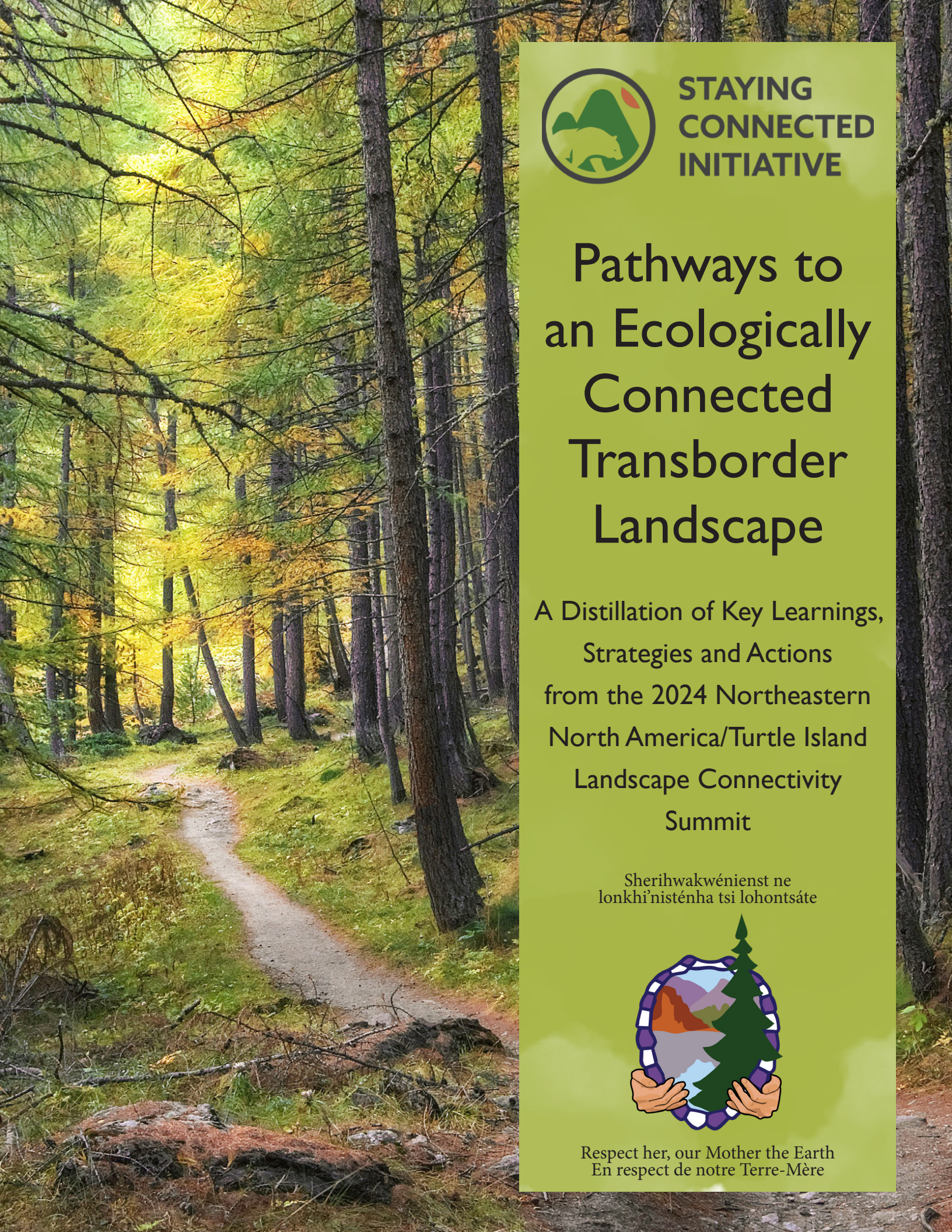

STAYING CONNECTED INITIATIVE

Pathways to an Ecologically Connected Transborder Landscape

A Distillation of Key Learnings, Strategies and Actions from the 2024 Northeastern North America/Turtle Island Landscape Connectivity Summit

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A Distillation of Key Learnings, Strategies and Actions from the 2024 Northeastern North America/Turtle Island Landscape Connectivity Summit

April 2025

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Front cover photo of forest trail from Pixabay. Credit: Sergio Cerrato - Italia

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Executive Summary

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Respect her, our Mother the Earth
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"Pathways to an Ecologically Connected Transborder Landscape" provides a distillation of key learnings, strategies, and actions to advance ecological connectivity conservation and restoration from the first-ever Northeastern North America/Turtle Island Landscape Connectivity Summit, held in Montréal/Tiohtià:ke, Québec, Canada, in June 2024. It focuses on the area encompassing the five eastern Canadian provinces, seven northeastern U.S. states, and many Indigenous territories within that geography, while recognizing the important ecological and societal connections to adjoining areas in eastern Ontario and the mid-Atlantic states. (Turtle Island is a name used by many Indigenous peoples of this region for what is commonly known as North America.)

The *Pathways* guide is intended to inform collaborative connectivity conservation and restoration efforts among diverse partners across borders, scales, cultures, and sectors in this globally and continentally significant transboundary region. It includes many actions that can be pursued in the near-term by individual entities or groups of partners to move connectivity work forward, as well as others that are more likely relevant for the mid- to long-term. The document intentionally **does not attempt to prioritize which actions may be most important** because that was beyond the scope of this effort and requires further dialogue among the network of partners to develop a consensus.

Pathways is provided as a resource for anyone with an interest and role in connectivity conservation in the region, including leaders, staff, and practitioners from governmental entities at various levels, Indigenous nations and groups, non-governmental organizations (NGOs), academic institutions, community groups, landowners, funders, relevant industries, and other interested parties.

This guide emphasizes the interconnectedness of ecological and social systems, and highlights the need for **multi-scaled, holistic, and integrated strategies** to reverse habitat fragmentation and biodiversity loss, and to ensure ecological and community resilience. To succeed, it is essential to foster a **well-coordinated network of diverse entities working synergistically at multiple scales** to sustain and enhance ecological connectivity through collective action.

The **Staying Connected Initiative (SCI)** offers a successful model of partner collaboration and coordination across scales, sectors, and strategies to sustain and enhance connectivity in the region, and there are opportunities to build on its success and further leverage its network.

Key complementary opportunities for advancing this work across borders include the renewed commitment to connectivity as a regional priority made by the New England Governors and Eastern Canadian Premiers (NEG-ECP) in September 2024, as well as further collaboration with the Northeast Association of Fish and Wildlife Agencies (NEAFWA), Indigenous nations, and other important entities and initiatives.

Key Strategies and Solutions: The *Pathways* guide spotlights a number of key strategies woven together in an **integrated, systems-based approach.** For each strategy, a number of actions that were identified through the 2024 Connectivity Summit in Montréal/Tiohtià:ke are presented. The key strategies include:

- **Etuaptmunk/Two-Eyed Seeing:** Integrating Indigenous and Western knowledge systems for a more holistic approach to conservation, emphasizing the interrelationship of people and nature, and the importance of inclusive, ethical approaches, shared stewardship, and co-creation.

- **Coordination, Collaboration, and Partnership-Building:** Enhancing coordination among diverse entities across borders and multiple scales, fostering transdisciplinary work, and avoiding redundancy. This includes strengthening collaboration between the Staying Connected Initiative, the New England Governors and Eastern Canadian Premiers' Ecological Connectivity Working Group, and other key entities.

- **Communication and Engagement:** Improving communication to bridge disciplinary divides and better engage the public, emphasizing the importance of a "relationship with the land" rather than "ownership." This includes developing an integrated communications strategy, celebrating place, and sharing success stories.

- **Connectivity and Climate Science, Indigenous Knowledge, and Conservation Planning:** Integrating diverse knowledge sources to inform conservation efforts, emphasizing the need for both landscape-scale and sub-landscape-scale science products, as well as community values and Indigenous Knowledge.

- **Land Protection/Securement:** Utilizing land acquisition and conservation easements/restrictions (aka servitudes) to permanently protect land from development, focusing on connecting lands, co-benefits, and people-centered conservation.

- **Land Management, Stewardship, and Restoration:** Fostering a land ethic that promotes ecological connectivity on both private and public lands, implementing restoration projects and best practices for stewarding working landscapes and wildlands.

- **Land Use Planning, Community Outreach, and Capacity Building:** Integrating ecological connectivity into land use plans and policies through community outreach and capacity building, and encouraging development patterns that maintain connected landscapes and minimize the fragmentation of intact forests and habitats.

- **Linear Infrastructure Mitigation:** Improving transportation infrastructure and minimizing its barrier effects on wildlife movement through improved design of bridges and culverts and other techniques, and by encouraging collaboration between transportation and natural resource agencies along with other partners.

- **Policy Initiatives:** Building policies at various levels of government to highlight the importance of ecological connectivity and wildlife corridors and crossings, and to support collaboration and action across the range of key implementation strategies.

- **Funding:** Increasing funding from diverse sources for connectivity conservation and restoration through a range of approaches and addressing barriers to funding access.

The framework, strategies, and potential actions described in this document are not the last word on what needs to be done, but are intended to help galvanize and inform collaborative, inclusive, and well-targeted efforts to enhance ecological connectivity for all its benefits in this vital transborder region.

Part 1:
Setting the Stage – An Introduction to the *Pathways* Guide

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Purpose

"Pathways to an Ecologically Connected Transborder Landscape" provides a distillation of key learnings, strategies, and actions to advance ecological connectivity conservation and restoration from the first-ever Northeastern North America/Turtle Island Landscape Connectivity Summit, held in Montréal/Tiohtià:ke, Québec, Canada, in June 2024. It focuses on the area encompassing the five eastern Canadian provinces, seven northeastern U.S. states, and Indigenous territories within that geography, while recognizing the important ecological and societal connections to adjoining areas in eastern Ontario and the mid-Atlantic states. (Turtle Island is a name used by many Indigenous peoples of this region for what is commonly known as North America.)

The *Pathways* guide is intended to inform collaborative connectivity conservation and restoration efforts among diverse partners across borders, scales, cultures, and sectors. It includes many actions that can be pursued in the near-term by individual entities or groups of partners to move connectivity work forward, as well as others that are more likely relevant for the mid- to long-term. The document intentionally does not attempt to prioritize which actions may be most important because that was beyond the scope of this effort and requires further dialogue among the network of partners to develop a consensus.

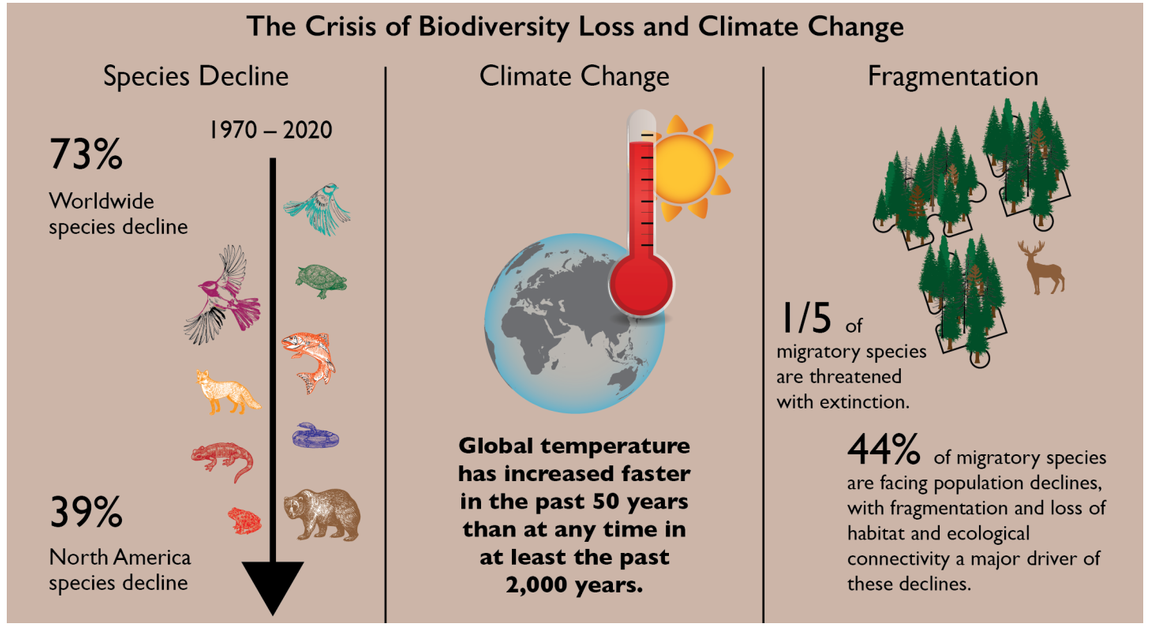
Given the complexity and scope of connectivity conservation and restoration at any one scale, let alone many, *Pathways* presupposes that a wide range of actors will be involved.

Intended Audience and Participants

This guide is intended for individuals and organizations with an interest or role in connectivity conservation work in the northeastern region of North America/Turtle Island. This includes relevant governmental entities (federal, Indigenous, provincial, state, regional, municipal), nongovernmental organizations (NGOs), foundations, academic institutions, community groups, landowners, natural resource-based industries, and others. The various sections of the document will be more or less relevant for different readers. We have sought to make it as widely useful and informative as possible.

Pathways lays out a proposed framework for implementing collaborative connectivity conservation and restoration in our region, including specific strategies and actions. However, it is not intended to be the final word on anything. We invite and encourage you to explore these pathways to see what strategies and actions are most applicable to your area(s) of focus, and to participate in ongoing dialogue and efforts to advance collective progress toward an ecologically well-connected future.

The United Nations Convention on Migratory Species defines ecological connectivity as "the unimpeded movement of species, connection of habitats without hindrance and the flow of natural processes that sustain life on Earth."



Defining Ecological Connectivity and Connectivity Conservation

The United Nations Convention on Migratory Species defines ecological connectivity as "the unimpeded movement of species, connection of habitats without hindrance and the flow of natural processes that sustain life on Earth." These characteristics of ecological connectivity are critically important for biodiversity conservation, climate adaptation, and ecosystem resilience, as well as for thriving, resilient human communities and land-based cultures, livelihoods, and economies.

International Union for the Conservation of Nature's (IUCN) World Commission on Protected Areas Connectivity Conservation Specialist Group defines connectivity conservation as the collective action of individuals, communities, governmental and non-governmental institutions, and businesses to maintain, enhance, and restore ecological flows, species movement, and dynamic processes across all environments. Connectivity conservation is widely recognized as an essential approach to protect the vital interconnections of nature that is bringing together a growing global movement. It fosters a coordinated response for safeguarding biodiversity and increasing resilience to climate change.

The Crisis of Biodiversity Loss and Climate Change

According to the World Wildlife Fund's *Living Planet Report 2024*, the Earth has seen an alarming average 73% drop in mammal, bird, fish, reptile, and amphibian populations between 1970 and 2020. North America has seen an estimated loss of 39% in that time.

Concurrently, the United States' *Fifth National Climate Assessment* shows that present-day levels of greenhouse gases in the atmosphere are higher than at any time in at least the past 800,000 years, with most of the emissions occurring since 1970. Global temperature has increased faster in the past 50 years than at any time in at least the past 2,000 years. This has led to higher average temperatures (the last 10 years are all the hottest in recorded history), more precipitation (with extreme precipitation events increasing dramatically in North America and projected to continue increasing in both the U.S. and Canada), severe storms, droughts, and wildfires.

Many species need to move to meet their life needs (including finding food, water, and shelter; reproducing; and dispersing), and to adjust their ranges in response to a changing climate and other environmental conditions. Regional changes in climate can force

species to shift their range(s) as existing habitats become unsuitable. If these species cannot move into suitable habitats under the new climate regime, populations can be threatened with extinction.

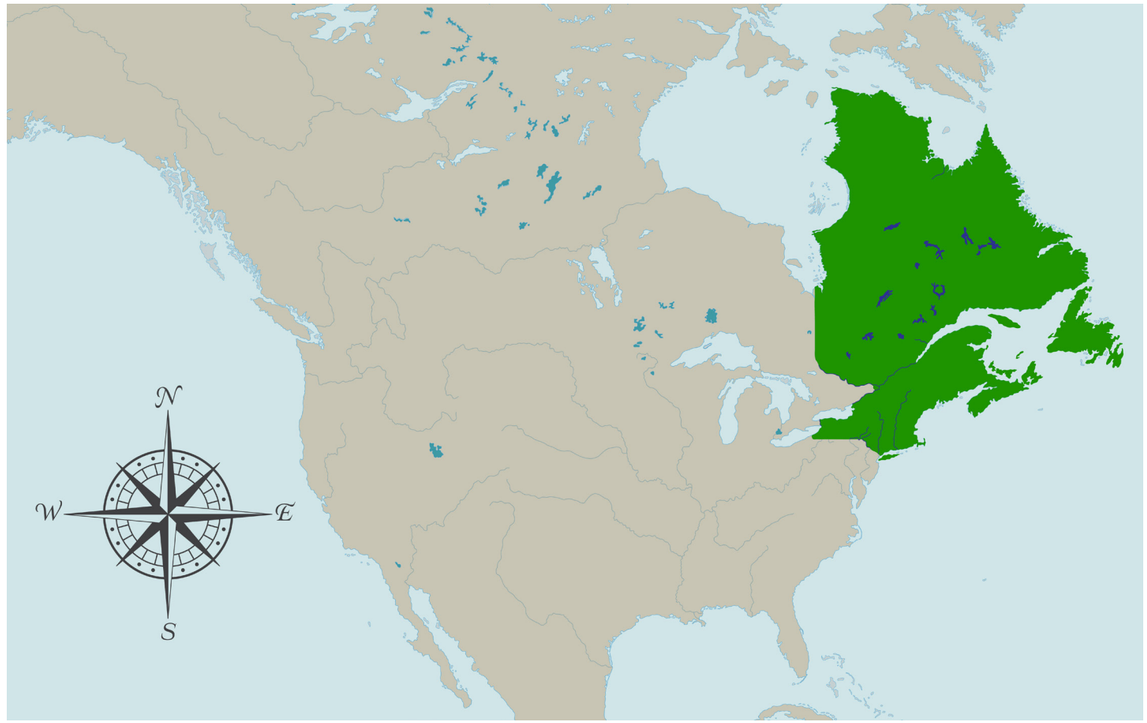
Globally, species that depend on movement across the landscape to survive are especially imperiled. The 2024 *State of the World's Migratory Species* report found that one in five species listed by the global Convention on Migratory Species are threatened with extinction and 44% are facing population declines, with fragmentation and loss of habitat and ecological connectivity a major driver of these declines. The report underscores that coherent, well-connected ecological networks are crucial for species movement and migration.

Fragmentation caused by infrastructure such as roads, railways, fences, culverts, and dams poses a particular threat to ecological connectivity and the ability of species to move freely. These obstacles interfere with natural wildlife movement, break up habitats, and increase risks such as wildlife-vehicle collisions, which can harm both humans and animals. In addition, roads are often key vectors leading to other forms of development on adjacent areas, which can further fragment the landscape and habitat.

One of the best options for addressing the interconnected threats of biodiversity loss and climate change is to foster collective action to stitch together ecologically well-connected lands and waters through a suite of complementary, integrated strategies.

Ecological Connectivity and the Northeastern Region of North America/ Turtle Island

The northeastern region of North America/Turtle Island—including the five eastern provinces in Canada, seven northeastern U.S. states, and many Indigenous territories within that geography—encompasses an area of 335,000 square miles (867,646 sq km) and is home to more than 45 million people.

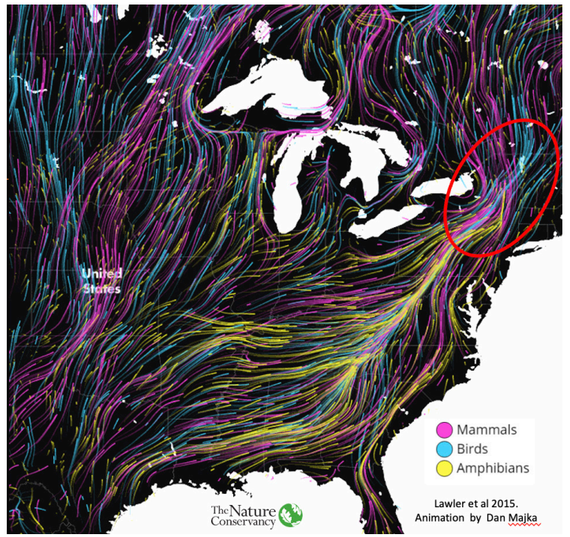


Pathways *focuses on the area encompassed by 5 eastern Canadian provinces, 7 northeastern U.S. states, and Indigenous territories within that geography, while recognizing the important ecological and societal connections to adjoining areas in eastern Ontario and the mid-Atlantic states.*

This region is **continentally significant** as both a destination and a gateway to areas further north for species moving up the Appalachian Mountain Range and Eastern Seaboard of North America in response to climate change.

The Nature Conservancy estimates that entire populations are moving north and south away from the equator an average of 11 miles per decade. The "Migrations in Motion" schematic developed by The Nature Conservancy based on data from Lawler et al. (2015) shows the likely movement of some 2,300 species of mammals, birds and amphibians in response to climate change, and identifies the northeastern region of North America/Turtle Island as a major movement zone.

Maintaining ecological connectivity at multiple scales—from fine-scale habitat corridors and pinch points, up to the vast extent of the Appalachian Mountain corridor—is essential to support this northward movement.



The "Migrations in Motion" schematic highlights the vital importance of the northeastern region of North America/Turtle Island for the northward movement of diverse species as climatic conditions shift. Credit: The Nature Conservancy

View the animated map online at maps.tnc.org/migrations-in-motion

Temperate Broadleaf and Mixed Forest
Historical Distribution

Temperate Broadleaf and Mixed Forest
Current Distribution

The above maps show the historical (pre-colonial) and current distribution of temperate broadleaf and mixed forest. The second map highlights the global significance of the Northern Appalachian-Acadian ecoregion (circled in red) as the most intact, contiguous area of this important forest type remaining in the world.
Credit: The Nature Conservancy

Within this vast region, the Northern Appalachian-Acadian ecoregion, stretching from eastern New York to Nova Scotia, is **globally significant** as the most intact, contiguous area of temperate mixed broadleaf forest remaining in the world. This area encompasses the traditional homelands of the Wabanaki, Haudenosaunee, and other Indigenous Peoples.

Maintaining and enhancing connectivity in rivers, streams, and wetlands within this landscape is doubly important. This connectivity enables aquatic species to move freely to meet their life needs and find suitable habitats as waters warm due to climate change. In addition, intact riparian corridors function as important movement pathways for terrestrial species. Ecologically well-connected aquatic systems in the region also support vital benefits for human communities, such as clean water, reduced vulnerability to flooding, and resilience to climatic variations.

The Staying Connected Initiative

The Staying Connected Initiative (SCI) is a successful connectivity conservation partnership in the northeastern region of North America/Turtle Island. SCI began in 2009 with the vision of fostering "an ecologically interconnected and resilient landscape across the Northern Appalachian/Acadian Forest region of the eastern United States and Canada that sustains healthy lands, waters, wildlife and vibrant human communities."

Since that time the partnership has brought together more than 70 federal, provincial, state, NGO, academic, and community organizations who collectively have permanently protected more than a million acres (404,685 hectares) of important private lands for connectivity; assessed and mitigated hundreds of road barriers; integrated connectivity into the land use plans and policies of hundreds of municipalities and dozens of regional commissions; engaged thousands of individuals through community-scale science, outreach, and events; and helped spark significant policy actions by regional leaders and jurisdictions that support connectivity.

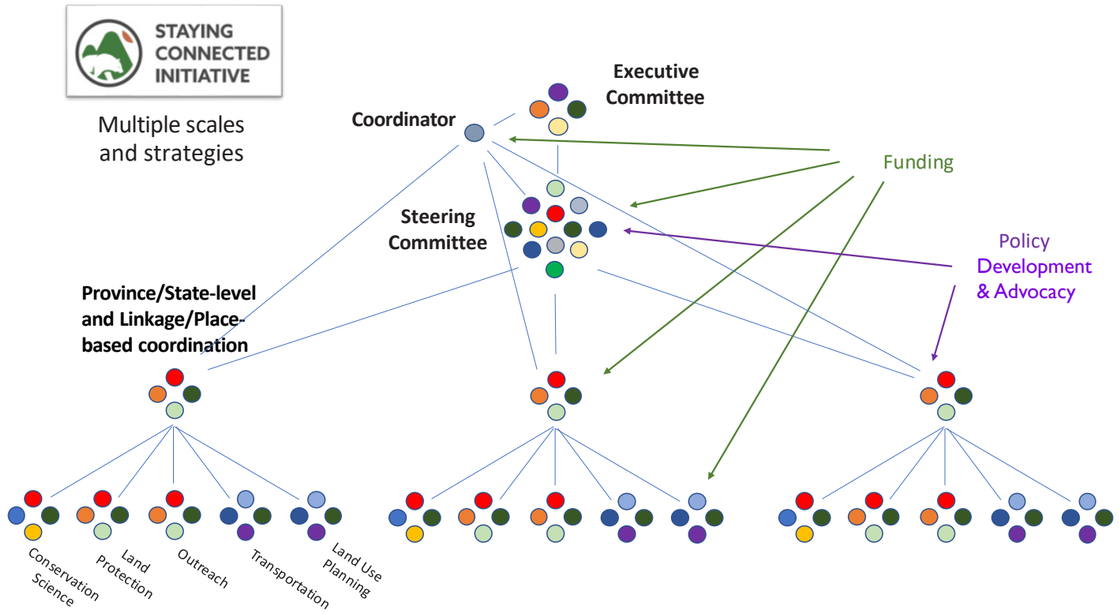
SCI offers a compelling and inspiring vision, a durable partnership, and an impactful model of collaborative connectivity conservation across borders, sectors and scales.

A key aspect of the Staying Connected Initiative's success in connectivity conservation and restoration is **coordination at multiple scales.**

The partnership has a full-time regional coordinator, and an executive committee and steering committee to set the initiative's overarching direction and help advance shared priorities in a cohesive way at the regional scale. Provincial/state "chapters" exist in several jurisdictions, and additional coordination occurs at other scales within SCI's scientifically identified priority "linkage areas" and other important focal areas.

Connectivity work is different at each scale and different organizations are involved:

- At the full regionwide scale, connectivity work is generally high-level and focused on partnership-building, sharing best practices, fostering collaboration, and advancing policy. Conservation science and planning at this scale tends to be more visionary and less specific locally, and the organizations involved are primarily national/international NGOs, federal agencies, and other governmental entities with interests in this sphere.
- At the province/state scale, connectivity conservation is achieved through a combination of science, policy, and on-the-ground implementation. The partners tend to be provincial, state, and federal government agencies, provincial and state-scale NGOs, and some more local NGOs. Conservation science and planning at this scale tends to be more detailed and place specific.
- At the scale of key linkages, individual organizations and place-based collaboratives such as linkage partnerships and Regional Conservation Partnerships achieve connectivity results primarily through local outreach and implementation of on-the-ground projects. Partners involved are typically NGOs with a local presence, community organizations, and governmental agencies supporting these efforts. Conservation science is often inferred from coarser provincial or state-scaled mapping, or available only for certain areas.



Effective coordination is essential at each of these scales to drive and optimize connectivity outcomes. Coordination helps weave together relevant partners, identify the appropriate scale of science and action, and connect the work with complementary efforts at other scales and locations. These steps are critical for maximizing collective conservation impact.

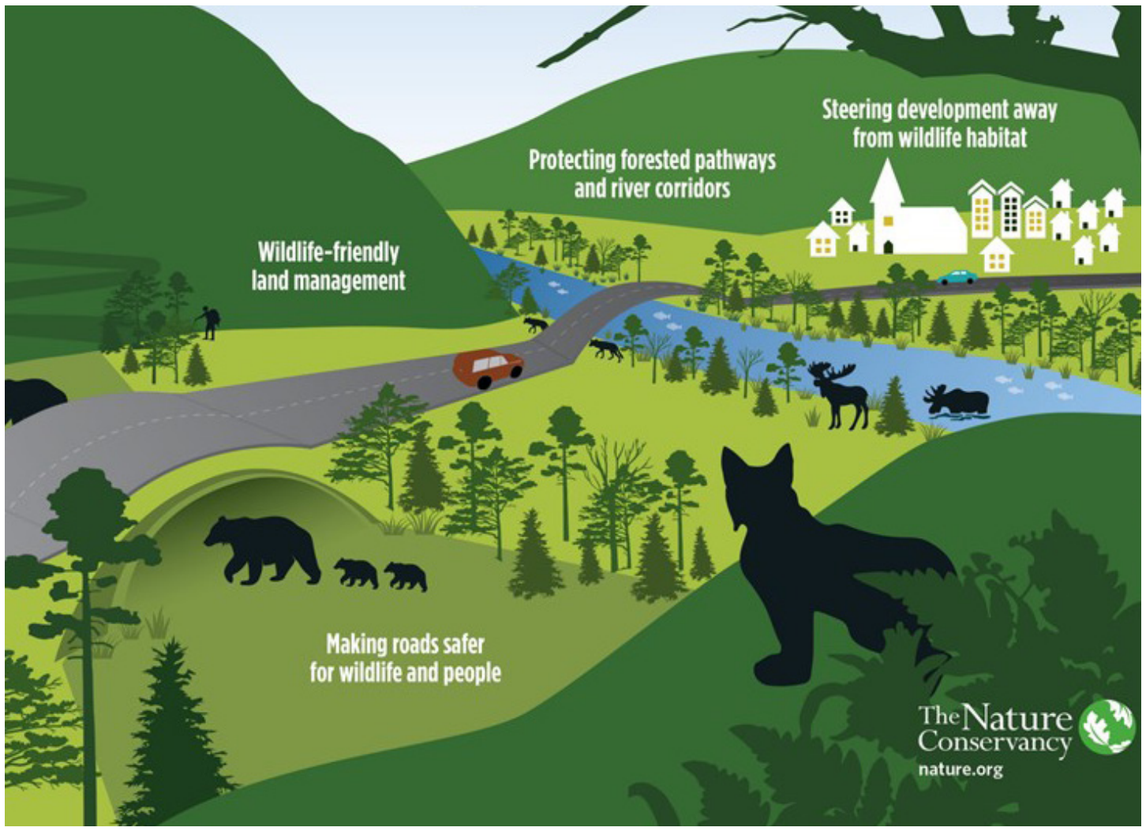
It is not sufficient to rely only on coordination at the regional and large landscape scale.

Credit: Maile Kuyper, Quebec-Labrador Foundation

Connectivity is ultimately achieved on the ground in specific places through particular projects. Without local scale coordination and informed implementation, the work to conserve ecological connectivity is more conceptual and has substantially less tangible impact. Conversely, local scale coordination and implementation alone is insufficient, because without larger-scale enabling conditions (e.g., science, policy, planning, and funding) it lacks a landscape vision and capacity to act strategically in the broader context.

Another key element of the Staying Connected Initiative's success is its **multi-pronged, integrated approach.**

Since its formation, the SCI partnership has recognized that no single strategy or tool is sufficient for effectively conserving and restoring ecological connectivity. Instead, a multi-pronged approach is required that integrates a mix of strategies and tools delivered by different types of partners.



Staying Connected Initiative partners use a mix of strategies to maintain and enhance connectivity so wildlife and people can thrive. Credit: The Nature Conservancy

Key strategies in SCI's multi-pronged approach to date are summarized below. The SCI partnership has used this approach effectively to advance connectivity conservation and restoration over the past 15 years, and it offers the basis of a framework for broader collaborative efforts going forward (see Part 2 of this document).

- **Conservation Science and Planning** involves geospatial analysis, mapping, and field research related to land cover, land use, transportation structures and networks, and other factors that either promote habitat connectivity or create barriers through which animal movement is more difficult. The work also involves gathering data on actual wildlife movement, and using all relevant scientific tools and products to help inform where to prioritize conservation action. Organizations engaged in this strategy tend to be federal/provincial/state science agencies, international/national NGOs with a science focus, and academic institutions and researchers.

- **Land Protection, Stewardship, and Restoration** involves buying or receiving donated land in fee, securing conservation easements/restrictions, and stewarding and restoring conserved and unconserved land. Partners tend to be governmental land-holding agencies (federal/provincial/state), private land trusts, other conservation NGOs, municipalities, community groups, and private landowners.

- **Land Use Planning** involves national, provincial/state, regional and municipal policies, incentives, regulations and procedures for determining where on the landscape development will occur, and what kinds of development are encouraged, permitted, or prohibited. Partners tend to be provincial/state planning organizations, regional planning commissions or their equivalents, municipal entities, local community groups, and agency and conservation NGO technical assistance providers working at one or more scales (e.g., local, provincial/state, regional).

- **Outreach and Capacity Building** involves targeted engagement and building the capacity, knowledge, and ability to act by key stakeholders, often though not exclusively at the local and community scale. Examples include organizing participatory educational events and community workshops, attending public hearings, and providing examples of zoning bylaws to protect and restore wildlife habitat. In these efforts, ongoing facilitation and decision-making support are essential for action; simply providing information is insufficient. This strategy is closely related to Land Use Planning, and the partners similarly tend to be provincial/state planning organizations, regional planning commissions or their equivalents, municipal entities, agency and conservation NGO technical assistance providers, and local community groups.

- **Road Barrier Mitigation** involves engaging in the assessment, design and construction of roads, bridges, culverts, and other transportation infrastructure to foster safe movement and passage of terrestrial and aquatic wildlife species. Partners for this strategy include federal/provincial/state transportation and natural resource agencies, conservation NGOs, and private-sector entities such as transportation engineering firms.

- **Policy Development** involves identifying and addressing public policy needs and opportunities at various governmental levels (federal, provincial/state, regional, municipal) to support connectivity conservation and restoration across the region. Examples include incorporating habitat connectivity criteria and objectives into natural resource and transportation agency plans and policies, fostering inter-agency coordination, and supporting the development and implementation of policies that advance science, planning, and projects related to connectivity. Partners include local, state, provincial, regional, and federal natural resource and transportation agencies, as well as conservation NGOs.

Integrating the above strategies is crucial to success in conserving and restoring connectivity. These strategies will not succeed in isolation, and intentional, ongoing coordination between the actors applying them is vital. For example, wildlife road crossings and road barrier mitigation work can create "bridges to nowhere" that ultimately will be ineffective without adjacent habitat protection and management—informed by conservation science and planning—to maintain a permeable landscape on either side of the road.

There is both an opportunity and a need to build on SCI's success and more fully leverage its unique partner network and integrated approach to optimize the partnership's collective conservation impact. A key part of achieving this is through closer collaboration with other complementary partnerships and coordination mechanisms—including those between provincial and state governments, and others.

New England Governors and Eastern Canadian Premiers (NEG-ECP) Connectivity Resolutions

Over the past eight years, the Governors of the six New England states and the Premiers of the five eastern Canadian provinces have taken action together twice to highlight the importance of ecological connectivity and commit their jurisdictions to working together to sustain and enhance it.

First, at their 40th Annual Conference in 2016, the NEG-ECP adopted Resolution 40-3—a *Resolution on Ecological Connectivity, Adaptation to Climate Change, and Biodiversity Conservation*. The objectives of Resolution 40-3 aim for broad-scale restoration and maintenance of ecological connectivity throughout the cross-border region for multiple benefits. In part, the Resolution states:

> "…maintaining and restoring ecological connectivity is an important strategy for boosting the resilience of the region's native ecosystems and biodiversity, as well as its economy and human communities. Connected habitats provide the natural pathways necessary for fish, wildlife, and plants to move to meet their life needs and to find suitable habitat as climate conditions change. Intact ecosystems also provide sustainable economic and social benefits on which the region's well-being depends—including renewable forest products, outdoor recreation and tourism, clean air and water, flood attenuation, carbon sequestration, and our 'sense of place'."

Resolution 40-3 also highlights the need for the provinces and states "to work across landscapes and borders to advance efforts to restore and maintain ecological connectivity" and instructs agencies to "elevate ecological connectivity, conservation, and restoration in their activities…. encourage regional collaboration… expand existing protected areas," support land protection, land use planning, transportation-related efforts, and collaboration within and across the jurisdictions to meet these goals.

The Resolution directed the NEG-ECP Committee on the Environment to establish a working group from provincial and state agencies to coordinate efforts and report back on progress. The resulting Ecological Connectivity Working Group (ECWG) met and worked through early 2020 and created an unreleased final draft report summarizing its efforts. Unfortunately, the COVID pandemic interrupted the group's progress and no further work was completed.

Nonetheless, Resolution 40-3 has served since 2016 as an invaluable policy statement by the region's highest ranking elected officials on the importance of ecological connectivity and the jurisdictions' commitment to work individually and collectively to maintain and enhance it for multiple values. It has fostered dialogue and collaboration among the provinces and states, has been an important leverage point for connectivity work by others, and is seen as a model for other regions in North America and beyond.

In September 2024, at the 45th NEG-ECP Conference, the New England Governors and Eastern Canadian Premiers adopted Resolution 45-2—a *Resolution Concerning Ecological Connectivity, Climate Adaptation, and Food Security*. The new Resolution reaffirmed the support of the current generation of governors and premiers, none of whom were in office in 2016, for Resolution 40-3 that was adopted by their predecessors. It "direct[s] the [NEG-ECP] Committee on Environment to reconvene to evaluate progress made since effectuation of Resolution 40-3...and consider and further any additional steps needed to advance this collective work."

Massachusetts Governor Maura Healey and Newfoundland and Labrador Premier Andrew Furey sign Resolution 45-2 on behalf of the New England Governors and Eastern Canadian Premiers at the 45th NEG-ECP Conference in Boston, MA, on September 10, 2024. Credit: John Austin, Vermont Fish & Wildlife Department

This recent action is a significant and timely recommitment by the region's top provincial and state leaders to work together across borders to sustain and enhance ecological connectivity for all the benefits it provides. It dovetails well with other important developments that are unfolding for connectivity conservation and restoration in the region, is helping accelerate momentum and attention, and provides a critical platform for further collaboration in the coming years.

2024 Northeastern North America/Turtle Island Landscape Connectivity Summit

Building on the success of the Staying Connected Initiative's work over the past 15 years and the high-level attention to connectivity by the New England Governors and Eastern Canadian Premiers, SCI saw the need and opportunity to convene a regionwide summit of key actors to advance progress on connectivity efforts.

From June 11 – June 13, 2024, more than 170 provincial, state, and federal agency decision-makers and staff, Indigenous leaders, and representatives of non-governmental organizations, academic institutions, public and private funders, and others gathered in Montréal/Tiohtià:ke, Québec, Canada, for the first-ever Northeastern North America/Turtle Island Landscape Connectivity Summit.

The Summit was convened by the Quebec-Labrador Foundation (QLF) and Center for Large Landscape Conservation (CLLC) on behalf of the Staying Connected Initiative, and was designed to achieve the following desired outcomes:

- Expanded relationships and durable mechanisms for well-coordinated, collaborative and inclusive landscape connectivity conservation at multiple scales
- Enhanced awareness of the region's significance and connectivity challenges, opportunities and strategies

- Promising approaches for advancing connectivity conservation and restoration
- Momentum toward solutions and biodiversity conservation goals like the "30x30" target
- Reinforced support for the principles of the New England Governors and Eastern Canadian Premiers' (NEGECP) Resolution 40-3 on ecological connectivity, biodiversity conservation, and climate adaptation, adopted in 2016

Plenary Sessions: A series of plenary sessions over the two days were carefully curated to provide important context relevant for all participants, surface innovative approaches and opportunities, and offer inspiring stories of success from across the region and beyond. See Appendix A for summaries of each plenary session.

Breakout Groups or "Wisdom Circles": Three sets of concurrent small group discussions engaged all participants in addressing pressing questions and offered opportunities for everyone to share their own experiences and identify solutions for landscape connectivity conservation. See Appendix B for summaries from each of the three breakout group/ wisdom circle sessions.

Elevating and integrating Indigenous perspectives, knowledge, and approaches was a prominent goal and theme throughout the Summit, with strong Indigenous attendance and powerful speakers and performances over the course of the gathering. In addition, Jasmin Gunn, a local Kanien'kehá:ka (Mohawk) Nation artist from nearby Kanehsatà:ke, was commissioned to create a unique design for the Summit. Her design and description became the visual symbol and touchstone for the gathering.

Overall, the Summit was a resounding success, with great energy, strong connections, important learning and outcomes, and keen interest in convening another similar gathering. This document is a distillation of the key learnings, strategies, and actions that emerged. A second regionwide Summit could provide an opportunity for further prioritizing and aligning collective action.

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Summit Logo

Designed by Jasmin Gunn, Kanehsatà:ke

"Created specially for the Northeastern North America/Turtle Island Landscape Connectivity Summit in Tiothià:ke/Montréal on June 11–13, 2024. The components include the map turtle (found in Montreal) shell to represent Turtle Island, with the outside scutes in the original wampum shell colours (purple and white). Wampum was the basis of all agreements and treaties between the Haudenosaunee and European and North American governments. The pine is the tree of peace (found on the Mohawk logo), connectivity of habitats on the shell with reflection, and hands showing the future is in our hands."

Values and Guiding Principles

Values and Guiding Principles

The following are key tenets that surfaced at the 2024 Connectivity Summit in Montréal/Tiohtià:ke for a holistic approach to guide effective connectivity conservation and restoration:

Social-Ecological Systems: Recognize that humans are inextricably a part of and dependent upon natural systems and play a vital role in ecological processes. Conservation strategies should reflect this interconnectedness.

Respect for People and Culture: Honor and integrate the cultural knowledge and traditions of Indigenous Peoples and local communities, recognizing their deep ties to the land and resources.

Biological Diversity: Commit to preserving a wide range of species and habitats, understanding that thriving biodiversity contributes to ecosystem resilience and health.

Community Engagement and Interconnectedness: Involve local communities actively in conservation initiatives, recognizing the interplay between ecological and human systems, and fostering harmony between conservation goals and community well-being.

Sustainability: Pursue long-term, durable solutions that support both ecological integrity and the social and economic needs of communities, ensuring a balanced approach to environmental stewardship.

Work Across Borders: Seek to blur and overcome human-made borders—sociopolitical, cultural, institutional, sectoral, and others—that divide the landscape and people, and that complicate efforts to sustain and enhance ecological connectivity across the region.

By embracing these tenets, we can work toward a thriving, interconnected ecosystem that benefits all living beings in the region.

Conservation and restoration of ecological connectivity in the northeastern region of North America/Turtle Island requires an understanding of the intricate relationship between humans and nature. Emphasizing that people are part of social-ecological systems is essential for fostering sustainable practices and ensuring the health of our ecosystems.

Part 2: Key Strategies and Solutions to Maintain and Enhance Ecological Connectivity

Sherihwakwénienst ne
lonkhi'nisténha tsi lohontsáte

Respect her, our Mother the Earth
En respect de notre Terre-Mère

Introduction to the Strategies

What follows is a compendium of connectivity strategies and key related actions that emerged from the 2024 Summit in Montréal/Tiohtià:ke. The strategies build off the multi-pronged approach that the Staying Connected Initiative partnership has used over the past 15 years, but also include additional elements that were highlighted at the Summit. For each strategy, a brief conceptual explanation is provided to give context on why and how it is relevant as part of a holistic, multi-pronged and multi-scaled approach to connectivity conservation and restoration in this region.

It is critical to note that these are **not** isolated strategies but instead are intersecting, crosscutting, and complementary. **We strongly encourage a "systems-based" approach to connectivity that applies these strategies in an integrated, holistic fashion,** and which takes into account the multiple geographic scales, jurisdictions, and larger socio-economic, political, and environmental contexts in which we are operating.

These strategies and actions are intended to help inform and advance collaborative connectivity conservation and restoration efforts across borders, cultures, sectors, and scales. Many of the actions can be implemented in the near-term by individual entities and groups of partners. Indeed, some are already being implemented to varying extent. Other actions are more relevant for the mid- to long-term.

The actions under each strategy are numbered for ease of identification, but **they are not ordered based on their relative importance or time-sensitivity.** Also, some actions are relevant for multiple strategies and could be included in different sections. However, for ease of organization and reading, we included each action under only one strategy.

Prioritization of the actions is beyond the scope of this document and will require further dialogue among the network of partners and key actors to achieve a consensus. **We invite and encourage you and others you work with to self-identify those strategies and actions that are most relevant given your unique context and area(s) of focus.**

Etuaptmunk/Two-Eyed Seeing Panel at the 2024 Landscape Connectivity Summit: Phil Huffman, Quebec-Labrador Foundation (moderator); Elder Dr. Albert Marshall, Moose Clan of the Mi'kmaw Nation, Eskasoni First Nation; Dr. Mark Anderson, The Nature Conservancy. Credit: Audrey Huffman

Strategy: Etuaptmunk/Two-Eyed Seeing

A prominent theme at the 2024 Connectivity Summit was that much work needs to be done across the northeastern region of North America/Turtle Island to better weave Indigenous wisdom and partners into connectivity conservation efforts. The approach of western society and conservation efforts needs to fundamentally shift to more fully recognize that people are part of nature and our well-being is dependent on the well-being of Mother Earth. Also, connectivity conservation efforts need to better integrate and reflect people-oriented values such as community and economic vitality, climate resilience, and soil, air, and water quality.

The concept of **Etuaptmunk or "Two-Eyed Seeing"** was highlighted in one of the first Summit plenary sessions and provides an important and useful concept in merging Indigenous and non-Indigenous worldviews. ("Etuaptmunk" is the Mi'kmaw word for Two-Eyed Seeing.) Elder Dr. Albert Marshall of the Moose Clan of the Mi'kmaw Nation, Eskasoni First Nation in Unama'ki (Cape Breton, Nova Scotia), first captured the concept of Etuaptmunk/Two-Eyed Seeing with his wife Elder Murdena Marshall more than 20 years ago.

This widely acclaimed concept has been described as "learning to see from one eye with the strengths of Indigenous Knowledge and ways of knowing, and from the other eye with the strengths of Western knowledges and ways of knowing … and learning to use both these eyes together, for the benefit of all." (Cape Breton University, Institute for Integrative Science and Health). At the Summit, Elder Dr. Marshall stressed that Two-Eyed Seeing is about walking forward together and embracing the unique strengths of both Indigenous and Western ways of knowing, rather than choosing one perspective over the other.

Several related key themes emerged at the Summit:

- **Interconnection and Interdependence:** Elder Dr. Marshall underscored the interconnectedness of all living things. He used the example of trees with roots holding hands to illustrate the idea that all species rely on each other for support and should work together. Similarly, he emphasized that humans should view themselves as belonging to a shared home—Turtle Island—a holistic perspective that transcends political boundaries.

- **Human Responsibility to Nature:** Elder Dr. Marshall argued that humans have allowed themselves to become disconnected from nature and have a responsibility to repair the damage that has been done. He called for a shift away from extractive industries toward an economic model based on healing and restoring nature. He called on the audience to consider the impacts of their actions on future generations and to learn from past mistakes.

- **The Importance of Action:** Both Elder Dr. Marshall and Elder Sedalia Kawennotas of the Kanien'kehá:ka (Mohawk) Nation from Kahnawà:ke powerfully urged participants to move beyond talk and to take concrete actions to address the environmental challenges facing Turtle Island.

- **Addressing Past and Present Injustices:** Both Elder Dr. Marshall and Elder Kawennotas emphasized that successful conservation requires acknowledging and addressing the historical and ongoing injustices faced by Indigenous communities, including land dispossession, cultural suppression, and the impacts of colonialism. Reconciliation, restorative justice, and approaches based on respect and relationship to Mother Earth and each other are essential for creating a more equitable and effective conservation framework.

Key actions to foster an increased integration of Etuaptmunk/Two-Eyed Seeing across the region include:

1. **Embrace a vision, understanding, and articulation of connectivity conservation that addresses multiple values and needs.** Connectivity efforts will resonate more broadly with different interests and be more effective if they are integrated with other benefits and values. This may not be possible or appropriate in every instance, but there is considerable room for moving more fully in this direction.

2. **Shift away from overly reductionist and objectifying language toward language that better speaks to our inherent interconnections and interdependence with each other and with Earth, which science also supports.** Too often we find ourselves using language that inadvertently reinforces a narrow and harmful worldview that places humanity outside of and above the rest of nature. Such language limits our perception and our possibilities of relating to nature in a more healthful, sustainable, and meaningful way. It is also directly at odds with Indigenous ways of knowing and being in the world.

3. **Cultivate a Stewardship Ethic.** This calls for fostering a sense of shared responsibility for the health and well-being of the land among all people, regardless of their background or relationship to the land. This encourages dialogue, understanding, and collaboration across cultures, perspectives, and communities. This approach embraces a more holistic view that recognizes humans as part of the natural world, acknowledges that human actions have profound impacts on the environment, and that the health of ecosystems is inextricably linked to human well-being.

4. **Build relationships with Indigenous leaders and representatives and move toward collaboration and co-creation on landscape connectivity efforts.** Non-Indigenous conservationists need to deepen our understanding of past injustice and its impacts, recognize that past injustice colors present relationships, and engage Indigenous peoples in a respectful, equitable, honorable way that builds trust. Fostering and expanding use of the concept of Ethical Space is essential. In addition, moving beyond consultation and toward fuller co-creation, in which Indigenous and other relevant people and communities actively participate in shaping conservation approaches and outcomes, is crucial. This approach fosters trust, promotes long-term project success, and avoids repeating past injustices.

5. **Work with First Nations, Inuit, and Native American leaders toward substantial Indigenous involvement in the Staying Connected Initiative's leadership structure (Steering and Executive Committees), with a potential evolution over time to co-governance.** As an interim step, assess the value and viability of potentially creating an Indigenous Engagement Working Group to help advise SCI leadership on key steps toward deeper Indigenous involvement.

6. **Seek ways to support additional capacity within Indigenous nations, communities, and organizations for conservation leadership, planning, and stewardship.** Indigenous nations and groups often have very limited capacity to tend to existing priorities, let alone engage in new initiatives. Non-Indigenous entities and individuals involved in connectivity efforts can be helpful allies by elevating this pressing challenge with funders and others who may be able to provide resources to address it.

7. **Celebrate people's connection to and pride of place as a meaningful starting point for engagement and collaboration.** Many people, both Indigenous and non-Indigenous, are strongly connected to the place and environment in which they live and take great pride in it, whether their roots there go back many generations or only a short time. Recognizing, honoring, celebrating, and learning from these heartfelt connections can be a powerful foundation for building relationships and fostering collaboration toward shared goals.

Owen Mayo and Kwena Bellemare-Boivin, Kanien'kehá:ka (Mohawk) Nation from Kahnawà:ke, perform a traditional ceremonial dance at the 2024 Landscape Connectivity Summit. Credit: Audrey Huffman

Participants at the 2024 Landscape Connectivity Summit identify challenges and opportunities for strengthening coordination, collaboration, and partnership-building at multiple scales to enhance connectivity outcomes. Credit: Audrey Huffman

Strategy: Coordination, Collaboration, and Partnership-Building

There is a strong need for effective coordination across organizations, scales, sectors, and borders (institutional, cultural, socio-political) to advance connectivity conservation and restoration. Ecological connectivity work is inherently multi-disciplinary and multi-organizational, involving a wide range of expertise, capacity, authority, tools, financial resources, and other components.

No one entity, whatever its purview and however well-resourced, can achieve effective, holistic connectivity conservation and restoration on its own. The key is effective coordination among different entities to optimize collective impact.

We can achieve far more working together than we would through uncoordinated action by individual entities.

Prior to the launch of the Staying Connected Initiative, work related to ecological connectivity in some cases had been occurring in separate organizational silos without significant coordination. This resulted in significant gaps because every entity has its own unique mission, geographic scope, and approach.

For example, transportation agencies are ill-suited to work outside of their right of way. No matter how significantly they might invest in connectivity-related infrastructure *within* their right of way, these agencies can never guarantee that infrastructure is effective in enabling safe, functional animal movement without land use planning and land protection partners that help maintain connectivity in areas *outside* and adjacent to the right of way. Similarly, land protection organizations cannot own road rights of way and have no ability to develop connectivity-related infrastructure therein.

Only through coordinated, collective action can we achieve a regionwide pattern of land use and infrastructure that supports ecological connectivity. The SCI partnership has made important progress in addressing this challenge over the past 15 years, but there is a significant ongoing need for additional, sustained coordination across the region. **This need for coordination exists at multiple scales**—from smaller, more local scales like a specific pinch point for connectivity or key road crossing site, to larger habitat linkage or watershed scales, to provincial and state jurisdictional scales, and to the transborder regionwide scale.

Coordination is also needed *between* different scales. For instance, some organizations that work primarily at a national or international scale are focused on developing or advocating for policy at those scales, while local organizations are focused on implementing specific on-the-ground projects at a much smaller scale. Local projects are often more effective and inspired when there is a larger vision and understanding of how that work fits into a regional framework. And in turn, larger scale policy work can be much more effective when well-informed by smaller scale work on the ground.

Actions needed for enhanced, more inclusive coordination and collaboration include:

1. **Strengthen transdisciplinary work and connections between organizations from different sectors.** We need to fully embrace the multi-pronged approach that has been the foundation of the Staying Connected Initiative and include additional partners from new sectors such as land management, energy, and housing. This is needed across all jurisdictions for a cohesive, integrated regional approach and action.

2. **Foster close collaboration, synergy, and efficiency between the Staying Connected Initiative and the New England Governors and Eastern Canadian Premiers' Ecological Connectivity Working Group.** SCI's well-established, coordinated network of diverse partners across the region offers a complementary mechanism to augment and support NEG-ECP's provincial and state government-led efforts.

3. **Ensure there is adequate dedicated, sustained coordination capacity at multiple scales across the region** through the Staying Connected Initiative, the New England Governors and Eastern Canadian Premiers' Ecological Connectivity Working Group, and other partner collaboratives. This should include dedicated staff to coordinate partners at the regionwide/transnational scale, within each province and state, and for all key linkages/corridors.

4. **Form additional provincial and state-scale coordinating groups in jurisdictions where they do not already exist to foster a well-coordinated, multi-pronged approach and collaboration with partners at larger and smaller scales.** This could include additional provincial or state "chapters" of the Staying Connected Initiative like the Québec Ecological Corridors Initiative and Vermont SCI partner network, or wildlife-transportation steering committees like the New Hampshire Wildlife and Transportation working group. Fund dedicated staff to coordinate these efforts.

5. **Pursue meaningful, respectful engagement and collaboration with Indigenous leaders in the implementation of New England Governors and Eastern Canadian Premiers Resolution 45-2 on ecological connectivity.** The first working group for the NEG-ECP's Resolution 40-3 included a fairly narrow array of participants and was limited in its ability to engage with broader interests. For implementation of NEG-ECP's new Resolution 45-2, meaningful and respectful engagement with Indigenous leaders is needed to embrace the multi-national nature of this work and an integrated, holistic perspective.

6. **Continue strengthening relationships and collaboration between the Staying Connected Initiative and key entities at the regional and national scales to help accelerate and scale up connectivity conservation and restoration work toward mutual goals.** Examples include the Northeast Association of Fish & Wildlife Agencies, Parks Canada, Canadian Wildlife Service, U.S. Fish and Wildlife Service Northeast Region, U.S. Forest Service, U.S. Department of the Interior-led Appalachian People and Places: A Conservation Collaborative, Appalachian Trail Landscape Partnership, Regional Conservation Partnership Network, Ducks Unlimited/Ducks Unlimited Canada, and Sustainable Forestry Initiative.

7. **Assess the value and feasibility of developing a regionwide connectivity Memorandum of Understanding, Statement of Shared Principles, or similar high-level document through which diverse interests could demonstrate shared commitment and foster collaboration.** Such a document would have merit not only in its final form, but even the outreach effort to get signatories would be an opportunity to reach out to a broad set of interests that could include provincial, federal, state, regional, and municipal agencies, Indigenous nations and groups, NGOs, academic institutions, private funders, and more.

8. **Pursue additional cross-disciplinary training and shared learning.** Bring together professionals from various fields, such as conservation biologists, urban planners, social scientists, foresters, and engineers, to foster a holistic understanding of interconnected systems, leading to innovative solutions. Host workshops and training programs that bring together these professionals to learn from each other. Fundamental to the multi-pronged approach is the understanding of how the different sectors play a role in connectivity conservation.

9. **Advance convenings, dialogue, and shared learning at multiple scales on connectivity broadly and on specific topics. Specific ideas that have surfaced include:**

   a. A *2nd Northeastern North America/Turtle Island Landscape Connectivity Summit* to continue building relationships and momentum on connectivity work across the region, assess progress on implementation, and further prioritize key actions.

   b. *Bring the greater regional Wabanaki family and other Indigenous nations together across borders* to discuss ways to join forces to participate in the Staying Connected Initiative and collaborate with the New England Governors and Eastern Canadian Premiers' Ecological Connectivity Working Group.

   c. *A funders forum and brainstorming session* focused on ways to increase funding from private philanthropy and other sources to meet diverse funding needs related to connectivity work.

   d. *Functional connectivity* (i.e., the degree to which specific locations and the landscape as a whole actually support the movement of various species): Bring field scientists and others together to discuss the status of knowledge and research related to this concept. Take stock of what has been done and what is underway for individual species, taxa, various methodologies, and geographic coverage; what and where are the gaps in data and knowledge; and what the opportunities and mechanisms are for working toward a more comprehensive, cohesive, coordinated, and synergistic approach. This should include academics, agency staff, non-governmental organizations, and Indigenous representatives.

   e. *Sustaining and enhancing connectivity on un-conserved lands:* Convene experts and practitioners from within the region and beyond to build understanding of the challenges and approaches to effectively ensure connectivity on the vast majority of lands in the region that are privately owned, aren't/won't be permanently conserved, and are under local land use control and provisions that vary widely and change over time. Elements of this discussion should include land use planning at municipal and regional levels; landowner and community outreach, engagement, and education; fostering a stewardship ethic; capacity needs of municipalities, regional planning commissions and similar entities, and non-governmental organizations engaged in this work; and enabling policies needed at the provincial and state level.

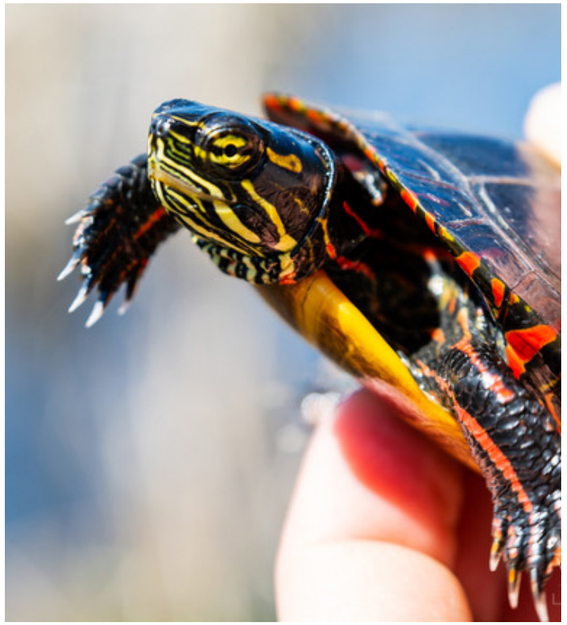
   f. *Stewarding protected lands (public, private, and Indigenous):* This discussion would include addressing pressing challenges in this realm (e.g., limited funding, capacity, leadership, and appetite) and potential opportunities for collaboration to address them (including linking more with Indigenous stewardship efforts). Participants should include federal, provincial, and state land managing agencies, municipalities, Indigenous leaders, land trusts of various sizes, funders, and academics.

   g. *Province and state-specific connectivity summits* to build relationships and foster collaboration and synergy that will lead to greater connectivity outcomes in individual jurisdictions. The 2023 Québec Ecological Corridors Conference and similar recent gatherings in Florida and California provide useful examples.

10. **Share learning with other examples of established cross-border collaborative frameworks and pursue peer exchanges to foster knowledge transfer and collaboration.** Shared two-way learning with other established efforts would be mutually beneficial and help accelerate success. This could occur between sub-regions within the northeastern region of North America/Turtle Island, and between this region and other regions. There are many excellent examples to learn from such as the Yellowstone to Yukon Conservation Initiative, North American Waterfowl Management Plan (NAWMP), Québec Ecological Corridors Initiative, and Bras d'Or Lakes Collaborative Environmental Planning Initiative (CEPI).

11. **Recruit new partners to participate in collaborative connectivity conservation work across the region.** The circle of partners and perspectives involved in this effort and within the Staying Connected Initiative needs to continue to grow. Examples of potential opportunities include greater engagement with provincial, state, and federal (U.S. and Canadian) forests and parks agencies, corporate and private large timberland owners, hunting and fishing organizations, and the insurance industry (related to the importance of safe passage for animals under or over roadways to reduce the risk of wildlife-vehicle collisions).

12. **Assess and pursue ways to optimize efficiency and synergy between the Staying Connected Initiative, the New England Governors and Eastern Canadian Premiers' Ecological Connectivity Working Group, and the Northeastern Transportation and Wildlife Conference (NETWC)** for fostering dialogue, shared learning, collaboration, and well-informed action on transportation and wildlife issues. Look for ways to use NETWC as a coordinating mechanism on these issues across boundaries.



Credit: Vermont Fish & Wildlife Department

Participants at the 2024 Landscape Connectivity Summit. Credit: Audrey Huffman

Strategy: Communication and Engagement

Communication and engagement are fundamental challenges in the field of ecological connectivity. Partially this stems from the sheer number of disciplines involved. Since each discipline uses its own professional language and includes its own assumptions, better communication is needed to bridge these divides and explain to all groups how their work fits into a larger view of ecological connectivity.

Communication and engagement are also crucial for how this work relates to public audiences. All disciplines related to ecological connectivity have a public nexus and ensuring a larger pattern of connected habitat fundamentally involves the buy-in of the people who live in this region. Land protection, land use planning, linear infrastructure, policy changes, and other facets of a holistic, multi-pronged approach all require public support. It is critical that we better explain the need for this work and offer meaningful opportunities for public engagement. This work cannot happen "to the people," it must be done with and by the people.

Potential actions to enhance communication and engagement include:

1. **Fund dedicated, sustained communication staff involvement in the Staying Connected Initiative** to ensure adequate capacity on an ongoing basis for communication and engagement at various scales, across a range of strategies, and with diverse audiences.

2. **Develop a multi-faceted, multi-scaled communications strategy and messaging campaign for the Staying Connected Initiative** in close coordination with partner organizations to better elevate connectivity in the public eye and with key leaders as an important region-wide priority. As part of the larger communications strategy, there is a particular need to fund and produce a new high-quality, compelling professional video for SCI. There also are opportunities to learn from good models elsewhere, such as the Florida Wildlife Corridor and California Wildlife Reconnected.

3. **Foster celebration of place as a central aspect of communication and engagement.** Pride of place is a uniting force within and across communities and is a critical aspect of communications efforts to unite diverse audiences and root them in the natural world.

4. **Enhance strategic communication and storytelling.** Develop and broadly distribute positive messaging and compelling stories that can inspire action, attract funding, and demonstrate the value of connectivity conservation to diverse audiences. Find and spotlight stories that quickly convey the importance of connectivity and captivate broad public, political, and funder support. For example, can we identify a northeastern equivalent of "P22," an iconic mountain lion in southern California that highlighted the need for connectivity and road crossings near Los Angeles? There also may be other unlikely hooks that can capture the attention of diverse audiences—for instance, reduced wildlife-vehicle collisions that increase motorist safety and reduce insurance claims, or the interplay between a well-connected landscape and outdoor recreation opportunities. In this effort, look for opportunities to engage digital techniques (e.g., storymaps) and print media that capture multi-faceted projects in compelling ways.

5. **Share the larger vision in connectivity conservation.** The narrative of conservation in this region needs to shift from individual projects and organizational mandates to a unified, mappable plan informed by scientific data, Indigenous Knowledge, and stakeholder input. This needs to include more accessible, layperson's language to reach diverse audiences.

6. **Focus outreach on communities engaged in land use planning to encourage inclusion of ecological connectivity provisions in planning documents and bylaws.** The best time to reach out to communities around the concept of land use planning for connectivity is when they are undergoing a town plan rewrite or zoning change. These moments provide opportunities to build an understanding of the relationship between connectivity and land use, and secure compatible provisions in the corresponding documents/products. Regional planning commissions or equivalents are well positioned to provide ongoing facilitation and technical assistance to support municipal-level action if they are sufficiently resourced.

7. **Shift the mindset and language from "ownership" to "relationship with the land."** A shift in mindset and language, moving away from "ownership" and toward the concept of a "relationship with the land," reflects an Indigenous worldview and can foster a deeper sense of responsibility and stewardship. This involves recognizing the historical and cultural connections that landowners and communities have with the land, acknowledging that people are part of nature, and building conservation strategies that honor these relationships.

8. **Use the theme of landscape connectivity to find common ground and build trust.** Connectivity and landscape conservation can serve as a unifying theme, bringing people together around shared values like protecting clean water and healthy ecosystems for both wildlife and people. Promoting a positive understanding of the benefits of ecological connectivity for both human and natural communities is crucial, including enhanced flood resilience, improved fire mitigation, and access to nature. It is also important to frame conservation messages in ways that resonate with diverse audiences. Successful connectivity conservation relies on building trust between diverse stakeholders, including government agencies, non-governmental organizations, and Indigenous communities.

9. **Further communicate the benefits for connectivity of diverse land management and stewardship.** The landscape across the northeastern region of North America/Turtle Island is a mosaic of public and private lands and diverse land management and stewardship. The full spectrum of lands from actively managed forests to passively managed wildlands can all contribute to ecological connectivity and can benefit from it. We need to better communicate how this mosaic of management types can benefit connectivity and how including awareness of this mosaic reflects the multiple values inherent in an integrated, holistic approach to conservation.

Credit: Alexa Schubak, Quebec-Labrador Foundation

Strategy: Connectivity and Climate Science, Indigenous Knowledge, and Conservation Planning

There are several sources of knowledge and understanding of this region that need to be brought together to inform where and how best to pursue conservation actions and guide strategic decision-making and investments. Indigenous Knowledge, community values, western science, and planning all need to be brought into the discussion on where and how best to work and what partners to involve. It is important that we build upon these sources of knowledge, identify any gaps, and not duplicate or interfere with good things already in place.

There is an abundance of existing analyses, tools, plans, etc., at various scales across the region. Some jurisdictions benefit from multiple overlapping or concentric products, while others have fewer. No single conservation science product will ever meet all the needs or express all the scales and kinds of connectivity science across the region, and therefore a single product should not be the goal. We need complementary conservation science at the regional, linkage, jurisdictional, and local scales to convey the vision and promise of connectivity across the region, as well as functional products that can assist land use and transportation planners, decision makers, and others on where connectivity functionally exists.

Key actions for moving forward on this include:

1. **Integrate Traditional Ecological Knowledge into connectivity mapping to inform prioritization and implementation.** Indigenous leadership and knowledge systems play a vital role in guiding effective and equitable conservation efforts. Indigenous communities, through generations of close relationship with their environment, have cultivated a deep understanding of the land. Traditional Ecological Knowledge offers crucial insights into the complexities of ecosystems, species behavior, and sustainable practices that can significantly enhance conservation efforts.

2. **Create regionwide, landscape-scale science products and maps that portray connectivity across the full extent of the northeastern region of North America/Turtle Island.** Few landscape-scale science products exist that cover the entire region. A regionwide illustration of connectivity across borders is needed to establish and provide the foundation for the larger vision. Comprehensive forest block mapping (areas of natural cover surrounded by roads development and agriculture) would be a valuable next step in better understanding and conveying the overall regional context.

3. **Create more detailed sub-landscape-scale connectivity science for each province and state in the region to guide jurisdictional efforts.** Each province and state should develop mapping of the network of ecological connectivity and use that as the basis for conservation implementation. There are several examples in the region that show how that science can be prioritized and delivered to diverse constituencies, including Vermont's BioFinder, Massachusetts' BioMap, Maine Focus Areas, Quebec's Ecological Corridors, and New Hampshire's Wildlife Action Plan. Here again, comprehensive forest block mapping would be useful as a consistent unit.

4. **Create/update products at the local scale for priority linkages and ecological corridors to help inform implementation of key actions.** Within key priority linkage and ecological corridors, conduct fine-scale assessments that help to identify specific areas for wildlife crossings, private lands conservation targets, and restoration activities. Integrate local and Indigenous knowledge and community science into these assessments.

5. **Increase technical assistance offerings in each jurisdiction to better interpret the science, help identify key linkages and corridors, and inform implementation in land protection/securement, land use planning, and transportation.** For many potential users, the science does not speak for itself. Technical assistance is required to translate and down-scale the science into terms that are more easily understood and into products that are useful for a particular need (e.g., science used for land use planning needs to be prioritized into discrete units). Technical assistance related to connectivity for land use planning and transportation is often best accomplished through provincial and state staff who represent the people's interests.

6. **Refine the Staying Connected Initiative's framework and system for tracking and clearly articulating progress and successes for connectivity conservation and restoration at multiple scales over time, both quantitatively and qualitatively.** This should include establishing, articulating, and periodically refreshing goals and metrics at different time intervals and at multiple scales, and then tracking progress toward them. This needs to be done in a way that is efficient and feasible for partners, ideally dovetailing with tracking and distilling results that they are already doing.

7. **Develop a shared vision and collaborative connectivity conservation and restoration action plan for priority linkages/corridors where this has not been done before or is outdated.** The state of conservation science, mapping, and planning is different for each linkage in the Staying Connected Initiative and across the region. But several would benefit from enhanced mapping to inform implementation and development of a shared vision and action plan. These include but are not limited to the so-called "Borderlands" linkage that includes adjoining areas of northeastern Vermont, northern New Hampshire, western Maine, and southern Québec; newer SCI linkages such as the Catskills to Adirondacks; and potentially areas in the eastern Canadian provinces and northeastern states currently outside SCI's primary areas of focus.

8. **Foster a more coordinated strategic and feasible regionwide approach to assessing and monitoring functional connectivity.** Disparate efforts exist across the region for assessing functional connectivity (i.e., the actual movement of animals across the landscape) using tracking, trail cameras, and other methodologies, but a strategic, coordinated, and feasible region-wide system is lacking. Genetic and large-scale telemetry data could be helpful in bringing this all together.

9. **Bring more social science expertise into connectivity efforts to help inform and enhance their effectiveness and relevance to diverse audiences.** The work of conservation is fundamentally about working with people and understanding their values, motivations, and what brings change in them and their communities. This requires more social science expertise to better develop and implement programs and policies that meet people where they are and to better tell the story of ecological connectivity. There is also a need and opportunity for social science expertise to help assess and improve the effectiveness of connectivity collaborations. These efforts would benefit from an applied social science network among institutions of higher learning within and beyond the region.

10. **Pursue a comprehensive, compatible conserved lands database in Canada and the U.S.** Consistent, cross-border mapping and tracking of conserved lands is needed to better monitor and assess protected areas that are an essential part of the connected lands network. This is not simply a one-time creation of data, but rather requires a consistent system of ongoing inventory and reporting.

11. **Assess the role wildlands (passively managed lands) can play in contributing to landscape connectivity.** The eastern forest is a mosaic of management types from actively to passively managed. Clarity is needed on the role that wildlands play in this network. Are they best utilized as core anchors in the connectivity network or do they also have applications as smaller connecting lands or stepping stones?

12. **Promote data sharing, consolidation, and accessibility.** A centralized, up-to-date database or online platform compiling information on scientific data, funding sources, relevant organizations, best practices, and case studies of successful projects would streamline information sharing and facilitate partnership-building. The regional Ecological Connectivity website (https://ecologicalconnectivity.com/) provides a strong starting point with a collection of connectivity case studies in French and English. The same need exists in the transportation field related to designs and programs for improving infrastructure to support connectivity.

13. **Address data sovereignty.** Discussions at the 2024 Summit stressed the importance of Indigenous data sovereignty and the sensitive nature of sharing Traditional Ecological Knowledge. Protocols and practices related to the collection, ownership, and use of data related to Indigenous communities are needed to ensure this knowledge is shared and used respectfully and appropriately.

Credit: Vermont Fish & Wildlife Department

Strategy: Land Protection/Securement

Land Protection or Land Securement is a fundamentally important tool in connectivity conservation because it offers permanent protection from various forms of development. Fee ownership by government agencies and conservation organizations as well as the use of conservation easements/restrictions (aka servitudes) are long-standing conservation practice that form the very backbone of the connectivity network in this region.

While ambitious targets for land conservation such as the "30x30" goals that have been adopted at various levels of government provide important benchmarks to aim for, it is crucial to identify potential needs, projects, collaborations, and funding to accelerate and scale up land protection/securement that benefits connectivity across the region.

It is also important to note that while land protection is a vital tool in the connectivity conservation toolbox, it can't do it all and other tools need to be deployed. With the enormity of the land area involved in the connected network of forests and waters across this region, it is likely impossible and potentially problematic to expect that fee acquisition and easements with willing landowners would be able to secure all priority areas from irreparable fragmentation. Well-informed land use planning and thoughtful land stewardship are needed to maintain a larger pattern of connectivity across the landscape, and engineered solutions are needed to address the "pinch points" of linear infrastructure. Land protection should be thought of as one vital tool among others that needs to be employed strategically to successfully conserve connectivity.

Important potential actions related to land conservation/securement include the following:

1. **Focus on connecting lands (i.e., the often-smaller stepping stones in between the larger core areas).** Context matters and sometimes conserving smaller undeveloped parcels that are strategically located (for instance, adjacent to an important location for wildlife road crossings) is more important that simply pursuing larger acreages. This involves redefining success to prioritize and enable land protection that supports ecological functionality regardless of size. It is also important to put greater emphasis on bio-cultural outcomes and co-benefits.

2. **Focus land protection efforts in valleys, wetlands and riparian corridors.** Land protection for connectivity and other ecological values often results in higher elevation "islands" of protected space (either a core area or an adjacent connecting land) across the landscape. Land protection efforts are beginning to adapt to different needs of connectivity by increasingly focusing on connecting lands rather than just core blocks, and lower elevation sites rather than ridges and mountains. More needs to be done to focus land protection efforts on connecting lands in valleys, wetlands, and riparian corridors to better create a pattern of contiguous conserved lands that support connectivity and bind together a well-connected network.

3. **Focus land protection on people-centered land conservation projects that meet multiple values, including community, economic, ecological, and others.** Measuring success should also incorporate social and ecological indicators and align with broader societal objectives, such as fostering resilient communities and recognizing the economic opportunities associated with a healthy environment.

4. **Support Indigenous-focused and Indigenous-led land efforts.** Land protection or securement is a Western legal tool that isn't necessarily applicable to the ways that Indigenous communities steward and interact with the land. Across the region, we need to support Indigenous-focused land efforts that can benefit ecological connectivity. In the context of conservation in the eastern U.S., growing attention on "Land Back" or "land return" efforts focus on restoring Indigenous control and stewardship over ecologically significant lands, many of which were taken through colonial dispossession and later became public or private conservation lands. Examples of Indigenous-led efforts by First Nations in eastern Canada that advance connectivity conservation include Indigenous Protected and Conserved Areas (IPCAs) such as the Skutik (St. Croix) River IPCA in southeastern New Brunswick and eastern Maine, and the Unama'ki Institute of Natural Resources' (UINR) efforts to establish an IPCA at Kluskap Cave in Nova Scotia.

5. **Work with land conservation organizations to assess and seek opportunities to bundle projects across state or provincial borders with connectivity as a unifying theme to help access relevant funding sources.** Bundling land protection projects together in packages that include multiple properties under a connectivity theme could create a compelling rationale for funders and potentially offer efficiencies and reduce overhead. One example could be a potential multi-state proposal to the U.S. Forest Service's Forest Legacy Program. Possible opportunities with other public and private funding sources in the U.S. and Canada should be explored.

6. **Develop a toolkit for land trusts related to ecological connectivity, building on existing resources.** Several resources exist for land protection partners related to ecological connectivity, but more can be done to bring these together, expand upon them and make them available. The Staying Connected Initiative developed model easement language for connectivity conservation in 2012, and more recently the Center for Large Landscape Conservation (CLLC) produced a *Land Trusts and Wildlife Crossing Structures* toolkit (2023). In addition, CLLC created an interactive policy brief titled *Wildlife Connectivity: Opportunities for Legislation*, which highlights advocacy opportunities for the conservation community to enhance connectivity.

Credit: Krista Grant, Quebec-Labrador Foundation

Strategy: Land Management, Stewardship, and Restoration

Private landowners play a vital role in maintaining the network of connected lands and waters through land management and stewardship. Land in the northeastern United States and eastern Canada is predominantly privately owned and there can be a limited appetite among the public for more governmental ownership. For many parts of the connectivity network in the region, working with private landowners to foster land management and stewardship that supports ecological connectivity is one of the most important approaches available.

A variety of NGO, Indigenous, federal, provincial, state and municipal entities also steward land in this region. The management decisions that these entities make have significant ramifications for thousands of acres in the connectivity network.

There is a spectrum of land management and stewardship activities that support connectivity from passive, "forever wild" to more intensive "working lands" management. More work needs to be done to ensure these various management approaches foster ecological connectivity where it is needed most.

In addition, efforts to restore lands and waters in the region to a more natural, ecologically functioning condition also have an important role to play in improving connectivity. These include activities such as replanting native vegetation in strategic locations like river and stream corridors to provide pathways for terrestrial animal movement while also improving instream conditions for aquatic species, water quality, and flood resilience; reconnecting rivers to their historic floodplains by removing or reducing human-made berms, channelization, and other obstructions where they may not be needed to protect settlements and important investments; and targeted reforestation programs on unproductive agricultural lands that can enhance connectivity while also providing enhanced carbon sequestration.

Important potential actions related to land management, stewardship, and restoration to benefit ecological connectivity include the following:

1. **Foster a land ethic on private and public lands that promotes ecological connectivity.** A land ethic promotes a responsible relationship between people and the land. It includes concepts of people as members of a broader ecological community, respect for the land, and ecological awareness. These are critically important concepts that are fundamental to land stewardship and should be fostered on conserved and un-conserved private lands as well as on public lands.

2. **Support increased Indigenous stewardship of lands.** This action recognizes the deep ecological knowledge and sustainable land-management practices that Indigenous communities have maintained for millennia, contributing to the protection of biodiversity and ecological connectivity. Supporting Indigenous-led efforts such as Indigenous Protected and Conserved Areas and co-management agreements can help ensure that land stewardship aligns with Traditional Ecological Knowledge while promoting habitat connectivity and climate resilience. Indigenous Guardians initiatives, which have grown rapidly in Canada in recent years, also are a powerful tool for Indigenous-led land management for many values, including connectivity. By providing legal recognition, funding, and decision-making opportunities, governments and conservation organizations can support the authority and leadership of Indigenous communities in preserving and restoring culturally and ecologically important landscapes. Important progress has been made in this direction in recent years in some parts of the region, but much more work remains to be done.

3. **Promote projects that help restore ecological connectivity (terrestrial and aquatic) at various scales.** Ecosystem-based management and Traditional Ecological Knowledge teach us to treat land, water, and species as interconnected rather than separate. In connectivity work it is especially important that we work to restore ecological integrity of both terrestrial and aquatic systems, helping to meet multiple values at the same place and time. Projects to benefit connectivity that also bring together values like improving water quality, river process, and flood resilience are stronger and engage more robust and dynamic partnerships. Replanting native vegetation, right-sizing culverts and bridges, and enlarging vegetated riparian corridors can all benefit ecological connectivity and achieve other important goals.

4. **Research and publicize best practices for fostering connectivity on working forest and agricultural lands.** Identifying strategies that allow for both productive land use and the protection of ecological connectivity is important. This includes studying and promoting techniques such as agroforestry, riparian buffer zones, silvopasture, and conservation easements that integrate biodiversity conservation with sustainable resource management. By sharing these findings with landowners, policymakers, and industry stakeholders, we can encourage the adoption of land use practices that maintain habitat connectivity, reduce fragmentation, and enhance ecosystem resilience in the face of climate change.

5. **Engage with large private forest and agricultural landowners to encourage adoption of management best practices for connectivity as part of their mosaic of land management approaches.** This involves sharing the findings of the research in action #4 above with large landowners and building partnerships, providing incentives, and demonstrating the long-term benefits of connectivity conservation-minded stewardship. This can be achieved through outreach programs, technical assistance, and financial incentives such as tax benefits, conservation easements, or ecosystem service payments that make sustainable practices more attractive. By fostering collaboration between landowners, conservation groups, and government agencies, we can promote land management strategies that maintain habitat corridors, support biodiversity, and enhance ecosystem resilience while ensuring economic viability for landowners.

6. **Research and publicize the role of wildlands/passive land management for fostering connectivity.** This involves studying how lands that are governed by natural processes (e.g., forest regeneration and succession, nutrient and water cycling, and disturbance regimes) free of significant human intervention contribute to ecological connectivity and species movement. By analyzing case studies, relevant literature, and ecological data, researchers can identify and assess the benefits of minimal human intervention in maintaining biodiversity, carbon sequestration, and climate resilience. Sharing these findings through reports, outreach programs, and policy recommendations can help land managers, conservationists, and decision-makers recognize the value of protecting and restoring wildlands as key components of landscape connectivity.

7. **Engage with large private forest landowners to encourage adoption of passive forest management for connectivity as part of their mosaic of land management approaches.** This involves developing and implementing an effective strategy for sharing the information and learning gathered through the research on wildlands/passive land management in action #6 above with large forest landowners and looking for opportunities to support them in incorporating it in their land stewardship.

Tree planting and other habitat restoration can enhance connectivity and other important values. Credit: The Nature Conservancy

Credit: Jens Hilke, Vermont Fish & Wildlife Department

Strategy: Land Use Planning, Community Outreach, and Capacity Building

Land Use Planning, Community Outreach, and Capacity Building is an important strategy in the multi-pronged approach to connectivity conservation. Community outreach and capacity building are essential aspects of land use planning and all three components are included here together for clarity.

Land use planning affects a comparatively larger land area than many of the other strategies. It can help create a pattern of natural cover or reduced development density, and links together other connectivity conservation strategies. This is instrumental for concentrating development in village and urban centers and minimizing sprawl development that threatens the connected landscape pattern.

For example, land protection often results in areas of permanent protection surrounded by unconserved, privately owned land. The permanently protected lands form the core areas, the anchors to the network of connectivity, and then well-informed and thoughtfully implemented land use planning and regulation can help sustain a connected pattern on surrounding unconserved private lands.

Similarly, improving transportation infrastructure is important for addressing many key pinch points in the network of connectivity, yet transportation agencies don't work outside of their right-of-way. Here again, thoughtful land use planning and regulation can be used to ensure ecological connectivity between these pinch points and permanently protected core areas.

Systems and authority for land use planning and regulation vary between Canada and the U.S., each province and state, and municipality to municipality. Given this variation, land use districts from neighboring jurisdictions rarely line up compatibly for connectivity. Furthermore, land use regulations are not permanent and can change from year to year. This is especially true with frequent turnover of volunteer members of many local boards involved with land use and if local citizens aren't aware of and engaged in the issues. As a result, there is a great deal of work to be done to effectively integrate connectivity considerations into land use planning across the region in the short and longer term.

Potential key actions to enhance land use planning for connectivity include:

1. **Build and sustain capacity at the provincial/state, regional/county, and municipal scales.** Investing in dedicated natural resource planners and technical assistance providers within government and planning agencies (such as regional planning commissions and equivalent entities) is needed to address capacity deficits. These individuals can facilitate communication, coordinate conservation efforts, and bridge the gap between science, policy, and implementation with local decision-makers and community members. Some jurisdictions provide liaisons who are responsible for translating the science and offering real-world examples of what land use planning for connectivity looks like (for instance, Beginning with Habitat in Maine and the Community Wildlife Program in Vermont). Regional planning commissions (RPCs) or equivalents are also well-positioned to serve in this role, but generally receive no funding to do so.

2. **Provide professional and volunteer land use planners with a better understanding of the concept and importance of ecological connectivity.** More outreach is needed to those engaged in land use planning across the region to increase awareness, understanding, and appreciation of the importance of ecological connectivity. In most jurisdictions, wildlife habitat is protected in small areas without regard to a larger pattern. More needs to be done to explain the need for a pattern of connected and intact lands and waters across the region. Fundamental to this is understanding the connections between terrestrial and aquatic components of the overall landscape and ecosystems. The riparian network is critical in linking upland habitats and ensuring ecological connectivity, especially in more fragmented landscapes where the narrow ribbon of stream-side vegetation is often all that's left to connect fragments of natural cover. Providing planners with these concepts is best done with applicable examples of what a connected pattern looks like rather than simply providing scientific literature on the concept.

3. **Provide planners with adequate and appropriately scaled science and mapping to identify and prioritize lands and waters important for connectivity and related action.** A mosaic of connectivity science exists across the region at different scales, but landscape or regionally scaled science generally is of limited value at the local level where decisions on land use planning are at the forest-block, habitat patch, and parcel scale. Often, many important connectivity locations exist at a local scale that are not shown or prioritized in regional or landscape-scale connectivity maps, leaving planners uncertain of how to prioritize what they see at the local level. Without clear science and prioritization that addresses what planners are seeing at the local level, it can be difficult to move forward on these issues. Ideally, connectivity mapping needs to get down to the scale of a regional planning commission or similar entity that provides assistance to multiple municipalities, and then technical assistance should be provided to interpret this mapping down to the individual municipal scale.

4. **Provide more outreach to the communities that planners serve with digestible, compelling information about the concept and importance of ecological connectivity so these issues will be included in land use planning.** Land use planning is rooted in democracy. As such, it requires input from the people. Planners need to hear from their constituents about the importance of

ecological connectivity. Even those planners who understand the importance of ecological connectivity still need that input to ensure they aren't operating in isolation. Because of this, efforts to weave connectivity into land use planning are inextricably linked with outreach efforts that inform the public at a local level about the importance of these issues. Most land use planning efforts—whether provincial/state, regional or municipal—include an outreach component to provide information and collect feedback from the public about their priorities.

5. **Develop and share a connectivity and land use toolkit and model land use bylaws.** Creating resources like guidance for municipalities on integrating ecological connectivity into land use planning and model bylaws can guide implementation and promote widespread adoption. Training modules, curricula, and webinars are all helpful resources. Existing examples to build on include *Protecting Wildlife Connectivity Through Land Use Planning: Best Management Practices and the Role of Conservation Development* by the Wildlife Conservation Society's Adirondacks Program (2012), and *Community Strategies for Vermont's Forests and Wildlife: A Guide for Local Action* by the Vermont Natural Resources Council (2013).

6. **Integrate land use planning for connectivity within the full suite of issues involved in developing and sustaining a thriving whole community.** An integrated, people-forward approach to connectivity conservation seeks to address multiple values, including ecological, economic, cultural, and recreational. In much of this region, there isn't enough space given the population density to separate uses and designate separate areas for each use, so the land use issues facing the region are often solved by looking to meet multiple values at the same place. The issues are all interrelated. We can't achieve a connected landscape pattern in the hinterlands without density in our village centers. Thus, supporting and investing in concentrated development in well-suited locations is an important aspect of ensuring sprawl doesn't consume areas where development could adversely affect important connectivity corridors and other values of a more natural landscape. It is important to acknowledge the pressures of population growth and the real need for housing on conservation efforts. Solutions require innovative approaches to densification that promote development in suitable areas, and protecting ecologically sensitive lands.

7. **Support efforts to invest in physical design, capital improvement planning, and capital financing strategies that foster compact development patterns and reduce sprawl, which can sustain and enhance connectivity.** Compact settlements must be well-planned, and require detailed physical master planning, capital improvement and investment planning, and public financing strategies and tools to create the conditions for development. Physical master planning takes into account the appropriateness of land to support resilient development, and guides where infrastructure—ranging from water and wastewater, streets, power, and public spaces—should be located. Supporting these efforts likely will necessitate the development of public investment and system operations structures that are intermunicipal, or regional, in nature. Solving this problem is foundational to a broad array of state/provincial, regional, and local policy directives related to land use, including connectivity conservation as well as other important priorities (e.g., energy development and conservation, greenhouse gas reduction, transportation, education, and economic development).

Credit: Kylie Paul, Center for Large Landscape Conservation

Strategy: Linear Infrastructure Mitigation

In maintaining a landscape-scale network of connected habitat across the region, different tools are required to address different needs. While land protection can secure large anchors of core forest and connecting lands, and land use planning can help ensure a larger pattern of connected lands and waters, linear infrastructure such as roads and railroads frequently are significant barriers to wildlife movement and ecological connectivity (both terrestrial and aquatic). Therefore, addressing these obstacles in the larger connected lands network is essential.

Transportation infrastructure can be modified and enhanced to minimize impacts on terrestrial and aquatic connectivity while also delivering important co-benefits. These include:

- increased safety for motorists, lower financial costs, and fewer insurance claims through reduced risk of collisions with wildlife;
- enhanced climate resilience and lower infrastructure maintenance costs through reduced vulnerability to flooding and related destruction of culverts and bridges;
- protection of water quality through avoided erosion and sedimentation from destructive events;
- recreation access improvements.

The northeastern United States and eastern Canada have a high density of roads and also an elaborate surface water and riparian area network. This has resulted in a vast number of culverts and bridges of varying sizes across the landscape to allow rivers and streams to flow under roadways. Some of these are large enough to support the safe, easy movement of aquatic and terrestrial species under the roadway, but many do not—and they also often are not large enough to enable high water volumes and debris to move readily downstream during peak flows and floods. Replacing undersized culverts and bridges with larger, well-designed ones presents a widespread opportunity to improve the ability of fish and wildlife to move safely under roads while simultaneously achieving the multiple co-benefits described above.

In other parts of North America/Turtle Island and elsewhere in the world, wildlife overpasses or bridges are effective and popular tools for providing pathways for diverse species of animals to move safely from one side of a road to the other. At the moment, the authors of this guide are not aware of any wildlife overpasses in the northeastern region of North America/Turtle Island, but there may be particular locations where an overpass will prove to be the best way to improve connectivity in the near future. However, this is likely to be relatively rare for a number of reasons, including cost, more dispersed patterns of wildlife movement than in other regions with well-established migration routes, and challenges of siting and maintaining the fencing needed to direct animals to an overpass on adjacent private forested lands. There is greater opportunity in this region to enhance connectivity by modifying existing culverts and bridges to provide effective underpasses for wildlife movement and meet multiple other values simultaneously.

In addition to transportation infrastructure, the thousands of large and small dams in eastern Canada and the northeastern U.S. are significant barriers to fish and wildlife movement in streams, rivers, and riparian corridors. The New England states alone have an estimated 15,000 dams that have been constructed over decades for flood control, energy production, water supply, irrigation, recreation, and aesthetic purposes. Efforts to provide safe passage for fish and other species over and around many existing dams have met with mixed success over the years. More recently, there has been growing progress in removing dams that are no longer serving an important public purpose. In addition to improving ecological connectivity, these removals provide important co-benefits such as eliminating maintenance costs, reducing the risk of catastrophic flooding downstream from dam failures, and improving instream habitat and water quality.

Lastly, the siting and design of energy-related infrastructure can significantly impact connectivity. This includes siting and design of infrastructure for energy extraction and generation (both for non-renewable fossil fuels as well as renewable sources such as solar and wind), transmission (i.e., powerlines and pipelines), and emerging energy-intensive industrial facilities such as data centers.

While the connectivity impacts of dams and energy infrastructure are important issues to address, they were not a significant focus of the 2024 Connectivity Summit and are not reflected in the suggested actions below. More work needs to be done to integrate them into a holistic, multi-pronged approach to connectivity conservation and restoration.

Potential actions toward reducing the impacts of transportation infrastructure on connectivity in the region while also supporting other important benefits include:

1. **Better communicate with transportation agencies, other partners, and the public the importance and opportunity of improving transportation infrastructure as an essential element of maintaining and enhancing ecological connectivity, climate resilience, and other co-benefits across the region.** Extensive transportation infrastructure bisects the forests and waters of this region, and it is essential that bridges, culverts and road segments are designed to better accommodate the needs of fish and wildlife movement. Transportation infrastructure can't just be thought of as part of the problem; it is part of the solution.

2. **Help transportation agencies better understand the concept of ecological connectivity and better integrate it into their operational culture through trainings and other tools.** Over the last few decades, many transportation agencies have successfully incorporated new and emerging issues that have a transportation nexus into their culture and procedures. Ecological connectivity is another element that needs to be included in this list. To do this, transportation agencies need to clearly understand why, how, and where. The "why and how" can be articulated in trainings such as Vermont's Highways and Habitats training that is being adapted for other northeastern states by The Nature Conservancy and agency partners. Also, capacity to incorporate ecological connectivity into transportation agencies planning and actions often requires additional capacity and funding. These funding needs should be considered as part of state budget processes.

3. **Encourage all jurisdictions to enhance relationships and collaboration between their transportation and natural resource agencies.** By recognizing the intersections and aligning the goals of transportation development with conservation objectives, these agencies can work together to keep the traveling public safe, minimize habitat fragmentation, reduce wildlife mortality, and ensure that infrastructure projects contribute to maintaining or enhancing landscape connectivity. This can be achieved through inter-agency memoranda of understanding, inter-agency working groups, joint trainings, and collaboration on project planning and implementation.

4. **Encourage all state transportation agencies in the region to develop a State Transportation and Wildlife Action Plan following U.S. Federal Highway Administration guidance,** similar to the Massachusetts Department of Transportation's current efforts. These plans should align with state wildlife action plans and land conservation priorities, focusing on key linkages and pinch points. Collaboration with relevant agencies, NGOs, and other stakeholders should be fostered in developing these plans, along with advocating for necessary funding to support plan implementation.

5. **Assess the potential for pursuing provincial wildlife and transportation action plans with transportation/infrastructure and natural resource agencies in the eastern Canadian provinces** (i.e., a provincial equivalent to the state plans described in the previous action). This would involve engaging transportation, infrastructure, and natural resource agencies to identify opportunities for greater collaboration on ecological connectivity. By integrating wildlife conservation goals into transportation planning and projects, the provinces can further address habitat fragmentation and ensure that infrastructure better supports sustainable land use and species movement. This action could require enabling Canadian federal policy and guidance.

6. **Provide transportation agencies and municipalities with appropriately scaled science, mapping, and tools to help them prioritize the most important bridges, culverts, and road segments for connectivity improvements.** Determining how to integrate fish and wildlife movement considerations into existing capital and project prioritizations is often a significant stumbling block for transportation agencies with respect to ecological connectivity. Landscape-scale or even regionally scaled science isn't usable by transportation departments when confronted with a huge array of site-specific structures. Often, numerous connectivity locations exist at a local scale that are not shown or prioritized in regional or landscape-scale connectivity maps, leaving transportation planners uncertain on how to prioritize what they see at the local level. Without clear science and prioritization that address what transportation planners are seeing at the local level, it can be difficult to move forward on these issues.

7. **Encourage better integration of connectivity into transportation agencies' understanding of climate resilience and preparedness.** For many transportation agencies, climate change preparedness has taken on an increased urgency as they are confronted with more frequent storm damage and repeated structure failures given unprecedented conditions. Much work is going into asset assessments relative to climate vulnerability. Ecological connectivity is fundamental in climate adaptation. More needs to be done to better communicate that connectivity is closely tied to climate resilience. Better linking these issues and potential complementary solutions is essential going forward.

8. **Advance system-wide prioritization in each jurisdiction of which structures and roadways are most important for terrestrial and aquatic connectivity and climate resilience.** Conservation science has not yet been able to provide a prioritized list of every structure's importance for ecological connectivity and climate resilience. In many jurisdictions, projects are selected in locations where there is a compelling justification for working at that site, but system-wide analysis has not been conducted. More work needs to be done to assess the functionality for fish and wildlife movement on a system-wide basis and prioritize structures accordingly. The Passage Assessment System (PAS) is an example of a terrestrial assessment tool that might be used or adapted. This can be a component of larger climate resilience efforts, helping agencies to frame connectivity as a climate adaptation strategy.

9. **Solidify the financial and administrative structure and the identity of the Northeastern Transportation and Wildlife Conference (NETWC)** to build on its success and impact over the past 20 years and ensure its long-term viability. Among other elements, this includes seeking reliable funding from states and potentially others for a pooled fund to support NETWC's bi-annual conference and other aspects of ongoing coordination among jurisdictions related to transportation and wildlife issues.

10. **Encourage broader Canadian involvement in NETWC.** This would provide heightened opportunities for Canadian agencies and other interested parties to share best practices, collaborate on cross-border ecological connectivity issues, and align transportation and wildlife conservation strategies within and across borders. Increased participation would foster stronger regional partnerships, enhancing the ability to address shared challenges in wildlife movement, habitat fragmentation, and transportation infrastructure planning.

Credit: Phil Huffman, Quebec-Labrador Foundation

Strategy: Policy Initiatives

A complex mosaic of existing public policies at various levels of government plays a critical role both in supporting connectivity conservation and restoration in diverse ways in the northeastern region of North America/Turtle Island, and in some cases hindering it in unintended or ancillary ways. These include policies at the international, federal (both Canada and the U.S.), provincial, state, regional and municipal levels. Collectively, they have a bearing to varying degrees on most if not all of the strategies described in this document, from land ownership, protection and management to land use planning, from wildlife road crossings to transboundary collaboration and coordination, as well as others.

The relevant existing policies at any one governmental level, let alone all of them, are far too numerous and multi-faceted to summarize here, and highlighting only a few risks overlooking other ones that may be equally worthy of attention. We will leave that type of compilation and distillation as a possible follow-up to this document.

Moving forward, policy work for connectivity in this region can and should involve a combination of identifying and pursuing improvements to existing policies and various levels of government, and seeking the establishment of necessary new policies at relevant levels. In this work, it is important to note that there are distinct aspects, such as content research and analysis, policy drafting, strategic political research, advocacy and lobbying, negotiation, etc. And different partners may or may not be positioned or be able institutionally to engage in the certain parts of the work, either in general or at particular governmental scales.

Potential key actions in the policy realm that have been identified to support connectivity conservation and restoration in the region include the following:

1. **Establish and support a regionwide Connectivity Policy Working Group to identify and pursue important policy needs and opportunities at the provincial, state, and federal (Canadian and U.S.) levels.** Ideally this would include a manageable cross-section of partners that are well positioned to engage

in policy development, with strong connections to other partners who are well grounded in implementation work that can help to inform what policy enhancements are needed. The group would need a leader or coordinator with adequate capacity to help ensure the effort is cohesive and well supported.

2. **Assess the need and potential for additional provincial and state policies/legislation to advance terrestrial and aquatic connectivity.** This could include policies to highlight the importance of wildlife crossings, corridors, and instream and riparian connectivity; further enable municipalities and regional entities to incorporate connectivity in land use planning and bylaws; enhance aquatic connectivity through dam safety, floodplain conservation, and shoreline protection policies; provide programmatic and funding support; and/or other components. A valuable resource for this action is the recent report by the U.S. National Council of Environmental Legislators and the Wildlands Network entitled *"State of the States: A Look at How Far U.S. State Habitat Connectivity Legislation Has Advanced and What is Working"* (2024).

3. **Work with northeastern states to get connectivity conservation and restoration at multiple scales fully integrated into State Wildlife Action Plans (SWAPs) in the current round of updates.** State wildlife agencies must complete SWAPs to qualify for funding from the federal State Wildlife Grants (SWG) program, established in 2000 to support the conservation of at-risk species and their habitats. SWAPs must undergo a major review and revision at least once every ten years. Most states are working to complete their second major SWAP update in 2025. SWAPs have become recognized as vital state-level "conservation blueprints" that compile the best available science, identify threats and actions, and foster coordination among various partners to promote the conservation of diverse wildlife species, including Species of Greatest Conservation Need. As a result, these plans are an important opportunity to incorporate connectivity provisions into a range of state-based efforts that can have broad impact. A useful reference for this effort is the recent report *Integrating Connectivity into State Wildlife Action Plans (SWAPs): Threats, Actions, and Recommendations* (2024).

4. **Seek to embed connectivity as a priority in provincial mandate letters for all relevant agencies in each province.** These letters, from provincial premiers to agency ministers, provide important direction on agency priorities. They could provide a strong mechanism for getting greater attention to connectivity in agency programs and foster greater inter-agency collaboration. Ideally this would be done for all agencies that have a role to play in advancing connectivity efforts—e.g., those with responsibility for environment/climate change/natural resources/fish and wildlife/forests, transportation/infrastructure, land use and development, and energy.

5. **Assess whether there is a similar need and opportunity to embed connectivity more directly in the missions of relevant state agencies.** This would entail researching the missions and other guiding direction of relevant agencies in each state, identifying whether connectivity is already embedded either explicitly or implicitly, considering what changes if any might be beneficial, and assessing and pursuing opportunities to make any beneficial changes through administrative or legislative action.

6. **Look for synergistic opportunities to engage and collaborate with neighboring jurisdictions on the implementation of the New England Governors and Eastern Canadian Premiers' Resolution 45-2 and other related policy goals.** There is a strong rationale for working with neighboring jurisdictions on the implementation of Resolution 45-2 based on shared ecological connections and collective involvement in existing partnerships such as the Northeast Association of Fish and Wildlife Agencies. This could perhaps best begin with New York, recognizing the significant portion of the state that is in the Northern Appalachian-Acadian region, its substantial attention to connectivity in state programs and investments, and its well-established involvement in the Staying Connected Initiative. New York has not been a part of NEG-ECP, but it had long-time involvement with the New England states in the now-defunct Council of Northeastern Governments (CONEG). The effort could potentially extend southward over time to include additional states in the mid-Atlantic region, and westward in Canada to include Ontario. These additional jurisdictions could potentially adopt high-level policy statements on connectivity similar to NEG-ECP's Resolutions 45-2 and 40-3, and seek more formal collaboration with the New England states and eastern Canadian provinces on implementation of these resolutions and other shared, connectivity-related policy goals.

7. **Assess, identify, and advocate for attention to any gaps in connectivity provisions in Canadian federal infrastructure policies, programs, and funding streams that could support or hinder progress on transportation-related work in the eastern provinces.** This would involve engaging with federal and provincial agency staff and NGO experts to determine what changes might be most beneficial, and then to develop and implement a strategy for getting them established.

8. **Encourage provinces and states in the region to make substantial commitments to implement a jurisdiction-wide bundle of strategic wildlife crossing projects at key locations over the next 10 or 20 years.** By prioritizing wildlife crossing infrastructure, provinces and states can significantly reduce vehicle collisions with wildlife, enhance habitat connectivity, and promote long-term biodiversity conservation. A coordinated, jurisdiction-wide approach to implementing strategic crossings at high-risk locations will ensure safer roads, healthier ecosystems, and a model for sustainable development that other regions can follow.

9. **Collaborate with U.S. NGOs that are working to ensure that ecological connectivity and wildlife crossing policy and funding at the federal level is robust and secure.** There is an existing U.S. Connectivity Policy Group that is focused on this at the federal level and at least a few national/international NGO partners in the Staying Connected Initiative are involved, but the connections could be broadened and more could be done to bring a northeastern perspective into the work and look for further synergies.

10. **Support national or sub-national identification of ecological corridors and/or Other Effective Area-Based Conservation Measures (OECMs) as a basis for recognition of the connectivity value of these lands and to support enhanced land management for connectivity.** An OECM is a geographically defined area that is not officially designated as a protected area but still effectively contributes to the long-term conservation of biodiversity. These areas can be governed by governments, private entities, Indigenous communities, or other organizations. This provides a framework to formally recognize areas that are critical for maintaining landscape connectivity and biodiversity. These recognitions help ensure that such lands are managed with a focus on ecological health and connectivity, encouraging the adoption of effective conservation practices, while enabling governments and conservation organizations to integrate these areas into broader land-use planning and policy to meet other needs and values simultaneously.

11. **Work with U.S. national policy partners to assess the potential for an American parallel to Parks Canada's National Program for Ecological Corridors and its related grants for priority areas for ecological corridors.** Established in 2022 with an initial investment of more than CAD$60M, Canada's National Program for Ecological Corridors supports efforts by other levels of government, First Nations, NGOs, and communities to sustain and enhance ecological connections between protected and conserved areas for the benefit of the environment and people. The program provides grants to partners working in identified high-priority corridors to advance

these efforts. Having a similar program in the U.S. specifically focused on priority ecological corridors in the northeastern states and elsewhere could provide heightened visibility as well as additional resources to help accelerate connectivity conservation and restoration in the region.

12. **Assess the potential for a joint Canadian-U.S. designation or recognition of the northeastern region of North America/ Turtle Island region, or sub-geographies within it, that highlights their significance for transboundary ecological connectivity and associated benefits for human and natural communities.** Examples of sub-geographies within the broader region that might be appropriate for consideration include the four regionally significant linkages identified by the Staying Connected Initiative that span the Canadian-U.S. border—i.e., Algonquin to Adirondacks (A2A) in Ontario and New York; the Northern Green Mountains-Sutton Mountains in Vermont and Québec; the "Borderlands" in northeastern Vermont, northern New Hampshire, western Maine, and southern Québec; and the "3 Borders" in southeastern Québec, northwestern New Brunswick, and northern Maine.

13. **Explore potential federal legislative recognition and funding modeled after the Highlands Conservation Act for the U.S. portion of the Northern Appalachian-Acadian region. This type of action also could be considered, separately or in tandem, for the Canadian portion of the region.** The Highlands Conservation Act, passed by the U.S. Congress in 2004, authorized the U.S. Fish and Wildlife Service to provide federal grants for the acquisition of important lands for wildlife and people in an adjoining area of Connecticut, New York, New Jersey, and Pennsylvania. As of 2024, the program had invested US$48.5M to help permanently conserve more than 16,000 acres of high-priority lands from willing sellers.

14. **Encourage settling outstanding land claims with Indigenous nations.** This approach, which acknowledges historical injustices, supports Indigenous sovereignty, and leverages Traditional Ecological Knowledge for conservation efforts, presents a significant opportunity to advance connectivity goals. Two examples that were noted at the 2024 Connectivity Summit and could serve as models include the Blueberry River First Nations Settlement and the Robinson Huron Treaty Territory Settlement.

15. **Establish sustained federal, provincial, and state support for adequate ongoing capacity to provide technical assistance and decision support to municipal/local entities that are responsible for land use planning and policy.** Appropriate municipal land use regulation is essential for connectivity and landscape conservation, yet most municipalities rely on volunteer planners and decision-makers who often have limited familiarity with the subject. Outside technical assistance to interpret relevant information and facilitate the decision-making process is often necessary for a municipality to ultimately take effective action. Some states and provinces have established programs to provide this technical assistance, but most do not. Regional planning commissions and their equivalents also are well positioned to provide this support, but typically lack funding to offer these services. Supporting greater sustained capacity within these entities is essential to enable broad-based municipal action.

Strategy: Funding and Conservation Finance

For holistic, collaborative transborder connectivity conservation to be fully successful, it is imperative that funding from diverse sources significantly increases and is sustained over time, including funding for coordination. This includes public funding at the federal, provincial, state, and municipal levels; support from the private sector—foundations, corporations, and individuals both within and beyond the region; and innovative conservation finance mechanisms. Some potential approaches to achieve this are outlined below.

In Canada, there has been unprecedented funding for connectivity and other aspects of conservation under Liberal leadership through substantial investments in the National Program for Ecological Corridors, land conservation, Indigenous-led conservation, and other initiatives. With a federal election upcoming this year, it remains to be seen what the prospects for sustained funding from that level of government may be in the coming years.

Similarly in the U.S., there has been unprecedented funding in recent years for a wide range of relevant existing and new programs through the Bipartisan Infrastructure Law and the Inflation Reduction Act, including the Wildlife Crossings Pilot Program, land conservation and stewardship programs, and Native American Tribal initiatives. It is uncertain how conservation, restoration and stewardship programs will fare under current leadership, but it appears that recent levels of funding will not continue.

A Need for Sustainable Funding Models: Existing funding models often prioritize short-term projects with easily measurable outcomes, making it difficult to secure support for partner coordination and the long-term, process-oriented and systems-change work needed for the wide range of components involved in multi-scaled transboundary connectivity conservation. Securing adequate and sustained funding is challenging because funding sources are frequently fragmented, competitive, and subject to change. In addition, funding often prioritizes land acquisition or direct conservation actions while neglecting crucial aspects such as coordination, planning, monitoring, capacity building, community engagement, and long-term stewardship. Having a substantial pool of funding from diverse sources that could grow over time and support these and other needs would be tremendously beneficial.

Some potential approaches to help secure robust, sustained funding for holistic connectivity conservation and restoration in the region are outlined below.

1. **Secure funding for dedicated, sustained coordination capacity at multiple scales across the region.** This should include dedicated staff to coordinate partners at the regionwide/transnational scale within each province and state and for all key linkages/corridors.

2. **Develop a concise, comprehensive, and compelling case statement that clearly articulates the need and cost for sufficient coordination capacity to optimize collective connectivity conservation action at all relevant scales.** This type of document is needed to support the efforts of various partners to secure significantly increased funding for coordination at different scales.

3. **Develop a comprehensive funding strategy for connectivity conservation and restoration at multiple scales.** This effort, potentially led collaboratively by Staying Connected Initiative partners, would involve estimating the comprehensive funding needed to make significant further headway on connectivity conservation across scales and strategies in the region over the next 5-10 years, identifying potential opportunities to secure it, and laying out a multi-faceted strategy for pursuing it.

4. **Assess opportunities for applying innovative conservation finance mechanisms to priority connectivity areas.** These finance mechanisms should support landowners, local and Indigenous communities, and federal, provincial, and state agencies in being able to invest in connectivity conservation and restoration efforts and steward them for the long-term. Tax incentives, carbon and biodiversity credits, open space bonds, payment for ecosystems services, mitigation funding, municipal biodiversity bonds, excise taxes, the Waterfowl Stamp program associated with the North American Wetlands Conservation Act (NAWCA), and other tools and models should be examined.

5. **Develop a portfolio, or "Look Book," of priority connectivity conservation and restoration projects to share with funders (public and private).** This effort, potentially led by the Staying Connected Initiative, could be done for individual strategies (e.g., land protection or wildlife crossings) or as a holistic multi-strategy package, and for individual linkages, provinces/states, and/or regionwide.

6. **Assess the feasibility of launching and securing significant capital for a pool of funding to support priority projects across multiple strategies by a range of entities (possibly a "Transborder Connectivity Action Fund").** This could be modeled in part after the Open Space Institute's earlier Transborder Fund, but could be broader to include other strategies in addition to land protection, and ideally would be substantially larger (e.g., US$50-100M). It would be desirable to have a portion of this fund, or perhaps a separate fund, reserved for/focused on high-priority, time-sensitive, and often expensive projects that emerge periodically (such as the Brière Forest project on the Québec-Vermont border that the Canadian NGO Appalachian Corridor Appalachien took on as a CAD$16M risk to secure in 2024, in the face of an imminent development threat).

7. **Encourage funders to reduce barriers to funding access for marginalized groups, and develop and implement equitable funding mechanisms.** Some communities and entities, particularly Indigenous and rural communities, face challenges in navigating complex funding systems due to language barriers, lack of capacity for proposal writing, and misalignment with traditional knowledge systems. This lack of access perpetuates the exclusion of Indigenous voices and rural communities. Additional training, technical advisement and modification of funding application systems are needed. In addition, creating more accessible and equitable funding mechanisms that support Indigenous-led initiatives, long-term stewardship, and community-based conservation projects is crucial.

8. **Explore opportunities for building ecosystem services into corporate financial reporting and accounting requirements.** There is a need to integrate the consideration of ecosystem services, or nature's gifts, into financial balance sheets and accounting standards. At the 2024 Connectivity Summit, it was noted that current accounting standards in Canada exclude ecosystem services and this undervalues natural assets and contributes to their overuse. Weaving ecosystem services into financial reporting could unlock opportunities for capital market investments in conservation, both for connectivity and for other important needs and values.

9. **Work with national partners to maintain and increase federal funding levels for key programs that support connectivity conservation and restoration in Canada and the U.S.** This includes programs such as Parks Canada's National Program for Ecological Corridors and the Wildlife Crossings Pilot Program and the Land and Water Conservation Program in the U.S.

10. **Explore opportunities to establish, expand, and better access funding for connectivity conservation and restoration through state, provincial, and regional programs.** Many existing programs at these levels provide opportunities to support connectivity conservation both in readily apparent ways and less obvious ones. Examples of regional entities with programs that are or could be relevant include the Lake Champlain Basin Program (LCBP) and the Northern Border Regional Commission (NBRC). In addition, there may be opportunities to enhance connectivity funding through more streamlined and effective inter-agency collaboration at the provincial and state level.

Credit: Vermont Fish & Wildlife Department

Conclusion

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lonkhi'nisténha tsi lohontsáte

Respect her, our Mother the Earth
En respect de notre Terre-Mère

Across forests, rivers and streams, mountain ranges and coastlines, people have shared the northeastern region of North America/Turtle Island with an amazing abundance of native wildlife, plants, and other living beings for thousands of years. This vast region is the enduring homeland of many Indigenous Nations; supports a mosaic of human settlements and development patterns from uninhabited forestlands to small rural communities and large urban areas; and is governed by federal, provincial, state, and municipal entities.

Amidst this complexity, challenges for sustainability are abundant. Among other important values, ecological connectivity, one of the underpinnings of well-functioning natural systems, is at risk of increased fragmentation and especially vulnerable to land use change and development. This jeopardizes both the natural world and the abundant co-benefits a well-connected landscape provides for people.

Well-coordinated, collaborative efforts to advance connectivity conservation and restoration at multiple scales and across borders of various types—sociopolitical, institutional, sectoral, cultural—are essential for securing positive and sustainable outcomes.

Moreover, these efforts are most effective when all relevant actors work toward a shared vision and plan for action. For more than 15 years, the Staying Connected Initiative has taken a leadership role in bringing partners together toward this end, and the 2024 Northeastern North America/Turtle Island Landscape Connectivity Summit was a pivotal moment for renewed and expanded commitment to this effort.

The information and potential actions presented in this guide, which are intended to distill the spirit, energy, and ideas flowing out of the 2024 Summit, are not an end point. In fact, they are a launching pad for more concerted and inclusive, collaborative efforts now and in the coming years. Individual entities or groups of partners are encouraged to pursue those actions that are most applicable for their particular context. In addition, further prioritization is needed to empower collective action. A second regional Connectivity Summit offers an opportunity to continue the dialogue and refine a shared set of actions.

As challenges to ecological connectivity such as climate change, political shifts, and development pressures grow in magnitude and pace, the Staying Connected Initiative, the New England Governors and Eastern Canadian Premiers' Ecological Connectivity Working Group, and the many partners and allies engaged in connectivity work should use *Pathways for an Ecologically Connected Transborder Landscape* as a guide for acting urgently, courageously, and collaboratively. It is our collective responsibility to ensure that this spectacular landscape and all its inhabitants remain well-connected for generations to come.

Elder Dr. Albert Marshall. Credit: Audrey Huffman

Appendices

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Appendix A: Summit Plenaries

Links to recordings, slides and summaries

- Summit Plenary Session Video Recordings
- Summit Plenary Session Presentation Slides
- Summit Plenary Session Summaries

Overviews of Each Plenary Session

The opening ceremony of the Northeastern North America/Turtle Island Landscape Connectivity Summit featured a powerful address and performances by members of the Kanien'kehá:ka (Mohawk) Nation from Kahnawà:ke. Kanien'kehá:ka (Mohawk) Elder Sedalia Kawennotas delivered a powerful and thought-provoking message about the importance of moving beyond symbolic land acknowledgments and taking meaningful action to respect Indigenous sovereignty and protect the environment.

Several key themes emerged from the **Summit's introductory plenary.** Speakers emphasized the urgency of the conservation challenge, citing habitat fragmentation and climate change as major threats to the region's biodiversity. The event organizers stressed the need for collaborative action, highlighting the Summit as a means of building and strengthening relationships across geographic, political, and organizational boundaries.

The second part of the introductory plenary focused on government leadership in advancing ecological connectivity. Agency leaders from Québec and Vermont, alongside recorded remarks from high-ranking Canadian and U.S. federal officials, detailed specific programs, policies, and funding commitments aimed at protecting and restoring habitat connectivity. A key theme was the need for cross-border and cross-jurisdictional collaboration, recognizing that ecosystems and wildlife transcend political boundaries.

Weaving the Strengths of Indigenous and Western Science Knowledge Systems explored the intersection of Indigenous and Western approaches to conservation, emphasizing the concept of "Two-Eyed Seeing" as a pathway to collective action. Elder Dr. Albert Marshall of the Moose Clan of the Mi'kmaw Nation, Eskasoni First Nation in Unama'ki (Cape Breton, Nova Scotia), highlighted the interconnectedness of life and human responsibility to nature, urging a shift from an extractive economic model to one focused on healing and restoring ecosystems. Dr. Mark Anderson from The Nature Conservancy illustrated how modern science is increasingly confirming Traditional Ecological Knowledge, framing the urgency of addressing the biodiversity and climate crises as intertwined challenges that demand a collaborative response.

The speakers acknowledged the colonial legacy of conservation and called for embracing diverse perspectives, increased collaboration, and individual responsibility in forging solutions. The session concluded with a dynamic question-and-answer period that underscored the complexities of these issues, urging attendees to move beyond dialogue and toward concrete action to protect and restore the natural world.

Global and Continental Context and Perspectives provided a broader examination of global and continental trends in connectivity conservation. Speakers emphasized the need to move beyond static conservation strategies to confront the rapid changes impacting ecosystems worldwide. This call for a more interconnected approach underscored the critical role of connectivity conservation in mitigating habitat fragmentation, a pressing concern highlighted through examples like the migratory patterns of bats in Australia. The session stressed that connectivity conservation, due to its scalability, offers a potent tool for addressing ecological challenges from local to international levels. Speakers discussed concrete initiatives such as Parks Canada's National Program for Ecological Corridors for mapping and protecting ecological corridors.

The presentations and subsequent panel discussion also emphasized that successful transboundary connectivity conservation hinges on fostering trust and respecting diverse cultural perspectives. Speakers challenged traditional conservation frameworks, arguing for a more inclusive approach that integrates Indigenous Knowledge systems and values. Trish Nash from the Unama'ki Institute of Natural Resources argued that "fortress conservation," which focuses on creating protected areas without considering the rights and knowledge of Indigenous peoples, is ineffective and harmful. She advocated for co-governance models where Indigenous communities have a genuine voice in decision-making. Tim Purinton from the U.S. Fish and Wildlife Service highlighted the Biden administration's efforts to embed co-stewardship with Indigenous communities within U.S. federal agencies. Ultimately, this session underscored the interconnectedness of ecological and social systems, advocating for collaborative, community-driven actions to protect and restore vital ecosystems.

Regional Context and Perspectives honed in on the Northern Appalachian-Acadian region, highlighting its global significance for biodiversity and carbon storage. The panel discussion emphasized that effective connectivity conservation in this region requires not just scientific data, but also robust partnerships and a willingness to bridge gaps between government agencies, non-governmental organizations, and diverse communities. The Staying Connected Initiative, a long-standing collaborative effort in the region, served as a model for this kind of cross-boundary conservation work.

A key takeaway from the session was the need to move beyond policy statements and planning documents toward concrete action on the ground. Speakers acknowledged the challenges of securing funding and coordinating efforts across multiple jurisdictions, but also emphasized that momentum is building for connectivity conservation, driven in part by increased recognition of the ecological and social benefits it provides. The session concluded on a hopeful note, with panelists highlighting the energy and commitment of the conservation community and the power of shared values in driving positive change for the region's landscapes and its people.

Stories of Innovative Efforts Near and Far provided a powerful illustration of the collaborative and multi-faceted approaches required for successful large-landscape conservation. Speakers representing initiatives across North America emphasized that effective conservation must transcend political boundaries and involve partnerships between diverse stakeholders, including indigenous communities, government agencies, NGOs, and private landowners.

The presentations underscored that while scientific data plays a crucial role in guiding conservation planning, it's equally important to incorporate local knowledge, community values, and long-term, relationship-focused partnerships. From prioritizing wildlife crossings based on movement patterns to leveraging co-benefits in infrastructure design, the speakers offered concrete examples of how these principles are being translated into tangible outcomes. The session served as a clear reminder that protecting and connecting natural landscapes requires both a broad, interconnected vision and a commitment to collaborative action on the ground.

Unlocking Policy and Funding Opportunities explored both policy and funding opportunities to advance ecological connectivity in the region. Speakers highlighted significant policy wins, including new and expanded funding for conservation and connectivity secured by both the U.S. and Canada in recent years. Kim Neale from World Wildlife Fund Canada, Renee Callahan from ARC Solutions, and Abby Weinberg from the Open Space Institute outlined new funding sources for on-the-ground conservation and emphasized the importance of supporting Indigenous-led conservation initiatives, such as the Indigenous Land Guardians Program and Indigenous Protected and Conserved Areas. Callahan highlighted the ecological and financial costs of wildlife-vehicle collisions and stressed the importance of the Infrastructure Investment and Jobs Act in providing dedicated funding for mitigation efforts, such as wildlife crossings. A common theme throughout the plenary was the need to develop and implement more equitable, effective, and innovative conservation finance mechanisms to scale up investments and close the biodiversity conservation gap.

While celebrating the progress made, speakers agreed that public and private charitable donations alone will not be enough to meet the challenge. Panelists and participants highlighted various market-based solutions, including carbon markets and conservation bonds, but agreed that these mechanisms must be carefully designed to reward good actors and ensure long-term ecological integrity. For example, referencing the limitations of current forest carbon offset programs, Abby Weinberg argued for the development of new programs that would directly reward landowners who are already engaged in sound forest management practices. Furthermore, echoing Weinberg's call for innovative approaches that recognize the true value of nature, Kim Neale stressed the importance of incorporating the value of ecosystem services, or "nature's gifts," into financial accounting and reporting standards. Neale argued that current accounting practices, which largely ignore the important benefits provided by nature, contribute to the undervaluation and overuse of these critical assets.

Where Do We Go From Here? The Culminating Plenary of the Summit provided a valuable space for participants to reflect on their experiences and articulate personal commitments for the future of conservation in the region. Following a guided reflection period, attendees shared a range of insights and intentions, highlighting key themes such as fostering deeper connections with nature, operating from a place of love rather than fear, amplifying marginalized voices, embracing Indigenous Knowledge and perspectives, and strengthening collaborations, especially across borders. This session underscored the Summit's role not only as a platform for knowledge exchange but also as a catalyst for personal and collective action toward a more connected and resilient future for the region. Participants also expressed resounding support for a second similar Summit in the near future to bring people together across borders again and carry the work forward.

Credit: Kylie Paul, Center for Large Landscape Conservation

Appendix B: Summit Breakout Groups/ Wisdom Circles

- Detailed Descriptions of Breakout Groups/ Wisdom Circles

Summaries of the Wisdom Circles

Session 1: What Does Successful, Durable, and Sustainable Connectivity Conservation in this Region Look Like to You?

Successful, durable, and sustainable connectivity conservation hinges on **shifting from transactional conservation to deep, transformative stewardship.** This means supporting Indigenous leadership by recognizing their inherent rights to their traditional territories and respecting their deep understanding of the landscape. Addressing past and present injustices, returning land stewardship to Indigenous communities, and supporting Indigenous-led initiatives are crucial steps toward achieving this goal.

It is equally important to cultivate a sense of shared responsibility for the health and well-being of the land, recognizing that humans are part of the ecosystem. Conservation projects that are deeply rooted in **community engagement and empower local actors** to lead implementation efforts are more likely to succeed. Co-governance models, as exemplified by the Niagara Escarpment Biosphere Region and the Bras d'Or Lakes Collaborative Environmental Planning Initiative, offer effective frameworks for transboundary conservation by enabling shared decision-making power between Indigenous and non-Indigenous communities.

Redefining success is paramount, moving away from solely focusing on "hectares" protected to encompassing ecological integrity, social well-being, and the effective governance of connected landscapes. Prioritizing the functionality of connected areas to ensure species movement and survival, incorporating social and ecological indicators, and considering biocultural outcomes are key. Recognizing Indigenous conservation outcomes, such as the success of Indigenous-managed maple syrup farms due to their focus on "understory health," highlights the importance of valuing the interconnectedness of ecological and cultural well-being. Adopting adaptive governance and a long-term vision allows for flexibility and adaptation to changing environmental conditions and community needs.

Session 2: What are the key barriers and challenges to achieving successful, durable connectivity conservation for the region?

Funding is a major challenge, with existing models often prioritizing short-term projects over the long-term vision needed for connectivity conservation. This is compounded by limited capacity and workforce gaps in the conservation sector. Furthermore, conservation efforts often struggle to compete with other funding priorities, such as carbon and solar markets.

Governance and collaboration present significant hurdles, with fragmented governance structures and siloed decision-making hindering large-scale initiatives. A lack of consistent political will and a unified vision across jurisdictions further complicates conservation efforts. The discussions also stress the need for meaningful Indigenous participation and leadership in conservation, recognizing that limited Indigenous participation has been a significant barrier.

Communication and perception barriers pose additional challenges. Misinformation can erode public support, while limited public awareness and understanding of ecological connectivity hinder broader support. Misconceptions about conservation initiatives, such as the "fear of corridors," and a lack of positive messaging further contribute to these challenges.

The discussions also emphasized **systemic challenges,** such as rigid categorizations of protected lands and reactive management practices that limit opportunities to enhance connectivity.

Finally, **social and cultural barriers** are significant. Navigating different values and perceptions among stakeholders, building trust, and engaging diverse stakeholders, including private landowners, industry representatives, Indigenous communities, and the general public, are crucial for successful connectivity conservation.

Session 3: Distilling Insights and Solutions for the Region

There is a need for a **shared vision** for connectivity in the region among stakeholders, shifting from individual projects to a unified, mappable plan encompassing core areas and priority zones. This vision should leverage scientific data, Indigenous Knowledge, and engage stakeholders. To achieve this vision, it is crucial to translate it into **concrete policy actions with clear language** outlining responsibilities for all government levels and incorporating ecological connectivity into existing processes like transportation planning. Creating resources such as toolkits, model legislation, and guidance documents can facilitate implementation. Sustainable funding models, potentially through mechanisms like excise taxes, as well as mechanisms for continuous stewardship should be explored to ensure long-term success.

Collaboration among conservationists, policymakers, Indigenous communities, and the private sector is critical. Cross-disciplinary training can foster a holistic understanding of interconnected systems. Engaging with communities and stakeholders, even those initially opposed, is vital for building support. The North American Waterfowl Management Plan exemplifies successful collaboration across borders.

Balancing conservation goals with societal needs requires understanding diverse perspectives. Solutions involve innovative approaches to urban densification and development, ensuring that conservation efforts consider socioeconomic realities and emotional connections to the land.

Recognizing and integrating Indigenous perspectives is paramount. This involves incorporating Indigenous Knowledge systems, respecting data sovereignty, and using a "Two-Eyed Seeing" approach that braids together Indigenous and Western knowledge.

Data plays a crucial role, but **data sharing,** standardization, analysis, and effective communication are essential to bridge the gap between data and actionable insights. A centralized database compiling information on funding, organizations, best practices, and case studies would streamline information sharing. To effectively translate insights into action, participants also highlighted the need to revitalize **transboundary collaborations, strengthen capacity and leadership** within organizations, and **utilize strategic communication** to share success stories.

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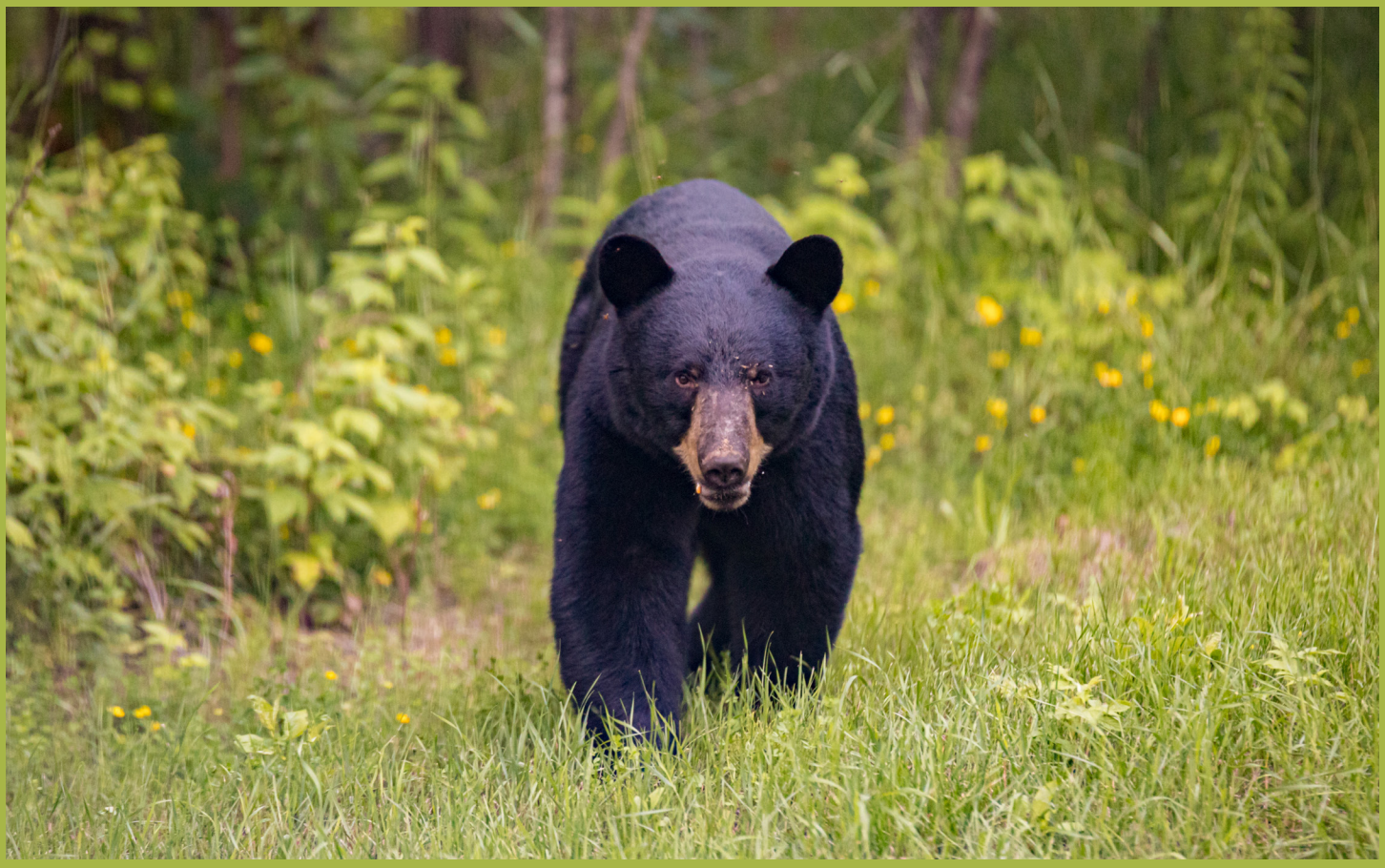

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