



NORTHWEST BOREAL
Landscape Conservation Cooperative



Wetland within Devil's Elbow Habitat Protection Area, central Yukon
Photo: Ducks Unlimited Canada

Strategic Plan

2015 - 2025

Version 1.0

Note from our Co-Chairs

The Northwest Boreal Landscape Conservation Cooperative (NWB LCC) is a voluntary, diverse, self-directed management-science partnership, informing and promoting integrated science, sustainable natural and cultural resource management, and conservation to address impacts of climate change and other stressors within and across ecosystems. The NWB LCC area includes parts of Alaska, Yukon, Northwest Territories, and British Columbia. Our partnership reflects both the broad geographic scope and an extensive array of active and engaged participants including resource management organizations, government representatives, policy makers, Tribes and First Nations, industry leaders, researchers, non-governmental organizations, and research/education institutions. Bringing together diverse partners will help assure the northwest boreal is a functioning, sustainable landscape.

We live in an era of profound conservation challenges, including the loss and fragmentation of habitats, genetic isolation, invasive species, and unnatural wildfire. The effects of rapidly changing climate are already evident on the landscape. In these circumstances, it is imperative that natural resource management agencies, science providers, Tribes, First Nations, conservation organizations, and other stakeholders work together to understand the drivers and impacts of landscape change and to determine how best to address those challenges. Further, it is essential that the public and communities receive clear communication about the vision and activities of the NWB LCC. Open public access to NWB LCC activities and products will promote acceptance and support of the science that guides potential changes in management action and conservation strategy.

This strategic plan provides a great opportunity for the NWB LCC to share our approach and intentions to the LCC members, collaborators, communities, and the public at large.

Carl Markon, U. S. Geological Survey, United States Co-Chair to the NWB LCC



Eric Schroff, Yukon Parks, Canada Co-Chair to the NWB LCC



Introduction

Potential for Landscape-scale Conservation in the Northwest Boreal Region: *Collaborative conservation that takes a holistic view of ecosystems and society across large landscapes is emerging as a 21st century model. People and nature are not separate; society depends on ecosystem services for economic and cultural wellbeing. In order to achieve sustainable landscapes, it is important to foster resilient economies and ecosystem services; here the term cultural resources encompasses the human components of socio-ecological systems. The challenge before us is to provoke a new way of thinking about conservation, explore the potential of LCCs, and work not only outside our own jurisdictions, but often outside our typical ways of doing business.*

NWB LCC Vision: *A dynamic landscape that maintains functioning, resilient boreal ecosystems and associated cultural resources.*

NWB LCC Mission: *To enhance the ability of organizations and communities to understand, manage, and adapt to our changing landscape.*

Conservation challenges facing our region today and in the future require unprecedented collaborative effort. Each organization in the NWB LCC partnership has unique strengths and capacities; by working together we can leverage our assets to address landscape conservation challenges at the scale at which they occur. When working collaboratively, our diversity becomes our biggest advantage. Diverse partnerships such as ours are more resilient in the face of change and can meet multi-faceted and large-scale conservation challenges by bridging diverse perspectives, missions, and institutions. Local and Aboriginal perspectives are particularly important to include in collective learning and adaptive management of our landscapes. By working together, we can achieve more than we can individually.

Working Together

The NWB LCC has an opportunity to lead the way into this new model of conservation. In doing so, we must be creative, and in some cases, be willing to leave the comfort of our typical practices. Rapid rates of change and high uncertainty require that science and action be coordinated in continuous learning loops. LCCs are in a unique position to facilitate the co-creation and application of science-based and traditional knowledge towards common conservation and sustainable management goals. The NWB partnership can take an active role in collaboratively building the knowledge base to reach those goals and by identifying scenarios of change and intervention opportunities. To reach their full potential, LCC partnerships must move past the collection and synthesis of information, and must work collaboratively to apply science

Informing Landscape Conservation

to sustainability issues. This involves engaging diverse stakeholders, facilitating dialogue among different viewpoints, and informing action. This is a time to be creative and inventive as a partnership, to talk about and plan for things to come both opportunities and risks, and manage for resilience and adaptation.



Braided River, Interior Alaska
Photo: Amanda Robertson

An integral part of every activity within the NWB LCC is communication, and once again we have an opportunity to be creative and think from a new perspective. The need to incorporate science into policy and decision making has never been greater given high uncertainties and rates of change, yet we often are not incorporating results of scientific inquiry into our management and policies. Translation of new and existing information from technical sources into easily understandable and accessible forms targeted towards diverse audiences is a key role that the NWB LCC can play. Successful communication should be multi-directional, facilitate participatory science (e.g., work with end users to frame research questions prior to collecting data), encourage dialogue with stakeholders (are the LCC-produced information or products useful?), and translate technical information for multiple users.

Communication

In order to successfully enhance the capacity of organizations and communities to respond to and adapt to change, we need to be flexible and adaptive. This includes taking advantage of new opportunities as they arise, and updating our priorities and goals as we learn more about our landscapes and trajectories of change. As a collaborative, we can help our institutions gain flexibility and embrace learning as an outcome. The NWB LCC can streamline its operational structures so that partners can work regionally, leverage resources, and target efficiencies.

LCC Management

Purpose of Strategic Plan

A Strategic Plan for the NWB LCC aims to:

- Ensure that individual activities and efforts build on one another to collectively help us reach our vision;
- Serve as an annual roadmap/action plan and guide maturation as an LCC;
- Help us attain our vision and mission by setting goals and measurable objectives;
- Communicate the NWB LCC's priorities and efforts to partners;
- Focus efforts of NWB LCC staff and meetings;
- Identify new funding sources;
- Ensure that NWB LCC efforts support the goals and objectives of the LCC Network.

This Strategic Plan is more than a science plan. Although informed by science and traditional knowledge, LCCs are also the social platforms in which partners convene to discuss values, articulate shared visions of our future landscapes, and plan ways to work hand in hand to achieve those visions. LCC functions that are not strictly science based include: coordination of existing efforts; identifying priority conservation features or areas; setting shared goals and objectives; supporting climate adaptation; identifying social and institutional constructs and barriers to change; and co-creation of knowledge with end users. For a plan to encompass all of the potential functions of an LCC partnership, it is necessary to incorporate science activities within a larger agenda. This Strategic Plan highlights important information gaps and science needs as they pertain specifically to the broader mission of the NWB LCC, targeting science that is necessary to move landscape conservation forward in new directions toward landscape sustainability.

Who is the NWB LCC?

The NWB LCC is made up of diverse partner organizations from across more than 133million hectares (330 million acres) of boreal forests, alpine environments, wetlands and rivers, spanning an altitudinal range from sea level to the highest point in North America. One of the largest LCCs in the LCC Network (lccnetwork.org), the NWB partnership includes the major metropolitan hubs and transportation infrastructure of the region, including the two largest cities in Alaska and the largest city in Yukon. The geographic region of the NWB LCC includes the boreal and boreal transition zones of Alaska, Yukon, northern British Columbia and westernmost Northwest Territories (**Figure 1**). As a true international collaboration, the NWB LCC is a growing partnership

of more than twenty-five U.S. and Canadian federal and provincial/territorial agencies, nongovernmental organizations, Tribes/First Nations, and institutions of higher education. Organizations serving on the NWB LCC Steering Committee are listed in **Appendix A** (pg.16).

Over the last 100 years, recorded air temperature within the NWB LCC region has warmed 1.4 °C (2.52 °F), twice the global average, and the growing season length has increased by 50%.¹ At the same time, global demand for natural resources such as oil and gas, rare-earth minerals, and timber is increasing exponentially. The combination of climate and land-use change will lead to drastic alterations of these largely intact ecosystems in our lifetimes.

The need for effective, science-based, and targeted conservation at landscape scales to inform management decisions within the NWB LCC region has never been greater. Land and resource managers need decision support tools, coordinated monitoring, and the latest results from climate, ecosystem, and social-economic

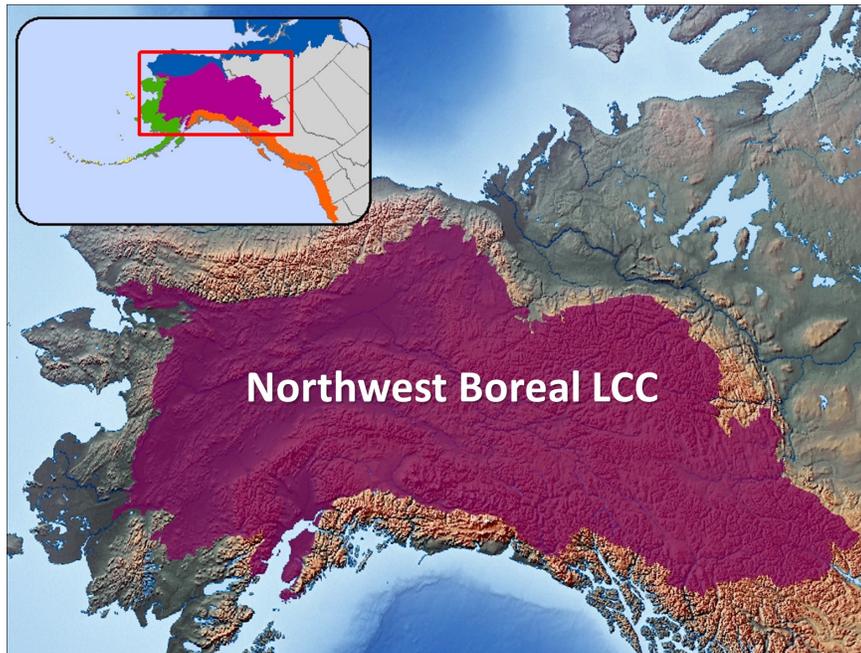


Figure 1. The geographic area of the Northwest Boreal LCC is shown in purple. The LCC includes the boreal forests of Alaska, Yukon Territory, Northern British Columbia, and the western mountains of the Northwest Territories.

models. By agreeing on a common vision, ‘A dynamic landscape that maintains functioning, resilient boreal ecosystems and associated cultural resources,’ partners of the Northwest Boreal LCC are embarking on a landscape conservation design process to guide collaboration to achieve that vision in the context of an uncertain future.

In 2012, the NWB LCC partners conducted a comprehensive information needs assessment to determine commonalities in what science and management information is needed, at what scale, and in what format to inform local and landscape-level conservation and sustainable management across the region. Biological and cultural conservation priorities were identified as were primary drivers of landscape change in NWB ecosystems. To help inform current and future LCC activities, a list of priority information needs was compiled based on over 200 partner interviews, a workshop, and several Steering Committee meetings (**Appendix B**, pg.17).

Overview of Strategic Plan

The NWB Strategic Plan begins in 2015 and goes through 2025; however, individual actions are identified for the partnership only through 2020. The rationale for the ten-year planning interval is two-fold. First, we want our activities and efforts to build on one another, through time, to help us reach our goals and achieve our vision. Rather than supporting disjoint projects and efforts, we want to ensure that the activities we undertake today will form the foundation for those in the future. Second, the uncertainties and data limitations common to this vast and remote region are such that it may take several years for some information gaps to be properly addressed. Through a longer planning horizon, the NWB partners hope to see objectives being reached and positive changes on our landscape.

¹ Wendler, G. & Shulski, M. (2008). A Century of Climate Change for Fairbanks, Alaska. *Arctic*, 62 (3), 295-300.

The needs of partners will change through time. Although this Strategic Plan is designed to guide and direct the NWB LCC over many years, it is important for the partnership to remain nimble, adaptive, and open to new opportunities. Flexibility is written into this Strategic Plan, but it is important for the plan to be updated as needed and at a minimum of every three years.

The Strategic Plan is organized into four Themes:

- I. Working Together
- II. Informing Landscape Conservation
- III. Communication
- IV. LCC Management

The four Themes describe the primary functions identified for the NWB LCC. Goals within each Theme derive from the NWB LCC Vision. Objectives describe how we can reach those goals, and the actions are individual strategies designed to meet our objectives. Each action listed is “SMART,” defined as follows:

- S - *Specific*
- M - *Measurable*
- A - *Agreed upon*
- R - *Realistic*
- T - *Time bound*

Once SMART Actions were identified, they were organized by year and placed in the **NWB LCC Roadmap** (pg. 1). This Roadmap, which will be revised as needed, will guide the NWB LCC partnership in the years to come.



Tintina Trench Wetland, Yukon
Photo: Lila Tauzer

I. Working Together Theme

Issue Statement

Conservation needs in Alaska and Northwest Canada require an unprecedented collaborative effort that links science and conservation information exchange with the combined capacities of many conservation partners. As a diverse international partnership including the perspectives of Alaska Natives and Canadian First Nations People, the Northwest Boreal LCC can work together to gain a better shared understanding of how our ecosystems function and how they may change in the future. Working together, the LCC can encourage research of priority resource information needs within the region and encourage partners to work together on shared objectives rather than duplicate efforts.

Goals

1. **Build strategic networks across the NWB LCC.**
2. **Improve information sharing across the NWB LCC.**
3. **Increase collaboration among partner organizations.**

Goal 1: Build strategic networks across the NWB LCC.

Objective 1: Identify partnership capacity for on-the-ground conservation that is tied to organizational assets (e.g., mix of land managers, policy makers, researchers).

Action 1: Identify organizational assets, or the individual capacities that each organization can contribute to the partnership, by July 2015; develop updates at a minimum of every 3 years or as new partners join the LCC.

Action 2: Steering Committee member organizations will evaluate and summarize the management responsibilities of their participating organizations in order to identify how capabilities may affect on-the-ground conservation by end of 2015.

Objective 2: Determine gaps in the NWB LCC network membership representation and identify institutional barriers.

Action 1: Work with partners to initiate a comprehensive network analysis in order to identify communication flows and directions, as well as barriers within and across organizations in the NWB LCC by the end of 2015.

Action 2: Decide what types of expertise are needed on the NWB Steering Committee by end of 2015.

Action 3: Identify gaps in expertise or organizational diversity on Steering Committee using the products of Action 1 (above), and Action 2 (above), and the network analysis by end of 2016.

Action 4: Identify legal and administrative barriers that may inhibit flexibility and responsiveness to change within each political jurisdiction (e.g., state, territory, or province) by end of 2017.

Objective 3: Fill gaps in the NWB LCC network.

Action 1: Foster engagement from missing entities (including local government and Aboriginal communities) through outreach and communication each year with a goal of filling all gaps by end of 2018.

Action 2: Establish workgroups comprised of Steering Committee Members and other partners as needed to assist LCC activities by end of 2015 and annually thereafter.

Objective 4: Emphasize the international nature of the NWB LCC.

Action 1: Hold quarterly in-person meetings in Alaska and Canada.

Action 2: Elect bi-national Co-Chairs (3-year terms).

Goal 2: Improve information sharing across the NWB LCC.

Objective 1: Devise mechanisms to share information/data among and within agencies, organizations, and jurisdictions.

Action 1: Host communities of practice/partner forums on NWB website (nwbllcc.org) by October 2015.

Action 2: Finalize development of a data sharing and management policy by which all NWB LCC-supported projects will be guided by end of 2015.

Action 3: Develop a landscape conservation atlas (geospatial database) to integrate and host cross-border datasets (US/Canada) by January 2016.

Action 4: Maintain a current list of science and management information needs by January 2015.

Action 5: Host annual workshops/trainings for NWB LCC Steering Committee and broader partnership community.

Action 6: Provide technical updates from partner organizations, LCC-supported project investigators, and Technical Working Groups at each Steering Committee meeting.

Action 7: Develop a directory of partner organizations that summarizes missions, mandates and general areas of focus by October 2015.

Action 8: Create and maintain an active list of relevant and current projects from partner organizations by end of 2015 and annually thereafter.

Goal 3: Increase collaboration among partner organizations.

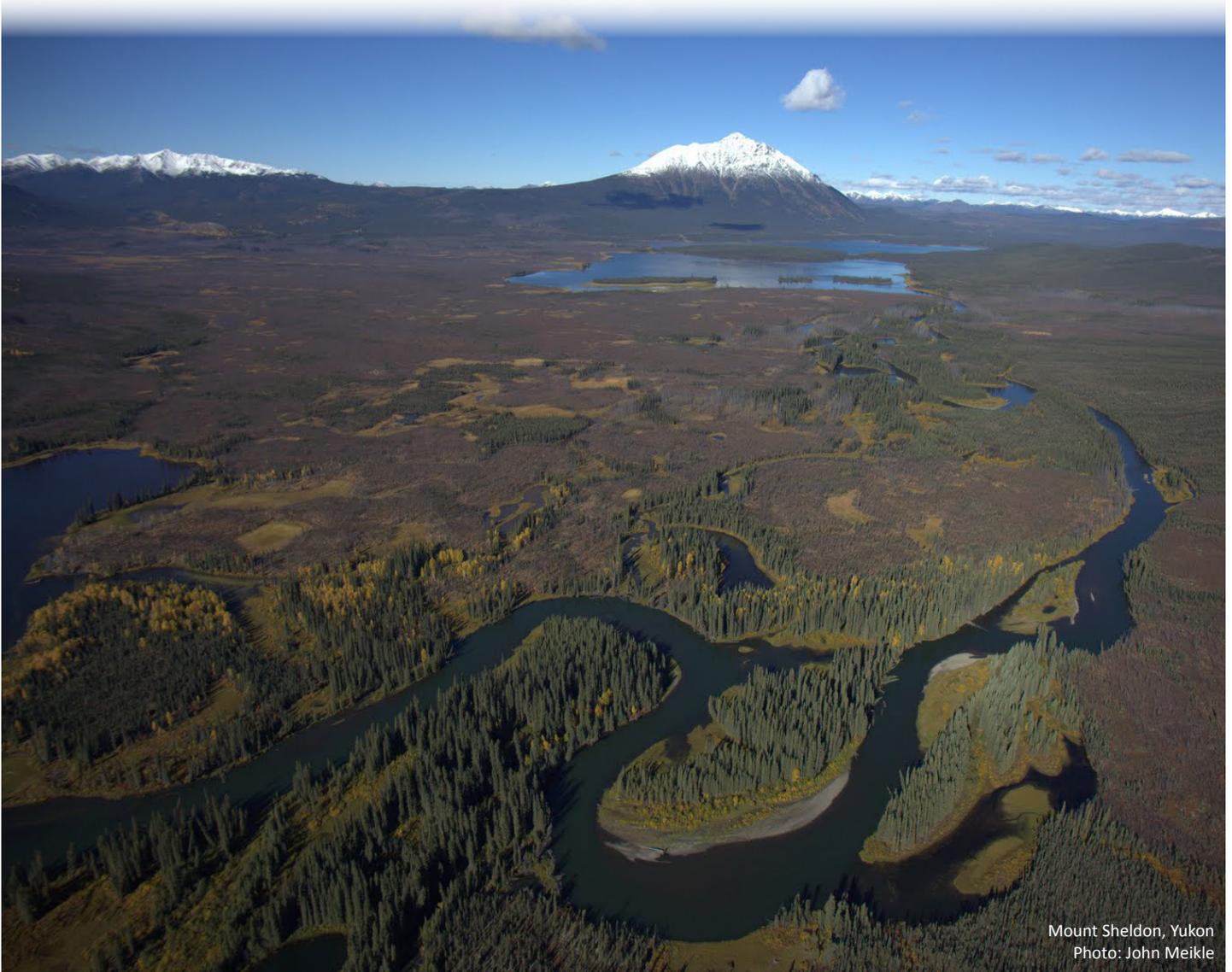
Objective 1: Identify shared objectives and opportunities to leverage resources and thereby facilitate working together among partner organizations.

Action 1: Share information regarding external funding opportunities on NWB website (nwblcc.org).

Action 2: Target annual coordination among partners for activities that are relevant to partners but outside the scope of the LCC.

Objective 2: Facilitate and support landscape planning

Action 1: Work annually with partners to voluntarily coordinate timing of land-use planning to increase capacity of organizations to plan at the landscape scale.



Mount Sheldon, Yukon
Photo: John Meikle

II. Informing Landscape Conservation Theme

Issue Statement

The mission of the NWB LCC is to enhance the ability of organizations and communities to understand and manage ecosystems and their processes in our changing landscape. The partnership will do this by identifying, developing, and supporting shared conservation goals that will help us reach our vision, and by promoting coordination, development, and dissemination of science and traditional ecological knowledge to inform and incentivize landscape-level sustainability. By taking a proactive approach to conservation, the LCC will provide the tools and information necessary to work collectively towards our shared vision in the face of an uncertain future. The LCC's goals in this Theme are inherently linked and iterative (**Figure 2**), and will be updated and revised as new information becomes available and as the partnership diversifies.

Goals

1. Identify, develop, and support shared landscape conservation goals to guide the partnership in achieving the vision of NWB LCC.
2. Build a landscape conservation foundation for NWB LCC.
3. Identify trajectories of change - What does the future hold for the NWB region?
4. Understand social-ecological relationships within the NWB LCC.
5. Coordinate and support conservation delivery across the NWB LCC partnership.

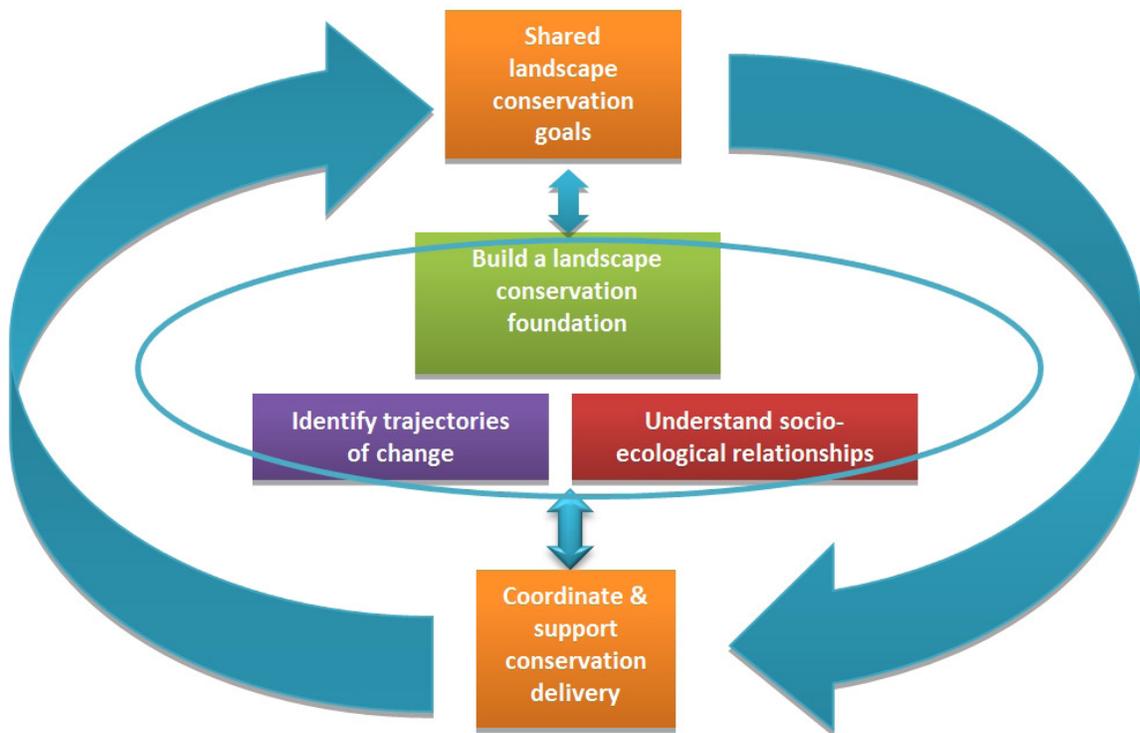


Figure 2. The five goals in the *Informing Landscape Conservation Theme* inform one another in an adaptive cycle.

Goal 1: Identify, develop, and support shared landscape conservation goals to guide the partnership in achieving the vision of NWB LCC.

Objective 1: Create and follow a transparent process for identifying, developing, and supporting shared landscape conservation goals, priorities, and measurable objectives.

Action 1: Summarize and synthesize existing conservation and land-use plans across the region by December 2015.

Action 2: Identify landscape conservation goals for the LCC by December 2016.

Action 3: Identify conservation priorities by December 2016.

Action 4: Update landscape conservation goals and priorities as new information is generated; revisit as needed or as the Strategic Plan is revised.

Goal 2: Build a landscape conservation foundation for NWB LCC.

Objective 1: Determine baseline datasets needed to reach our conservation goals.

Action 1: Identify and prioritize necessary datasets by October 2016; revisit and update priorities as needed.

Objective 2: Integrate, acquire and improve priority baseline datasets with an emphasis on continuity across the US/Canada border.

Action 1: Integrate existing priority datasets as possible by end of 2016.

Action 2: Acquire, update, and improve priority datasets as needed by October 2018.

Objective 3: Complete a landscape conservation assessment for the NWB region.

Action 1: Create and maintain a land management status map with associated International Union for the Conservation of Nature (IUCN) protection levels by May 2015 (updated every 2 years).

Action 2: Complete a State of the NWB LCC report describing the LCC partnership, including ecological, social, and institutional setting by October 2015.

Action 3: Synthesize known information regarding drivers of landscape change and their impacts by end of 2015.

Action 4: Synthesize and translate existing knowledge on social-ecological relationships for conservation priorities by July 2016 – December 2017.

Action 5: Host an online, spatially-searchable annotated natural resource bibliography by December 2016.

Action 6: Obtain and synthesize pertinent Traditional Ecological Knowledge as it pertains to priority conservation priorities and conservation goals by end of 2018.

Goal 3: Identify trajectories of change - What does the future hold for the NWB region?

Objective 1: Coordinate monitoring of current and changing states across NWB LCC.

Action 1: Describe the why, what, when, and where of existing monitoring relevant to LCC priorities by October 2018.

Action 2: Identify gaps in monitoring for priority topics, including spatial scale mismatch by March 2019.

Action 3: Coordinate and support development of monitoring for priority topics by 2020.

Objective 2: Identify potential future landscape conditions.

Action 1: Support vulnerability assessments for conservation priorities across the NWB LCC region beginning in 2015 and annually thereafter.

Action 2: Utilize scenario planning to explore potential future landscape states/conditions by integrating vulnerability assessments and projections of future change by 2020.

Goal 4: Understand social -ecological relationships with in the NWB LCC.

Objective 1: Identify relationships and interactions needed to take an ecosystem approach in order to meet landscape conservation goals.

Action 1: Prioritize social-ecological relationships by March 2016. Update as needed.

Objective 2: Support and encourage the research needed to address NWB LCC's priority relationships.

Action 1: Leverage NWB LCC funds to support projects to improve our understanding of social-ecological relationships by 2020.

Action 2: Provide letters in support of research on priority relationships as opportunities arise.

Action 3: Distribute research needs to research/academic community annually.

Objective 3: Engage stakeholders to gain multiple perspectives on potential future scenarios and identify opportunities and risks.

Action 1: Create and communicate narratives around potential future scenarios by 2020.

Action 2: Identify management intervention points within potential future scenarios by 2020.

Objective 4: Develop and support tools to assist in landscape conservation design.

Action 1: Identify available conservation tools as well as gaps or areas where tools may be useful by end of 2018.

Action 2: Work with partners to create tools to assist in landscape conservation design by 2019.

Objective 5: Provide resources for adapting to a changing landscape.

Action 1: Synthesize adaptation efforts from across the NWB LCC region and determine their effectiveness by 2019.

Action 2: Create a 'menu' of adaptive management options or best management practices and their impacts for stakeholders by 2017.

Action 3: Develop best management practices for informing landscape-scale conservation and protecting ecosystem function by 2019.

Objective 6: Incentivize and coordinate adaptation action across the NWB LCC.

Action 1: Leverage LCC resources to support on-the-ground adaptation projects by 2019.



NWB LCC Steering Committee member Mike Spindler preparing to pilot LCC staff on a visit to several National Wildlife Refuges in Alaska
Photo: John DeLapp

III. Communication Theme

Issue Statement

The LCC is a diverse international partnership including the perspectives of Alaska Natives and Canadian First Nations People. The Northwest Boreal LCC and its partners will work together to gain a better shared understanding of how our ecosystems function and how they may change in the future. The LCC functions to encourage and broker collaborative research, identification of shared goals, and joint pursuit of those goals. Effective communication is essential to ensure LCC success. Communication is multidirectional with both inputs and outputs, ensuring participatory efforts, and is targeted to specific audiences such as LCC partners, Aboriginal groups, academia, government, NGOs, industry, and the public.

Goal

1. **Define the LCC - Describe roles and responsibilities of partner organizations.**

Goal 1: Define the LCC - Describe the roles and responsibilities of partner organizations.

Objective 1: Develop a communications plan.

Action 1: Assemble a working group comprised of Steering Committee members and selected communications specialists to outline what information needs to be communicated by April 2015.

Action 2: Assemble a communications working group to identify audience and develop prioritized messages, best methods of delivery, and complete communications plan by March 2016.

Action 3: Work with third party to develop tools to assess efficacy of information delivery and identify success metrics by July 2017; conduct evaluations every two-three years thereafter.

IV. LCC Management Theme

Issue Statement

The NWB LCC requires an effective business plan in order to be successful at achieving the goals of the three previous themes. The Steering Committee, Co-Chairs and Staff must regularly prioritize actions, and identify required capacity and resources to maximize efficiency and opportunity. The NWB partnership must remain nimble to capitalize on unforeseen opportunities as they arise.

Goals

1. **Establish appropriate structures and business operations for the NWB LCC.**
2. **Ensure that the NWB LCC partnership is effective.**

Goal 1: Establish appropriate structures and business operations for the NWB LCC.

Objective 1: Maximize efficiencies to support all Themes.

Action 1: Review LCC actions, accomplishments, and outcomes annually in the form of reports and other formats.

Action 2: Develop a 3-5 year business plan for proposed future activities by end of 2015: Steering Committee Subcommittee.

Action 3: Develop an annual budget to set annual priorities: Steering Committee and Staff.

Action 4: Develop general evaluation criteria for LCC-funded projects by Subcommittee by end of 2015.

Objective 2: Position the LCC to successfully compete for internal and external funding.

Action 1: Create and maintain an annual list of potential internal and external funding sources and an associated annual funding calendar.

Action 2: Develop the NWB LCC brand to distinguish it from the other 22 LCCs and regional conservation partnerships by end of 2016.

Action 3: Develop at least one strategic partnership annually to leverage funding.

Objective 3: Establish the ability for the NWB LCC partnership to respond to new opportunities.

Action 1: Develop criteria for contingency projects or opportunities by end of 2015.

Action 2: Develop policies for the Steering Committee to allow Co-Chairs and Staff to act quickly when opportunities arise that fall within priorities by end of 2015.

Action 3: Review opportunities annually to retain flexibility in staffing and review opportunities missed in the past year in order to improve future flexibility.

Goal 2: Ensure that the NWB LCC partnership is effective.

Objective 1: Evaluate LCC success based on metrics or feedback for the entire LCC partnership.

Action 1: Define what success means for the NWB LCC and develop metrics or indicators by July 2016.

Action 2: Develop and disseminate annual surveys for partners, including evaluations from workshops and trainings.

Action 3: Revisit the Strategic Plan at a minimum of every 3 years using survey and reporting data to improve objectives and actions.

Northwest Boreal LCC Roadmap

The NWB LCC Roadmap lists the individual SMART actions identified listed by year. Cell color designates the Theme: Working Together = Green; Informing Landscape Conservation = Orange; Communication = Purple; LCC Management = Blue.

Annual or ad hoc	2015	2016	2017	2018	2019	2020
1.1.3.2. Establish workgroups comprised of Steering Committee members and other partners as necessary needed to assist LCC Activities by the end of 2015 and annually thereafter	1.1.1.1. Steering Committee members identify assets by July 2015; develop updates at a minimum of every 3 years	1.1.2.3. Identify gaps in expertise or organizational diversity on SC by end of 2016	1.1.2.4. Identify legal and administrative barriers that may inhibit flexibility and responsiveness to change within each political jurisdiction by end of 2017	1.1.1.1. Steering Committee members identify assets in spring of 2014, and updated at a minimum of every 3 years	1.1.1.1. Steering Committee members identify assets in spring of 2014, and updated at a minimum of every 3 years	1.3.2.1. Work annually with partners with land management authorities to voluntarily coordinate land-use planning to increase capacity of organizations to think about landscape-scale conservation
1.1.3.1. Foster engagement from missing entities (including local government and Aboriginal communities) through outreach and communication each year with a goal of filling all gaps by end of 2018	1.1.1.2. SC organizations will evaluate and summarize the management responsibilities of participating organizations in order to identify how capabilities may affect on-the-ground conservation by end of 2015.	1.2.1.3. Develop a landscape conservation atlas (geospatial database) to integrate and host cross-border datasets (US/CA) by January 2016	2.2.3.1. Update land management status map with associated LUCN protection levels every 2 years)	1.1.3.1. Foster engagement from missing entities (including local government and Aboriginal communities) through outreach and communication each year with a goal of filling all gaps by end of 2018	2.2.3.1. Update land management status map with associated LUCN protection levels by December 2019 (updated every 2 years)	2.3.1.3. Coordinate and support development of monitoring for priority topics by 2020
1.2.1.5. Host annual workshops/trainings for NWB LCC Steering Committee and broader partnership community	1.1.2.1. Work with partners to evaluate a comprehensive network analysis in order to identify communication flows and directions, as well as barriers within and across organizations in the NWB LCC by end of 2015	2.2.2.1. Integrate existing priority datasets as possible by end of 2016	2.2.3.4. Continue to synthesize and translate existing knowledge on social-ecological relationships for conservation priorities by December 2017.	2.2.2.2. Acquire, update & improve priority datasets as needed by October 2018	2.3.1.2. Identify gaps in monitoring for priority topics, including spatial scale mismatch by March 2019	2.3.2.2. Utilize scenario planning to explore potential future landscape states/conditions by integrating vulnerability assessments and projections of future change by 2020
1.2.1.6. Provide technical updates from partner organizations, LCC-supported project investigators, and Technical Working Groups at each quarterly Steering Committee meeting	1.1.2.2. Decide what types of expertise are needed on the NWB Steering Committee by end of 2015.	2.1.1.2. Identify landscape conservation goals for the LCC by December 2016	2.5.3.2. Create a 'menu' of adaptive management options or best management practices and their impacts for stakeholders by 2017	2.2.3.6. Obtain and synthesize pertinent Traditional Ecological Knowledge as it pertains to priority conservation priorities and conservation goals by end of 2018	2.5.2.2. Work with partners to create tools to assist in landscape conservation design by 2019	2.4.2.1. Leverage NWB LCC funds to support projects to improve our understanding of socio-ecological relationships by 2020
1.2.1.4. Maintain a current list of science and management information needs	1.2.1.1. Host communities of practice/partner forums on NWB website by October 2015	2.1.1.3. Identify conservation priorities by December 2016	3.1.1.3. Work with third party to develop tools to assess efficacy of information delivery and ID success metrics by July 2017; conduct evaluations every two-three years thereafter	2.3.1.1. Describe the why, what, and when, where of existing monitoring relevant to priorities by October 2018	2.5.3.1. Synthesize adaptation efforts from across the NWB LCC region and determine their effectiveness by 2019	2.5.1.1. Create and communicate narratives around potential future scenarios by 2020
1.2.1.8. Create and maintain an active list of current projects from partner organizations by end of 2015 and annually thereafter	1.2.1.2. Finalize development of a project data sharing and management policy by which all NWB LCC-supported projects will be guided by end of 2015	2.2.1.1. Identify & prioritize necessary datasets by October 2016; revisit and update priorities as needed		2.5.2.1. Identify available conservation tools as well as gaps or areas where tools may be useful by end of 2018	2.5.3.3. Develop best management practices for informing landscape-scale conservation and protecting ecosystem function by 2019	2.5.1.2. Identify management intervention points within potential future scenarios by 2020
1.3.1.1. Share information regarding external funding opportunities on NWB website	1.2.1.7. Develop a directory of partner organizations that summarizes missions, mandates and general areas of focus by October 2015.	2.2.3.5. Host online spatially-searchable natural resource bibliography by December 2016.		4.2.1.3. Revisit the Strategic Plan at a minimum of every 3 years using survey and reporting data to improve objectives and actions	2.5.4.1. Leverage LCC resources to support on-the-ground adaptation projects by 2019	3.1.1.3. Assess efficacy of information delivery and ID success metrics and conduct evaluations every two-three years
1.3.1.2. Target annual coordination among partners for activities that are relevant to partners but outside the scope of the LCC	1.2.1.8. Create and maintain an active list of current projects from partner organizations by end of 2015 and annually thereafter	2.2.3.4. Begin to synthesize and translate existing knowledge on socio-ecological relationships for conservation priorities by July 2016				
1.3.2.1. Work annually with partners with land management authorities to voluntarily coordinate land-use planning to increase capacity of organizations to think about landscape-scale conservation	2.1.1.1. Summarize and synthesize existing conservation and land-use plans across the region by December 2015	2.4.1.1. Prioritize socio-ecological relationships by March 2016				

1.1.4.1. Hold quarterly in-person meetings in US and Canada (quarterly)	2.2.3.1. Create and maintain a land management status map with associated IUCN protection levels by May 2015 (updated every 2 years)	3.1.1.2. Assemble a communications working group to identify audience and develop prioritized messages, best methods of delivery, and complete communications plan by March 2016				
1.1.4.2. Elect bi-national Co-Chairs (3-year terms)	2.2.3.2. Complete a State of the NWB LCC report describing the LCC partnership, including ecological, social, and institutional setting by October 2015	3.1.1.2. Communications working group to identify audience and develop a prioritized messages, best methods of delivery, and complete communications plan by March 2016				
2.1.1.4. Update landscape conservation goals and priorities as new information is generated; revisit as needed or as the Strategic Plan is revised	2.2.3.3. Synthesize known information regarding drivers of landscape change and their impacts by end of 2015	4.1.2.2. Develop the NWB LCC brand to distinguish it from the other 22 LCCs and regional conservation partnerships by end of 2016				
2.3.2.1. Support vulnerability assessments for conservation priorities across the NWB LCC region beginning in 2015 and annually thereafter	2.3.2.1. Support vulnerability assessments for conservation priorities across the NWB LCC region beginning in 2015 and annually thereafter	4.2.1.1. Define what success means for the NWB LCC and develop metrics or indicators by July 2016				
2.4.2.2. Provide letters in support of research on priority relationships as opportunities arise	3.1.1.1. Assemble working group (SC members and selected communications specialists) to outline the necessary information that needs to be communicated by April 2015					
2.4.2.3. Distribute research needs to research/academic community annually	4.1.1.2. Develop a 3-5 year business plan for proposed future activities by end of 2015; Steering Committee Subcommittee					
4.1.1.1. Review LCC actions, accomplishments, and outcomes annually in the form of annual reports and other formats	4.1.1.4. Develop general evaluation criteria for LCC-funded projects by Subcommittee by end of 2015					
4.1.1.3. Develop an annual budget to set annual priorities; Steering Committee and Staff	4.1.3.1. Develop criteria for contingency projects or opportunities by end of 2015					
4.1.2.1. Create and maintain an annual list of potential internal and external funding sources and an associated annual funding calendar	4.1.3.2. Develop policies for the Steering Committee to allow Co-Chairs and Staff to act quickly when opportunities arise that fall within priorities by end of 2015					
4.1.2.3. Develop at least one strategic partnership annually to leverage funding						
4.1.3.3. Review opportunities annually to retain flexibility in staffing and review opportunities missed in the past year in order to improve future flexibility						
4.2.1.2. Develop and disseminate annual surveys for partners, including evaluations from workshops and trainings						

Appendix A: NWB LCC Steering Committee Makeup

Northwest Boreal LCC Steering Committee Organizational Members as of April, 2015.

- Alaska Climate Science Center
- Alaska National Fish Habitat Partnerships
- British Columbia Ministry of Forest, Lands, and Natural Resource Operations
- Bureau of Indian Affairs
- Bureau of Land Management
- Canadian Forest Service
- Council of Athabaskan Tribal Governments
- Ducks Unlimited Canada
- Environment Yukon
- Kenai Watershed Forum
- National Park Service
- Natural Resources Conservation Service
- National Oceanic and Atmospheric Administration/ National Weather Service
- Northwest Territories Department of Environment and Natural Resources
- Tanana Chiefs Council
- University of Alaska Fairbanks 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 Research Center of Yukon College
- Yukon Territory Parks



Appendix B: NWB LCC Priority Information Needs

Northwest Boreal LCC: Prioritized Information Needs by Category		Information Needs Categories ("Bins")
B1	High resolution <u>land cover imaging</u> to strategically focus geospatial data collection within the LCC with the following properties: Ability to distinguish among plant species (e.g., black spruce from white spruce, willows from alder)	<p>B - Baseline. These are information needs that support or enhance the LCC's understanding of current system states. They may use existing data or involve new ways of using existing data. They may require collection of new data, or require synthesis of multiple existing datasets. They may be spatial or non-spatial in nature. Fundamentally, this bin includes information needs that define "Where we are, today."</p>
B2	Map the location of existing <u>anthropogenic disturbances</u> (e.g., transportation infrastructure, mining activity, and reclamation efforts.)	
B3	Consistent <u>hydrological dataset</u> for all of the LCC, across international border. Uses include the following: Salmon management, Pollutant transport studies and investigating the spread of invasive species	
B4	Assemble and develop <u>Ecological Land Classification and mapping</u> at multiple geographic scales (e.g. wetlands, soils)	
B5	In the face of changing land uses, obtain <u>baseline data on life histories, species habitat associations and suitability models</u> for plant and animal species of concern (e.g., identify critical anadromous and freshwater habitat, migratory routes, spawning areas, and overwintering habitats).	
M1	<u>Monitor changes in plant and animal species distribution, abundance/density, productivity and survivorship</u> , including invasives, as a result of growing-season length changes (e.g., tree line migration; shrubification of alpine tundra habitats; greening/browning of vegetation; and impacts to subsistence species and resources).	<p>M - Monitoring. These are information needs that support or enhance the LCC's understanding of changes in system states over time. They may involve coordination or standardization of protocols or minimum data standards. They may reflect improvements to existing measurement systems or development of new measurement systems. Fundamentally, these are information needs that allow the LCC to track real world change in order to evaluate the accuracy of projections of future states and modify adaptation planning and best management practices. These information needs tell us "How systems are performing" and provide an essential feedback loop for landscape conservation.</p>
M2	Collect <u>standardized stream information</u> (including glacial melt and glacial stream discharge) on a sufficient number of watersheds to determine the impacts of temperature and precipitation change on flow and water quality at the landscape scale	
M3	Improve mapping, modeling, and monitoring of <u>permafrost</u> location, depth, and freeze/thaw rates	
M4	<u>Increase weather station (and Snotel, etc.) coverage</u> to improve biome/climate association	
R1	<u>Assess the vulnerability of forest species and communities to climate change</u> , including vulnerability of species throughout food webs	<p>R - Understanding Relationships. These are information needs that support or enhance the LCC's understanding of relationships within current systems. These may involve experimentally-derived conclusions or analysis of existing empirical data. This information is necessary to project future states (based on anticipated changes). This bin also includes information needs that explain "How or why systems function."</p>
R2(a)	<u>Impact of climate change on vegetation composition and on subsistence resources</u> (e.g., harvested vegetation, ungulates, freshwater fish, etc.)	
R2(b)	Investigate the <u>effects of fire on ecosystems processes</u> (e.g., severity, frequency, and timing), including the following: permafrost dynamics, Water temperature and quality (turbidity, sedimentation, etc.), fish and wildlife habitats and populations, stand dynamics and vegetation change, Changes in carbon storage and plant biomass, and subsistence and other consumptive uses of fish and wildlife	<p>P - Projecting Future System States. These are information needs that support or enhance the LCC's understanding of potential changes in system states, based on modeling future conditions. They may include impact models, distribution models and downscaled climate information. Model products may be spatial or non-spatial in nature. Fundamentally, this bin includes information needs that predict "Where we are headed" given various future scenarios.</p>
P1	<u>Predict and map the impacts of changing permafrost dynamics</u> on the following: Hydrology-surface and subsurface, Wetlands, Lakes, rivers, streams (including connectivity), Biochemistry, Land use management, Species habitat and populations, Water quality and quantity, Terrestrial plants (forests), and Human use; public safety/health	
P2	<u>Project changes in plant species, community composition/biomes, and ecosystem processes</u> as a result of climate change	
P3(a)	<u>Project future vulnerability to land-use change</u> , including projected changes to human access and resource exploitation (e.g., recreation, mining, timber extraction), and effects of cumulative disturbances in a changing climate on ecosystems, cultural resources, and focal species (e.g., habitat fragmentation, location/spread of invasives)	<p>A - Adaptation Planning and Best Management Practices. These are information needs that support or enhance the LCC's understanding of the actions needed to move toward a desired future system state or condition, given current knowledge of "Where we are, today," "How and why systems work" and "Where we are headed." The information needs in this bin pertain to the conception or implementation of local to regional adaptation strategies. This includes the creation of Best Management Practices or alternative management scenarios, and decision support to identify "Where do we want to go, and how do we get there."</p>
P3(b)	<u>Investigate how changes in temperature and precipitation regimes may affect vegetative productivity</u> via temperature-induced drought stress, longer growing seasons, less water availability (higher evapotranspiration)	
A1	<u>Best management practices for protecting/informing landscape scale conservation, ecosystem function</u> (e.g., wildlife corridors, road placement, buffers)	
A2	<u>Develop management protocols for potential future invasive species</u>	
A3	<u>Develop inclusive decision-making processes for managing new or expanding land uses</u>	