information and support in helping agencies cope with change.
    - This is a time to be creative and inventive, and to consider new ways of implementing conservation given the pace of social-ecological change in the region. New solutions may be outside the mandate of formal institutions and the LCC can bridge various organizations and scales to create new lines of communication necessary to deal with arising situations – this is a more social role for the LCC;
    - Develop contingency plans (crisis management) that will allow us to be ready to act when events occur to maximize the potential to grasp opportunities;
    - Establish recommendations for how agencies can incorporate learning in plans so that plans can be adaptive, responsive to changing conditions, and be more useful for the agencies/organizations.
- The NWB LCC can approach landscape conservation by creating a 'diverse portfolio' of options and products that focus on long-term and near-term planning for species and habitats as well as enduring features and evolutionary and ecological processes, and planning for adaptation and resilience.

LCC staff conducted an anonymous survey of Steering Committee members after the workshop to evaluate the value of the workshop and its presentations. An overwhelming majority of respondents indicated that the lessons learned and tools discussed at the meeting will be useful in their jobs. Respondents als indicated a desire that the LCC sponsor similar workshops in the future. There was strong support for an ecosystem stewardship approach; implementing a conservation matrix model for the full extent of the LCC; the use of the enduring features concept for conservation planning; and the consideration of scenario planning and related tools for dealing with uncertainty. Full presentations on each of these topics can be found on the NWB LCC YouTube channel here: (http://www.youtube.com/playlist?list=PL5OV4-zBXlADXkk2fRgQAWgxlKMIbUGJm).

International Partnership

LCCs were established to transcend political boundaries; to be a true partnership, NWB LCC is committed to working across the international border to coordinate applied science to inform shared land and resource management needs. Nearly half of the land area (47.5%) in the NWB LCC is in Canada (Figure 1) and the Steering Committee feels strongly that Steering Committee composition and participation should reflect this. Substantial progress has been made in contacting potential Canadian partners. Several Canadian agencies and organizations have shown interest and enthusiasm in participating in NWB LCC, as evidenced in Table 1.

Based on the recommendations of our Canadian Outreach Subcommittee the LCC Steering Committee attempts to hold at least one meeting in Canada each year and has held two meetings in Whitehorse, Yukon Territory to date. The Steering Committee fully engaged our Canadian partners in the dialogue leading to articulation of shared goals, vision and mission statements, and the development of a charter for the NWB LCC.

There are multiple agencies and organizations that would like to participate in the Northwest Boreal LCC in the future. Efforts are being made on a continual basis to engage new partners in both Canada and the U.S, particularly within the Alaska Native and Canadian First Nations Communities.

LCC Projects

While the LCC has received limited funding in support of project activities, we have been successful in leveraging significant amounts of other federal and non-federal funds in support of priority management information needs. In FY13 the NWB LCC funded five projects (http://nwblcc.org/resources/projects) with $143,185 in LCC funding (1410), matched with $1,011,293 in leveraged funding from partners. Additional FY13 in-kind administrative support included $260,266 (1410) in LCC staff time and $232,000 in leveraged support from SC partners. Total LCC funding is matched at a greater than 3:1 ratio by partner contributions. The following projects were funded, co-funded, or were implemented as a result actions of the NWB LCC in 2013:

Cooperative agreement with Wildlife Management Institute – The NWB LCC continued to work though a cooperative agreement with the non-profit Wildlife Management Institute in support of the facilitation, implementation, and reporting on the LCC's Management Framing and Landscape Conservation Design Workshops in 2013. The final report for the Management Framing Workshop is complete and available from our website (http://nwblcc.org/resources-2/workshop-reports) and the final report from the November 2013 Landscape Conservation Design Workshop will be completed early in 2014.

Synthesis of the state of science within the NWB LCC partnership community - *Federal and territorial/provincial agencies and governments, science-based non-governmental organizations, Tribal and First Nations governments, and universities.*

This ongoing project will inform the NWB LCC information needs assessment process by broadly identifying the existing knowledge bases as well as the priorities and objectives for science and

landscape activities within the region. The purpose of this synthesis is to develop an understanding of the NWB LCC partnership community's management responsibilities and inform how the NWB LCC can most effectively direct future support of applied science to inform management and landscape planning. Cooperators will work closely with the NWB LCC SC in the identification of priorities and scope of the synthesis. The resulting deliverables will be suitable for distribution to a broad range of stakeholders within the LCC community (scientists, managers, administrators, general public) and will address management information needs. A primary need of the NWB LCC is to identify and describe the greater partnership community (i.e. science and land/resource management organizations that operate within the NIWF geographic region but are not currently represented on the SC). The cooperators are working with the NWB SC to target known organizations and to characterize the scope of the partners into broad categories. Categories are defined by broad science or management objectives and priorities of each partner organization. This information will directly inform the Steering Committee in its prioritization of biological and cultural Resources.

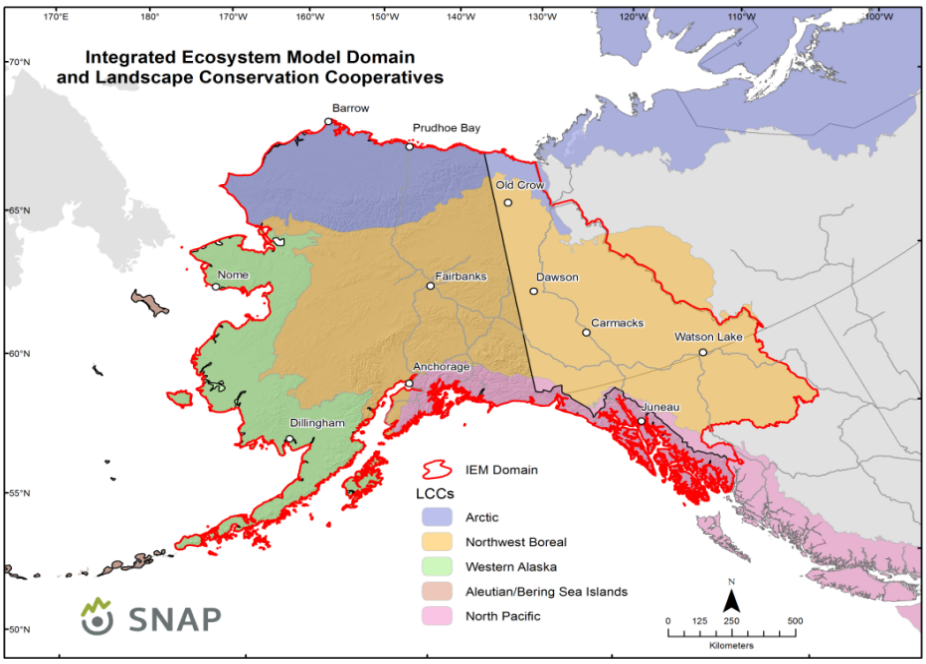
Integrated Ecosystem Model for Alaska and Northwest Canada:

The NWB LCC is continuing to provide financial and technical support in the development of the Alaska and Northwest Canada Integrated Ecosystem Model (IEM) Project. This effort is designed to help resource managers' understand the nature and rate of landscape change. Maps and other products generated by IEM will illustrate how arctic and boreal landscapes may be altered by climate-driven changes to vegetation, disturbance, hydrology, and permafrost. IEM uses three ecosystem models that link changing climate scenarios to different ecological processes:

- The Alaska Frame-Based Ecosystem Code (ALFRESCO). ALFRESCO simulates wildland fire, vegetation establishment, and succession.
- The Terrestrial Ecosystem Model (TEM). TEM models characteristics of organic soils, hydrology, vegetation succession, biomass, and carbon balance in soil.
- The Geophysical Institute Permafrost Lab model (GIPL). GIPL simulates permafrost dynamics such as active layer thickness (the depth of summer seasonal thaw in perennially frozen ground) and mean annual soil temperatures.

The individual models provide important information on how the Alaskan and Northwestern Canada landscapes may respond to climate change. However, these processes do not act in isolation, and they each influence processes simulated in the other component models. Linking ALFRESCO, GIPL, and TEM together will produce a more realistic picture of potential future landscape conditions because it allows the models to simulate known interactions of ecosystem components and physical processes. In addition to linking the models together, new functionality is being developed so that IEM can better simulate ecosystem dynamics such as tundra fire and treeline dynamics, landscape-level thermokarst dynamics, and wetland dynamics. FY13 funding from the LCC is supporting the development of products showing the spatial probability of vegetation composition change within NWB LCC

Figure 5. Geographic extent of Integrated Ecosystem Model



Anthropogenic disturbance mapping and database compilation for the Canadian portion of the Northwest Boreal LCC

In response to an important priority information need identified by the NWB LCC, Ducks Unlimited Canada is compiling and mapping all existing publicly available spatial data that infers an anthropogenic disturbance on the environment in the Canadian portion of the NWB LCC of Canada. A single standardized ArcGIS Geodatabase is being created, with accompanying series of maps profiling individual types of disturbances. In addition, an accompanying document lists a summary of all data compiled (by provincial jurisdiction), available metadata, caveats, information gaps, and recommendations moving forward to better understand the anthropogenic changes throughout this region.

Landcover Mapping of the Northwest Boreal LCC

The LCC is supporting the efforts of the Conservation of Arctic Flora and Fauna (CAFF) Program, Circumboreal Vegetation Mapping (CBVM) group, under the leadership of Dr. Steven Talbot of the USFWS. The CBVM group convened a three day international vegetation mapping workshop in Anchorage in September 2013 to develop a classification of boreal vegetation at the Alliance level for the region with CBVM representatives from Alaska, Canada, and the Russian Federation. The CBVM group will finalize the legend of a unified map of Alaska and western Canada, refine a boreal mapping approach that integrates the Alaska and western Canadian regions, and harmonizes the mapping concepts of Canada, Russian Federation, and the United States. Project outcomes include a report of the papers presented from the workshop as a CAFF Proceedings Series Report, a vegetation map for the Northwest Boreal LCC region, a boreal vegetation map legend for the Northwest Boreal LCC and for the entire circumboreal region of North America and Eurasia, and MODIS Moderate Resolution Imaging Spectroradiometer images of the Northwest Boreal LCC region.

Bridging Yesterday with Tomorrow: Understanding Traditional Ecosystem Management Practices & Their Application to Contemporary Sustainable Boreal Ecosystem Management

Under this cooperative agreement with the Council of Athabascan Tribal Governments (CATG), the LCC is partnering with the Alaska Native community to document the traditional ecosystem management practices of the Gwich'in and Koyukon community of Beaver, Alaska and by so doing, provide improved insight and understanding into the culturally-based rules which guided management and relationships between people, landscapes, and food resources to ensure sustainable yield within the northwest boreal forest. Through this award, the Recipient will collaborate with the community of Beaver and researchers from the University of Saskatchewan in the documentation of culturally and traditionally- based ecosystem management practices as held in the oral histories of the community elders. This rich cultural tradition holds management solutions necessary for cultural adaptation, resilience, and survival in a changing ecosystem. Through documentation and development of a Traditional Practices Seasonal Calendar these practices will be accessible to the next generation as well as partners in management

A Bibliography of Important Natural and Cultural Resource Information for the Northwest Boreal Landscape Conservation Cooperative

LCC staff and Steering Committee members are working closely with the University of Alaska Anchorage (UAA) and the staff of the Alaska Resources Library and Information Services (ARLIS) to develop and populate a publicly available map-based bibliography of existing published and "grey" literature for priority resource subjects within the geography of the Northwest Boreal Landscape Conservation Cooperative. LCC staff is collaborating with UAA and ARLIS to develop and implement Standard Operating Procedures for project development; identify chronological and other limits to scope of project; develop list of relevant key words and geographic and other search terms and strategies; develop subject categories for use in presentation of bibliography in classified format; and provide input in the review draft and final bibliography.

Arctic-Boreal Vulnerability Experiment - ABoVE

LCC staff is working closely with staff at the National Aeronautics and Space Administration to guide the successful delivery of their Arctic-Boreal Vulnerability Experiment (ABoVE) within the Northwest Boreal region. ABoVE is a NASA Terrestrial Ecology Program field campaign that is currently being conducted in Alaska and northwestern Canada. The LCC Science Coordinator is supporting ABoVE's science definition team to develop a concise experiment plan to be be completed in Spring 2014. The LCC is also assisting in the development of partnerships with other programs and existing research sites to identify priority information needs and to facilitate the sharing of resources and data.

ADFG Statewide Subsistence mapping (multi-LCC project)

The NWB LCC played a key role in the preparation and sponsorship of the successfully-funded Multi-LCC project Spatial Representation Of Subsistence Data In Alaska - A Mapping Interface Of The Community Subsistence Information System (funded through the national office of OSA). This project is an effort to map the Alaska Department of Fish & Game's Subsistence Database for all of Alaska and to make this geospatial database available and searchable online. Geo-spatial analyses

of household harvest and subsistence data are being applied to analyses projecting food security risks, identifying gaps in data collection, and assessing the economic value of ecosystem services.

National Hydrography Database update for Alaska

The NWB LCC also co- the successfully-funded Multi-LCC project to upgrade the Alaska National Hydrography Dataset (NHD) to quality standards that exist for the rest of the United States (funded through the national office of OSA). This data product is crucial for informing landscape conservation design and for targeting research assumptions. This project is co-led with USGS and involves Alaska's National Fish Habitat Partnerships, Refuge I&M, the Interagency Hydrological Committee for Alaska and others in an oversight team to ensure that it will meet the needs of many stakeholders. The implementation of this project will provide substantive benefits to the NWB LCC geographic area and to stakeholders in all other LCCs of the region. Our Steering Committee, through its Management Framing Workshop, has identified "the development of a consistent hydrological dataset" as one of the highest priority management information needs for our area. An updated and more accurate Alaska NHD will improve our ability to monitor the current status of our surface waters and will allow us to more effectively model future aquatic habitat conditions in a changing climate. Salmon management, pollutant transport studies, and the investigation of the spread of water-dispersed invasive species are just a few of the important management uses of such a dataset. Hydrology and mapping staff of NWB LCC member agencies will commit significant time and resources to ensure the success of the project

An evaluation of contaminant levels in subsistence foods in the eastern Interior of Alaska

The LCC and its member Agency the US Army are encouraging conservation of natural resources on property in the vicinity of Fort Wainwright in interior Alaska and hoping to develop lasting relationships between federally recognized tribes in the Upper Tanana River Watershed and the Government at Fort Wainwright. Many residents of the Upper Tanana River Region do not eat local fish, in part because of the perception of impacts from past military use and potential contamination and a longstanding impression that the food web has served as a pathway of human exposure. This project, conduct by the US Fish and Wildlife Service, Alaska Department of Fish and Game, and the Department of Defense, will determine contaminant levels in local fish to address these concerns. Partnership staff will investigate concerns of the residents of the Upper Tanana villages of Northway regarding fish and wildlife anomalies and their potential relationships to contamination. As a direct result of LCC collaboration, Fort Wainwright has provided $433,000 in funding to the U.S. Fish and Wildlife Service's Environmental Contaminants Program to conduct this study.

Conclusions

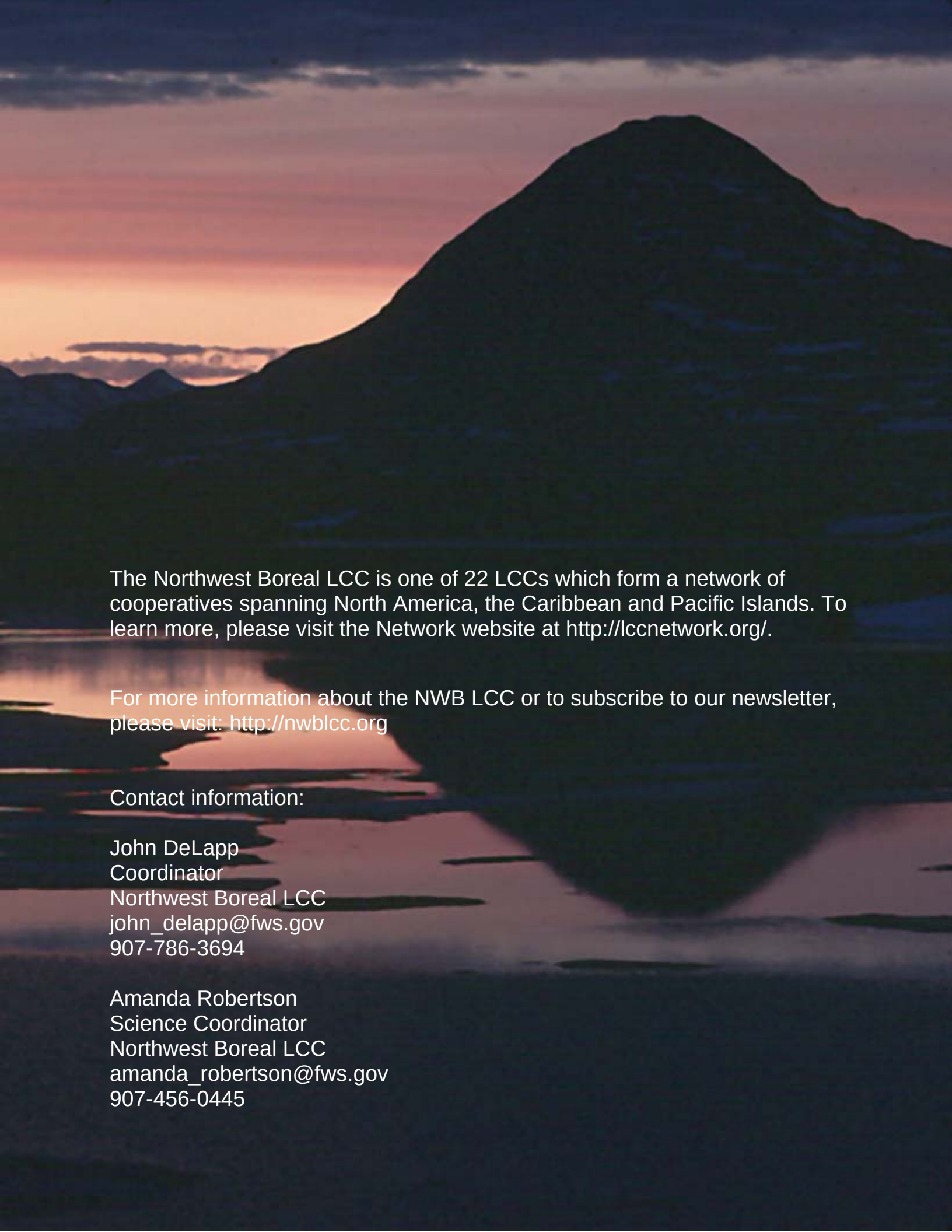
The Northwest Boreal LCC is a young and developing LCC, with its Steering Committee formed in 2012. Since that time, a comprehensive team effort from NWB Core Staff and Steering Committee members was central to forming an active and collaborative international, inter-agency partnership. The greater partnership community continues to grow, as does interest in the NWB LCC. The need for and interest in conservation planning at the landscape scale and is great in this region; increasing participation in the NWB LCC reflects this need.

At two and half years old, the Northwest Boreal LCC is developing into a strong regional

conservation presence. Our Coordinator and Science Coordinator are working with a diverse Steering Committee consisting of members from Alaska and neighboring Canada to finalize the LCC strategic plan and to determine the LCC's science focus. Nineteen priority science and information needs have been identified within the five broad categories of baseline information; monitoring, understanding relationships; projecting future system states; and adaptation planning and best management practices.

In 2013 the NWB LCC ratified its charter, formalized its Steering Committee membership, and provided technical and financial support to address several important landscape scale resource information needs.

In 2014 the NWB LCC will continue to prioritize research, monitoring, assessment, and modeling efforts within the region. The results of our recent landscape conservation design workshop and related strategic planning activities will guide us in our selection of several high priority projects designed to provide immediate short-term and long-term benefits to fish and wildlife resources and their management. The LCC will leverage our modest level of FY14 project funding with additional external funding to improve our shared scientific understanding of the boreal landscape.



The Northwest Boreal LCC is one of 22 LCCs which form a network of cooperatives spanning North America, the Caribbean and Pacific Islands. To learn more, please visit the Network website at http://lccnetwork.org/.

For more information about the NWB LCC or to subscribe to our newsletter, please visit: http://nwblcc.org

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