RCEN
Réseau canadien de l'environnement
Canadian Environmental Network

Biodiversity Best Practices Handbook 2009

Case studies from the environmental non-government sector

Canadian Environmental Network

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Biodiversity is life.
Biodiversity is our life.

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Introduction

For over 31 years, the Canadian Environmental Network (RCEN) has been facilitating networking between environmental non-government organisations (ENGOs) and others who share its mandate—To protect the Earth and promote ecologically sound ways of living. RCEN works directly with government agencies, community organisations, and concerned Canadians from coast to coast to coast.

Biological diversity, or biodiversity, is a term we hear of more and more, but what does it mean? There are many definitions; two are useful here. The first is from the Rio Summit: *'Biological diversity' means the variability among living organisms from all sources including...terrestrial, marine and other aquatic ecosystems, and the ecological complexes of which they are part; this includes diversity within species, between species, and of ecosystems.* The Canadian Biodiversity Strategy defines it as *the variety of species and ecosystems on Earth and the ecological processes of which they are a part.*[1]

The RCEN has a keen interest in biodiversity in Canada, and the rate at which we are losing diversity in all ecosystems across the country. In summer 2009, with funding assistance from Environment Canada, the RCEN asked its member organisations (over 600) to tell their stories about what they are doing to help increase or protect biodiversity. The following twelve projects were selected by RCEN as representative best practices for publication in this "Biodiversity Handbook."

The projects range from dealing with the plight of a single species—wild bees—to those focussed on improving agricultural practices or protecting large areas of land and the diversity of species that inhabit them, and from programs that increase our understanding of biodiversity to those that show how people of all ages and abilities can simply enjoy the natural areas where they live. All show dedication to how, by working together, we can improve biodiversity in Canada. The projects featured have come from seven of Canada's 15 terrestrial ecozones (see map on following page), plus one (Canadian Rivers) that cuts across more than one ecozone.

The RCEN congratulates everyone involved in these and other projects for their successes. They are important not only in themselves but are a significant contribution to the 2010 International Year of Biodiversity (IYB). The UN Convention on Biological Diversity (CBD) is one of the most broadly subscribed international environmental treaties in the world. Its purpose is to promote sustainable development through the Convention's three objectives: the conservation of biodiversity, the sustainable use of its components, and the equitable sharing of the benefits arising from the use of genetic resources.

Biodiversity affects the functioning and stability of ecosystems. It is important for many reasons, including humankind's own survival. As we lose species, we lose the inspiration of hearing lilting birdsong in our backyards, the thrill of watching a grizzly bear dig in an alpine sidehill for its food; we lose food and medicinal species that enhance our own lives. We also lose critical ecological services (such as clean air and water) that landscapes and species freely provide for all life on Earth.

[1] http://canadianbiodiversity.mcgill.ca/english/intro/index.htm

Biodiversity is life.
Biodiversity is our life.

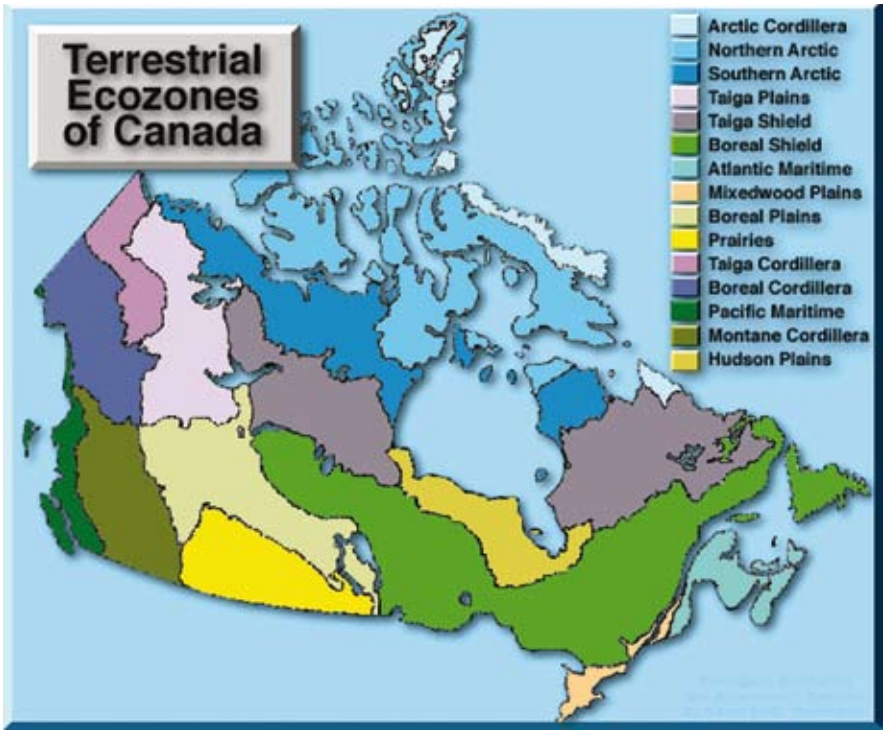
Canada is divided into 15 terrestrial ecozones, a word that relates to the classification system used to denote generalised descriptions of the climate, landforms, species, and ecosystems found within a given region. This handbook is organised according to the Ecozones as found in the map below.

For more information on the RCEN and on Environment Canada's and the UN's biodiversity initiatives, please see these websites:

Canadian Environmental Network:
www.cen-rce.org/IYB2010/submissions/index.html

Canadian Biodiversity Information Network (Environment Canada):
www.cbin.ec.gc.ca/index.cfm

Convention on Biological Diversity: www.cbd.int/2010/



Terrestrial Ecozones of Canada

Biodiversity is life.
Biodiversity is our life.

Map source: http://ec.gc.ca/soer-ree/English/Framework/Nardesc/canada_e.cfm

Yukon Conservation Society—Interpretive Hikes Programs

YCS provides a variety of interpretive hiking programs for people of all ages and abilities that foster an awareness of the importance of biodiversity in the Yukon's fragile ecosystems.

The Yukon Conservation Society (YCS) educates, advocates, and conducts research on Yukon environmental issues. Our mission is "To pursue ecosystem well-being throughout the Yukon and beyond, recognising that human well-being is ultimately dependent upon fully functioning healthy ecosystems."

We carry out a number of programs that promote education about biodiversity, including interpretive nature hikes, outdoor education for young children, and an educational website on climate change.

Our interpretive hikes and programs are targetted to different audiences, including children, youth, adults, and families. Subject matter featured on the hikes includes cultural story-telling, birding, natural history, and biodiversity. The hikes foster a sense of nature appreciation in young and old alike. They provide conservation stewardship education to all ages, and increase awareness of the fragility of northern ecosystems.

As a means of public outreach, the hikes help to increase awareness about current and important conservation issues affecting the Yukon today. YCS provides hikes to people in the Whitehorse area. Our family walk is suitable for people of all ages and abilities. One of our biggest challenges is the weather, but we still manage to get over 1,000 people out each year.

For more information on our programs, please see our website: www.yukonconservation.org

Summary of Activities

- Providing free interpretive hikes on a diversity of subjects
- Offering Leave-No-Trace outdoor ethics programs for campers and hikers
- Conducting programs on maintaining healthy ecosystems, healthy humans, and the interconnectedness of both.

BPERC

Boreal Shield

Burin Peninsula Environmental Reform Committee
The Community Garden Initiative

This project involves the creation of a regional food system by planting community gardens.

The Burin Peninsula Environmental Reform Committee's project is the creation of a regional food system. We are planting community gardens in the peninsula towns of St. Lawrence, Lawn, Burin, Marystown, Fortune, and Grand Bank. While our primary target audience is youth groups in area towns, the gardens will teach youth and other community members about the importance of nutrition, physical activity, socialisation, biodiversity, and organic agriculture. The project aims to protect the environment through healthy living, increasing environmental awareness, and encouraging environmental stewardship.

The gardens educate citizens of the Burin Peninsula (and beyond) that it is easy to grow, harvest, and eat locally and organically produced food. This project also addresses food scarcity issues in our province.

There are many challenges to gardening in this region—the weather, soil conditions, the amount of physical work involved, and the knowledge level of individual gardeners—and BPERC faced them all this first year. We met each challenge head-on.

BPERC is bridging generation gaps, fostering relationships within the community, promoting sustainable use of resources, conserving green spaces, and increasing awareness of biodiversity.

Our partners include: Eastern School District, Service Canada, WalMart Evergreen Fund, Brighter Futures, Small Wood Crescent Community Kitchen, Conservation Corps, Town of Burin, Eastern Health, Community Youth Network, Canadian Tire, Shell Environmental Fund, NL Green Fund, Department of Agriculture, the regional school board, and Centrac College.

For more information, please visit our website: http://www.greenburin.ca

Summary of Activities

- We have planted 37 varieties of seeds, from basil and beets to pumpkins and tomatoes, as well as three edible flower species.

- BPERC potted some seeds with peninsula school children, who then visited the gardens in June to plant their seedlings. They will revisit the gardens in fall to harvest and help with our goal to plant 50 native trees and 20 native shrubs, all while learning about native plants.

Adopt-A-River Program: Education & Water Monitoring Action Group (Groupe d'éducation et d'écosurveillance de l'eau—G3E)

This project cuts across several ecozones. The program enables communities to be actively involved in restoring and protecting the rivers that flow through their communities.

Adopt-a-River is a pan-Canadian program that surveys the ecological health of our rivers. The objective of the program—aimed at schools (Grade 5 and up) and members of the community, and carried out in public spaces such as protected nature areas (visitor and community science projects)—is to enable Canadians to become actively involved in the protection and conservation of the overall health of the rivers that flow through their communities. Our partners include The Biosphère, Environment Canada, Canadian Nature Museum, Parks Canada, and the Canadian Wildlife Federation.

This program is divided into two main projects: the formal (school) and informal projects:

- In the formal project, more than 35,000 children in Quebec, Prince Edward Island, Ontario, and Manitoba are actively involved in river conservation. Helped by their teachers and various environmental organisations, the children begin their project by studying a particular river and its ecological and human aspects in order to determine a problem they would like to investigate. They are responsible for making a clear description of the site (width of river, depth of the water, speed of the current, etc.), then for collecting data on the physical, chemical, and bacteriological conditions of the water, and finally for studying the macro-invertebrates that inhabit the bottom of the river. The resulting data, which is compiled on the program's website (www.pjse.ca), provides a valuable indication of the overall health of the river. Carried out annually, the program allows the health of the river to be monitored and authorities to be alerted should variations in the results occur.

- In the informal project, which takes place in Canada's national protected nature areas, visitors are invited to become involved in the water-monitoring program by participating in a short activity, lasting approximately two hours. During the activity, they are informed about drainage basins and the importance of protecting them, and learn about the various means available to protect or conserve rivers in their respective communities. The local communities around the protected nature areas are also involved in the program; in fact, some protected nature areas staff carry out the Community Science Project with the local community. During the activity, local citizens receive several hours of instruction, allowing them to collect scientifically valid data on the overall health of the river. This informal project is currently being realised in five protected nature areas in Quebec, New Brunswick, and Manitoba.

Water is at the heart of life and is closely linked with a multitude of problems that affect human and environmental health. For this reason, the Adopt-a-River program brings together new enthusiasts every year concerned about the evolution of the riverine milieu in which they live.

Summary of Activities

- Engaging schools to become actively involved in river conservation
- Engaging visitors in protected nature areas to become involved in water-monitoring programs

Adopt-a-River is more than just an educational program; it is a pan-Canadian network of people of all ages who share a deep concern for the global health of our rivers. Maintaining an active, dynamic network in which the participants feel involved remains a challenge. A recipient of several prestigious prizes, Adopt-a-River will undoubtedly continue to grow in importance in the coming years.

For more information, please visit these websites: www.pjse.ca and www.wmyp.ca

Cape Jourimain Nature Centre (New Brunswick)

Cape Jourimain Nature Centre was built in 2001 in a National Wildlife Area (NWA) to offset impacts from building the Confederation Bridge between New Brunswich and Prince Edward Island. Our mandate is to have as small an ecological footprint as possible, work towards reducing visitors' ecological footprint, and promote sustainable lifestyle choices.

The Centre is a steward for the NWA. We develop exhibits and public education programs on protected areas, species at risk, and biodiversity, and present them to a wide range of audiences, including tourists, schools, colleges and universities, and local community members. Visitors can explore the area's rich past and appreciate the delicate balance between nature and people. Education, appreciation, and sustainability are fundamental cornerstones of our mission. Each year, over 80,000 people visit our Entry Building, and over 12,000 visit our Interpretation Centre.

We have met a number of challenges, especially that of "walking our talk." For example, we operate two revenue-generating activities. In the restaurant, the challenge is to increase the volume of purchases from local and Canadian sources—particularly organic food—and balance this goal with availability and cost. Today, over 35% of all restaurant purchases are locally sourced or organic. We also provide education on the positive impacts of "buying local" and growing organically.

Another major challenge is in linking education and outreach programs to lifestyle choices we can all make in order to have a smaller footprint on the environment—locally and globally.

We appreciate the partnerships we have with the Canadian Wildlife Service (Sackville), NB Tourism and Parks, NB Department of the Environment, Biosphere (Montreal), and Confederation Bridge Ltd. While these are largely informal arrangements, they are nonetheless critically important to the Centre's success.

For more information, please visit our website at www.capejourimain.ca

Photo above: Marsh at the Cape

Photo right: Trailhead for Trenholm Trail

The Nature Centre provides visitors with opportunities to explore the area's past and appreciate the balance between nature and people.

Summary of Activities

- Summer educational programs: intertidal bio-diversity, green technologies, human & nature interactions.
- Guided nature tours in the NWA; role of protected areas for biodiversity.
- School programs (over 400 school children in 2009).
- Youth Nature Camp covering all topics relating to the NWA's biodiversity, green technology, and conservation.
- Educational programs provided to area summer camps on biodiversity and nature-related topics.
- School curriculum programs (adapted for biodiversity, water conservation, green technologies; intensive development and testing planned for 2009).
- Participation in DFO's Community Aquatic Monitoring Program (measuring intertidal biodiversity & invasive species).
- On-site exhibits, including for CITES, species-at-risk, biodiversity, and ecosystem exhibits.

Conservation Council of New Brunswick
Conseil de conservation du Nouveau-Brunswick

Conservation Council of New Brunswick
The Backyard Bee Box Project

The "Bee Box" Project aims to increase the availability of plants attractive to insect pollinators, especially bees, in urban areas.

Native insect pollinators, such as bumblebees, are in trouble. Scientists suggest habitat destruction, pesticides, pollution, parasites, and viruses as the most likely reasons for the continuing decline in insect pollinator populations. Acadian forest trees—such as the black cherry and basswood, require insect pollination, as do shrubs—such as hazelnut and staghorn sumac, and flowers—such as spring beauty and trillium. The wild blueberry of the Acadian forest is widely cultivated as a food crop and is also dependent on native bees for pollination.

The effects of pollinator losses, native and otherwise, on food production and security cannot be overstated. Three-quarters of a typical North American diet is dependent on pollination by insects. Any work to encourage conservation of pollinators—in this case by habitat recovery—can increase the numbers and diversity of species available for pollinating New Brunswick's important agricultural crops. Industrial food crops, such as blueberries, are not the only ones to suffer from loss of pollinators, home and farmyard gardens and orchards across the province have been affected.

Since habitat destruction is a significant contributor to loss of native insect pollinators, an education project focusing on recovering pollinator habitat will directly yield an increase in pollinator numbers and diversity. In turn, this may yield greater numbers and diversity of insect-eating wildlife, such as songbirds.

The Backyard Bee Box Project, a new project of the Conservation Council of New Brunswick, aims to mitigate habitat loss in developed urban areas and protect populations of native insect pollinators. The project will increase public awareness of the threats to native pollinators, and the importance of pollinator protection and urban biodiversity, by hosting workshops at schools, in municipalities, and for community groups. Our project will encourage planting pollinator-friendly native plant species in urban areas and the construction of "bee boxes" for bee nests.

Approximately 10 backyard bee boxes and 100 seed balls will be made as examples, with instructions on how groups and individuals can easily make their own bee boxes and seed balls. The sample bee boxes and seed balls, instructions, and biodiversity information will be distributed across the province. The project is currently being organised for a public launch in spring 2010.

Challenges to the project include a lack of understanding of biodiversity and how it functions. Intended outcomes of the project include a greater understanding among the public of the importance of biodiversity in urban areas, and of New Brunswick's native biodiversity, specifically, its native pollinator and wildflower species.

For more information, please visit these websites: Canadian Pollination Initiative: http://www.uoguelph.ca/canpolin/ and CCNB's media release on pollinators: www.conservationcouncil.ca/News/news06010901.aspx

Summary of Activities

- Engage people to enhance native pollinator foraging and nesting habitats, create and distribute bilingual educational materials on "bee boxes," and plant pollinator-friendly vegetation in urban areas
- Distribute "seed balls" of soil, compost, and native wildflower seeds in spring
- Hold workshops on how to create and use "bee boxes" and "seed balls"
- Form partnerships with local groups in urban centres, such as student environmental clubs, naturalist groups, and others, to enhance pollinator habitat in urban areas

Maritime Aboriginal Peoples Council—IKANAWTIKET

IKANAWTIKET is the environmental respect organisation of Aboriginal peoples who continue on Traditional Ancestral Homelands (off-reserve) throughout Canada's Maritimes region. IKANAWTIKET's partners include: Native Council of Nova Scotia, Native Council of Prince Edward Island, New Brunswick Aboriginal Peoples Council, Congress of Aboriginal Peoples, and a number of federal government offices in the Maritimes region. We work with all these, and others, to promote the preservation of natural environments through education about environmental issues, biodiversity, and Aboriginal culture, worldviews, and knowledge.

IKANAWTIKET undertakes activities to connect individuals, promote new learning, establish partnerships, and encourage individual involvement in biodiversity environmental issues. We support and encourage Aboriginal persons to share the Aboriginal ethic of respect for our natural environments and biodiversity, and to take a lead to create new paths toward a better future.

Mobilisation of Aboriginal peoples in the Maritimes region traditional ancestral homelands on biodiversity issues, in just a few years, is a testament to the passion, knowledge, and perseverance of Aboriginal peoples. As one elder says, "We are here to stay. Where else are we to go? This is our only home. Mother Earth provides us with all that we need and we must respect that."

Despite strong words in the Convention on Biological Diversity to seek and accommodate Aboriginal peoples' involvement, government policies and actions continue to marginalise Aboriginal peoples' participation in biodiversity issues. For example, on 12 September 2007, Canada voted against signing onto the UN Declaration on the Rights of Indigenous Peoples, which recognises the importance of maintaining and protecting Aboriginal peoples' knowledge, practices, and identities by accommodating Aboriginal peoples' involvement in decision-making.

IKANAWTIKET advances respect for biodiversity and seeks Aboriginal peoples' involvement because, "We have nowhere else to go." A few others in our region recognise the vital importance for all of humanity to learn this respect and, together, we are starting a path toward a better future.

For more information, please visit our website: www.ikanawtiket.ca

This project promotes the preservation of natural environments through education about environmental issues and biodiversity in the context of the region's Aboriginal culture, worldviews, and knowledge.

Summary of Activities

- June 2007, at Sackville, New Brunswick, IKANAWTIKET held ARISES, the first opportunity in which over 100 participants from the Maritimes met to discuss Aboriginal peoples' participation in the Convention on Biological Diversity. By talking with national and regional officials, Aboriginal participants learned where they can participate and share their Indigenous Knowledge and world views in the federal Species-at-Risk Act, as an entry point to involvement in biodiversity decision-making.

- Species-at-Risk Reference Library CD-ROM, 2008 – A reference CD that contains several hundred documents and websites related to biodiversity in an easy-to-navigate format. Primarily intended for home and student use, the CD is also used as a resource in some schools, libraries, and government offices.

• ABS Workshop, March 2009, Truro, Nova Scotia – Select Aboriginal participants initiated an introductory learning session on Access and Benefit-Sharing (ABS), a fundamental segment of the Convention on Biological Diversity.

• Leave No Footprint, 2009 – Aboriginal community produced a book that illustrates human threats to 20 species-at-risk and their habitats in the Maritimes region; written in Mi'kmaw and English, and from an Aboriginal perspective.

• IKANAWTIKET volunteers take part in local initiatives: species recovery teams, species status reports, and making recommendations on Species- at-Risk Act (SARA) listings.

• IKANAWTIKET makes recommendations on a variety of government policies and strategies, including the federal review of SARA and Minister's Roundtables.

Ontario Soil & Crop Improvement Association—Steckly Municipal Drain Project

An agricultural demonstration project on how to increase local biodiversity and prevent farm run-off from silting up a municipal drain.

The Ontario Soil & Crop Improvement Association (OSCIA) is a unique non-profit farm organisation. The association is a significant presence in all the major agricultural areas of Ontario. OSCIA is committed to four strategic directions: producer education, development and delivery of stewardship programs, local association development, and consumer outreach on agricultural environmental issues.

Reid and Rhonda Wilson are agricultural producers in Perth County, Ontario. They have 700-acres planted in a corn-barley-winter wheat rotation. The farm is intersected by the Steckly Municipal Drain. This watercourse is surrounded by crops planted in silty clay soils. During heavy rain storms and periods of snowmelt, soils wash into the drain, resulting in the need for frequent maintenance to remove sediment that prevents drainage from the fields. This sediment, and nutrients from crop fertilisers and livestock, contributed to the historically poor water quality found in these watercourses.

The Wilsons, with assistance from the Grand River Conservation Authority, planted trees, shrubs, and grasses along the drain to create a vegetated buffer. The buffer runs the length of the field (711 m). Trees and shrubs were planted in three rows on the south side of the drain into a six-metre-wide grass (timothy) buffer. In total, 1,400 trees and 200 shrubs were planted. A three-metre-wide grass buffer was planted on the north side of the drain.

Natural vegetation planted alongside streams filters sediments from runoff before it enters the drain. The plants improve water quality by absorbing nutrients and residual farm chemicals. The buffer creates habitats for birds and other animals, and improved water quality encourages more fish. Fifteen years later, Rhonda Wilson was asked if the project met her expectations. She replied that the buffer has exceeded their hopes:

> *We feel that the naturalised strip …enhances the farm by providing habitat for fish and wildlife. We also believe that the … buffer has increased the value of our farm.*

Fish surveys done in 1991, 1992, and in 2006, illustrate her point (see table below). In 1991, only one species was found (25 brook stickleback). In a 2006 follow-up study, seven species (372 individuals) were found. This is a very dramatic improvement for a buffer that represents only 9% of a municipal drain in a very heavily modified landscape. This project shows how biodiversity can be greatly increased when even a relatively short length of a watercourse is buffered from farm activity.

The table on the following page shows that the relatively simple act of building the vegetated buffer and revitalising the riparian strip has increased the drain's aquatic (fish) biodiversity over the period of this project.

Summary of Activities

- Revitalised the riparian area along the drain by planting trees, shrubs, and grasses
- Conducted fish surveys to assess biodiversity, both before and at various periods after project completion

Fish community observed in the Steckly Drain in 1991, 1992, and 2006.

June 17, 1991		June 10, 1992		August 29, 2006	
Species	Total	Species	Total	Species	Total
Brook stickleback	25	Northern redbelly dace	10	Brook stickleback	205
		Blacknose dace	7	Bluntnose minnow	31
		Creek chub	1	Creek chub	39
		Brook stickleback	20	Northern redbelly dace	9
				Blacknose dace	59
				Green sunfish	1
				Common shiner	28
Abundance	25		38		372
Richness (S)	1		4		7
Diversity (H)	0.0		1.1		1.4

For more information, please visit our website at:
http://www.ontariosoilcrop.org

Also see the Rural Water Quality Program on the website: www.grandriver.ca, and the flyer at: www.grandriver.ca/rwqp/stecklydrain.pdf

Galiano Conservancy Association Community-Based Ecological Restoration Project

Galiano Island is situated in the Strait of Georgia between the urban centres of Vancouver on British Columbia's mainland coast, and Victoria on Vancouver Island. Plantation forests, agricultural lands, roads, and residential development have replaced and fragmented Galiano's old forest, leaving behind a patchwork of some of BC's most endangered ecosystems.

For the past six years, our organisation, in partnership with the Silva Forest Foundation, has addressed issues of forest habitat loss and fragmentation through our Community-Based Ecological Restoration Project. We are focused on improving the ecological health of a 30-year-old monoculture Douglas-fir plantation located on a 60-hectare property owned by our organisation. Increasing biological diversity by restoring key ecosystem structures and composition is our primary goal.

Hand-powered treatments were developed to thin the dense monoculture plantation, disperse large woody debris across the forest floor, and erect snags or wildlife trees. The treatments are designed to avoid further degradation of an impoverished soil ecosystem, and ensure minimum impact to natural vegetation and wildlife species in the plantation. Our approach to forest restoration is based on sound scientific principles and on an ethic rooted in respect for the land and the need to make positive contributions for the benefit of future generations.

Just five years after restoration treatments commenced, we already see significant changes. The plantation has responded to restoration with an increase in species richness and biomass. The moss layer first responded to the increase in light resulting from the thinning treatments. Grasses and herbs followed quickly, along with a flourish of shoots branching off red alder stems. Shrubby species have been slower to respond; however, patches are beginning to emerge and are expected to expand throughout the stand over the next five years. Structurally, the restored areas resemble a more natural condition with a mosaic or patchy distribution of dominant Douglas-fir, a revitalised sub-canopy of broadleaf trees and conifer saplings, wildlife trees of varying diameter throughout the site, and coarse woody debris across the forest floor. This new structural complexity equates to greater habitat diversity and availability, adding to the site's potential for supporting biodiversity.

A study examining changes in soil chemistry resulting from restoration treatments suggests that the restoration work increases microbial activity, creating a healthy soil system that more closely resembles a natural mature forest system.

The Galiano Conservancy is also studying the impact of restoration treatments on carbon sequestration in the forest. Preliminary studies looking only at the vegetation have indicated that treatments are carbon-neutral in the short term, but will likely increase carbon sequestration over the long term. Researchers have also begun to examine the effects of restoration treatments on carbon sequestration in the soils.

In addition to on-the-ground forest restoration work, we are developing partnerships with local landowners to promote a property management approach that considers ecological health and wildlife habitat at the root of every decision. This community stewardship program helps owners and residents connect with their "ecological

Using unique forestry treatments to improve the ecological health of a 30-year-old monoculture Douglas-fir plantation.

Summary of Activities

- Development of ecosystem-specific hand-powered forest restoration treatments
- A study of forest soil chemistry in the project area
- A study on the ability of the restored forest ecosystem to provide carbon sequestration
- Development of partnerships with local landowners and property managers
- Development of site tours and an educational component of the project

neighbourhood" and contributes to ecosystem protection and connectivity on the Island.

Interest in our stewardship program continues to grow. We now have 38 landowners participating, and the project is providing treatments to over 200 hectares on the Island.

While restoration treatments benefit the local ecology, it's the project's educational component that reaches beyond Galiano's shore. Site tours and opportunities for in-depth study are offered to students and professionals from around the world. Forest restoration theory and techniques are also the focus of an ongoing hands-on education program for youth.

The Galiano Conservancy Association won Wildlife Habitat Canada's Forest Stewardship Recognition Award in 2009. This program "promotes awareness and appreciation of good stewardship, sustainable forest practices, and forest biodiversity conservation efforts across Canada." The award recognises "outstanding stewardship in Canada's forests."

Please visit our website to view papers, videos, and pamphlets associated with this project: www.galianoconservancy.ca

Mixedwood Forest Society

Mixedwood Forest Society—A Community-Based Approach to Protected Areas Planning

A campaign to protect mixed forest, wetland, and river landscapes—and the unique species they contain—in the Swan River & Porcupine Hills regions of western Manitoba.

In May 1996, the Manitoba government allocated 5,863 sq km of forest within the Duck Mountains of Manitoba's western upland region to Louisiana-Pacific (LP), an international logging company. Although the Duck Mountains (DM) contain some of the oldest forest in Manitoba, officials had decided that the unique flora and fauna would be adequately protected within Riding Mountain National Park, which is further east and roughly 50 kilometres to the south.

While licenses for commercial activities are issued within months, it takes years to establish a protected area. Resource activity preceded locating sensitive areas, critical habitat assessments, and conservation. We set out to challenge—and reverse—that policy.

The Mixedwood Forest Society was founded in Swan River in 1996, during the course of the public hearings for LP's license. Our mandate is to foster research and education that promotes conservation in order to protect biodiversity. Our goal was to combine existing, relatively accurate land information with new geospatial data from a series of public consultation sessions involving community stakeholders and other knowledgeable local people, and use this information as the basis for a new decision on the best use of these lands.

At the time, two small ecological reserves were the only areas for protection within the escarpments slated for logging, including 85% of Duck Mountain Provincial Park. The areas we focused on are ecologically significant transitional mixedwood forest landscapes containing deep river valleys and pure lakes on age-old bedrock and glacial till. They benefit biodiversity, climate change, education, and recreation.

In 1997, the government responded by placing Backcountry Zone designation on 25% (90,900 ha) of DM. Setting a precedent, they adjusted the park borders to allow for timber removal by LP, compensating by adding natural provincial forest. Source waters for at least six rivers (including the Shell, Valley, Pine, Duck, Favel and Roaring rivers) were protected. Also protected were upland meadows with natural mineral licks, rich prairie grasslands, wetlands, fens, bogs, and peatlands—with pitcher plants, orchids, and carpets of mosses and lichens. After the protected areas were established, we embarked on a project in community-based ecosystem management planning.

Then we looked to the Porcupine Hills, the slopes north of the Duck Mountains on the other side of the Swan River Valley, where bird studies had found the highest level of diversity in neo-tropical migrants in western Canada. We nominated its Bell River Canyon as an area of special interest, and wrote to the federal government about Canada's responsibilities under the Migratory Bird Act.

We informed the ambassadors of Belize and Mexico that while their countries had set aside large areas for birds and butterflies in which to spend winter, Canada had neglected to safeguard spring and summer habitats for these species. LP co-operated by suspending logging for three months in early spring to give birds a chance to establish nests and raise young.

Summary of Activities

- We located the steepest slopes, the headwaters for some of the major rivers, the rare upland meadows, and the richest habitat and staging grounds for migratory birds.
- We canvassed the local community to determine which habitats were important to them.
- We held forums and made presentations at a local school.
- We fostered a scientific study of cavity-dependent species.
- We published a colourful booklet on the biology of the mixed woods.
- We completed a protected areas report.
- We nominated areas for preservation under the Parks and Protected Areas Initiative.

Parks staff consulted with aboriginal communities, miners, and loggers, and, after ten years, 11,500 ha were designated as Protected Provincial Forest. Our cause was supported by individuals and groups during a process of negotiating with competing interests, changing policies, bureaucratic tangles, staff retirements, and political pressures. The public, our naturalists, geologists, botanists, ornithologists, and zoologists had all found the area to be worthy for timber wolves to roam, birds to reproduce, and elk to bugle from the hills.

Our report, *A community based approach to protected areas planning. A pilot project within the Duck Mountains and Porcupine Hills region of Manitoba,* is available at www.mixedwoodforestsociety.org.

Western Manitoba's upland region features many endangered ecosystems containing wetlands, mixed forests, lakes, and rivers, and all the habitats and species they support.

- We wrote letters to the Premier and Minister of Conservation advocating protection from logging, mining, and hydroelectric resource activity in these areas.

- We campaigned in Winnipeg and Swan River with publications, maps, petitions, articles, radio documentaries.

- We founded a research facility—the Wellman Lake Nature Centre—on the shore of Wellman Lake in Duck Mountain Provincial Park. The Centre houses graduate and under-graduate researchers from five universities across the three Canadian Prairie Provinces and hosts a variety of educational events for the public, as well.

Bell Canyon Lookout. Photo: Prairie Pathfinders Walking Club

Saskatchewan Prairie Conservation Action Plan

A project to increase conservation of native prairie and at-risk species within the Prairie Ecozone in Saskatchewan.

Since 1998, the Saskatchewan Prairie Conservation Action Plan (SK-PCAP) has brought together organisations representing producers, industry, provincial and federal government agencies, ENGOs, and research and educational institutions to work towards a common vision of native prairie and Species-at-Risk conservation within Saskatchewan's Prairie Ecozone.

PCAP is an important forum for guiding conservation and management efforts in Saskatchewan. It increases communication and coordination among partners; addresses gaps in native prairie research, activities and programming; guides the development of programs and policies that reward sustainable use and promote ecological health and integrity, including Species-at-Risk recovery; and improves public understanding of native prairie and Species-at-Risk.

PCAP consists of 27 partners (provincial and federal governments, business, industry, ENGOs, research and educational institutions, producers) and is affiliated with seven national and international organisations. The work of PCAP falls into these cross-cutting themes: Education, Coordination, Monitoring, Research, and Participation. Stewardship is also an important concept supported through most of our activities.

In 2008, the partnership embraced a five-year framework approach upon which annual work plans were developed by focus groups consisting of PCAP partners and other stakeholders. The 2009-2013 framework applies to native aquatic and terrestrial habitats within Saskatchewan's Prairie Ecozone and is built on a renewed vision, goals, and priority areas of focus:

Vision:

- Healthy native prairie ecosystems as vital parts of our vibrant and strong communities.

Ecosystem Goal:

- Native prairie ecosystem health and biodiversity are conserved and restored as part of a functioning landscape.

Economic Goal:

- Sustainable uses of native prairie improve the livelihoods of Saskatchewan people.

Cultural Goal:

- Native prairie is a valued part of our culture and identity as Saskatchewan people.

Priority Areas of Focus:

- At Home on the Prairie: Connecting to Native Prairie
- Prospering with Prairie: Sustainable Land Use and Development
- Caring for Prairie: Managing Invasive Alien Plant Species
- Accounting for Prairie: Valuing Ecological Goods and Services
- A Working Prairie: Grazing Management in Prairie Ecosystems

For more information, please visit our website at www.pcap-sk.org

Summary of Activities

- The declaration of Native Prairie Appreciation Week (NPAW) by the Saskatchewan ministries of Agriculture and Environment since 1999; it is the only week in North America dedicated to raising awareness and celebration of native prairie.

- A workshop and tour by the Society for Range Management-Prairie Parkland Chapter is held in conjunction with NPAW and has engaged over 1,000 participants to date.

- Since 2000, the engagement of over 57,300 K-6 students at 1,016 rural and urban elementary schools through our five Stewardship Education Programs about native prairie conservation, biodiversity, and Species-at-Risk.

- Coordination of province-wide uniform range and riparian health assessment workbooks and supplemental *Saskatchewan Rangeland Ecosystems: Ecoregions, Ecosites, and Communities* binder to enable data collected by partners to be shared and analysed; 500-600 participants at 20 developmental workshops; 11 PCAP partners were involved.

- Increased awareness about native prairie issues and research with up-to-date information; our Native Prairie Speaker Series (topics include Species-at-Risk, invasive weed management, native prairie restoration/reclamation, and riparian assessments) is directed at staff and urban/rural residents.

- Increased communication and awareness among the 27 PCAP partners, seven affiliates, and 65 other organisations through a monthly newsletter.

Photo credits: top left-Prairie lilies, R. Magnus; top center-Birding at Val Marie, Krista Connick Todd; top right, Discussion at Esterhazy, Andrea Kotylak; center left-prickly pear cactus south of Moose Jaw, Sarah Vinge; center right, Prairie grasses, Andrea Kotylak; bottom, Big Muddy Badlands, Krista Connick Todd.

Alberta Wilderness Association

Alberta Wilderness Association (AWA)
Hay-Zama Lakes: Involving the Neighbourhood in Environmental Protection & Community Development

A project involving "the Neighbourhood" in environmental protection & community development in the Hay-Zama Lakes complex in traditional territory of the Dene Tha' in northwestern Alberta, an area under pressure from resource extraction activities. The project was twinned with indigenous groups in Mongolia.

The Hay-Zama Lakes complex in NW Alberta is designated as a wetland of global significance under the Ramsar Wetlands Convention. It lies within the traditional territory of the Dene Tha'. In the 1990s, poorly regulated oil and gas activity in an environmentally sensitive area threatened the wetlands, wildlife, water, and traditional way of life.

The project—which is focussed on involving "the Neighbourhood" in protection of the Hay-Zama Lakes complex—combines strong support for environmental protection with the need to sustain a local economy. The Dene Tha' practice their traditional harvesting, while new approaches to community development are being sought through a tourism strategy. Partnerships among the Dene-Tha' First Nation, ENGOs, industry, and municipal, provincial, and federal governments ("the Neighbourhood") formed the Hay-Zama Committee (HZC).

The HZC has been instrumental in obtaining long-term protection through Wildland Park designation in 1999, and winding down pre-existing oil and gas activity in the most sensitive areas through Memorandums of Understanding (MOUs). It has improved environmental performance by working with regulators and industry to change operational practices and reduce activity levels in the complex. It developed unprecedented (for Alberta) time limits for extractive activities and the concept of no new industrial footprint, confining the pre-existing extraction to a small, less sensitive area. All activity must be phased out by 2017, but oil and gas wells in the highest environmental risk areas have already been abandoned and reclaimed.

The HZC is unique in being led by stakeholders and has full participation from First Nations, ENGOs, industry, and governments. It has withstood a challenge from industry to renegotiate the MOUs, but the neighbours all demonstrated their original commitment to environmental protection.

Examples of regional, national, and international cooperation facilitated by this project include:

- Since 1995, industry has funded wildlife monitoring. Hundreds of thousands of waterfowl and shorebirds continue to use the complex for staging and nesting. The Wood Bison herd has expanded from 29, when re-introduced in the 1980s, to over 500 today.

- In 2008, Hay-Zama Wildland Park was twinned with Dalai Lake National Nature Reserve in Inner Mongolia, another Ramsar site and part of the world's most extensive remaining temperate grassland, the Daurian Steppe. Both Dene Tha' and Mongolian indigenous peoples have strong conservation interests. The focus of the HZC is on building capacity in indigenous communities for nature protection and community development through the vehicle of international cooperation.

Summary of Activities

- 1995–HZC re-established to deal with oil and gas activity

- 1999–MOU introduces novel concept of time limitation where all activity must cease by 2017, and high risk activity is halted immediately. Designated as 486 sq km Hay-Zama Wildland Park on HZC advice.

- 2000–MOU updated with concept of "no new industrial footprint"

- 2002–Management Plan approved limiting industrial use and recognising Dene-Tha' traditional land use and need for collaborative management

Dene Tha' Chief James Ahnassay addresses official twinning ceremony in 2008.

Wildland protection, economic development, and the vision of First Nations all happen through meaningful participation. Mutually beneficial agreements developed by "the neighbourhood" protect wildlife, land, water, and help to sustain indigenous communities. Successful change requires mutual sharing of information, communication, transparency, and trust. All of this helps to protect and reinvigorate biodiversity throughout the region.

For more information, please see our website:
www.albertawilderness.ca/wilderness/areas/hay-zama

Area where the Hay-Zama lakes are located.

Hay-Zama Wildland Park in northwestern Alberta Photos: Cliff Wallis, AWA

The Hay River Delta in northwestern Alberta

Mongolian herder beside Dalai Lake

- 2003-2008–twinning of Dalai Lake, Inner Mongolia and Hay-Zama Lakes, Alberta
- 2007–Alberta confirms limits on industrial activity; wells continue to be abandoned and reclaimed
- 2008–Hay-Zama Wildland Park dedicated and twinning agreement signed during official visit by Inner Mongolia; tourism strategy initiated
- 2009–Alberta visits Dalai Lake in Mongolia; sponsors community participation workshop

CPAWS
CANADIAN PARKS AND WILDERNESS SOCIETY
NORTHWEST TERRITORIES CHAPTER

Community-Based Conservation: The Saoyú–?ehdacho National Historic Site of Canada, NWT Chapter, Canadian Parks and Wilderness Society (CPAWS-NWT)

A campaign to protect the cultural and ecological values of Saoyú-?ehdacho, two peninsulas on Great Bear Lake.

> *We need the land. Every breath I take I think about knowing this is my land. I also feel in my heart that it is my land. When we talk about Grizzly Bear Mountain (Saoyú), Scented Grass Hills (?ehdacho), and Great Bear Lake, I know it is my land. ~ Lisa Blondin, Dél̨ine*

Saoyú-?ehdacho is deeply linked to the history of the Sahtugot'ine, the Dene of Great Bear Lake. To the Sahtugot'ine, the oral traditions and stories that are tied to the land help define who they are as a people. In recognition of the historical and cultural importance of these areas, Parks Canada designated them as a National Historic Site in 1999. While this designation was an important step in recognising the importance of the peninsulas, it did not protect the land from development. This project sought to rectify that situation.

The community of Dél̨ine has actively and collaboratively pursued preservation of their stories, language, and the boreal land- and water-scapes that are tied to them since the signing of the *Sahtu Dene and Métis Comprehensive Land Claim Agreement* (1993). The cultural landscapes of Saoyú-?ehdacho were priorities for Dél̨ine's elders, and were put forward as the first area proposed for permanent protection through the Protected Areas Strategy (PAS) initiative. A newly established process in 1999, Saoyú-?ehdacho forged strong partnerships between community organisations, CPAWS-NWT, and the federal and territorial governments to navigate the complex and evolving PAS process.

Our goal has been to permanently protect the cultural and ecological values of Saoyú-?ehdacho, two peninsulas on Great Bear Lake, in the Northwest Territories. The protection of Saoyú-?ehdacho has set a positive example for many other NWT communities working to protect their special places for all time, and for the many groups working on large landscape conservation in Canada through the combination of local, cultural, and scientific knowledge.

This work has come with many challenges to each partner organisation, from re-thinking the application of federal legislation to cultural sites (i.e., buildings) to a large-scale cultural landscape, to securing enough funding each year to hold community meetings in Dél̨ine, to working out the details on land title. Each step in the process was new for everyone.

Our project is a partnership with the Dél̨ine Land Corporation, Dél̨ine Renewable Resources Council, Parks Canada, Indian and Northern Affairs Canada, and the Government of the Northwest Territories. Through the strength of partnerships and the commitment of the community, Saoyú-?ehdacho National Historic Site has come into being. Crown surface lands transferred to Parks Canada will be managed along with Sahtu private lands by a Cooperative Management Board under the *National Historic Sites Act*—a Canadian first. Subsurface rights have been withdrawn by Indian and Northern Affairs Canada under the *Territorial Lands Act.* Permanent protection preserves the stories of the Sahtugot'ine and the boreal forest that keeps them, along with important species, such as woodland caribou, grizzly bears, wolverines, and peregrine falcons.

Summary of Activities

- 1991: The community of Dél̨ine began working to permanently protect Saoyú-?ehdacho, vital cultural landscapes for the people of Great Bear Lake, the Sahtugot'ine.
- 1999: Saoyú–?ehdacho designated as a National Historic Site, formally recognising Sahtugot'ine heritage and culture as part of our collective Canadian heritage. However, national historic site designation did not legally protect Saoyú-?ehdacho, which covers over 5,500 km2 of boreal forest in the NWT.

Saoyú (saw-you-eh) -ʔehdacho (aa-daa-cho) are two major peninsulas on the west side of Great Bear Lake totaling 5,550 km² in size. These peninsulas form the National Historic Site called Grizzly Bear Mountain and Scented Grass Hills.
Map source: http://www.nwtpas.ca/area-saoyu.asp

Dél̨ı̨ne and Parks Canada will continue to break new ground in the managing of Saoyú-ʔehdacho National Historic Site. With the vision to maintain Saoyú-ʔehdacho as a place of continued teaching and healing, permanent protection helps to ensure that the culture and well-being of the Sahtugot'ine will be sustained and that all Canadians will benefit from the enrichment of our collective natural and cultural histories.

For more information, please visit these websites:
www.nwtpas.ca/area-saoyu.asp and
http://cpaws.org/chapters/nwt/work/greatbear/sahoyue/index.php

Photo:
AnneJane Grieve

Photo above and right:
Sean Kollee

- 1999: Guided by its elders, the community sought full protection and, with the help of CPAWS-NWT, put Saoyú-ʔehdacho forward as the first proposed protected area under the NWT Protected Areas Strategy (PAS).

- 2001: The federal Minister responsible for Parks Canada travelled to Dél̨ı̨ne to announce interim protection under the PAS, and pledged that the areas would ultimately become part of the National Parks System.

- April 2009: Dél̨ı̨ne and Parks Canada announced and celebrated the full protection of the Saoyú-ʔehdacho National Historic Site, the first area to be permanently protected through the NWT PAS.

Gorabe (Manitou Island) is a long, narrow island located off the south shore of the Keith Arm on Great Bear Lake. With its sweeping tapered shape and two prominent red rock outcrops, Gorabe is a sacred site for the Dene. Photo: Miki Ehrlich

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An endeavour of this kind can only be successfully accomplished with the invaluable contributions of people with a wide variety of commitment and skills. The Canadian Environmental Network (RCEN) is a volunteer and membership-based organisation. Many, many volunteer hours went into this handbook, without which it never would have seen the light of day.

The RCEN Biodiversity Best Practices Handbook belongs, first and foremost, to the environmental non-governmental organisations across Canada whose dedicated and skillful staff and volunteers work on improving and enhancing biodiversity in their communities. Their innovative and effective solutions to countering the rapid loss of biodiversity in Canada are the inspiration and the basis of this book.

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Thank you all!

Susan Tanner

Susan Tanner, Executive Director
Canadian Environmental Network

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