



NACCB Policy Declaration: Advance Ecological Connectivity Implementation in the Rocky Mountains and North America

July 31, 2020

The biennial North America Congress for Conservation Biology (NACCB) is one of the largest gatherings of conservation professionals in North America. Due to the COVID-19 pandemic, the 2020 Congress convened virtually to bring together scientists, researchers, Indigenous Peoples, policy makers, practitioners, students, and others interested in biodiversity conservation.

With a theme of *Crossing Boundaries—Innovative Approaches to Conservation*, we have an excellent opportunity to highlight recent ecological connectivity successes and advance strategies for more widespread implementation in North America. With many on-going initiatives to restore and conserve ecological connectivity at multiple scales, we seek to address the extent of continent-wide habitat fragmentation/degradation. Significant action is urgently needed to increase conservation of ecological connectivity, proactively link climate change policy to conserving connectivity, and implement strategies that rely upon transboundary cooperation and information sharing among practitioners and the public.

With this Policy Directive, SCBNA:

- Promotes a coherent approach to identify and conserve ecological connectivity at all scales across North America in accordance with the new International Union for the Conservation of Nature (IUCN) “Guidelines for Conserving Connectivity through Ecological Networks and Corridors.”
- Calls for action at all levels of governance, including indigenous, to invest in and implement a system of ecological corridors that enables protection and restoration of native fish, wildlife, and plant species as well as ecological and evolutionary processes [e.g., calling on the U.S. Congress to provide funding for wildlife crossings and corridors through federal transportation legislation, including HR 2, Moving Forward Act, and SB 2302, America’s Transportation Infrastructure Act].
- Calls for action at all levels of governance, including indigenous, to integrate climate change into ecological connectivity, climate resiliency, and adaptation policies.

- Encourages action by SCBNA members, North American conservation practitioners, and interested citizens to engage across diverse communities and stakeholders for the purpose of sharing knowledge, coordinating action, and increasing ecological connectivity implementation from local to international scales.

THE NEED FOR ECOLOGICAL CONNECTIVITY

Expansion of the human footprint globally is causing continued habitat loss and fragmentation¹ which is a main driver of the impending largest projected global extinction of biodiversity in the history of this planet.² Research shows that, in most cases, maintaining, enhancing, and restoring **ecological connectivity** across ecosystems can safeguard biodiversity, protect ecological processes, and increase resilience to climate change to halt and potentially reverse environmental degradation.

Thus, the strategy of **connectivity conservation** is coalescing a growing global movement to protect the vital interconnectedness of nature and to provide a coordinated response for enhanced biodiversity conservation.³ Through innovative efforts, the science of ecological connectivity is being translated into policy and practice around the world, including through the preservation of wildlife corridors and migratory pathways. Traditional area-based and species-based approaches are being enhanced by more comprehensive connectivity conservation solutions to bring together communities, disciplines, and sectors to accelerate conservation gains. This is exemplified by a variety of national legislative and administrative measures to implement connectivity conservation around the world.⁴ In North America, many regional and national connectivity conservation initiatives are in progress, some operating since the 1990s and others just emerging. These include:

The Boreal Songbird Initiative	Mesoamerican Biological Corridor
Cascades to the Rockies Conservation Initiative	Piedmont Environmental Council
Cascadia Partnership	Sky Island Alliance
Crown of the Continent Roundtable	Southern California Wildlinks
Eastern Wildways Project	Staying Connected Initiative
Florida Wildlife Corridor	Trans-border Grizzly Bear Project
Heart of the Rockies	Washington State Connectivity Initiative
High Divide Collaborative	Western Wildway Network Priority Corridor Project
Highlands to Ocean Initiative	Wildlands and Woodlands of New England
Houston Wilderness	Yellowstone to Yukon Conservation Initiative
Maryland Environmental Trust	

See Attachment 1 for additional information.

Additionally, innovative federal, state, and provincial as well as transboundary laws and policies recognizing the importance of ecological connectivity have been adopted in recent years. These include:

- Canada's *Pathway to Target 1 Connectivity Working Group* advising the government on how best to meet its 2020 Biodiversity Goals and Targets.⁵
- The Ecological Connectivity Working Group under the Annual Conference of New England Governors and Eastern Canadian Premiers executing the *Resolution on Ecological Connectivity, Adaptation to Climate Change, and Biodiversity Conservation*.⁶
- U.S. Department of the Interior Secretarial Order 3362 *Improving Habitat Quality in Western Big-Game Winter Range and Migration Corridors*.

- The U.S. States of California,⁷ New Hampshire,⁸ New Mexico,⁹ Oregon,¹⁰ and Vermont¹¹ adopting measures relating to the protection of ecological connectivity.

In addition, a growing number of international fora are embracing connectivity conservation and promoting related elements in policies and inclusion in national implementing legislation. For example:

- The UN Convention on Biological Diversity's current strategic plan, and accompanying Aichi Biodiversity Target 11, commits Parties to conserve and manage at least 17% of terrestrial and inland water areas and 10% of coastal and marine areas through "...well-connected systems of protected areas and other effective area-based conservation measures and integrated into the wider landscape and seascape¹² and is currently negotiating a new strategic plan to establish the Post-2020 Global Biodiversity Framework.¹³
- In 2020, the 130 States Parties to the UN Convention on the Conservation of Migratory Species of Wild Animals (CMS) embraced and defined "ecological connectivity as the unimpeded movement of species and the flow of natural processes that sustain life on Earth".¹⁴
- IUCN has adopted over 20 official policy resolutions since 1996 related to connectivity conservation, including Resolution 6.087 *Awareness of connectivity conservation definition and guidelines* and will convene in January 2021 for the IUCN World Conservation Congress where a number of new policies are expected to be adopted to further ecological connectivity conservation at local to international scales.¹⁵

Across North America, ecological connectivity and large land-, freshwater-, and seascape planning and implementation has arisen in many different contexts in recent decades. One of the earliest connectivity conservation efforts focused on maintaining and restoring migratory bird populations through the development of the Migratory Bird Treaty Act of 1918¹⁶ and the U.S. Fish and Wildlife Service (USFWS) National Wildlife Refuge System in the United States.¹⁷ The USFWS also was early in developing trans-jurisdictional collaborative networks, such as through Migratory Bird Joint Ventures that developed partnerships across government agencies, corporations, Indigenous Peoples, non-profit organizations, and individuals for the benefits of birds, other wildlife, and people. Since 1993, the Commission for Environmental Cooperation has bound Canada, Mexico, and the United States under treaty to foster protection and improvement of the environment together and across their territories,¹⁸ and have also been collaborating since 1995 through the Trilateral Committee for Wildlife and Ecosystem Conservation and Management.¹⁹

All of these advances have come about without formal guidance to promote more consistent connectivity conservation practices around the world. Now, building on past inquiry and experience,²⁰ the IUCN World Commission on Protected Areas (WCPA) Connectivity Conservation Specialist Group has recently published the first-ever IUCN "*Guidelines for Conserving Connectivity through Ecological Networks and Corridors*"²¹ to provide a unified set of definitions and approaches that advance more effective and enduring connectivity conservation on the ground through the designation of ecological corridors that connect systems of core habitats across protected and conserved areas, other intact natural areas, and human modified environments across terrestrial, freshwater, and marine ecosystems.

Resonating with the NACCB theme *Crossing Boundaries— Innovative Approaches to Conservation*, achieving ecological connectivity in North America requires work across local to international jurisdictions and by individuals, communities, institutions, and businesses underpinned by the mounting scientific evidence that protecting the interconnections of life is critical to saving nature and living sustainably on the planet.

POLICY DECLARATION²²

The participants of the 2020 North American Congress on Conservation Biology (NACCB) and Members of the Society for Conservation Biology North America (SCBNA) declare the need for strong policy, management, and implementation actions that maintain, enhance, and restore ecological connectivity across North America. This is a top priority of SCBNA to support conservation of biodiversity, increase resilience to climate change, and safeguard human health.

To that end, SCBNA:

- Promotes a coherent approach to identify and conserve ecological connectivity at all scales across North America in accordance with the new International Union for the Conservation of Nature (IUCN) “Guidelines for Conserving Connectivity through Ecological Networks and Corridors.”
- Calls for action at all levels of governance, including indigenous, to invest in and implement a system of ecological corridors that enables protection and restoration of native fish, wildlife, and plant species as well as ecological and evolutionary processes [e.g., calling on the U.S. Congress to provide funding for wildlife crossings and corridors through federal transportation legislation, including HR 2, Moving Forward Act, and SB 2302, America’s Transportation Infrastructure Act].
- Calls for action at all levels of governance, including indigenous, to integrate climate change into ecological connectivity, climate resiliency, and adaptation policies.
- Encourages action by SCBNA members, North American conservation practitioners, and interested citizens to engage across diverse communities and stakeholders for the purpose of sharing knowledge, coordinating action, and increasing ecological connectivity implementation from local to international scales.

These actions include:

- 1) Raising Awareness and Building Capacity
- 2) Identifying Corridors and Collecting Data
- 3) Planning for and Advancing Connectivity Conservation

1) Raising Awareness and Building Capacity

- Raise awareness of key local, regional, national, and international constituents who have the ability to advance ecological connectivity conservation, including through formal and informal cooperation, enabling policies and mechanisms, and public and private sector engagement for funding and implementation.
- Promote evidence-based case studies, analyses, and practical guidance for scientifically informed policies, laws, and plans.
- Encourage natural resource agencies to build new partnerships for public engagement and education to increase support for ecological networks and corridors.
- Provide technical and scientific expertise to identify key drivers, species, areas, ecosystems, and processes to prioritize ecological connectivity, especially in indigenous areas, urban areas, and working lands.

- Seek opportunities to join together to work locally, regionally, nationally, and internationally, to advance connectivity conservation policy, planning, implementation, and capacity-building. We propose an SCBNA Ecological Corridor Working Group or Community of Practice for knowledge exchange and implementation support.
- Create a new outreach initiative on connectivity conservation associated with NACCB conferences and through other venues reaching both youth and adults.

2) Corridor Identification and Data Collection

- Advance and support formal identification and designation of ecological corridors and encourage governance authorities to eventually report ecological corridors and ecological networks for conservation to the [Protected Planet Database](#) managed by the UNEP and IUCN.
- Support data collection and analysis for identification of corridors, including state of the art technologies, such as remote sensing and genetic data as well as traditional indigenous knowledge.
- Enable data-sharing, including crowdsourced roadkill datasets and other relevant corridor identification data.
- Support monitoring and evaluation of connectivity implementation strategies to enable networked learning and adaptive management over time.

3) Planning for and Advancing Connectivity Conservation

- Encourage international, federal, provincial, regional, and local legislation and policy that supports the identification, maintenance, and or restoration of ecological corridors in according with the aforementioned IUCN Guidelines and best-available science.
- Support the convening of multijurisdictional, state-federal partnerships to address ecological corridors to streamline implementation processes.
- Encourage planning for ecological connectivity with and across agencies and regulatory bodies charged with management of wildlife, natural resources, transportation, etc.
- Promote identification of priority ecological corridors through best-available science, including understanding economic and/or social values that may align with them
- Identify available and innovative funding mechanisms from local to national levels.
- Integrate emerging climate change science and policy with connectivity conservation.
- Advocate for policies that mainstream ecological connectivity in development, infrastructure, and public health planning as well as natural resource management.

Attachment 1 Examples of large landscape seascape efforts across North America

Rocky Mountains and Western North America

Beginning in 1993, the goal of the **Yellowstone to Yukon (Y2Y) Conservation Initiative** is to connect Yellowstone National Park to Yukon in Canada and create climate change refugia for flora and fauna. Focus areas within the Y2Y region include increasing connectivity and corridor size between protected parcels, international connectivity for grizzly bears, and use of wildlife-friendly fencing in Montana. In addition, the initiative works to protect headwaters and restore hydrology to build climate resilience.

The goal of the **Cascades to the Rockies Conservation Initiative**²³ is to restore and maintain connectivity, including highways crossings, between north and south portions of the Rocky Mountains, especially between Rocky Mountain habitats in Washington (USA) and British Columbia (Canada). Species of concern include grizzly bear, black bear, coyote, bobcat, cougar, beaver, deer, elk, and wolves.

The **Trans-border Grizzly Bear Project**²⁴ helps protect grizzly bear populations in the northwestern United States by maintaining core habitat and travelling corridors in Montana, Idaho, and Washington in the United States and British Columbia and Alberta in Canada.

Wildlife Corridor and Crossing Initiatives—In the Cascade Mountains in Washington, near the Snoqualmie Pass over I-90, a total of 20 total bridges are being planned for the I-90 highway to allow crossing of elk, black bears, mountain lions, and trout to decrease mortality and relieve inbreeding pressure in some species. Wildlife crossings of the Trans-Canada Highway in the Banff area¹ includes 6 overpasses and 38 underpasses built since 1996, helping to decrease wildlife mortality from collisions with vehicles and promoting gene flow between habitats for grizzly bears (citation to come, 2014). In Nevada, road crossings assisting mule deer have been constructed on US-93 and I-80, which has increased mule deer genetic heterogeneity and decreased danger of collision for motorists (citation to come).

The goal of the Wildlands Network's **Western Wildway Network Priority Corridor Project**²⁵ is to connect Canada, the United States, and Mexico along the Rocky Mountains through 6,000 miles of corridor. Conservation targets include wolves, wolverines, black bears, grizzly bears, bison, mule deer, desert bighorn sheep, and Kaibab tassel-eared squirrels, among other species.

In 2007, **Washington** formed the Washington Habitat Connectivity Working Group (a voluntary public-private partnership between state and federal agencies, universities, tribes, and NGOs) to conduct a statewide habitat connectivity assessment by bringing together data from a variety of stakeholders and identifying wildlife corridors throughout the state. From 2009-2012, **Oregon** and federal natural resource agencies have identified wildlife linkage areas near roads through collaborative, science-based workshops and integrated the findings into the ongoing Oregon Conservation Strategy and several roadway improvement efforts to enhance connectivity. In 2008, **California** began compiling an online, public database of the state's most critical wildlife corridors and habitat linkages. This process produced a statewide connectivity assessment to incorporate natural resource considerations into transportation and land use planning.

State natural resource agencies, through the *Securing the Grass Highway for Wyoming Migrations*, promotes the use of conservation easements, fence modifications, and habitat enhancements within Greater Yellowstone migration corridors. In 2009, natural resource agencies in **New Mexico** and **Colorado** signed an agreement to work together and with native tribes to identify key habitat connectivity, travel, and migration corridors for use by key wildlife species and to develop and prioritize strategies that will help protect wildlife corridors.

Eastern Connectivity Initiatives, United States and Canada

The goal of the **Wildlands Network's Eastern Wildways Project** is to protect and restore a corridor of lands including national parks, preserves, scenic rivers, and other wild places, from the wilderness of Quebec, the Adirondacks, and the Shenandoah Valley, to the Great Smoky Mountains and Everglades National Park. Some key species of conservation planning focus include red wolves, Canada lynx, cougar, marten, and other native carnivores as well as many resident plants, birds, fish, salamanders, and butterflies found nowhere else on Earth.

New England, New York, and Eastern Canada

At the two-country scale, the ***Staying Connected Initiative (SCI)*** seeks to conserve, restore, and enhance landscape connectivity across the Northern Appalachian/Acadian region of the United States and Canada for the benefit of nature and people. SCI unites its U.S. and Canadian partners to use conservation science, land protection, community outreach, land use planning, transportation, and policy to safeguard landscapes for wildlife and local communities. In addition, the **Connecting the Connecticut River Watershed** initiative unites Connecticut, Massachusetts, New Hampshire, and Vermont in improving and connecting aquatic and riparian habitat across the four-state Connecticut River Watershed.

In 2016, legislation in **New Hampshire** required identification of existing and needed wildlife corridors (including riparian corridors and potential crossings of transportation arteries) and developing recommendations concerning necessary changes on regulations that affect wildlife corridors. The outcomes included formation of a new Transportation and Wildlife Working Group and the New Hampshire Stream Crossing Initiative, which promotes cooperation among the relevant state agencies. Both **Virginia** and **Pennsylvania** currently have legislation introduced or in draft status to require study and/or implementation of wildlife corridors and crossings. In **Florida**, the Ocala to Osceola Wildlife Corridor works to increase protected lands and provide management incentives to connect the state's two large National Forests and provide critical Habitat for Florida Black Bear, the red-cockaded woodpecker, and gopher tortoise. The **Florida Wildlife Network** is a proposed connected network of land and water that enhances human communities and provides habitat connectivity for many species, including the Florida panther and Florida black bears. Florida citizens and organizations are advocating for prioritization and protection of this network, especially as pressure for highway development increases.

These initiatives are just a sample of the increasing policy and on-the-ground partnerships that are advancing wildlife corridors and crossings in North America. Although these projects represent a major step forward, more needs to be done to create a truly connected continent for wildlife.

¹ Haddad. N.M, et al. (2015). 'Habitat fragmentation and its lasting impact on Earth's ecosystems'. New York: *Science Advances*.

² IPBES. (2019). *Global assessment report on biodiversity and ecosystem services of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services*. E. S. Brondizio, J. Settele, S. Díaz, and H. T. Ngo (eds.) Bonn: IPBES Secretariat.

³ J.A. Hilty et al. *Corridor Ecology*, 2nd edition. Island Press 2019

⁴ These include:

- Bhutan's constitution mandates the preservation of at least 60% of its land under forest cover, and 51% is managed as a system of protected areas connected by designated biological corridors (See <https://www.ecolex.org/details/legislation/constitution-of-the-kingdom-of-bhutan-lex-faoc117663/>);

- Brazil's National Landscape Connectivity Program – 'CONECTA' was established "...to promote connectivity of ecosystems and management of landscapes in the Brazilian territory through integrated public policies...";

- Costa Rica's Conservation of Wildlife Act No. 7317 that created 44 biological corridors representing about 33% of its territory and forming an integral link for the Mesoamerican Biological Corridor (See <https://stopanimalselfies.org/wp-content/uploads/2019/10/Ley-CVS-ingles.pdf>);

- Croatia's 2013 Regulation on Ecological Networks lists Natura 2,000 sites covering over 36% of its land and over 16% of internal waters and territorial sea managed comprehensively (See <https://www.ecolex.org/details/legislation/regulation-on-the-ecological-network-lex-faoc143048/>);

- In India, the National Tiger Conservation Authority was given strengthened oversight in the 2006 amended Wildlife Act through advisory/normative guidelines based on ongoing appraisal of tiger status, ongoing conservation initiatives, and recommendations of specially constituted committees (See https://projecttiger.nic.in/WriteReadData/CMS/wildlife_protection_amendment.pdf);

- Kenya's 2017 report "Conserving Connectivity – Protecting Wildlife Corridors and Dispersal Areas in Kenya" identified more than 100 migratory routes and corridors and a Connectivity Task Force is tasked with prioritizing and designing management measures (See <https://www.accafrica-us.org/wp-content/uploads/sites/2/2019/05/Report-on-Wildlife-Corridors-and-Dispersal-Areas-Final-July-2017.pdf>);

- Malaysia first (2005) National Physical Plan defined the Central Forest Spine (CFS) as the backbone of peninsular Malaysia's environmentally sensitive areas and approved a master plan in 2011 to reestablish, maintain, and restore forest connectivity (See http://conservationcorridor.org/cpb/Peninsular_Malaysia_Regional_Planning_Division_2009.pdf); and

-As part of implementing the Netherlands' Nature Conservation Act, the Multi-Year Programme for Defragmentation ran from 2005 until 2018 to address 150+ problematic wildlife-vehicle collision areas across the country by installing a variety of wildlife crossing structures (See <http://www.mjpo.nl/downloads/35/100323-dww-faunavoorzieningengeng-def.pdf>).

- Tanzania's 2009 nationwide assessment documented 31 major remaining wildlife corridors - the majority identified as threatened - and the 2017 Wildlife Conservation Regulations are requiring additional and adequate implementation mechanisms for wildlife corridors, dispersal areas, buffer zones, and migratory routes;

⁵ <https://www.conservation2020canada.ca/the-pathway>

⁶ <https://www.coneg.org/neg-ecp/committees/ecological-connectivity-working-group/>

⁷ <https://wildlife.ca.gov/Conservation/Planning/Regional-Conservation>

⁸ <https://legiscan.com/NH/text/SB376/2016>

⁹ <https://www.nmlegis.gov/Sessions/19%20Regular/final/SB0228.pdf>

¹⁰ <https://olis.leg.state.or.us/liz/2019R1/Measures/Overview/HB2834>

¹¹ <https://legislature.vermont.gov/bill/status/2016/H.857>

¹² <https://www.cbd.int/sp/targets/rationale/target-11/>

¹³ <https://www.cbd.int/conferences/post2020/wg2020-03/documents>

¹⁴ https://www.cms.int/sites/default/files/document/cms_cop13_res.12.26_rev.cop13_e.pdf

¹⁵ <https://www.iucncongress2020.org/motion/088>

¹⁶ <https://www.fws.gov/birds/policies-and-regulations/laws-legislations/migratory-bird-treaty-act.php>.

¹⁷ <https://www.fws.gov/refuges/>

¹⁸ <http://www.cec.org/about-us/NAAEC>

¹⁹ <https://www.trilat.org/>.

²⁰ Connectivity Conservation Management, Chapter 27 in Protected Area Governance and Management (2015) <http://press-files.anu.edu.au/downloads/press/p312491/pdf/CHAPTER27.pdf>; The Legal Aspects of Connectivity Conservation – A Concept Paper (2013) https://www.iucn.org/sites/dev/files/legal_aspects_of_connectivity_conservation- a concept pape.pdf; The Legal Aspects of Connectivity Conservation – Case Studies (2013) <http://www2.ecolex.org/server2neu.php/libcat/docs/LI/MON-088253.pdf>; 2012: MEETING AICHI TARGET 11: WHAT DOES SUCCESS LOOK LIKE FOR PROTECTED AREA SYSTEMS? http://parksjournal.com/wp-content/uploads/2012/09/PARKS-18.1-Woodley-10.2305IUCN.CH_2012.PARKS-18-1.SW_en.pdf; Connectivity Conservation Management: A Global Guide (2010) <https://www.routledge.com/Connectivity-Conservation-Management-A-Global-Guide/Worboys-Francis-Lockwood/p/book/9781844076048>; 2008: Large scale connectivity conservation in mountains: a critical response to climate change <https://www.cbd.int/doc/pa/tools/large-scale-connectivity-conservation-in-mountains-2008-en.pdf>; 2007: Connectivity Conservation: International Experience in Planning, Establishment and Management of Biodiversity Corridors http://cmsdata.iucn.org/downloads/070723_bci_international_report_final.pdf; 2004: Integrating Biodiversity Conservation and Sustainable Use Lessons Learned From Ecological Networks <https://portals.iucn.org/library/sites/library/files/documents/2004-002.pdf>; 2003: Linkages in the Landscape: The Role of Corridors and Connectivity in Wildlife Conservation <https://portals.iucn.org/library/efiles/documents/fr-021.pdf>; 2001: The Development and Application of Ecological Networks: A Review of Proposals, Plans and Programmes <https://portals.iucn.org/library/sites/library/files/documents/2001-042.pdf>; 1999/2003: Linkages in the landscape: The role of corridors and connectivity in wildlife conservation <https://portals.iucn.org/library/node/7500>

²¹ Hilty, J., Worboys, G.L, Keeley, A., Woodley, S., Lausche, B., Locke, H., Carr, M., Pulsford I., Pittock, J., White, J.W., Theobald, D.M., Levine, J., Reuling, M., Watson, J.E.M., Ament, R., and Tabor, G.M. (2020). *Guidelines for conserving connectivity through ecological networks and corridors*. Best Practice Protected Area Guidelines Series No. 30. Gland, Switzerland: IUCN.

²² Based on recommendations from the National Council of Environmental Legislators.

²³ <https://www.conservationnw.org/our-work/habitat/the-cascades-conservation-partnership/>

²⁴ 1. M. F. Proctor, S. E. Nielsen, W. F. Kasworm, C. Servehen, T. G. Radandt, A. G. Machutchon, M. S. Boyce, Grizzly bear connectivity mapping in the Canada-United States trans-border region: Grizzly Bear Connectivity Mapping. *Jour. Wild. Mgmt.* 79, 544–558 (2015).

²⁵ <https://conservationcorridor.org/ccsg/connectivity-in-action/north-america/>