# Two Countries, One Forest – Deux Pays, Une Forêt: Launching a Landscape-Scale Conservation Collaborative in the Northern Appalachian Region of the United States and Canada

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## Introduction

THE FINDINGS OF CONSERVATION SCIENCE OVER THE PAST TWENTY YEARS are slowly influencing people to think beyond political boundaries, endangered species, traditional partners, and other artificial constraints in the urgent battle to save biodiversity rather than merely slow the rate of ecological decline. With the conservation goal posts shifting, all and sundry are scrambling to protect and restore native biodiversity at the necessary landscape scale. Science notwithstanding, the sheer scope and scale of landscape-scale conservation is daunting. In practical terms, how—and why—does one attempt to achieve conservation at such ambitious levels? Where does one even *begin*? This article examines how 50 scientists, conservationists, and funders have picked up the landscape-scale conservation collaborative in the 80-million-acre Northern Appalachian region of the eastern United States and Canada. Although this particular initiative —Two Countries, One Forest (2C1Forest, or "to see one forest")—remains in relative infancy, an examination of this preliminary period offers insights into the value of the landscape-scale approach, and the first steps toward a shared and compelling conservation vision.

# The Northern Appalachian region: from New York to Nova Scotia

Northern New York, northern New England, and southeastern Canada share a vast, interconnected forested region and rich ecological system. Perched on the eastern edge of the continent, the Northern Appalachian region is also one of the most populated areas in North America, with a long history of human settlement and habitat alteration. Today it is a region that remains predominantly in private land ownership, particularly on the U.S. side of the border. Paradoxically, it is here, in this settled, threatened land, that some of the greatest potential exists on the continent for biodiversity protection and restoration—coupled with a great need for creative, collaborative conservation.

The heart of the region is the rugged chain of the Appalachian Mountains stretching down from the Gaspé Peninsula in Québec to the Berkshire Plateau in Massachusetts, with craggy, high peaks safe-

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guarding fragile alpine species and high sedge meadows. This ancient mountain range is flanked on either side by spectacular forests. To the east are the Acadian forests of the Canadian Maritimes with their characteristic mix of maple, birch, spruce, and fir covered with lush moss, stretching down to a meandering coastline and safeguarding an incredible mix of coastal birds and other species, including Atlantic salmon and Arctic terns. To the west, the region encompasses the fabled Adirondack Mountains of New York, with their rare alpine vegetation and the region's largest wilderness areas and old-growth forests. The forests that blanket the Northern Appalachian region are an equal mix of deciduous northern hardwoods, high-elevation and lowland spruce-fir forest, and hardwood-spruce forest. This combination creates a spectacular display of fall foliage that has been called one of the most stunningly beautiful natural events in the world. Shaped by the retreat of glaciers 12,000 years ago and the mineral-rich soils they left behind, the region is also characterized by an endless web of ecologically rich bogs, wetlands, fens, rivers, lakes and streams that are home to numerous freshwater and wetland species—some globally unique.<sup>1</sup>

An impressive array of migratory songbirds—including Blackburnian, Canada, and black-throated blue warblers—flies each year from the tropics to raise their young in the Northern Appalachian forests. Many mammal species also call these forests home, including bear, moose, deer, American marten, and Canada lynx (Figure 1). The region also supports a number of species of concern because they are rare and sensitive to ecological change, such as the Bicknell's thrush, the woodland caribou, and alpine potentilla. Wolf, elk, wolverine, and cougar are other native species that



Figure 1. Prime moose habitat in the Adirondacks. Moose are currently repopulating the region, where they have not been seen for 100 years, because of habitat connectivity north to Canada and east to Vermont. *Photo courtesy of Emily M. Bateson* 

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were pushed out long ago; for some a return will be possible if land is suitably protected and connected.

Collectively, this broad sweep of forests cleans the region's air and water, and provides the densely populated Eastern seaboard with breathtaking beauty and extensive areas that offer protection for wildlife and opportunities for human recreation and wilderness solitude. Ecologically, this region represents a key transition zone between the boreal forests of the North and the temperate forests of the South—a vital ecological melting pot that melds the two together and enriches them both.

# Conservation threats and opportunities: backdrop to collaboration at the landscape scale

The forests of the Northern Appalachian region are recovering from the extensive deforestation that occurred during the region's agricultural era, and overall forest cover today is far more extensive than 100 years ago (Trombulak 1994; Daniel and Hanson 2001). Moreover, over the last 15 years more than 6 million acres of forestland owned by forest products companies on the U.S. side of the border have come on the market because of the changing economics of the industry.<sup>2</sup> All this has led to opportunities for habitat and biodiversity protection not seen since the turn of the last century when the Adirondack State Park, Baxter State Park, and the Green and White Mountain national forests were created. In spite of the lengthy history of human influence since European settlement, the Northern Appalachian region currently offers enormous potential for conservation of its rich natural heritage.

At the same time, the ecological integrity of the region is increasingly endangered

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by a new suite of threats: human development, forest ownership fragmentation, airborne pollutants, and climate change (Daniel and Hanson 2001). Many native species are under stress while invasive species are on the rise. The region's forests today are much younger, more fragmented, and far less resilient to such ecological bombardment. As Mark Anderson, director of conservation science for the eastern region of The Nature Conservancy (TNC), explained: "Our forests are growing back, but the average size of trees is shrinking and harvesting methods are more intense. If a forest is full of coarse woody debris and old plants and root systems and fungi in the soil, then the forest can perform its traditional ecological role, be more resilient to stress, and recover faster." According to Anderson, "Restoring these components to our ecosystems is critical."3

In addition, the Northern Appalachian region does not have enough land set aside in conservation to protect biodiversity from the rising tide of human threats. In a region with 50 million people within a day's drive, the protected areas are not uniformly large enough, connected enough, or ecologically representative enough to maintain native biodiversity. Habitat corridors remain mostly unidentified and unprotected, despite their vital importance if the region is to remain one interconnected and healthy ecological system.<sup>4</sup>

The region overall has only 7% of its habitat designated as protected or "core" areas (lands preserved for ecological or habitat values with compatible recreational and other uses), and these lands are disproportionately clustered at high elevations. An additional 19.5% of the region is in buffer lands (The Nature Conservancy 2005) or "stewardship lands" (Figure 2). Generally,

**Conservation Practice at the Landscape Scale** 



Figure 2. Summary of land protection in the Northern Appalachian region. Approximately 5,962,000 acres are in protected status, 15,799,000 acres are in buffer zones, and 59,198,000 acres are unprotected. Source: The Nature Conservancy Eastern Science Office. Data as of February 2004.

these are lands conserved through conservation easement that allows timber harvesting but no further subdivision or development; the extent to which such easements include additional ecological provisions varies widely, although the recent trend is promising. Although complementary and interdependent, protected areas and stewardship lands provide different ecological benefits (Trombulak 2001). Yet another barrier to conservation in the region has been a tendency to blur the distinction between the two in both word choice and map colors, thus diluting the ecological message that the region needs more areas in strict ecological protection-as the cornerstone of nature protection (Margules 2000)—as well as the more multi-purpose stewardship lands.

These facts and perceptions are important because of the growing scientific consensus that one of the most important tools for protecting native biodiversity is sciencebased conservation that protects large core areas *and* buffers them through well-managed stewardship lands *and* ensures functional habitat connectivity between the protected areas and across the ecological region. Only in this way will a region maximize its chances of protecting and restoring the key elements of biodiversity: (1) representative natural communities; (2) viable population of all native species; (3) natural and evolutionary ecological processes; and (4) the ecosystem's responsiveness to change (Noss and Cooperrider 1994; Trombulak 2001).

Yet another regional challenge is the international political boundary between Canada and the United States. Despite the 20-year history of marine collaboration through the Gulf of Maine Council, conservationists and agencies on the two sides of the border have little history of working on ter restrial habitat protection together, or even considering the Northern Appalachians as one ecological region. Stakeholders are not fully aware of the others' conservation history, regulatory differences, or priority concerns. The French-speaking worlds of the Canadian provinces pose an additional challenge to English-only speakers.

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In order to achieve the new ecological triumvirate of conservation, practitioners must understand as never before what habitat, species, and ecological processes to protect and at what level of protection. They must build public support for and implement a broad range of private and public land management strategies as well as for new land acquisition: a multifaceted conservation arsenal both complex and expensive. Cultural and economic issues must be firmly woven into the equation on this settled landscape, but somehow without sacrificing the ecological bottom line. With large public lands few and far between, and conservation opportunities dramatically outpacing available funds, the Northern Appalachian region represents conservation in the trenches, and an ecosystem in a race against time.

## A transborder collaborative is born

The volume of land for sale over the past decade and a half, coupled with increased biodiversity understanding, have combined to form a sense of conservation urgency. New public-private partnerships have formed, and creative financing and protection mechanisms have emerged. On the U.S. side of the border alone, approximately 2.5 million acres have been placed in some level of conservation, with roughly 2 million acres of new stewardship lands under conservation easement and 325,000 acres of new protected core areas (The Nature Conservancy 2004). Public land management gains include 335,000 acres of Crown land in New Brunswick that have been designated as protected natural areas, where industrial activities such as forest harvesting and mining are prohibited in perpetuity.5

Despite the number of impressive con-

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servation alliances and initiatives, there was no unifying vision for the ecological health of the region as of 2001. There was no clear ecological framework or understanding of how each piece of conservation must contribute to the larger biodiversity puzzle, and there was no network sharing vital information and strategies across the international border. The conservation pace was rapid, but the framework across the region remained muddled and somehow incomplete. As Kathleen Fitzgerald, executive director of the Northeast Wilderness Trust explained: "There has been a barrage of conflicting economic and ecological messages out there. If we are to succeed in preserving ecological integrity, we must work across the entire ecological region and tackle the hard questions. For example, is conserving timberland and core reserves in a ratio of 10 to 1 sufficient? What has been notably lacking is a diverse, bi-national network to put biodiversity front and center and address these challenging issues."

In the fall of 2001, the EJLB Foundation and the Henry P. Kendall Foundation hosted a half-day meeting in Montréal of key conservationists and scientists involved in Northern Appalachian conservation and biodiversity protection. "We had worked for the past several years to help build the Y2Y Conservation Initiative," explained Ted Smith, executive director of the Kendall Foundation, "and saw the ecological imperative and strategic need to promote landscape-scale conservation in the Northern Appalachians as well." This need was highlighted as attending organizations presented information and maps that stopped at the boundaries of their immediate conservation concern, and most notably at the international boundary. By the end of the gathering, participants agreed on the

value of meeting again the following year, and an informal cross-border conservation network called ANEW volunteered to take the organizational lead.<sup>6</sup>

With support from the Fine Family Foundation, the Henry P. Kendall Foundation, the EJLB Foundation, and the George Cedric Metcalf Foundation, a second meeting was convened in the fall of 2002. The participation list of the earlier meeting (23 participants) was expanded to an invitee list of approximately 65 scientists, conservationists, and funders; roughly 50 ultimately attended the meeting. This began a series of strategic two-day meetings with increasing momentum and collaboration since that time.

At the 2002 gathering, participants adopted a preliminary vision and mission statement, after readily agreeing that a transborder collaborative was the optimal way to achieve their shared conservation missions. "The Nature Conservancy has considerable science and conservation resources invested in the Northern Appalachians," explained William Ginn, 2C1Forest chair and TNC representative. "But we recognized that it will take many, many partners to protect and restore biodiversity here. 2C1Forest promised to be the glue that holds us all together through inspiration, collaboration, perspiration, and implementation." Smaller organizations recognized that their local missions must be achieved within a framework of regional ecological integrity to be successful. Scientists applauded a forum where scientists and conservationists could come together around collective strategies for biodiversity protection.

Over the course of that first year, participants crafted four goals for 2C1Forest:

- Vision and network: Provide a compelling vision for regional ecological integrity and a network—a "watering hole" —for all to share their work around this vision;
- Conservation science: Help infuse regional conservation decision-making with credible science by improving communication and coordination between conservationists and scientists, and by synthesizing and disseminating ecological information to build public understanding and influence conservation policy;
- Education and outreach: Increase public awareness and support of the Northern Appalachians as a vibrant ecological region and landscape-scale conservation as a vital regional goal; and
- Strategy and implementation: Work with partner organizations to design and implement specific, "value-added" conservation strategies.

In addition to clarifying its mission and goals, 2C1Forest and participating organizations crafted by-laws, and adopted a formal steering committee, executive committee, and science and communications working groups. 2C1Forest also completed a number of strategic analyses, including a detailed communications framework, an analysis of regional science and policy needs, and an evaluation of the potential value-added purposes of 2C1Forest that included review of landscape-scale conservation initiatives elsewhere.

In the second year, starting in the fall of 2003, 2C1Forest and its partner organizations began crafting major initiatives in all four priority goal areas, and the executive committee created a five-year plan for the collaborative. A "branding" exercise helped

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refine the communications framework, and gave the group its current name. 2C1Forest launched its cornerstone science initiative, the Ecological Status and Trends ("Eco-Trends") Initiative (see below), and began scoping a Key Connections Initiative on regional habitat connectivity.

# The Human Footprint Project

The most advanced and illustrative 2C1Forest initiative to date is the Human Footprint Project, part of the larger EcoTrends Series, based on the 2C1Forest science working group's identification of seven key ecological issues affecting biodiversity and wilderness quality across the Northern Appalachians: land use change, invasive species, native species status and trends, forest condition, pollution, natural disturbance, and global climate change. The Human Footprint Project will specifically address the issue of land use change by analyzing and mapping the current human activities that affect the natural landscape of the region. This collaborative project is being led by the Wildlife Conservation Society (WCS), the organization that developed the human footprint methodology at a global scale (Sanderson et al. 2002).

The Northern Appalachian human footprint analysis will be published as a peer-reviewed article with a background technical document detailing the analytical process. In addition, 2C1Forest will prepare a companion policy report that "translates" the scientific findings and connects conclusions to on-going regional conservation initiatives, releasing the report with a major media push and public outreach strategy. This approach of journal article and policy report will ensure scientific credibility while maximizing public education and policy influence. A second project in the EcoTrends Series will provide a "future build-out" analysis that models biodiversity health under alternative future conservation s cenarios—a methodology that has been very effective in combating urban sprawl. These projects are emblematic of 2C1Forest: they are collaborative, sciencebased, and biodiversity-focused, but also rooted in the world of policy and conservation implementation.

# Evaluating Two Countries, One Forest

2C1Forest is now in its third year, and strategic planning is giving way to outreach and implementation. To paraphrase Winston Churchill, 2C1Forest now stands poised at the "end of the beginning." The listserv has grown to more than 125 people, the website and electronic newsletter will be launched in early 2005, and the EcoTrends Series is underway. 2C1Forest will host a regional landscape-scale conservation conference and "coming out party" for the organization next winter. A full-time executive director will be hired and a science fellow is coming on board. Momentum continues to build. As the preliminary dust settles, interviewed participants cite values of this collaborative effort that mirror to a promising extent the experience of the Y2Y Conservation Initiative after seven years of operation (Chester, this issue).

First, the regional perspective and networking championed by 2C1Fo rest and partners have served as a catalyst for transborder conservation thinking, planning, and action. Participants have started participating in major conservation debates across the border,<sup>7</sup> have worked to educate each other on key issues, and are starting to initiate projects that will help "float all boats." As set out in Chester's article in this issue, the Canadian and U.S. conservation

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experience is different in terms of how much wild habitat and native species remain or have been lost, and each side can learn fundamental lessons from the other. Reconnecting the two countries in order "to see one forest" is both an inspiring vision and an ecological necessity.

Second, 2C1Forest puts ecological health and integrity front and center-and what else could possibly be the end game for conservation? This vision and message will enhance and invigorate the many ongoing conservation initiatives that must battle every day with competing issues of politics, short-term economics, intensive recreation, cultural biases, and so on. This will be achieved by providing not only a powerful science-based message, but providing it with clarity and consistency to new and traditional constituencies. "Messages must be clear and consistent to get into the public water supply," articulated Wildlands Project Northern Appalachians Director Conrad Reining. "2C1Forest will provide laser-like focus on the biodiversity message, and this will help build new support for conservation and change the regional conservation paradigm."

Third, 2C1Forest promises to bring new vigor to the regional biodiversity initiative, not only through transborder collaboration, but through bringing scientists and conservationists together. As noted by WCS Canada Director Justina Ray, "2C1Forest provides a rare forum where those of us who care about biodiversity can put our heads together and implement credible, science-based projects that will make a real difference in the real world."

Finally, 2C1Forest provides a big picture vision that resonates because it is both ecologically necessary and fundamentally inspirational to people in conservation based Forest Watch Executive Director (and first 2C1Forest Chair) Jim Northup explained: "The Green Mountains are the ecological heart of Vermont, but also a major corridor connecting habitat and species from Massachusetts to Québec. The 2C1Forest vision inspires us to do our part not only for Vermont, but for the whole Northern Appalachian region." The New Brunswick executive director for the Canadian Parks and Wilderness Society (CPAWS), Roberta Clowater, concurred: "We are working on an initiative to protect natural areas in the Restigouche River watershed. This watershed and its major salmon rivers are ecologically significant in their own right, and as part of a corridor connecting Maine to the Gaspé. Working with 2C1Forest has given me a powerful message about the Restigouche's international significance which will help encourage increased nature conservation in that corner of our province."

practice across the region. As Vermont-

The 2C1Forest vision is powerful in both its simplicity and its logic: protecting nature is the right thing to do, and implementing science-based regional conservation is the only way to succeed. Three years of collaboration have laid a solid foundation for implementing that vision, and now the hard work begins. The experience to date has only deepened the collective commitment of 2C1Forest participants to build a broad-based regional collaborativethrough an ever-expanding circle of regional partners-and succeed in protecting and restoring the region's biological wealth. The end of the 2C1Forest vision statement, crafted at the first meeting, continues to resonate, now more than ever: "On a satellite image of the continent at night, an impressive part of the Northern Appalachians is

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still bathed in darkness—it is still wild. We see a vast and effective network of people across the region that care enough, and know enough, to protect and restore our priceless ecological heritage for future generations of wildlife and people while we still have this spectacular chance."

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#### Endnotes

- The ecological description of the Northern Appalachians is taken from Trombulak 1994; Davis et al. 2001; a presentation by Mark Anderson of The Nature Conservancy at the November 5–6, 2002, 2C1Forest meeting in Montréal, entitled "An ecological overview of the northern Appalachians"; and from 2C1Forest partner information.
- A number of organizations have tracked the extent of land turnover over the past 10–15 years, including The Nature Conservancy (The Nature Conservancy 2005) and the Northern Forest Alliance (Northern Forest Alliance 2003).
- Presentation by Mark Anderson of The Nature Conservancy, entitled "Restoring ecological systems and processes in the northern Appalachians." 2C1Forest Meeting, Montréal, May 21–22, 2003.
- 4. Habitat connectivity—only intermittently on the regional conservation radar screen—is ecologically vital, particularly for mammals that have extensive habitat requirements and need to travel long distances to disperse, find food and mates, and maintain long-term genetic viability. Scientists predict that north–south connectivity will be increasingly important for both plant and animal species in an era of climate change. Today, the northern reaches of the Northern Appalachians provide the last bastion of many key species, including the eastern caribou and Canada lynx. Analyses of lynx and wolf indicate the need for increased protection and connection of regional habitat for successful reintroduction and conservation efforts (Carroll 2005). Moose from Québec and Vermont are currently repopulating the Adirondack Mountains, where they have not been seen since the turn of the last century, and yet few of the travel corridors being used are protected. What will happen if such connectivity and ecological richness is lost over time? Connecting habitat across the region is necessary to ensure that individual parks, refuges, and other protected areas do not become "habitat islands" that lose biodiversity over time, but that instead are woven together into one robust and enduring ecological system.
- 5. Background on New Brunswick protected natural areas may be found at the website for the Canadian Parks and Wilderness Society (CPAWS) New Brunswick at

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www.cpawsnb.org/NBprotected.htm and that of the New Brunswick Department of Natural Resources, www.gnb.ca/0399/index-e.asp.

- 6. The author stepped forward at the 2001 meeting to organize the 2002 gathering, acting in a pro bono capacity for an incipient and informal U.S.-Canadian network, A Network for Eastern Wilderness (ANEW), which was to become the predecessor of 2C1Forest. Jim Northup, executive director of Vermont-based Forest Watch; Roberta Clowater, executive director of what is now CPAWS New Brunswick; and Conrad Reining, Northeast regional director of the Wildlands Project, constituted the remainder of the ANEW executive committee that worked with science and conservation partners to convene these early seminal meetings.
- 7. Two examples of cross-border participation in 2004 are American comments submitted to the province of New Brunswick on an ecologically ill-advised proposed doubling of timber harvesting on Crown lands, and Canadian comments submitted to the U.S. Forest Service on draft regulations that would have reduced biodiversity protection on national forests, including the region's ecologically significant White and Green Mountain national forests.

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