



The Kingfisher

Volume 19 Summer-Fall 2009, The Land Trust Alliance of British Columbia

In This Issue:
Land Management & Restoration
Rare Mosses & their Habitats
Backyard Wildlife & *much more*

Spreading the news about conserving BC's natural and cultural diversity

Published by:



We are dedicated to the stewardship and conservation of BC's natural and cultural heritage. We provide education, research, communication and financial services which support land trusts, conservancies and others.

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The uncertainty that underlies our current times is an opportunity for re-creating our economic system so it values and sustains people, wildlife and the environment. As our Co-chair Kathy Dunster and Robert F. Kennedy both reminded delegates at the recent BC Land Summit, the economy is a wholly-owned subsidiary of the environment. In the midst of this uncertainty, there is one thing that is crystal clear. Because nature sustains humanity, we must learn to carefully steward and conserve nature, rather than merely extract her natural resources.

This issue is full of stories about how organizations and people are working together to restore, manage and conserve habitats and nature's ecosystem services and natural processes that provide for a healthy planet and thus a healthy economy. The economic downturn has directly affected land trust and stewardship organizations, and other charities, as the donors, foundations and governments that support them are also receiving less revenue. The welcome slow down in development of land is contrasted with an equal lack in financial resources to manage and acquire it for long-term protection. So we are propelled into creativity. How do we sustain the land and the organizations that protect them so both will be here for future generations?

Some ideas explored in this issue include: learn from past actions and understand their consequences; don't necessarily be deterred by the size or scale of the project; clearly observe, monitor and record information; maintain a positive and inclusive approach and a humble attitude; and share knowledge.

Top down, centralist approaches have led to many of today's problems—socially, economically and environmentally. They tend to leave decisions in a few hands, far removed from the local communities where the consequences will be felt and paid for. Diversity is key to successful adaptation—in a changing climate and natural world, in economic systems, and for the sustainability of communities and organizations. Governments, foundations and organizations can help care for and sustain the land if we re-evaluate these basic premises. We need to involve a wide diversity of partners in size, scope and across multi-jurisdictions in our decisions and actions. Choices based on longer time frames, with local perspectives and control, and not necessarily big sexy one-off projects, are likely to result in better care for the land that sustains us.

The Land Trust Alliance of BC welcomes this diversity and asks that you continue to share, work and communicate with us about current campaigns to protect and steward land, ways of working and involving the public and other land use professionals, successes and creative ideas - and mistakes. Because after all, miss-takes are just that, an opportunity to re-think, re-create and re-store our relationships with ourselves, each other and the beautiful natural places that provide healthy air, food, water, beauty and habitats – from the glorious bird songs to the rushing rivers. Making choices that will nourish and sustain our economies, communities and the ecosystems which provide all life to humans and other species with whom we share this beautiful Earth requires that we rise to a higher level of understanding and action. *We encourage all, especially now, to sustain land stewardship and conservation through personal involvement and financial support.*

- Sheila Harrington

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THE RACE TO SAVE CHASE



Mt Tzouhalem Moonrise (Mike Szaszi)

by Lesley Neilson

Chase Woods represents an ecologically and culturally significant piece of the Cowichan Valley mosaic

Today, the name Tzouhalem is much loved by the communities of the Cowichan Valley, representing as it does the mountain that hovers over the valley like a dear old relative. Rather than a place of dark history, Mt Tzouhalem is a revered destination for hikers, mountain bikers and nature lovers of all stripes, not to mention a wilderness refuge for the many plants and animals that are being crowded out by ever expanding human development.

Mt Tzouhalem is not entirely safe from these threats, however. On its hallowed slopes, conservation competes with development pressures. This summer, the fate of a particularly important 40-hectare parcel on the mountain's southern slopes hangs in the balance.

Chase Woods rises over 400 metres from sea level to the summit of Mt. Tzouhalem, and includes in its footprint the giant cross that can be seen from across Cowichan Bay. The woods nurture an intact example of British Columbia's most

There is a legend in the Cowichan Valley that takes many forms. It tells of the namesake of Mount Tzouhalem. In one story, Tzouhalem is a vicious warrior who was banished to the cliffs and caves of the mountain as punishment for killing his tribesmen. Another version tells of Tzouhalem living in the caves with women he would steal from the nearby villages. According to this version, when he tired of his "wife" he would simply toss her off the cliffs that mark the summit of the mountain. A marginally more sympathetic rendition has Tzouhalem being driven mad at the sight of his family's murder, followed by his exile to the mountain. All the stories end the same way: with Tzouhalem's death by beheading.

under-protected ecosystem—Coastal Douglas-fir forests, including pockets of Garry oak woodland. With, by one estimate, less than one percent of these forests left undisturbed from forestry and human settlement, Chase Woods is an ecological treasure.

The Nature Conservancy of Canada (NCC) has set its sights on protecting Chase Woods. The group

has inked a purchase agreement with the owner, 98-year-old David Chase, who is hopeful his land will be protected for its natural beauty and habitat far into the future. After investing decades in keeping the lush forest in relatively pristine condition, he wishes for nothing less.

"I have spent half my working life keeping it like a park," says Chase who has owned the property since 1955. "But I'm out of gas, so it's time for someone else to take care of the land."

As this conservation project becomes known throughout the Cowichan Valley, local support has been quick to rise to the challenge of raising the \$1.7 million required to purchase and care for the property. The Cowichan Community Land Trust has thrown their support behind NCC's effort, and local residents and business are busy organizing fundraisers and networking throughout the community. But it's a lofty target, and NCC needs the support of many more to ultimately succeed in securing a spot for Chase Woods in the Cowichan Valley's growing network of ecologically magnificent protected areas.

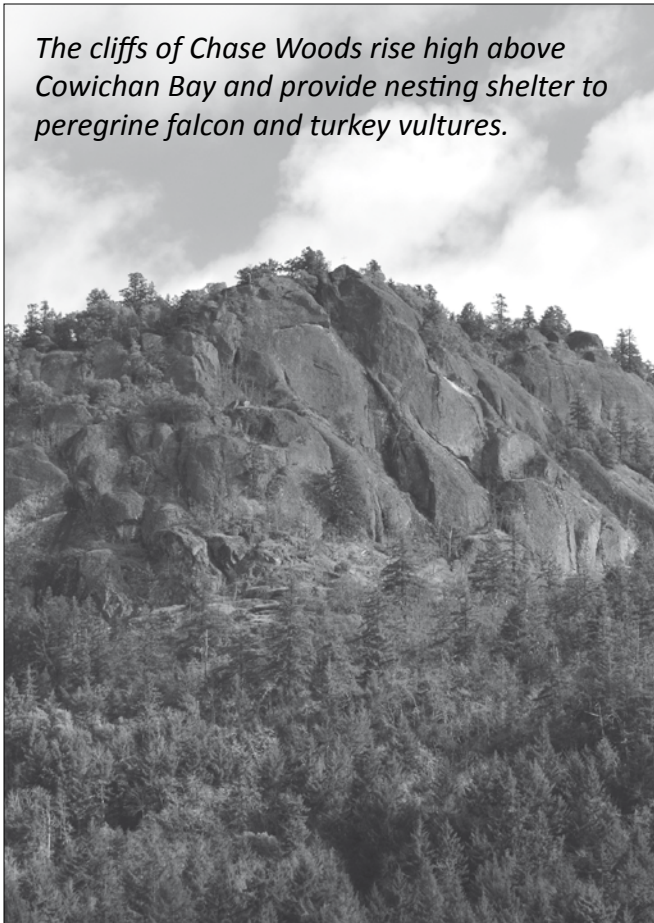
Help NCC Protect Chase Woods

With a total project budget of \$1.7 million and a deadline of July 24, NCC BC has launched a spirited campaign to raise the funds to protect this ecological treasure. Celebrated Cowichan Valley artist Sue Coleman has pledged her support by donating an exclusive run of 100 limited edition prints (including a very small number of *remarque** prints) that will be given out for donations of \$500 or more.

Find out how you can help protect an ecological treasure and take home a treasure of your own: 1-888-404-8428 bcoffice@natureconservancy.ca www.natureconservancy.ca/bc

**A remarque is a small, original drawing or marking that an artist sketches onto a print.*

The cliffs of Chase Woods rise high above Cowichan Bay and provide nesting shelter to peregrine falcon and turkey vultures.



Tzouhalem Cliffs Photo Tim Ennis

CAPE ROGER CURTIS RARE TREE SPECIES REINFORCES NEED TO PROTECT THE CAPE

by Pamela Dicer

In July 25, 2006, Diamond Head Consulting conducted a one-day survey of the plants of Cape Roger Curtis on Bowen Island as part of an environmental assessment required prior to development. At the time, the juniper trees were thought to be Rocky Mountain juniper (*Juniperus scopulorum*).

Terry Taylor, the survey botanist, subsequently drew my attention to the research of Dr. Robert P. Adams, a juniper expert from Baylor University, Texas (all Dr. Adams' juniper papers are available at www.juniperus.org). Says Dr. Adams, "... a new cryptic species, *Juniperus maritima*, has been recognized. Called Seaside Juniper, it grows on rocky areas near the sea, in Puget Sound/Georgia Strait. A striking aspect of the Seaside Junipers is their habitat. They all grow at the seaside (or lakeside) on granite or sand. This is a very different kind of habitat than that found in *Juniperus scopulorum* which grows on dry, rocky mountainous soils. The Seaside Juniper is not weedy and usually appears as if it is relictual (i.e., older trees, with few or no seedlings). The Puget Sound juniper's habitat seems to be very restricted and has only been collected in a few locations. The climate is very different than the Rocky Mountain or the eastern US climates, having a mild, wet regime. In short, the juniper in Puget Sound has evolved physiological genes to facilitate its growth in such an environment."

In March of 2008, I collected specimens from seven of the Cape junipers and mailed them to Dr. Adams who quickly replied that the Cape's juniper is definitely rare Seaside variety. The nearest Rocky Mountain Juniper is at Ross Lake, BC, 140 km east of the coast.

Adolf Ceska, a plant ecologist from Victoria who compiles the Botanical Electronic News (<http://www.ou.edu/cas/botany-micro/ben/ben387.html>) says, "I would not hesitate to treat *Juniperus maritima* as RED-listed, but I am afraid that it will get a BLUE-listed status. The number of sites may go over the limit for the RED-listing, but if you consider the total number of individuals, the RED status would be fully justified."

This reinforces the need to protect the shoreline of the Cape.

Pamela Dicer, is a Director of the Cape Roger Curtis Trust Society and the Bowen Island Eco-Alliance

TLC PROTECTS FISH AND WILDLIFE HABITAT IN THE SEA TO SKY CORRIDOR

By Tamsin Baker



Top Photo: Tamsin Baker; Lower Red-legged frog Photo: Sheldon Reddecopp

Squamish is seeing an unprecedented level of growth that is likely to continue with the attention it will receive due to the upcoming 2010 Winter Olympics. Because of the many changes taking place in the region, protecting greenspaces in the Sea to Sky corridor is now more important than ever.

TLC The Land Conservancy of BC is pleased to announce the protection of over seven hectares of fish and wildlife habitat in the heart of the District of Squamish. Since 2006, TLC The Land Conservancy of BC has been working in close partnership with the Squamish River Watershed Society (SRWS) to acquire an undeveloped site that is bisected by the Sea to Sky highway (Highway 99) and north of the Squamish Adventure and Tourism Centre.

Known as the Squamish Mamquam Blind Channel property, it is on the shared floodplain of the Squamish and Mamquam rivers and is surrounded on most sides by a tidal slough and drainage channels. These sheltered narrow drainage channels form key rearing and overwintering habitat for young salmon, areas for adult salmon to migrate and spawn and critical survival habitat during periodic flooding of the main channels.

Besides the waterways, the upland area includes a marsh meadow that is mostly forested with Sitka spruce, red alder, Western red cedar and black cottonwood. The variety of habitats on the site provides refuge for many species, including various species at risk and nesting songbirds. The species at risk include the red-listed Pacific water shrew and the blue-listed red-legged frog.

In addition to the site's wildlife values, its proximity to the Tourism Centre and to the urban area of Squamish, gives the property an exciting potential for future educational opportunities. The expansion of the nearby trail system may also increase recreational access to the property.



TLC gratefully acknowledges the assistance of BC Rail Properties, District of Squamish, BC Hydro Bridge Coastal Restoration Fund, CN Cheakamus Ecosystem Recovery Fund, Pacific Salmon Foundation, Peter Kiewit Sons Co. (Sea to Sky Highway Improvement Project) and BC Trust for Public Lands. Future management of the site will be in partnership with the District of Squamish and the SRWS.

VALHALLA MILE PROPERTY ADDED TO PROVINCIAL PARK

The B.C. government, with the help of TLC The Land Conservancy of BC, The Valhalla Foundation for Ecology and Social Justice, the landowner, and public donors, has acquired the Valhalla Mile property consisting of 63 hectares of land and 1.7 kilometres of shoreline along the western shore of Slocan Lake.

"I'm pleased that the B.C. government has been able to acquire the Valhalla Mile property to add to Valhalla Provincial Park, enhancing the park for visitors, and the local community," said Environment Minister Barry Penner. "I commend the Valhalla Foundation and The Land Conservancy of BC for their leadership in bringing together hundreds of citizens and a number of organizations to financially support the acquisition, appraised at \$1.625 million."

The partnership, coordinated by The Land Conservancy of BC (TLC), consisted of \$700,000 from the B.C. government, a \$325,000 Ecogift from the vendor, Burkhard Franz, under the Ecological Gifts Program of Environment Canada, and \$600,000 raised by The Land Conservancy and the Valhalla Foundation for Ecology and Social Justice. The BC Land Summit participants who purchased offsets for their travel to the Summit raised \$600.

"We have been working with the Valhalla Foundation for Ecology and Social Justice since the summer of 2008, and the fact our goal to protect Valhalla Mile has been reached is a huge accomplishment," said TLC's Director of Conservation Policy & Programs and Regional Operations Kathleen Sheppard. "We would like to thank all the concerned citizens, community groups, businesses, foundations and the provincial government for helping to protect this land for its environmental and recreational values. This campaign is a good example of how important partnerships are when it comes protecting B.C.'s special places."

This property is a key addition to Valhalla Provincial Park, which encompasses almost 50,000 hectares and protects an

entire mountain ecosystem from lakeshore to high alpine. Besides protecting undeveloped shoreline and intact upland forest, this property provides habitat for a variety of wildlife species including grizzly and black bears, cougars, wolverines, mule deer and great blue herons.

"To protect the Valhalla Mile and have it added to the park was one of the dreams of my sister and environmental colleague Colleen McCrory, who passed away two years ago, so this acquisition gives us great joy," said Wayne McCrory, a director of the Valhalla Foundation for Ecology and Social Justice. "We would particularly like to thank members of

the public for the huge groundswell of support. Special thanks goes to people in the Slocan Valley, Vancouver and Victoria who gave generously, organized fund-raising events and contributed lots of hard work to making this acquisition happen."

Other partners were the Columbia Basin Trust, BC Hydro Fish and Wildlife Compensation Fund, the BC Trust for Public Lands, the Regional District of Central

Kootenay, the Toronto-Dominion Friends of the Environment Foundation, support from environmental, naturalist and outdoor recreation organizations, and personal donations from hundreds of members of the public.



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NEW WILDLIFE MANAGEMENT AREAS DESIGNATED WITHIN THE FRASER VALLEY

by Robin Rivers

The B.C. government has designated 915 hectares of important fish and wildlife habitat located just west of Chilliwack, and a further 71 hectares in south Surrey as Wildlife Management Areas (WMA).

"This is very good news and fits in so well with the Heart of the Fraser initiative," said Mark Angelo, spokesperson for the Heart of the Fraser and chair of the Rivers Institute at BCIT. "Designation of this beautiful site as a WMA will better protect the extensive fish and wildlife values found along this part of the Fraser, which is one of the most productive stretches of river on Earth."

Bert Brink WMA

In April the McGillivray Slough wetlands complex was renamed the Bert Brink Wildlife Management Area. Dr. Vernon (Bert) Brink, a prominent UBC agricultural scientist and a life-long conservationist, possessed a vast love and knowledge of the outdoors. He received many awards throughout his distinguished career, including the Order of Canada and Order of British Columbia. In 2007, upon receiving the Lieutenant-Governor's Conservation Award, former Lt.-Gov. Iona Campagnolo described Brink as "BC's icon of conservation and sustainability."

The Bert Brink WMA features 915 hectares (2,261 acres) of important fish and wildlife habitat located just west of Chilliwack. It has been recognized as an important area for wildlife since the 1920s, when a game reserve was established on the site to protect a heron colony and other wildlife values. Since then, this area has become increasingly important for conserving wildlife habitat on the Fraser River floodplain. The area provides habitat for provincial red- and blue-listed species, including peregrine falcon, marbled murrelet, red-legged frog, Pacific water shrew, and rearing areas for white sturgeon. It also includes rare stands of old-growth cottonwood trees. Two properties (totalling approximately 25 hectares/62 acres) owned by The Nature Trust and leased to the Ministry of Environment



for management, are also included in the WMA.

The designation of the Bert Brink WMA under the Wildlife Act provides the Ministry of Environment with additional legal and regulatory tools to ensure effective management of the site.

"This action by our government will protect prime habitat for many migratory birds, fish and other fauna

around McGillivray Slough along the Fraser River. And, while the Serpentine area near Surrey is a smaller parcel of land, it is also very important for fish and wildlife in the Lower Fraser Valley." Minister of Environment Barry Penner stated.

Working behind the scenes to develop these conservation designations has been a person who has dedicated his career to protecting our province—a passionate conservationist with an engaging personality, Tim Clermont. With the support of the Pacific Estuary Conservation Program partners, Tim worked as the Vancouver Island Wetlands Manager from 1993 to 2005. Then he assumed the role of the Crown Land Securement Coordinator with the support of The Nature Trust, Ducks Unlimited Canada, the BC Ministry of Environment and the Habitat Conservation Trust Foundation. He has been involved in establishing 7 WMAs and 20 Crown wildlife reserves representing over 8,000 hectares (19,760 acres) of prime wetland, estuary, coastal foreshore, river and riparian corridors, Garry oak and coastal Douglas fir old-growth forest habitats.

"No one person can do what needs to be done," says Tim. "This work requires a collaborative effort. I work closely with First Nations, local government, conservation organizations and local stewardship groups."

The Nature Trust has over 20 properties within 10 provincial WMAs. Initial acquisitions of key private lands totaling some 1,857 hectares (4,600 acres) has helped protect over 41,000 hectares (100,000 acres) of Crown land long term as a WMA.

CREATING HABITAT TO LAST FOREVER

by Maria Olson,

Project Manager, Maclure Wetland Restoration

In 2008, the Fraser Valley Conservancy acquired the Maclure Wetland - 15 acres of wildlife habitat in north Abbotsford. This property was unable to be developed due to its ecological sensitivity, so it became a valuable donation to the Fraser Valley Conservancy. This wetland comes with its own set of challenges, namely invasive species and tricky accessibility due to a neighbouring development.

Reed canary grass has had nearly a half a century to take over the property. While there are still natural areas holding on, a large percentage of the property is facing a difficult battle with this grass.

Now that the Maclure Road Wetland belongs to the Fraser Valley Conservancy, plans are in full swing to help this piece of habitat live up to its full potential. We are currently in the planning stages of a multi-year restoration project,



Photo: Dr. Allan Arndt, University of the Fraser Valley

which will increase the biodiversity of the site and improve the habitat for a wider variety of species, including many species at risk.

Recently Dr. Allan Arndt and his Conservation Biology class from the University of the Fraser Valley, along with a team of volunteers, joined with the Fraser Valley Conservancy to begin the fight against reed canary grass. They spent three days removing a large section of the grass and replacing it with larger, native trees and shrubs which will shade out new grass growth. In addition, these new plants will enhance the habitat for a greater diversity of wildlife.

Although we are still in the planning stages of this project, we plan to have another major planting event in 2009, planting a minimum of 300 more shrubs and trees. In addition, a thorough survey of the property has been completed, along with some fish-trapping to determine the health of the watercourses that run through the property. These efforts will contribute to producing the best possible restoration plan for this project. We have hopes to create suitable habitat for Oregon Spotted Frog release in the future.

Funding for this restoration project was provided by Vancity, the BC Transmission Corporation, Habitat Stewardship Program for Species at Risk, BC Hydro, and Shell's Releaf Program through Tree Canada. In kind support was provided by Olson Floors Ltd., Pearson Ecological, the City of Abbotsford and the University of the Fraser Valley.

WHAT IS A WILDLIFE MANAGEMENT AREA?

A Wildlife Management Area is designated under the BC Wildlife Act as an area where conservation and management of wildlife, fish and their habitats is the priority land use, but other uses may be permitted. A WMA is not a park. WMAs consist of Crown land or lands leased to the province and are administered by the Ministry of Environment.

WMAs are different than most parks as conservation is the number one priority with public use and recreation secondary. They also encourage partnerships and assistance from the local community towards site monitoring and management.

After consultation with landowners, all levels of government and First Nations, new WMAs have to be approved by the Cabinet.

Generally historical hunting or fishing activities, existing Crown land tenures or water lots, docks, moorage and navigable boat use, traditional and cultural uses by First Nations are unaffected by a WMA.



THE CONSERVATION OF RARE MOSSES AND THEIR HABITATS IN BRITISH COLUMBIA

article & photos by Terry McIntosh, PhD

If you take a walk in the forest, along a river, even along a city street, you can't help but notice that mosses are nearly everywhere, especially visible and sometimes almost glowing after a rainfall. They grow on trees, rocks, on the ground, on roofs, even on abandoned cars. Mosses often form near continuous carpets of green in some forests. Although often considered 'pioneer' species and of lesser ecological value than flowering plants in many university ecology texts, mosses and their sister group the liverworts, are important contributors to the health of an ecosystem throughout all successional stages. They not only assist in nutrient and water maintenance in ecosystems, they are used by many wildlife species, such as for nesting or hiding.

Over 800 species of mosses make British Columbia their home. Many of these are common across the forested areas of our province although they are usually restricted to one type of substrate in the forests, such as tree bark or a rock face. Others are only common in dry habitats such as in Garry oak meadows or sagebrush grasslands. Even though dry ecosystems may appear harsh and rather unforgiving because of the long, dry and hot periods, and the mosses are shrivelled and appear dead during this time, most of the species that grow there would find shaded habitats unforgiving and they would rot and die. They need their dormant, dry period to survive! Once the rains come, they flourish, changing from a drab colours into a flush of brilliant greens.

Inventory research on mosses has been completed across most of BC, especially by the late Dr. Wilfred Schofield and his students. Tens of thousands of moss collections from every part of the province have been made and deposited into UBC herbarium. Because of these collections, we

are able to better understand not only the distribution of mosses across the province but also the variation of all of the species across their range. We can also assess what species are less common and, in some cases, rare. Rare species have been tracked for many years by the BC CDC and by the federal government (COSEWIC). Some of our provincial species are listed in the Species at Risk Act (SARA). The study of rare taxa is important not only so that we can assess necessary conservation methods for individual species, but so that we can better assess the importance of their resident habitats...for without habitat protection we cannot effectively protect rare species!

However, as common as mosses are, few are easy to identify. This, combined with few available experts and illustrated identification texts, can make the study of mosses intimidating. Small, apparently insignificant features are used to separate species. Leaf shape, colour, stem arrangement, whether the leaf has a pointed end or is rounded, and the morphology of the reproductive structures are some of the many characteristics that will separate mosses to the trained observer, usually with the aid of a hand lens. Unfortunately, distinguishing mosses in the field is only the first step in identifying moss species. One often needs microscopes and detailed keys and descriptions before identification is complete...and even then you may have to send away the specimen to an expert. Whew! Nevertheless, the study of mosses, like with any group of organisms, is a rewarding exercise.

Rare mosses are found throughout BC, but are most common in isolated areas, such as the Queen Charlotte Islands, or in unique habitats including Garry oak meadows, sage-

brush grasslands, or limestone outcrops. The rare mosses of British Columbia have gained a great deal of attention lately. One moss in particular, rigid apple moss (*Bartramia stricta*), has been studied in detail since 2005. There have been a COSEWIC Status Report and a Recovery Strategy produced for this species, as well as three in-house documents prepared for the Department of National Defence (DND) and Parks Canada. It may be the most documented and photographed of all of the rare moss species in North America! Rigid apple moss grows in Garry oak or similar meadows along the coast, from Lasqueti Island to southern Vancouver Island, and is most common on lands owned by DND west of Victoria and north of Nanaimo.

DND has been especially cognisant of rare species that inhabit their lands and have undertaken extensive research programs to better understand and conserve them, from butterflies to flowering plants to mosses. Rigid apple moss grows either on rock or on stony soil and is usually associated with seeps. In favourable wetter years, it produces round capsules on a short stalk, the so-called 'apples' that give it part of its name. The other part of its name comes from its pointed, straight, and 'rigid' leaves. Unfortunately for observers trying to find this species, there is another 'apple' moss, Menzies' anacolia (or apple) moss (*Anacolia menziesii*), that also grows in similar open coastal habitats. It is much larger and its leaves and stems are sometimes curved, although small specimens need microscopic examination before they can be distinguished from rigid apple moss. Rigid apple moss has also helped to clarify *Critical Habitat*, a proposed federally legislated 'protection zone' of habitat that surrounds a species and is deemed necessary for this species continued survival in the wild.

Because of the narrow distribution of sagebrush grasslands, restricted to the bottoms of narrow valleys in the southern interior, and the unusual and often specialized habitats found there, grasslands are the only provincial residence for many species of rare mosses. Two species have been of particular conservation interest lately: alkaline wing-nerved moss (*Pterygoneurum kozlovii*) and nugget moss (*Microbryum vlassovii*). They inhabit starkly different habitats. Alkaline wing-nerved moss grows on soil along the edges of seasonally wet alkaline ponds or sloughs. In

contrast, the nugget moss lives on or near extremely dry lacustrine-derived silt banks that are prominent to the visitor east of Kamloops and near Penticton in the Okanagan Valley. Both of these species have COSEWIC Status Reports prepared for them and are considered rare in both BC and Canada.

Alkaline wing-nerved moss forms very low-growing fuzzy patches amongst grass stems or beside rocks at the edges of the wetlands. Each plant is made up of a few leaves, each with a long awn or hairpoint and, after fertilization, a round spore-containing capsule that looks like a little golden balloon within the leaves. The second part of the common

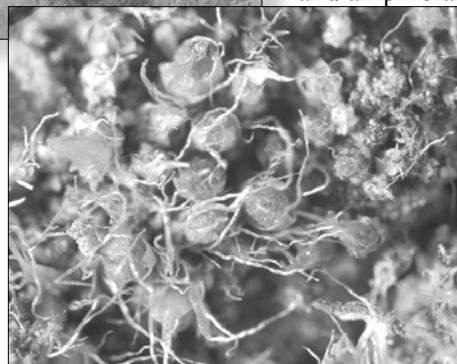
name comes from small flaps that are found on the inner part of the leaf. Like so many arid land mosses, these specialized structures probably help in gathering or retaining water during the brief rain storms of the spring. Interestingly, research on the prairies in 2007 showed that the alkaline wing-nerved moss is widespread and fairly common in Saskatchewan and parts of Alberta. Although this may change its federal ranking, it will still be considered rare in British Columbia where it is still hard to find. The significance of this species is that alkaline wetlands are critical components of the dry-land ecosystem, as either a source of water or as home to numerous birds and amphibians. The introduction

of livestock over the past 150 years, however, along with the conversion of grassland to agriculture, roads, and cities has severely degraded or eliminated many of these wetlands. The alkaline wing-

nerved moss reflects these changes, being rare or absent in heavily grazed wetlands, and having a fractured range, absent in wide areas where alkaline ponds used to exist.

The nugget moss has been found only twice in BC and only three times in North America. It is very tiny, rarely

The study of rare taxa is important not only so that we can assess necessary conservation methods for individual species, but so that we can better assess the importance of their resident habitats... for without habitat protection we cannot effectively protect rare species!



Far Left: Rigid Apple Moss

Above: Alkaline pond & Alkaline wing-nerved moss

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GARRY OAK ECOSYSTEMS RESEARCH COLLOQUIUM 2009

by Carolyn Masson

Every February, researchers in the field of Garry oak ecosystems recovery get together in Victoria to give short presentations about their work to their peers. The research colloquium is hosted by the Research RIG (Recovery Implementation Group) of the Garry Oak Ecosystems Recovery Team (GOERT). This year as usual, it was a packed house at the Pacific Forestry Centre, and the 10-minute presentations were followed by lively discussions. Here are some of the topics of the day.

The Garry oak habitat on Mt. Tuam, Salt Spring Island contains more than 20,000 endangered yellow montane violets, a large herd of feral sheep, and an infestation of invasive grasses. *'The Impact of Grazing by Feral Sheep on the Endangered Yellow Montane Violet'* presented by Robin Annschild of Salt Spring Island Conservancy and Dr. Hans Roemer illustrated the complexity of ecosystems and how difficult it can be to tease out ecological relationships, especially when voles are feeding on violets inside the sheep exclosures!



Yellow Montane Violet
Photo: Chris Junck

Kristiina Ovaska described the endangered blue-grey taildropper slug, which can excise the end of its tail if seized by a potential predator. An intensive search for the slugs, employing 10,000 cardboard artificial cover objects, has turned up very few individuals in few sites. Kristiina showed some rare photos of the slugs, and asked people to keep an eye out for them in open moist microsites, especially in the late fall. To conserve this species, help prevent the spread of exotic plants, snails and slugs.

Jenny Balke described endangered Taylor's checkerspot butterflies, currently numerous on Denman Island. She and Andrew Fyson showed photos of the butterflies feeding on



Colloquium Participants - Photo Todd Carnahan

Veronica, and one butterfly that laid about 100 eggs in an hour on the undersides of the leaves.

James Miskelly, Royal BC Museum, told a tale of two butterflies. Previously all branded skippers on Vancouver Island have been considered western branded skippers (subspecies *oregonia*), but in 2008, high- and low-elevation specimens were compared for the first time, and found to differ in colouration and size. The high elevation specimens are clearly the common branded skipper, which is common in subalpine and alpine areas across southern British Columbia. The western branded skipper in BC occurs only in Garry oak and associated ecosystems and is extremely rare. It flies in late summer in hot dry grass balds and lays its eggs near the bottom of bunch grasses.

Nicole Kroeker, Parks Canada, described restoration efforts in the wake of introduced plants, rampant fallow deer and Canada geese on two islands in the Gulf Islands National Park Reserve. For more on this project, see 'featured sites' at www.goert.ca/news.

Colin Huebert, UBC, presented results of his work showing that Garry oak is genetically similar throughout its range, which suggests that the tree is adaptable to changing climate conditions -- a sign of hope in the face of climate change.

Hiroshi Tomimatsu, UBC, reported that his study of the genetic structure of camas does not support the hypothesis that populations of camas on the west coast were translocated by First Peoples.

Dr. Brenda Callan, Research Scientist at Forestry Canada, presented on the status of 'sudden oak death' in BC and its impact on Garry oak ecosystems. To date, establishment of the causal agent *Phytophthora ramorum* in natural areas has been limited to coastal California and southern Oregon. In Canada, the pathogen has caused problems with importations of landscape plants, particularly Camellia,

Rhododendron, Pieris, Kalmia and Viburnum, which are inoculum-producing hosts for the disease. Nursery imports from the United States and Europe are under strict regulation to prevent further introductions and more research is underway.

Susan Hannon of Salt Spring Island gave us 'a restoration neophyte's need-to-know list' for community restoration projects, with questions about invasive plant removal, which native plants to choose, deerproofing, Douglas-fir encroachment, and funding and research opportunities.

Susan Pinkus from Ecojustice presented on the science, law, policy and politics of recovery planning under the Species At Risk Act.

Dr. Hans Roemer presented results of his study showing, among other things, that most Garry oak meadows surveyed are infested with more than 50% exotic species. He was heard to say that 'rare species are drowning in introduced species'. Surveys have taken place over the last 14 years, resulting in 31 data sets (with a total of 366 relevés).



Brenda Beckwith, Senior Lab Instructor at the UVic School of Environmental Studies, picks up a flat of Roemer's fescue for her native plant research garden. Photo Carolyn Masson

Dr. Adolf Ceska spoke about the decline of rare plants in Beacon Hill Park and the problems faced in trying to protect rare plant species in urban areas. A field trip to Beacon Hill Park led by Fred Hook, City of Victoria Parks, provided opportunities for further learning the following day.

Proceedings from this and previous colloquia can be found at www.goert.ca/research.

Field trip in Beacon Hill Park
Photo by Kersti Vaino

Rare Mosses - continued

more than a few millimetres tall, and is sometimes hidden in other moss stems. It too has leaves with little hairpoints and a small golden capsule, but lacks the wings on the leaves. Its name comes from the colour of the plants when mature. Unlike the habitat of the alkaline wing-nerved moss, this species' habitat is rarely used by livestock as it is rather dangerous for cattle (some cattle, and as rumour has it, a young boy in the early 1900's, have disappeared into sink-holes that occasionally appear on the tops of these bluffs). However, some of the most desirable land for houses (and roads) and smaller vineyards are in this habitat, especially near Penticton where the only recent sighting of this moss has occurred. The main threat to this species is probably development.

This has been a very sad time for bryologists in British Columbia. Dr. Schofield, the father of bryology in the province, passed away last year, but his wonderful legacy remains.



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ECOLOGICAL RESERVES AND THEIR BOUNDARIES

article and photos by Adolf Ceska

In the system of protected areas in British Columbia, Ecological Reserves represent the category with the strictest protection. The rules for establishing an Ecological Reserve and for its management are given in the Ecological Reserve Act. This Act specifies that Ecological Reserves can be established only on Crown land and the area must “be immediately withdrawn and reserved from any further disposition that might otherwise be granted under any Act or law in force in British Columbia.” Due to the limitations of this process, the boundaries often miss the ecological phenomena the reserve should protect, or the areas worth protecting occur at the very boundary of the protected area.

Katherine Tye (Vedder Crossing) Ecological Reserve # 116 can be given as an example. The reserve land was in part donated and in part sold by Mrs. Katherine Tye to the Nature Trust of British Columbia, and is now leased to the crown on a 99-year term to preserve and/or develop it “as a site of ecological interest for the use, enjoyment and benefit of the people of British Columbia.” The Ecological Reserve should protect the rare Phantom orchid (*Cephalanthera austini* [Gray] Heller) that occurs on the site. However, a large portion of the Phantom orchid population there occurs at the very boundary, if not outside of the Ecological Reserve.

Trial Island Ecological Reserve # 132 hit an interesting obstacle when the part of the proposed site included four C-FAX Radio transmitting towers. Although the footprint of the towers is rather negligible, the area of the Crown land leased to the C-FAX Radio Station had to be excluded from ER # 132. The other alternative would have been to cancel the lease and take down the towers. To take the leased area out of the proposed ecological reserve appeared to be the less absurd solution. A large population of Macoun’s meadowfoam (*Limnanthes macounii* Trel.) and the site of the rare Victoria’s paintbrush (*Castilleja victoriae* Fairbarns & Egger) were excluded from this Ecological Reserve. Both species are local endemics with declining populations. Victoria’s paintbrush was described only recently (Fairbarns & Egger, 2007), and with its several historic populations extirpated and only three extant popula-

tions worldwide, it is certainly the rarest plant in Canada and Washington State. Nevertheless, its site on Trial Island is in the area that had to be excluded because of the radio transmission towers. Even today the area with the C-FAX Radio transmission towers retains an “Institutional” designation in the Official Community Plan for the District of Oak Bay: <http://www.oakbaybc.org/bylaws/3943.pdf>

Boundaries of most Ecological Reserves in British Columbia are thus the result of a compromise. They depend on the availability of the “otherwise uncommitted” Crown land (cf. Katherine Tye ER # 116 and Trial Island ER # 132), and the survival of species to be protected is not the most important consideration when selecting the ER boundary.

Given this situation, it is rather idealistic to talk about the need of certain buffers, the areas that would run alongside the ER boundaries and protect ERs from impacts of activity on neighbouring lands.

The following examples illustrate some buffers issues in the existing management of British Columbia Ecological Reserves.

Case Study 1. Mount Tzouhalem Ecological Reserve # 112



I remember a nice population of White-head aster (*Sericarpus rigidus* alias *Aster curtus*) that was at the very entrance to the Mt. Tzouhalem ER in Duncan. That population disappeared shortly after the “lower” entrance to the reserve was established. But here is what the Mt. Tzouhalem ER boundary looks like now: The sign “Ecological Reserve” is still on the oak at the margin of the artificial cliff. The role of the fence has drasti-

cally changed. Before the house was built, the fence was erected to keep the intruders from entering the reserve; now it serves to protect the ER intruders from falling into the abyss.

Case Study 2. Field's Lease Ecological Reserve # 33

The same situation as in the Case No. 1, except that the neighbours did not blast the rock up to the ER boundary in order to fit their house in. Only a chicken wire fence is marking the boundary between the reserve and the house. This results in much more introduced plants in this corner than in the rest of the Field's Lease ER.



Case Study 3. Haynes' Lease Ecological Reserve #100

There is only a narrow field road that divides the Burrowing Owl Winery from the Haynes Lease ER: The last burrowing owl was seen in British Columbia, just here in Osoyoos, in 1996. It is commendable that the burrowing owl still lives in the Okanagan Valley in name (only), but we should be concerned about the ecological impact of vineyard watering on the ecological reserve. It is hard to predict what impact the vineyard operations or vineyard watering will have on the Haynes' Lease Ecological Reserve, but it will not likely be positive.

Case Study 4. Trout Creek Ecological Reserve # 7

There is a sharp contrast between the heavily used area, the golf course, and this ecological reserve. A simple fence separates the golf course from the protected area. The fence is easy to negotiate with the help of a few wooden steps: the steps apparently serve the golfers to retrieve their lost balls. The transition between the natural area and the golf course is sharp; however, one cannot see any negative impact of the golf course on the neighbouring reserve. In this case, the



golf course functions as a large buffer area to this ecological reserve.

Conclusion

I have brought up several issues, but am not able to offer any solutions to the problems. I hope that my grumbling will inspire the readers to think about this problem and promote the establishment of buffer zones in particular cases of ecological reserves they know. Do we need more than a dirt road between the reserves and the development of the surrounding land? In some cases yes, in some cases no. We have to think about this with each individual case in mind.

I also like the broader flexibility of the Manitoba Ecological Reserves that does not restrict the creation of the ecological reserves to Crown land only. In British Columbia, the provincial governments have been happily giving away Crown land without any ecological considerations, and the chances to establish new ecological reserves with natural boundaries are getting even smaller. Will we eventually end up with ecological reserves that are not worth preserving?

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MEADOWS MATTER ON DENMAN

Story and Photos By Jennifer Balke RPBio

Denman islanders have demonstrated once again that they care about the non-human residents of their island! Landowners of 1059 acres (over 8 % of the island) signed up for the first year of the Denman Conservancy Association's (DCA) 2008-9 Rare Meadow Stewardship program, funded primarily by the federal Habitat Stewardship Program (HSP). This project continues on from the DCA's initial stewardship effort of ten years ago.

Stewardship is the DCA's way of honoring landowners who care for native species and of raising islanders' consciousness of the rich biodiversity of their surroundings. The DCA's new meadow-stewardship project has four objectives. The DCA sought to identify meadow-species at risk on private land, to create a rare-meadow-species awareness among landowners and the community, to gain information and share ideas about their ecology and habitat needs and lastly to inspire and assist landowners in adapting their land use for the mutual benefit of all. This new stewardship initiative was focused on rare species in meadows. But Denman is known mainly for its forests and wetlands. So, a rare 'meadow' species program on Denman comes with a quite a story.

A colorful checkered flutter began this phase of the Denman stewardship story, but to be complete, we probably need to begin even further back. At the turn of the millennium, Denman lands had changed dramatically. One third of the island's covering blanket of vibrant Douglas-fir forests was gone. In its place, around the homes, gardens and farms of islanders were thousands of acres of raw clear-cuts.

Wildlife species on Denman changed with the vegetation conversion. Removal of the forests led to the demise of myriads of forest-dwelling species. Creation of the vast open spaces of dry shrubs and wet meadows resulted in the proliferation and immigration of sun lovers and open-land species. The Taylor's checkerspot butterfly *Euphydryas*



editha taylori was one of those emerging species.

Taylor's checkerspot butterflies, affectionately known as Cspots, once occupied Garry oak meadows and open areas of SW Vancouver Island and the Gulf Islands. Populations dwindled to a last stand on Hornby Island before being declared "extirpated" or gone from Canada about 2001. Thus, their emergence in Denman Island clear-cuts in 2005 was greeted with both joy and amazement. The wet shrubby sites where the butterflies thrived didn't look much like Garry oak meadows, but this focused ad-

Checkerspots breeding

ditional conservation attention on

those 'vernal pools' of the south coast meadows. Meanwhile biologists studied Cspots on Denman.

Learning about the Cspot life cycle timing and stages on Denman was the first goal. Identifying where the Cspots had breeding populations was essential for their conservation. So, biologists searched for the spring or 'post-diapause' larvae. Fortunately background information was plentiful, as Checkerspots, worldwide, are one of the most studied groups of butterflies. The recently published *On the Wings of Checkerspots* (Erlich, P.R., & Hanski, I. (Eds.) (2004). New York: Oxford University Press, Inc.) textbook is evidence of the scientific interest. As more breeding sites were identified on Denman, the focus turned to conservation. Stewardship for all these private land parcels seemed the best approach.

The DCA's previous success with a two-year private-land stewardship program was the inspiration. From 1996 to 98, landowners of 114 properties signed stewardship pledges committing to protect native species for 1158 acres of Denman Island. This project had all the usual rewards and the exhausting aspects of landowner contact and stewardship education, with which stewardship groups are very familiar. Island groups also know the changing nature of Gulf Island land-ownership. Repeated landowner-turnover is due to both the ever-rising property values and the inability to

tolerate rural life-styles combined with ferry travel. This reality, together with a lack of institutional support for BC's natural history, and an amazing paucity of wildlife information, even at the species presence or absence level, makes the need for community-based natural history education a never-ending necessity.

So ten years after the DCA's first major stewardship effort, the meadow stewardship project began, with the charismatic Cspot as the flagship species. In the new revived-stewardship program, rare meadow species are emphasized in the landowners' pledge and the subsequent plans and land-use records. Only properties with rare-meadow species are included in this project, and so far, the overlap with the previous project is minimal (3% of acreage pledged). The rest of the island community is included in all of the educational aspects of the project, and the potential for habitat protection increases as new landowners with rare meadow species, especially Cspots are continually coming forward.

The aims of the Government of Canada's Habitat Stewardship Program are to conserve and to assist the recovery of 'species at risk' and their habitats. During the Denman project, the DCA's list of 'meadow-species at risk' has grown to 18. Included with the Cspots are five other invertebrates, one reptile, one amphibian, eight bird and one mammal species. While local biologists learn more about the Cspots, they also identify other rare species and can assist landowners in conserving these species and their habitats.

As the DCA's new stewardship program enters its second year, the Cspots are flying again. Throughout May, they take flight for their short ten days to 2 week life as butterflies in Denman clear-cuts and fields. Stewardship is focused on both the dry open sites as well as the wet meadow habitat. Biologists have identified all phases of the Cspot lifecycle, from mating and laying of eggs, to the birth of summer or 'pre-diapause' larvae. These tiny caterpillars gradually forage further from their initial communal nets, usually wrapped around Marsh speedwell plants *Veronica scutellata*, on the ground. The larvae eat these plants and move on for more. Then, they disappear!

The main life-cycle/habitat question at the moment, is where the caterpillars 'sleep' for the late fall and winter. By February, they emerge from these sleeping sites, and this year, their early appearance suggests that they enjoyed our cool, dry and sunny spring. These fuzzy black caterpillars,



with eight bright-orange spots along their back, are distinctive and active! They travel singly or in groups, eating speedwells and plantains, shedding skins and growing larger. Then, the caterpillars find a protected spot under a leaf or on some man-made habitat and become a gorgeous spotted pupa. They emerge a couple of weeks later to take wing, to

Top Photo left: eggs being
laid on *Veronica scutellata*,
photo by Andrew Fyson

nectar on any available flowers
and to start the cycle again.

As usual with wildlife, predic-
tion is difficult and understand-

ing is never complete. Biologists don't know
if these Cspots were always on Denman, and
if they were just waiting for more openings to
prosper. They don't know if these new clear-
cut habitats are particularly good for them

and whether they will successful
colonize the seemingly suitable
Denman farmlands, if enhance-
ment ideas are attempted.

'Meadows' are such a rare thing
for the coastal Douglas-fir eco-
system. Except for wet, rocky
or dune-type sites, forests would
prevail over the coastal habitats.

First Nations are responsible
for creating and managing the
magnificent expanses of coastal



Pupa and larva face below
Photos by Jenny Balke



Garry Oak meadows and the wealth of species that once
colonized them. Turning present-day coastal lawns to Garry
Oak meadows is one potential answer to protecting a whole
ecosystem of species including Cspots!

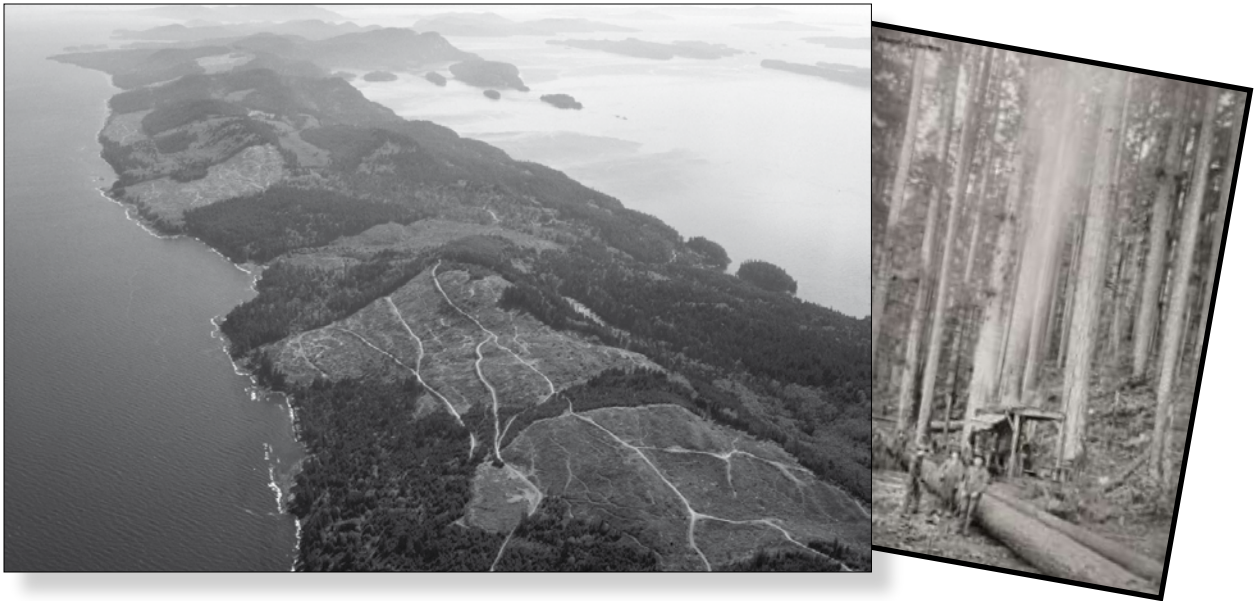
Meanwhile, populations of animals fluctuate for so many
reasons. Disease, parasites, predators and density-depend-
ent factors, for these Cspots, are still unknown. The DCA's
stewardship program will continue to monitor the Denman
population and to protect and enhance available habitat.
However, single site populations are extremely vulnerable,
and as last year's Canadian stamp depicted.... Denman's
Taylor's Checkerspot is truly one of Canada's Endangered
Species.

Denman's Rare Meadow Species Stewardship Project Pledge:

- * to respect the biological diversity of Denman Island by being aware of and showing sensitivity to the rare meadow species of wildlife and plants that inhabit our property,
- * to support the rare species stewardship plan that we describe for our land and to agree if possible, to seek the Project's advice, when major changes are planned in the use of the land,
- * to support the continuity of the Project by informing subsequent owners of our property of the Stewardship Pledge."

RESTORATION OF A GALIANO FOREST

by Keith Erickson



Galiano, the second largest of British Columbia's Southern Gulf Islands, is located within the Strait of Georgia between the urban centres of Vancouver and Victoria. Over half of the island was operated as a commercial tree farm until the late 1980s, and though the island today has a relatively intact forest landscape, much of this forest shows the history of industrial timber extraction.

Galiano's location on the lee side of the Vancouver Island Mountain range combined with the moderating influence of the ocean lead to a mild and relatively dry climate. The Island's forests are characteristic of the Coastal Douglas-fir Biogeoclimatic Zone (CDF), an ecological classification that has recently been ranked as imperiled (a high risk of extinction) both provincially and globally. The CDF has the highest density of species of conservation concern in British Columbia (Austin et al., 2008). This conservation challenge is further intensified when considering the future impacts of climate change and has led to the CDF being identified as BC's highest priority for conservation (Wilson, Hebda 2008).

Over the past two decades the Galiano Conservancy Association has focused on addressing issues of biodiversity loss and environmental sustainability. These efforts include a unique project with a goal of helping to transform one of the island's degraded forest plantations into a healthy, resilient and connected forest ecosystem.

Photos Above: left - aerial 1980 (two years after cutting began) right: skid road crew and yarder - courtesy of M. Reusseau
Next pages - bottom snag erection photos: GCA

History of Forest Use on Galiano

Logging in its various forms and intensities has been a constant presence on Galiano Island for thousands of years. Florence James, an Elder from the Penelakut First Nation, raised on Galiano Island, provides a glimpse of how our forests were cultivated and used for millennia: "The respect for trees is what my grandfather told us about as children, that the tree gives its body to assist us for travel [canoes]. So, a cedar tree was felled for a specific purpose and it was four to eight hundred years old. The tree was nurtured from a little sprig, limbed in a way that would prevent many knots. No single person would witness all this, as the plans were meant for future generations." (James, 2005)

Not until the 20th century did the intensity of logging really begin to re-define the ecology of the island. Loggers in the early 1900s used the steam donkey, which increased their ability to maneuver their fallen giants. Efficiency was drastically increased after the two world wars with the development of the internal combustion engine in heavy machinery and the chainsaw. This increased capacity to remove timber was showcased in the industrial clearcut – and by the 1980s, moonscape-like patches dominated the view of Galiano from the air. By the turn of the new millennium one was hard pressed to find a patch of untouched old-growth forest on the island. The old trees managed for thousands of years by First Nations have been replaced by industrial plantations established within the past 50 years, scattered with patches of mature forest high-graded a century ago.

History of the Forest Restoration Site

Qwxwulwi's is the Penelakut name for the restoration site at the heart of the Galiano Conservancy's forest restoration program. Florence James, an elder of the Penelakut Tribe explained that Qwxwulwi's is a place to live while resting, gathering provisions and medications, and waiting for good weather. Qwxwulwi's is the word for the action of paddling...". The site embodies the full spectrum of Galiano's forestry history.

The site's use as an industrial scale timber farm began in 1968 with the first clearcut, which removed all trees from about a third of the lot. The cut was followed by an intense slash burn that penetrated beneath the forest floor through the root systems of the stumps left behind. The remainder of the site was clearcut in 1978. The intensive industrial-scale treatment included the removal of every standing tree regardless of size or species followed by the bulldozing of top soil and slash into long linear piles called windrows. Although the site was set ablaze, the burn failed, leaving behind the windrows and their rotting organic material. This intensive and costly treatment of the cut-block was an attempt to simplify future access to the site for planting, thinning and harvesting.

The site was planted with uniform rows of genetically similar Douglas-fir seedlings selected for fast growth and size. Any other plants that naturally sprouted were quickly eliminated to ensure that the planted fir had no competition.

The industrial approach to forestry including the removal of all vegetation from the site, the devastation to the forest floor by machinery and the establishment of a uniform single-aged, single-species plantation have set the forest on a trajectory where biodiversity and ecosystem processes function on a minimal level. However, this cycle was broken in 1998 when the Galiano Conservancy recognized the potential of the site to provide connectivity at the landscape scale and purchased the property for restoration. A forest restoration plan was prepared in 2002, and two years later restoration treatments were initiated to help shift the plantation's trajectory towards a healthy mature forest.

Restoration Treatments

After completing a detailed inventory of the plantation and comparing its ecological condition with nearby mature

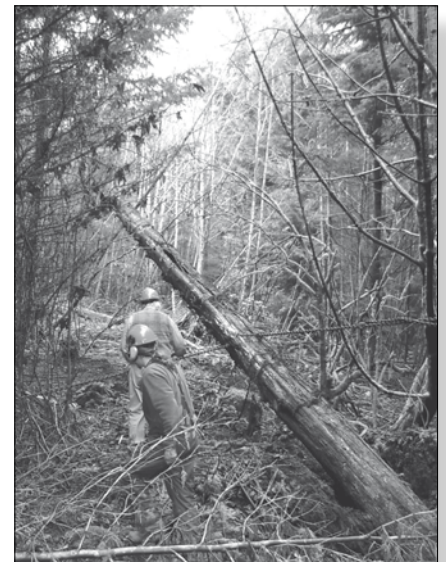
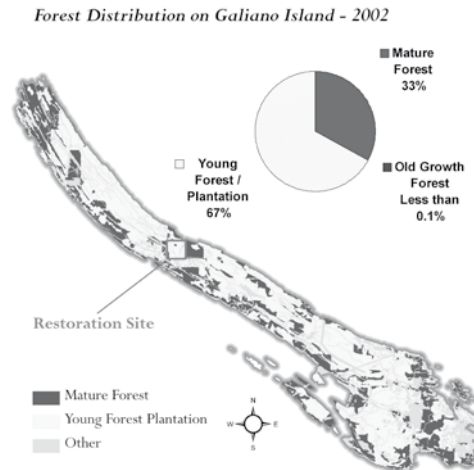
forest and some of the last remaining old-growth patches in our region, we devised a range of restoration treatments.

The goal was not the re-creation of the forest that existed prior to industrial logging, but re-establishing a healthier, more diverse, and resilient forest ecosystem.

Our treatments were developed under the guidance of ecosystem-based forester Herb Hammond of the Silva Forest Foundation. They focus on increasing diversity of forest structure, composition and ultimately function. Primary treatments include thinning of plantation trees and dispersal of the coarse woody debris remaining in windrows.

Rotting slash is dispersed across the barren forest floor with the aid of a 5-ton chain hoist for lift and a cable and pulley system for horizontal movement. The organic material provides habitat for a variety of plants and wildlife, creates soil conditions conducive for the growth of mycorrhizal fungi and functions as a moisture sink during periods of summer drought. In addition, we use large, intact pieces found in the slash piles to create snags. With a modification of the cable system, we stand up the large diameter logs as wildlife trees creating forest structure that would otherwise take centuries to form. This unique, hand-powered, portable restoration system minimizes further damage to the site.

Thinning plantation Douglas-fir trees creates gaps in the canopy allowing more light to reach the forest floor. This promotes growth of mosses, grasses, shrubs and other tree species. Any natural elements such as a red alder tree, a patch of salal or a small area of undisturbed soil that remain within the plantation are viewed as 'anchors' of diversity and provide a guide for choosing which plantation trees to keep and which to cull. We use three methods for thinning. Pulling trees over mimics natural windthrow creating a pit and mound feature on the previously scraped and flattened forest floor. A 5-ton



chain hoist in series with a number of chains, pulleys and cables easily brings the trees down by hand. Topping creates a small-diameter wildlife tree while opening the canopy and allowing more light to reach the forest floor. Girdling is the most efficient technique for thinning. The cambium is removed in a band around the entire circumference of the tree with a specialized chisel, cutting off the transport of nutrients to the roots. After thinning treatments have been completed we plant native Galiano stock raised in our own restoration nursery to reestablish understory cover and enhance genetic and species diversity.



Photos: right - before treatment, left - same site after treatment



of climate change, the Galiano Conservancy is 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 treat-

ments on carbon sequestration in the soils.

In 2005 a graduate student from the Netherlands conducted a study focused on the availability of soil nutrients and found that levels of key soil minerals in the

Short-term Results

Just 5 years after restoration treatments, we have already seen significant changes. The plantation has responded to restoration treatments with an increase in species richness and biomass. The moss layer was the first to respond to the increase in light resulting from thinning treatments. The grasses and herbs followed quickly, along with a flourish of shoots branching off of red alder stems. Salal, oceanspray and other shrubby species have been slower to respond; however, patches of these species are beginning to emerge and are expected to expand throughout the stand over the next 5 years. Structurally, the restored areas of the plantation resemble a more natural condition with a mosaic of dominant Douglas-fir trees, a revitalized 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 newly created structural complexity equates to greater habitat diversity and availability, adding to the sites potential for supporting biodiversity.

Education and Research

Data from the monitoring program on this site indicates that ecological restoration has clearly increased the structural, compositional and functional diversity of the Douglas-fir plantation. Now, in light of the ever-increasing significance

restoration site were more similar to those in an adjacent mature forest stand than in the untreated plantation. The study suggests that the restoration work increases microbial activity, creating a healthy soil system that more closely resembles a natural mature forest system. (Koele, 2005)

While restoration treatments at this site are benefiting the local ecology, it is the educational component of the project that reaches beyond Galiano's shoreline. 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 youth educational program that incorporates hands-on restoration activities that provide students with a positive connection to the natural world. The Conservancy is now piloting programs that engage students in restoration projects in their home communities after visiting our site on Galiano.

Funding for this project was generously provided by: EcoAction Community Funding Program, Science Horizons, Canada Summer Jobs, Victoria Foundation, Tides Foundation, Mountain Equipment Coop, Vancity, Walmart Evergreen Grants Program, and the Home Depot Foundation.

Galiano Conservancy Association has just been awarded Wildlife Habitat Canada's Forest Stewardship Award for their work on this project. Congratulations Galiano! For further information www.galianoconservancy.ca

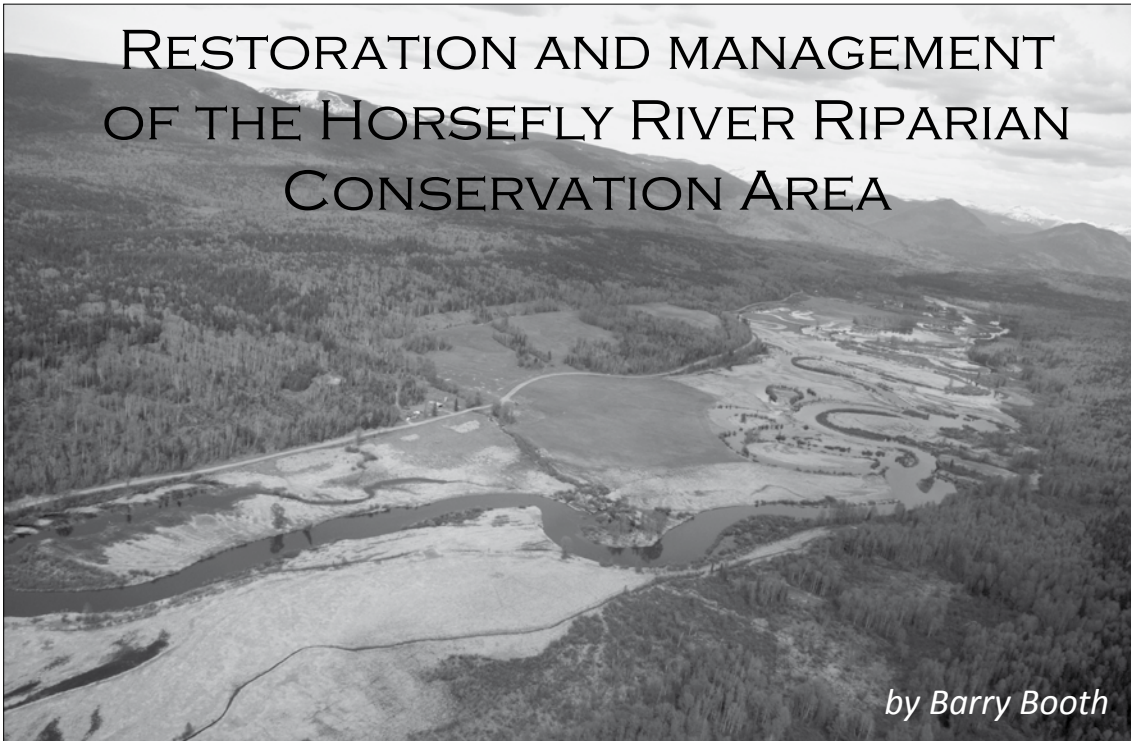
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RESTORATION AND MANAGEMENT OF THE HORSEFLY RIVER RIPARIAN CONSERVATION AREA



by Barry Booth

Photo by Don Lawrence

The Horsefly River Riparian Conservation Area, located approximately 25 km from the town of Horsefly, was one of TLC The Land Conservancy's first acquisitions. At the urging of Department of Fisheries and Ocean (DFO) biologists and community partners, TLC purchased a portion of the Black Creek Ranch in 1998. Since then we have added a further 80 ha to the Conservation area, bringing our holdings in the valley to ~ 400 ha, most of which is low elevation riparian habitat. The initial 320 ha purchase started the long and arduous task of restoring what is arguably some of the most valuable fish and riparian habitat in BC.

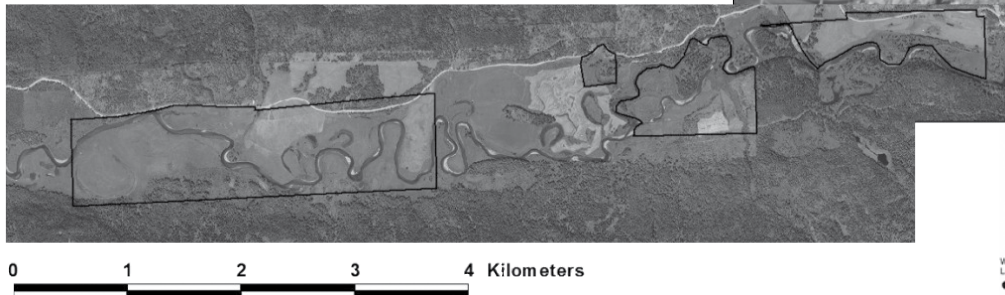
Why this property was initially purchased, despite the significant restoration challenges was and is clear: the Horsefly River is one of BC's most valuable sockeye salmon rivers. Some of the best spawning habitat in the Horsefly system occurs along sections of the old Black Creek Ranch that are now owned by TLC. Unfortunately, the Horsefly River is not as well known as the Adams River in the southern interior and as a result does not get the attention it deserves. However, it is second only to the Adams River in terms of the number of sockeye that return to spawn, and in fact, the number of returning sockeye have at times surpassed the numbers on the Adams. The river also supports spawning populations of Coho and Chinook salmon as well as world renowned trophy-sized Rainbow trout. The conservation area itself is used by grizzly and black bears that come to feed on the salmon carcasses in the fall. It is also excellent moose winter range and breeding habitat for a wide range of song and waterbirds.

This property and the surrounding area has much history. First Nations Peoples relied on the returning salmon for hundreds of years. Billy Miner homesteaded along the Horsefly in close proximity to the Conservation Area. Ranching sprung up in the area as far back as the 1890s. Hardrock and placer mining and commercial forestry continue to leave their indelible marks throughout the watershed.

Ranching is perhaps the one land use whose mark is most evident on the Conservation Area itself. In the lower reaches of the Conservation Area the river meanders through a wide valley up to 800 m. in places. This broad valley represented potential areas for the cultivation of reed canary grass (*Phalaris arundinacea*) once the original vegetation was removed. While the removal of the original vegetation allowed for the cultivation of hay for cattle, it had a number of unintended effects. The first and most obvious effect was the destabilization of the river bank and subsequent increased erosion along vast stretches of the river both inside and outside the Conservation Area. Another effect of the clearing of native vegetation was elimination of large coarse woody debris into the river system, decreasing valuable fish habitat. Dyking was also used to control flooding in two places on the Conservation Area. In these places containment dykes were built with the hope that these structures could hold back the annual flood waters that inundate much of the sections of the mid-Horsefly River. While holding back some of the melt waters of the Cariboo mountains, these dykes created barriers for fish movement: once flood waters overtopped,

or circumvented these dykes, fish would move into areas behind them only to become trapped as flood waters receded.

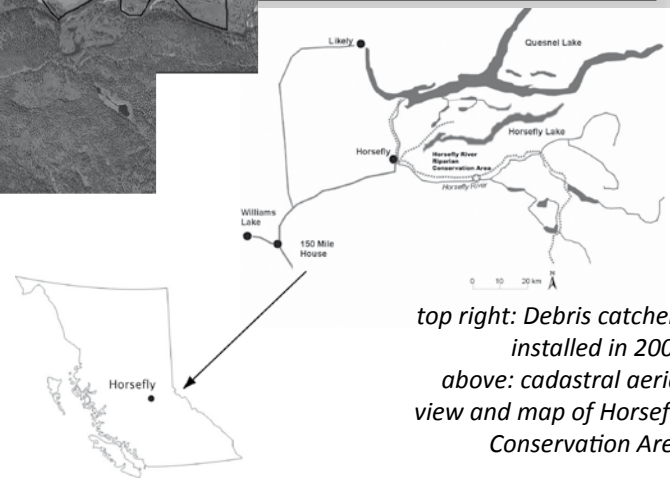
Perhaps the most insidious effect of ranching was the introduction of reed canary grass as a forage crop in the Horsefly River Valley. This species of grass is perfectly adapted to this section of the Horsefly River: it tolerates prolonged flooding, spreads by rhizomes and forms solid sod dense mats. Unfortunately its values as a forage crop in this, and many other parts of North America, also make it a problem for the long-term health of wetlands and floodplains. It is one of the most invasive plants in North America and covers a large portion of the flood plain in the Conservation Area.



Restoration

These four consequences of past land management prompted TLC's partners to initiate restoration work on various parts of the Conservation Area, while at the same time maintaining ~30% of the land in active agriculture through long term leases with adjacent ranches. Spearheaded initially by the Provincial Ministry of the Environment and the Department of Fisheries and Oceans, the restoration efforts began early after the acquisition. Initial work was guided by a comprehensive assessment and restoration plan produced by a local biologist. These efforts also took place during the heyday of both Forestry Renewal and Fisheries Renewal BC. What ensued over the period of ~ 3 years was akin to a gold rush. Large sums of money were applied to a number of different types of restoration work. Projects were implemented by both MOE and DFO simultaneously.

Upon reflection, the list of projects applied to this area is staggering. Efforts involved literally thousands of person and hundreds of heavy machine hours. Projects included the planting of thousands of willow stakes, coniferous and deciduous seedlings, the construction of a 500 m back channel for off channel fisheries habitat, the installation of deflector logs and debris catchers along a 600 m stretch of the river to push the flow of water away from the eroding bank and to catch and hold large woody debris, extensive bank rehabilitation using both machines and bioengineering, the breaching of a containment dyke, and the construction of hundreds of meters of fencing to name a few of the restoration activities.



*top right: Debris catchers installed in 2000
above: cadastral aerial view and map of Horsefly Conservation Area*

Unfortunately, funding for work in the Horsefly from Forestry and Fisheries Renewal BC came to an end in 2001. What followed shortly thereafter were significant budget cutbacks to the Ministry of the Environment and the eventual withdrawal of MOE's direct involvement in the management of the Conservation Area. In 2004 TLC assumed active management of the Conservation Area guided by an ad hoc advisory committee comprised of DFO, MOE, and local citizens.

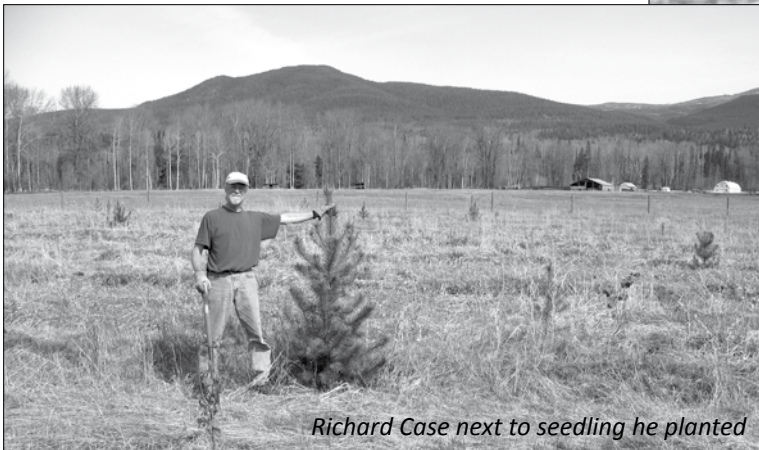
Almost immediately after we assumed management of the Conservation Area we purchased an additional piece of land with very high fisheries values that required some restoration work. Unlike past restoration efforts, gone were the days of big budgets and large machines. Instead, we planted the floodplain of this area, by hand, using a variety of species over the course of three seasons. We also established photo points in the area and are measuring the rate of bank loss in the property. At the same time, we began to take stock of what had happened in the Conservation Area as a whole. Unfortunately there were very few records of what was planted, when it was planted, and where the stock originated. There were cursory attempts made to monitor the efforts using photo point monitoring, but the protocols

for this monitoring were not standardized. In addition, there was no central record of the restoration activities and no catalogue of how they were spatially applied.

While this seems like a tale of woe, it is a story that continues to be repeated in restoration projects throughout the world. It is now time for us to step back and think about what happened and why, and to determine what could be done differently. There has been a dramatic transformation of large parts of the Conservation Area as a result of past restoration efforts. The pine and spruce seedling planted in 1999 and 2000 are now starting to look like trees, and in some places a forest is taking shape. Shoreline vegetation is making a slow and gradual comeback as a result of willow staking and riparian plantings. We have also eliminated two fish stranding issues by



grizzly bear feeding in Horsefly - photo Cornelius Iwan



Richard Case next to seedling he planted

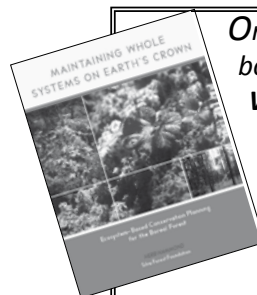
removing portions of two containment dykes that separated oxbow lakes from the main stem of the Horsefly River.

While we have seen changes in the flood plain of the Conservation Area, what we do need to do is gauge the effectiveness of this work, which is exactly what will occur this season. With funding from the Habitat Conservation Trust Fund and the Pacific Salmon Foundation TLC along with engineers from DFO will be inspecting a number of the large projects that have been implemented. We will be preparing mitigation plans for any work that needs to be done on any of the aforementioned projects. TLC will also be upgrading a much needed monitoring and evaluation plan that will build on and improve the one established back in 2000. To date we have summarized all of the restoration work as best as we can and have created a GIS-based mapping project that will assist in tracking restoration efforts and needs.

Any future restoration work on the Conservation Area will occur in a much more strategic manner. Further work will be carefully planned, evaluation and monitor-

ing protocols will be built in, and regular updates will be completed. As an example of this our most recent work, funded by the BC Trust for Public Lands, is a small scale experimental trial using willow stakes and ground cloth (landscape fabric and heavy plastic) as physical barriers in attempts to control reed canary grass. We will be closely monitoring this trial in the coming months and years to determine if this low-tech and low-cost solution to a chronic problem can be implemented in other parts of the Conservation Area.

The literature on restoration is full of projects that fall short in the area of monitoring and evaluation. Restoration experts also emphasize the need for carefully planned, executed and monitored projects. Our funders are beginning to demand it, and perhaps more importantly, we are instituting it as a matter of learning to do things better, and gaining experience and professional knowledge through the results. In so doing we will ultimately be more effective in the restoration of this extraordinary area of BC.



Order the Silva Forest Foundation's new book by Herb Hammond, *Maintaining Whole Systems on Earth's Crown: Ecosystem-based Planning for the Boreal Forest*. This book provides details for ecosystem-based planning from large landscapes to small patches in any ecosystem type and guidance for developing diverse, community-based economies. To order go to www.silvafor.org/

DUCK CREEK RESTORATION SIXTEEN YEARS LATER

by Kathy Reimer



It doesn't seem like that long ago, but armed with a "huge" \$10,000 Public Conservation Fund grant in 1993, we started the restoration project on four km. of what used to be a completely dry stream by June of every year. St. Mary Lake, Salt Spring Island is stocked with Cut-throat trout that spawned downstream in Duck Creek every winter, but only a few fry ever survived. There had been an oral history of salmon in the creek, so we thought we would try to bring them back.

Our first task was to rebuild the entire stream channel through three agricultural properties downstream of the lake, where over the last 80 or so years, land clearing and farming practices had destroyed the riparian area and completely silted in the creek bed. The end result was the flooding of the fields in the winter and the blocking of summer water flows from the springs near the lake.

A lot of our funds were spent on survey work, and we hoped that if we reconstructed the streambed, the water from the springs could keep Duck Creek alive year round. By the end of the summer we had hired a big excavator and completely rebuilt the channel. The creek had summer flows again. The success had a lot to do with John Wilcox, one of the property owners, who volunteered his time and managed the project.

We had a lot of "experts" telling us why we should not bother with the restoration. One reason given was because the water in our ponds would be too warm for fish. It turns out that ground water seeps into our ponds from on top of the blue clay that lines the valley. We didn't know that at the time, but we kept saying that warm water was better than no water at all. Also the main riparian vegetation left was the yellow flag irises, but there was no way to get rid of all of them, so we did not bother. Sixteen years later, they still have not "taken over". They actually helped to stabilize the new stream banks, which were lined with clay.

For three more years, with funding from Fisheries Renewal BC and the Pacific Salmon Foundation we added spawning beds and woody debris, constructed off channel wetlands in the upper watershed, and planted our new riparian areas. Our efforts attracted a family of beavers and John wisely decided to let them "manage" the water levels on his farm. The school children from Fernwood Elementary restocked the creek with Coho fry from their "Salmonids in the Classroom" program. Duck Creek was suddenly full of fish year round, even though there were still only minimum summer flows.

When the local North Salt Spring Water District applied in the early 2000s for a weir on St. Mary Lake, an

independent biologist was hired to assess the fish stocks in the creek. He found Coho and Cutthroat trout fry in every reach of the creek from the sea to the lake. This meant that Fisheries and Oceans could request summer water release from the weir. The weir was constructed in 2004 and Duck Creek now has ample summer water. If we had not restored the creek and had not reintroduced the Coho Salmon, this story would have been entirely different.

So sixteen years later Duck Creek is still doing just fine. The spawning beds look like they have been there forever; the ponds are all full of fish. There are redlegged frogs, western toads, herons, eagles, muskrats, otter, deer, and beavers coming and going. The riparian areas have grown in well. The two main farmers have also completed both the Environmental Farm Plan and Biodiversity Plans.

If we ever get more funding, another water storage pond on one of the farms would be a good idea, just to prepare for climate change and any years of prolonged drought.

Our advice to other conservation groups is to “just do it.” If you get an opportunity to restore a stream seize the moment. Don’t keep looking for reasons not to do a restoration project. Future generations will never be able to afford it. Try to foresee the problems, i.e. the beavers showing up, and be ready to deal with them. We have lots of riparian planting and “beaver control” tricks we can share with you.

Kathy Reimer, John Wilcox. Island Stream and Salmon Enhancement Society, Box 289, Salt Spring Island. V8K2V9. Email: thesalmonladies@saltspring.com



A note from John Wilcox:

After you told me what you intended to do on Duck Creek - before we started - I was reading a book on stream reclamation. It described works like this as the most difficult of all land reclamation projects one could undertake. Many never meet with success due to all the contingencies Mother Nature and land owners throw in the face of those undertaking such initiatives. I didn't hold much hope that we would ever get this work done. You amazed me how you got this project started and finished. You get a great big congratulations from me for what you did to bring Duck Creek back to life.

Your work complemented the farm's diversity and is part of what made us Conservation Partners with TLC. It is also why the Duck Creek Farm is now posted on the provincial Agricultural Ministry website as a prime example of agricultural biodiversity in action.

*At the time we started I also committed another \$10,000 to add an additional 8 “off stream” ponds to the ecosystem for irrigation and habitat use which complement the project you got started. As our Whole Farm Plan shows, we also have set aside 3 acres of our 13 as a conservation wetland habitat zone. That farm plan is the one used to start off LTABC's inspiring book *Giving The Land a Voice*. We also have acquired a conservation habitat water license following the completion of our works here to ensure the continued maintenance of our water habitat.*

Now living here is to live in a working farm park. Our short staffed BC Parks administration might do well to look to what we do here. Any Agricultural Land Reserve property within any park could become working stewardship landscapes like this one where farm people steward what are otherwise unmanaged landscapes.

Not only do I thank you for what you accomplished here, I can tell by their songs, their flights and their tracks that the host of waterfowl, wildlife and plants that now grace this farm are also very thankful to you for the place they now enjoy as their hospitable home. One of the off stream ponds is full of newts who thank us too.



After we got started with this I hoped that Red-winged Black-birds would come to nest in the bullrushes Mother Nature so kindly planted for us on one of our off stream ponds near the house. Red-wings were part of our old Woodslee family farm homestead in Ontario's Carolinian biotic zone. Now they scold me in season for coming too close to their nests.



There is no shortage of evidence

that we are losing habitat on a grand scale, and that there is a need to protect that habitat on an equally grand

scale. It can be disheartening to see the slow progress of stewardship and conservation compared to the onslaught of development. There is more than a little hope though, in practicing stewardship on a more manageable scale—right in our own backyards.

When we moved in to our little bungalow in a Lady-smith subdivision, there was almost no wildlife to be seen. It was weeks before I could note the arrival of the first junco to our bird feeder. Fortunately, there were a couple of large Douglas-firs, but the expanse of lawn was pretty much devoid of wildlife. We began the slow process of converting the city lot to a more wildlife friendly place. We're developing hedges of native and non-native species, chosen for their wildlife appeal and drought tolerance. Vegetable beds are replacing some of the lawn, and perennials chosen for their appeal to hummingbirds and butterflies are taking hold. The back corners are being rehabilitated with native plant communities and brush.

The rewards are starting to show. We're seeing salamanders we haven't seen before, and a Red Squirrel has become a regular. A pair of Northern Flickers raised two young in a cavity of a Broadleaf Maple in the front yard. Dozens of juncos now return each winter, along with a few other sparrows and towhees. Several species of swallowtail butterflies have visited to nectar, and lay their eggs on the



STEWARDSHIP ON THE HOME FRONT

article and photos by Bruce Whittington

dill. Anna's and Rufous Hummingbirds jostle each other for control of the Red-flowering Currant. We mulch many of the beds with leaves from the maple, which in turn are tossed around the yard by resident Bewick's Wrens and wintering Varied Thrushes.

It's still very much a work in progress. Band-tailed Pigeons (a blue-listed species) visit to feed on the fruits of dogwood and arbutus, so we're transplanting a new generation of these volunteers to our garden. The next step is a pond, something that in previous gardens has attracted many species. More of the lawn will disappear under additional vegetable beds—for better food sustainability, and winter foraging habitat for birds.

It's all happening in less than a quarter of an acre, minus the footprint of the house and woodshed. While it's not a major conservation effort, it makes a difference to the wildlife that use it, and combined with other small efforts nearby, it lessens the impact of a suburban landscape.

There is excellent information available for people who want to create backyard wildlife habitat. Bill Merilees of Nanaimo has written a very useful book titled *The New Gardening for Wildlife* (Whitecap Books.) Several good books are available on gardening with native plants in British Columbia, both from commercial publishers and organizations like the Garry Oak Ecosystem Recovery Team. Finally, I highly recommend the provincial government's Naturescape program. One Naturescape booklet covers wildlife friendly gardening principles for the province, while other booklets focus on plant and animal species in specific regions of the province. You can order the series for \$21.00 for any region at www.hctf.ca/nature.htm, and the provincial guidebook can be downloaded free at the same web site.

Photos by Bruce Whittington: Top Bewick's Wren, middle: Swallowtail butterfly, bottom: blue-listed Band-tailed Pigeon

BEYOND ACQUISITION - A Community Plans for the Future of Mount Artaban Nature Reserve *by Christine Pritchard*

Since our beginning as a Gulf Islands land trust, the many private landowners we have met through our journey have inspired us by their devotion to protecting the earth: Keith and Sylvia Pincott of North Pender joyfully observe and document the plant and animal species on their property, understanding who they share their land with and mindful of their own activities which might disturb sensitive species. Eileen Wttewaall of Salt Spring Island works tirelessly to remove invasive species from her property, ensuring that the native species she loves have the chance to grow and flourish. Protecting land through ownership is only the first step in conservation. It is landowners like Keith, Sylvia, Eileen, and the many other conservation-minded landowners who remind us that we must care for the land we own, ensuring the ecosystem values we strive to protect continue to flourish many years from today through effective stewardship.

The Islands Trust Fund strives to emulate the level of care set by these conservation-minded landowners when managing its own properties or Nature Reserves. For each nature reserve owned by the Islands Trust Fund, a management plan is created, documenting the property's values and features and setting out the terms of use and recommended stewardship activities for the property.

Most recently, in partnership with the Gambier Conservancy, the Islands Trust Fund undertook a management planning process for its newest nature reserve, Mount Artaban on Gambier Island. Mount Artaban Nature Reserve, the second Free Crown Grant received by the Trust Fund Board from the Province of British Columbia, protects 107 hectares (265 acres) of forest (including old growth), a wetland, and several at-risk plant communities. We work with the Gambier Island Conservancy to manage trails, signage and invasive species in Nature Reserves like Mount Artaban.

The management planning process for Mount Artaban included the following steps:

1. An ecological inventory of the Reserve
2. An investigation into the history of the area and the impacts on the landscape
3. Consultation with adjacent landowners, including the Sunshine Coast Regional District, BC Parks, the Province of BC (Crown lands) and the local Resident's Association
4. Consultation with the local community
5. Consultation with local First Nations
6. A community site visit and public hike on the property

Organizations and individuals were invited to comment on the management plan both at the start of the planning process and throughout its drafting by email, through a mailed and online questionnaire, at public meetings and by phone.

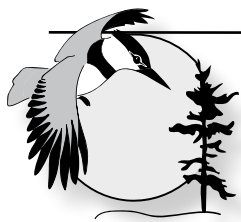


*View of Mt. Artaban looking northeast up Howe Sound
photo Rick Gustavson*

A highlight of the management planning process was the site visit in April 2009, in which 13 people hiked to the top of Mount Artaban, ascending through the Nature Reserve, into the snow at its peak, and descending through the forests of Halkett Bay Provincial Park. Participants, including Islands Trust Fund staff were given insight into the history of the Nature Reserve and its ecological value. Questions were asked and feedback was given on the future management of the property. With the help of all those who contributed to the process, the completed management plan, set to be released by the end of June 2009, will highlight management issues for the Islands Trust Fund, including wildfire hazard management, hunting, hiking trail access and signage, and a monitoring program for the property.

The Islands Trust Fund is a regional land trust that focuses on the Islands Trust Area which is composed of 13

continued on Page 28



STANDARDS & PRACTICES

Land management and stewardship encompass a wide range of activities and responsibilities. Simply purchasing land is not enough to protect it. Organizations who are actively conserving land, bear the responsibility for managing, restoring, monitoring, inventorying and caring for their properties. As a reflection of this responsibility, Standard 12 of the Canadian Land Trust Standards and Practices addresses the issue of Land Stewardship.

by Kathleen Sheppard

Funding Land Stewardship

Funding land stewardship is one of the most challenging aspects of owning conservation land. Even the most pristine of properties will require regular upkeep, whether it be signage, fencing or other management actions. Because raising money to manage properties can be more difficult than raising money to purchase them, many land trusts build the stewardship costs into their initial fundraising costs. These funds can then be held in an endowment fund, with the interest used to support future management.

For properties that are donated to a land trust, finding funds to manage properties can be more difficult. Some landowners may agree to donate funds to an endowment or to leave funds to the land trust as part of their estate. Other landowners may not be in a position to be so generous. In these situations, land trusts should carefully examine their ability to raise funds to manage the property and what sources of funding may be available to do so.

Stewardship Principles

Many land trusts know what types of activities are appropriate for their properties. However sometimes there are more parties involved, and their contributions and long-term involvement needs to be considered. Putting these principles in writing or developing a set of land management policies can help guide the best management of these lands into the future.

Land Management and Monitoring

Before a management plan can be written, it is important to be familiar with the features of the property. A baseline document will be a helpful tool in guiding the management plan. Management activities can vary from highly intensive to more passive, depending on the condition and uses of the property. The depth of the management plan will depend on the intensity of the management activities proposed.

The issue of public use of the property is a critical component to a management plan. Restoration and the protection of significant features will also be key components. Developing a management plan provides an important means of communicating the goals that the protection of the property is intended to achieve, with the public and within the organization to members, donors and staff.

Related to the management plan is monitoring. Land trusts should visit their properties regularly (at least once per year) to ensure that the conservation values are protected. Especially critical is encroachment from neighbouring properties and inappropriate uses of the property. *Land Conservation Law, US Easement Defense*, an article about enforcement featured in the previous issue of *the Kingfisher* demonstrates the importance of clearly marked property (or covenant) boundaries.

Other Issues

Land trusts should keep good records of their management activities on their properties. This is particularly important as personnel who work on the properties shift and change over time, as detailed in Barry Booth's article on the Horsefly in this issue. Land trusts should also build strong relationships with their neighbours, as in many cases, this can result in local stewards who are willing to keep an eye on the land trust's property.

Purchasing land is the exciting part of working for a land trust; managing the property provides long term rewards. Careful funding and planning will allow your land trust's property to be well managed into the future.

continued from Mt. Artaban - Page 27

island groupings containing over 450 islands in the Strait of Georgia and Howe Sound. Because of the scope of its area of interest, and the inherent challenge of working on islands separated by water, the Islands Trust Fund does much of its land management in partnership with local conservancy groups. With the land trusts' intimate knowledge of the landscapes and the values of the property, the Islands Trust Fund can make efficient use of its management funds, maintain a local property management presence and utilize skills and knowledge of the area that are already present on the island.

The Islands Trust Fund is grateful to islanders for helping with acquisition campaigns and also for the help and local knowledge they provide in the management of our properties. Together, we can work to ensure the ecosystem values we all worked so hard to protect will continue to delight generations to come through effective stewardship and care.

WILDSIGHT'S COLUMBIA HEADWATERS LEGACY



By Heather Leschield

Water Stewardship Success Story

The Columbia Wetlands are one of North America's last intact wetland ecosystems. They form the headwaters of the Columbia River, the largest river flowing into the Pacific Ocean from North America, and the primary source of freshwater for more than 15 million people. These wetlands—180 kilometres from north to south—lie between the Rocky and Purcell mountain ranges of southeastern British Columbia. They connect to both Windermere Lake and Columbia Lake.

It's a biologically-rich area. Attracting more than wildlife, a considerable influx of people "amenity migrants" impact its natural and freshwater resources. The permanent population in the Lake Windermere Area is 7,000, which swells to between 30,000 and 50,000 during the summer months. Both Columbia and Windermere lakes have experienced a collapse in the Burbot (*Lota lota*) fishery. This top predator fish is an indicator of ecosystem health. According to a 2006 Foreshore Habitat Inventory Mapping project, more than 62 per cent of Windermere Lake's shoreline is now classified as disturbed.

Wildsight's Columbia Headwaters Legacy Program is working to protect the Columbia Wetlands, Windermere Lake, Columbia Lake, the upper Columbia River and its tributary watersheds. This is an extensive, multi-faceted program.. It includes measurements of the water quality and quantity of both lakes and wetlands. It includes community outreach and education. And it facilitates collaborative lake management and watershed stewardship, being modeled around the world.

The Lake Windermere Project—a water stewardship success story

The Lake Windermere Project started in 2005. It is a key part of Wildsight's overarching Columbia Headwaters Legacy Program. Wildsight developed the Lake Windermere Project (LWP) as a response to growing public demand for an ongoing, comprehensive water stewardship initiative. It was Wildsight's goal that the LWP would engage both government and the public in efforts to protect and enhance water quality in the lake and in its surrounding uplands.

The project was launched as a result of financial assistance provided by the Real Estate Foundation of BC, Columbia Basin Trust and Environment Canada. Through innovation and creativity, the LWP has been successful in its approach to dealing with common problems associated with lake ecosystems, which has built trust and confidence in our funders and the community. By communication with our funders and successfully delivering our objectives, we have secured annual funding and attracted new funders, helping us to meet and exceed our goals.

As a pilot program, the LWP is precedent setting and serves as a template for lake management in the East Kootenay and across the province. Through effective partnerships and public education, LWP is a positive example of a collaborative approach to lake management. Lessons learned from LWP will be applied as Wildsight's Water Stewardship work expands to include water quality and quantity monitoring in the upper reaches of the Columbia River.



volunteer Amy Brett with VanDorn bottle, sampling Windermere Lake

A total of 32 volunteers have contributed 358.5 hours to help in water quality monitoring and boat counts. Water quality and quantity have also been monitored on six tributaries in the Columbia Headwaters.

This is leading to an understanding of the health of Windermere Lake at a watershed level.

All monitoring is conducted in accordance with the 2005 Masse & Miller Windermere Lake Water Quality Monitoring Program and Literature Review, which identifies priority monitoring such as nutrient and bacteria levels.

This year marks the 4th Annual Water Wonders Workshop. This interactive, educational water stewardship event, hosted by the LWP, draws hundreds of people. Water Wonders increases public understanding and promotes respect for local water resources through interactive water-based learning activities.

The LWP also organizes and hosts the Lake Windermere Fall Shoreline Cleanup. Since 2006, 55 volunteers have removed 677 kilograms of garbage from the shoreline. The cleanup is supported by Sobey's grocery store, the Great Canadian Shoreline Clean Up, CP Rail, the District of Invermere, the Regional District of East Kootenay and Waste Management Canada. These partners provide supplies and assistance with waste removal.

The LWP also partners with a local newspaper to produce a series of educational articles. The articles emphasize the importance of a healthy lake ecosystem, and cover topics such as septic system maintenance, the value of aquatic plants and water conservation measures. Several articles are also available on www.wildsight.ca/programs/windermere.

The LWP hosted the first Non-Motorized Day in 2008. Sailboats, canoes, kayaks, windsurfers, paddleboats, dinghies, rafts, rowboats and swimmers took to the water to celebrate non-motorized sport on Windermere Lake. Supported by the District of Invermere and the Chamber of Commerce, the day encouraged low-impact, traditional recreation.

Partnerships & Collaboration

In 2008, the LWP was invited to present at the 12th Living Lakes Networks conference in Umbria, Italy. The international network asked to use the LWP as a template for other lake stewardship groups from around the world.

In 2009, the LWP traveled to Cumbria, UK, to attend the signing of a Sister Lake Partnership agreement at the international Lakes for Living, Lakes for Life conference. This initiative of Wildsight and the UK Environment Agency links the two lakes and provides a framework for sharing expertise. The lakes have similar physical, environmental and social attributes. They face problems from sewage input, recreational pressures, large visitor and second homeowner populations, public access issues and declining water quality.

The LWP and the Canadian Cancer Society teamed up with other organizations to create the Pesticide Free Columbia Valley Coalition. After two years of effective public education, the coalition was delighted when the District of Invermere became the first community in the East Kootenay to pass a cosmetic pesticide bylaw. The bylaw enhances Invermere's image as a healthy, green community in which to raise a family.

The bylaw states that "no person shall use or apply a Pesticide or grant the permission or authority, express or implied, to use or apply a pesticide for the purpose of maintaining outdoor trees, shrubs, flowers, other ornamental plants and turf on, in, under or upon any Private Land or Public Land."

Joining with the BC Lake Stewardship Society, the LWP will deliver a two-day LakeKeepers workshop in August, 2009. The workshop is an excellent opportunity for individuals to learn water quality and quantity monitoring and aquatic plant identification. Many representatives from regional priority lakes (as identified by the East Kootenay Integrated Lake Management Partnership) will be attending the workshop and sharing these skills with their communities.

Planning & Development Guidelines

With funding from The Real Estate Foundation of BC, Windermere Lake's shoreline is the first digitally-inventoried foreshore in the East Kootenay. The inventory documents land use, riparian habitat changes and sensitive fish and wildlife habitats. The Windermere Lake Shoreline Management Guidelines came as a result of the inventory. The guidelines focus on the protection, conservation and restoration of important fish and wildlife values. They are being used by the Regional District of East Kootenay and the District of Invermere as the basis for a comprehensive Lake Management Plan.

Wildsight's Water Stewardship Program Manager, Heather Leschied, is chair of the East Kootenay Integrated Lake Management Partnership (EKILMP). The partnership formed in

2006 and is responsible for the development of the Shoreline Management Guidelines.

Residents, agencies and developers had expressed concern about the lack of a consistent strategy for the review and approval of development related activities on Windermere Lake. This lack of consistency could create serious environmental degradation of this water ecosystem. The guidelines will help remedy this and protect shoreline habitats from unnecessary degradation.

The partnership hopes that the guidelines will focus where new development can be located on the lake, without sacrificing the priceless natural assets and the economic viability of the area. The guidelines are a how-to manual—based on scientific studies—for those who are planning to alter their shoreline properties. They include information about permit requirements and contacts that help simplify the approvals process and make it consistent.

The EKILMP was formed to assess the potential cumulative impacts of increased development and population growth on East Kootenay lakes. Members include representatives from Fisheries and Oceans Canada, the Regional District of the East Kootenay, the Ministry of Environment, Transport Canada, Interior Health, the District of Invermere, the Village of Canal Flats, local First Nations (represented through the Canadian Columbia River Intertribal Fisheries Commission), Wildsight and others. The vision for EKILMP is to encourage “productive and healthy lake ecosystems in the East Kootenay Region, with balanced land and water uses that support and sustain traditional, environmental, community, recreational and aesthetic values.”

Our experiences on Windermere Lake will not only be used as a template for existing groups, but will assist in nurturing the creation of lake stewardship groups throughout the Kootenays. Similar processes have already begun on Columbia, Moyie, Monroe, Wasa, Tie and Rosen lakes.

The Lake Windermere Project participants believe that the environmental features that attract people to live in lakeside communities can also motivate them to build strong, healthy communities.

Expertise will help monitor healthy water

Wildsight was chosen to represent two of four groups in the Kootenays to complete the Canadian Aquatic Biomonitoring Network training. This knowledge will help Wildsight deliver tributary monitoring programs in the upper Columbia River. The network training is an initiative of Environment Canada; it helps streamline protocols to allow for data to be collected and compared across the country.

Wildsight has also recently increased expertise and capacity through the Pacific Streamkeepers Federation. Three Wildsight program managers are now trained to deliver Streamkeepers workshops in the area. They are the first in the East Kootenay to become certified Streamkeepers instructors. This will open the doors for community-driven stream monitoring programs across the upper portion of the Columbia Basin.

Water stewardship in the Columbia Headwaters — looking to the future

Wildsight's Lake Windermere Project is in the final year of its five-year term. To prepare for a future of ongoing water stewardship, the LWP created the Lake Windermere Ambassadors committee in 2008. The committee

has two roles: first as a long-term advisory committee and second as a short-term fundraising committee. Its mandate is the protection of the lake in perpetuity. It includes citizens who represent business, government, recreation, second homeowners, local residents, youth and the LWP.

While recognizing the need to expand funding resources, the Ambassadors will help the program maintain an adequate level of community-based water stewardship.

The Ambassadors are informed by recommendations from local residents and business people. It also creates an opportunity for developers, businesses and community members to contribute financially to the LWP. Contributors are recognized by categories of bronze, silver, gold or platinum.

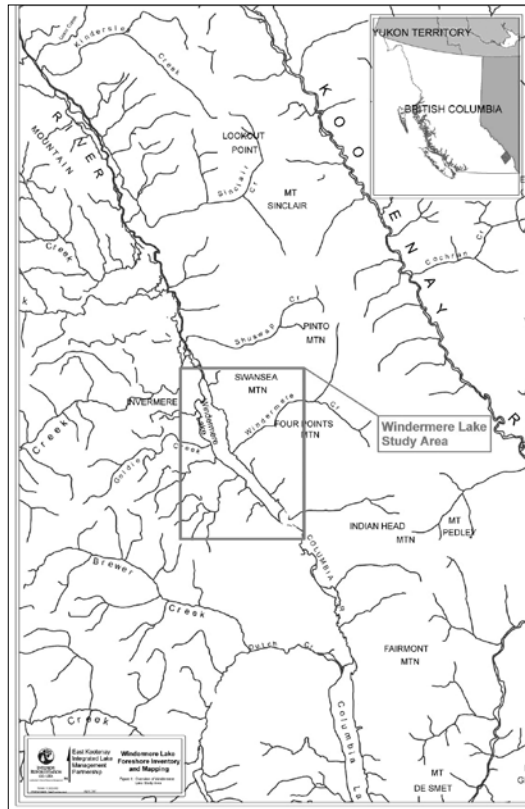
The District of Invermere became a Platinum Ambassador recently. Their grant of \$10,000 will help local water stewards carry on with the monitoring, training and public education components of the LWP.”



As to future activities, the Ambassadors will direct water quality monitoring based on the findings of the LWP and will encourage the implementation of policies and guidelines from the forthcoming Lake Windermere Management Plan and the recently implemented Lake Windermere Shoreline Management Guidelines for Fish and Wildlife.

A tangible legacy starts with a commitment and builds on expertise

Wildsight's Columbia Headwaters Legacy program, including the Lake Windermere Project, has laid down a strong foundation for community water stewardship. Since the LWP started in 2005, it has involved many volunteers, reached out to the general public, cultivated successful partnerships and made links to the international water stewardship community. By increasing capacity for stewardship at the local level, and by wisely in-



tegrating science, public education and new expertise, Wildsight has helped create an awareness of local water resources in the Columbia Headwaters. This awareness, and the actions of the local water stewards will help make the future of this globally-significant region healthier.

The LWP is committed to a continued presence in our community. Our goal is for community members to be able to access scientifically-sound, reliable water stewardship resources as they tackle issues that relate to human and ecosystem health in the Columbia Headwaters.

Partners in the Program include: BC Lake Stewardship Society; Canadian Columbia River Inter-Tribal Fisheries Commission; Fisheries and Oceans Canada; District of Invermere; East Kootenay Conservation Program; East Kootenay Integrated Lake Management Partnership; Interior Health Authority; Living Lakes Network; Ministry of Environment; and the Regional District of East Kootenay.

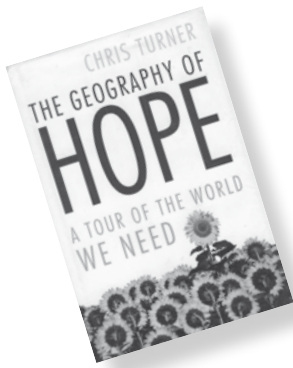
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Geography of Hope: A Tour of the World We Live In. 2007

by Chris Turner. Random House Canada. 469 pp.

ISBN 978-0-679-31465-3

At the time this book was published in 2007 it seemed to be another in the wave of books that variously informed, exhorted and frequently browbeat the reader about the utter necessity of adopting a truly sustainable way of life. Among the books I read then, Chris Turner's book stood out as the one that actually gave me hope that we could accomplish this. Along the way, it also gave me a great deal of pleasure to read such a well written account of a journey in search of what people around the world are accomplishing right now. A bonus for me was that fact that it is a Canadian book that includes Canadian energy and sustainability issues among the global examples.

The book is in two parts—the first, *The Geography of Hope*, contains accounts from around the world. These range from the grassroots inventiveness of the people of the Danish island of Samsø who have assembled an amazing assortment of low- and high-technology to make their lives carbon neutral, to the large impact of legislated requirements in Germany for power distributors to buy energy from renewable sources at fixed rates. In the second part of the book, *The Infrastructure of Hope*, the author deals with issues of economics, agriculture, 'green' marketing, and new ways to look at environmental policy. He notes, for example, that none of the accomplishments he describes were stimulated by the Kyoto Accord. To tell his many tales he visits some of the usual suspects such as green designer William McDonough, Interface Flooring's Ray Anderson, green business leaders Paul Hawkins and Amory Lovins and revisits pioneers such as E.F. Schumacher who wrote *Small is Beautiful* over 35 years ago. But, they are just part of the context for his mix of new characters, new places and his own perspectives on what he has discovered.

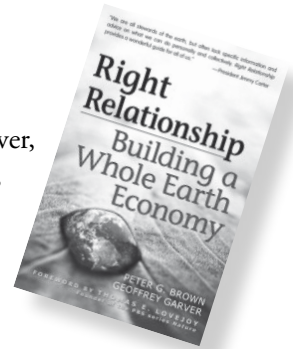
In the first chapter, the author writes: "My goal was not merely to find a duplicate version of our current social order, minus the greenhouse gas emissions, but to find the right fragments to assemble into a whole new way of life". In this, I think he succeeds: there is much here to inspire us.

*Reviewed by Linda Gilkeson, Executive Director,
Salt Spring Island Conservancy*

Right Relationship: Building a Whole Earth Economy

by Peter G. Brown and Geoffrey Garver, with Keith Helmuth, Robert Howell, and Steve Szeghi.

San Francisco: Berrett-Koehler Publishers, Inc. 2009.



For the past 350 years the Quakers (Religious Society of Friends) have had an impact on society out of proportion with their small numbers. Quakers have championed the cause of peace since the 17th Century and began working for the abolition of slavery in the 18th Century. In 2003 a group of Quakers met at Pendle Hill, a retreat centre in Pennsylvania, to talk about the environmental crises. This meeting led to the creation of a new organization, the Quaker Institute for the Future (www.quakerinstitute.org) and to this book, *Right Relationship: Building a Whole Earth Economy*.

It is now unthinkable for one person to "own" another. Perhaps one day it will be equally unacceptable for people to feel they own part of the natural world. The co-authors of this book come from the United States, Canada, and New Zealand. In developing their concept of "right relationship" they make the surprising claim that they see a convergence between religion, science, and ethics. They support this claim by building their ethical vision on slightly revised wording from ecologist Aldo Leopold, reflecting contemporary systems theory in their definition of right relationship: A thing is right when it tends to preserve the integrity, *resilience*, and beauty of the *commonwealth* of life. It is wrong when it tends otherwise.

In 1971 Ehrlich and Holdren proposed the equation $I=f(PAT)$ where I is environmental impact, P is population, A is affluence, and T is technology. These authors add E for ethics, making the equation $I=f(PATE)$. Using this ethical lens, they re-frame some basic questions about economics in surprising ways.

By shifting the goal from economic growth (or even sustainability) to right relationship, the book suggests a way towards a whole earth economy. They have taken the ethical principles reflected in the Earth Charter (www.earthcharter.org) and successfully mapped them on to world economic, political, and ecological systems.

continued on next page

The book provides an in depth view of the governance needs of a whole earth economy and the limitations in existing institutions. It then moves on to present a plan of how this ethical vision can be implemented. The final chapter is modeled on the campaign for the abolition of slavery initiated by Quakers and Anglicans in 1787 England.

This book provides a superb analysis of the world environmental and ecological situation informed by both ethics and science. It paints a beautiful picture of a world built on ecological principles and a firm ethical foundation. It provides a path towards this future based on education, experiment, individual responsibility, and collective action. The concept of right relationship, like the golden rule, gives us a simple and straightforward ethical tool to evaluate our personal and collective decisions.

The book provides a theoretical and ethical background for land trusts who are at the forefront of this paradigm shift. Using a combination of goodwill and economic tools, we are removing parts of the natural world from the market economy, providing alternatives forms of land tenure with long-term plans to sustain the lands values.

reviewed by John Scull, Cowichan Community Land Trust



The National Land Conservation Conference
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**Natural Area Protection
Tax Exemption Program**

Helping Gulf Island landowners protect our natural heritage

The BC Land Summit was a successful outreach event for land trusts in BC!

The benefits of our partnership at the Summit were enormous, as the 785 attendees (mostly planners, in addition to realtors, appraisers, landscape architects) now know about land trusts and many of the stewardship and conservation tools available in BC. Our attending members said the workshops were informative and that they really benefitted from the broader networking. Some reported that they went back home and met with planners and others from their local communities to discuss conservation projects.

Richard Hebda held the entire delegation's captive attention during his thought provoking and entertaining plenary. His Friday morning plenary followed Robert Kennedy Jr.'s evening discourse, distilling facts and views on how to achieve economic sustainability within the boundaries of the planet; providing alternative energy solutions—still at current consumer levels—through changes in technology, market and legislative tools. Richard Hebda brought the reality of nature's essential life-supporting ecosystems to the conference, summarizing how BC's landscapes and ecosystems, especially water, will be impacted by climate change, and how our "individual gluttony" is still invisible in our general recognition of the problems and their solutions.

Kathy Dunster was a persuasive and enjoyable co-presenter at the Economic Roundtable, offering a sound argument that the economy is wholly subsidiary to the environment. She also informed the audience about a recent UK report that questions the idea of growth as the primary directive of society and sustainability.

Many other of our members and partners presented on land trust successes and programs: Jack Minard, CVLT, (Kathleen Sheppard, Christina Waddle, Ramona Scott - TLC), Richard Hebda and Herb Hammond of Silva Forest Foundation on Forest Impacts in BC, and Dan Buffet, Stuart Gale and Matt Austin presented Biodiversity BC's new Atlas. The South Okanagan and Similkameen Partners and Grasslands Conservation Partners joined LTABC on Successful Conservation Partnerships. We made a very credible and professional contribution to the program and the conference.

Some participants remarked that there were too many presenters, and not enough time for real, deep discussion on the challenges and urgency of climate change and public policy objectives. Particularly *"communicating the urgency to redesign our economy to the general public. It's long past time for professionals, business, academics, consultants, planners, politicians and communities to come together and collectively*



Hugh Westheuser, Councilor at LTABC booth

and honestly ask ourselves - HOW DO WE ACTUALLY MAKE THE CHANGES REQUIRED AS A SOCIETY?"
- Joan Sawicki (former Minister of Environment)

I think all who heard Robert F. Kennedy Jr. speak were inspired to pursue effective avenues for change within the free-market system so as to redeem the markets from overly subsidized crony capitalism that has taken advantage for far too long of hidden externalities. It was a wonderful conference.
(Doug Marakoff, Living Forest Communities)

Credible Conservation Offsets Report and Presentation:

Our newly released research on Conservation Offsets was presented by Richard Hebda, who made the economic markets of offsets and the science of carbon and biodiversity clear and understandable. We hope that you will read our report, and that you will contact us with your thoughts and ideas on its recommendations. It is available online at www.landtrustalliance.bc.ca or you can email us at info@landtrustalliance.bc.ca for a printed copy.

We are all very saddened to hear that Jeff Wheeler, initiator of the Naramata Conservation Society along with Craig Henderson, died after a motorcycle collision just as he was returning home to Naramata on Saturday after the Land Summit. I met Jeff for the first time this weekend, having heard about his creative business and conservation initiatives, not only in Naramata but elsewhere. I was inspired by his practical and knowledgeable approach to governance and organizational development issues (from a business perspective, which is similar in many ways), and of course, his dedication to conservation. We all mourn the loss of such an inspirational man, and pray for his wife and family of three daughters he has left behind. (editor)

FISH AND WILDLIFE IN A CHANGING CLIMATE:

Options for Future Management Practice

June 1-2, 2009 at University of Victoria

Summary by Briony Penn representing LTABC

The take-home messages of the symposium on BC Wildlife and Climate Change, sponsored by an alliance of research institutions and the BC and Canadian Wildlife Federations, were that climate change is having a profound impact on wildlife and we know very little about long term effects. There are scant resources to assist wildlife adapt to the changes and the situation is difficult to remedy because we are dealing with a human crisis of disconnection with nature. With such a large proportion of the population removed from any engagement with wildlife and intact ecosystems, there is a corresponding lack of understanding politically about the role of ecosystem conservation as a key priority of a climate action strategy for both mitigation and adaptation.

In the two-day event at UVic, attended by a diverse group of about 100 government scientists, land trust representatives, naturalists, trappers, hunters, sportfishers, ENGOs and academia, the symposium covered a range of topics on the key issues of the day. What actions do we need to take to reduce the vulnerability of wildlife? How do we improve connectivity for wildlife on the landscape? What laws need to be changed to deal with climate change? How do wildlife managers deal with uncertainty? Where should we put our money, trying to prevent or adapt to climate change? How do we deal with the human education element? Some of the plenary speakers of most interest for land trust members included, Patty Glick, a climate change policy lobbyist with the US National Wildlife Federation, LTABC's own Dr. Richard Hebda, who recently completed his Summary Report with Dirk Brinkman on Conservation Offsets, Dr. Kathryn Lindsay, the scientist with the Canadian Wildlife Service leading the North American tri-lateral committee on wildlife and ecosystem conservation and climate change and Dr. Bob Gifford, an environmental psychologist at UVic.

Patty Glick described how the current US Waxman bill being debated in the American parliament (soon to be America's Clean Energy and Security Act) is set to support the work of stewardship and nature conservation—which in turn will have an influence on how Canada deals with these pressing issues. Pointing to one of the few bright

lights on the horizon, Glick showed how a 1% allocation of Obama's cap and trade carbon permits will go to a National Adaptation Program for Natural Resources, kicking in 2012 at about \$1.7 US billion a year—the majority of which will fund projects managed by the State Fish and Wildlife Departments, in collaboration with community stewardship groups, land trusts, ENGOs and academic institutions. These projects to be eligible must be specific actions that help ecosystems and wildlife adapt, including the protection of critical habitat and connecting corridors to enable migration. A very interesting discussion, one which LTABC has been leading in our reports on Conservation Offsets, involved the relative merits of what Glick calls “managed”

adaptation versus “natural” adaptation. Managed adaptation involves engineered activities, e.g., releasing cold water from dams to keep endangered salmon fry alive through summer, or assisting migration by moving endangered species. Dr. Richard Hebda's presentation

on the effects of climate change on ecological processes and adaptation options highlighted the need to place the highest priority on assisting natural adaptation by the protection of as many natural areas as we can. As Hebda states, there is no other way to pull carbon out of the air than a plant and the best chance wildlife has to survive climate change is in an intact ecosystem with the genetic resources to adapt. Glick reinforced this premise and it gave some of us hope that our primary work of protecting nature was not going to be sidelined for engineering projects with untested results. Hebda introduced LTABC's Hebda/Brinkman report as a key adaptation option, for which there was great interest and the 50 copies we brought for the conference were snapped up within minutes.

Dr. Kathryn Lindsay, teleconferenced in from Ottawa, discussed the recent tri-lateral talks on climate action for ecosystem adaptation that took place in Miami with Mexico and the US. **Canada developed three key messages: 1) We need to take action now; 2) We need to involve a wide range of people at multi-scale, -jurisdictional levels: and 3) protected areas are an integral component of a continental adaptation strategy.** Dr. Bob Gifford pointed to various psychological human “dragons” such as denial and ‘opti-

***At the tri-lateral talks on Climate Action
Canada developed three key messages:***

- 1) We need to take action now;***
- 2) We need to involve a wide range of people at multi-scale, -jurisdictional levels: and***
- 3) protected areas are an integral component of a continental adaptation strategy.***

mism bias' (where there is a completely unrealistic faith in such things as technology to solve problems) as barriers to effective action. His recommendations are to acknowledge these dragons and harness them as the energy fuelled into these states of mind can be leveraged into action.

There were several break out working groups, with similar action items being developed to answer key issues: lack of resources, lack of engagement from the public, the need to act now. Interestingly, when action items boiled down to doing more research, inventory, educating the public, there were lively debates between doing something now (even in the uncertainty) versus the old process of doing research to achieve certainty and then acting. Dr. Hebda, in his characteristic fashion, reminded the audience that the scientific concept of 'uncertainty' was contributing to the dragon of denial. Instead, as responsible citizens we should be delivering the very clear unified message that there is no uncertainty about the climate change impacts already occurring and going to occur in the future. What we need is concerted action now and land trusts are a huge part of that equation.

The Natural Fix? The Role of Ecosystems in Climate Mitigation.

The United Nations Environment Programme released a report for World Environment Day which makes the case for investing in protecting fragile ecosystems as a form of carbon mitigation instead of carbon capture and storage technology. The report highlights the ways in which nature is better at regulating carbon than CCS through the carbon cycle and how preserving nature's role in carbon regulation will bring greater and cheaper benefits.

The report explains that the priority ecosystems to protect are tropical forests and peatlands. Reducing deforestation by 50 percent by 2050 could prevent the release of 50 gigatonnes of carbon into the atmosphere this century, which meets 12 percent of the emission reduction recommendation by the International Panel on Climate Change. Peatland restoration could prevent the release of up to 0.8 gigatonnes of carbon per year.

The other main area that the report devotes attention to is agriculture. UNEP believes the agriculture sector could be mostly carbon neutral by 2030 if necessary policies are adopted, therefore preventing the release of 2 gigatonnes of carbon per year.

The report calls for governments to draft carbon management policies that rely more on ecosystem protection and restoration and less on funding CCS technologies, particularly during the upcoming climate convention in Copenhagen. You can access the full PDF <http://www.ecogeek>.

BC Trust for Public Lands/ Conservation Land Forum

The Land Management Committee goals are to achieve broad level management planning, and development of standards as well as site specific management activities on projects as set out in the B.C. Conservation Land Forum Memorandum of Understanding:

"The Land Management Committee: facilitates management of secured conservation lands by identifying and implementing solutions to address ongoing funding needs, carrying out management and maintenance of acquired properties, and developing land management standards."

In 2008 the Land Management Committee recommended funding for a variety of projects being conducted by province-wide organizations. The LTABC was invited to join on behalf of local land trusts, and Keith Erickson has been attending in 2008-9. The Committee also focused on developing a strategy and workplan for 2009 and beyond.

The priority item for 2009 is to initiate a two phase program focused on improving standards for Best Management Practices for Conservation Lands in BC. The first phase is to complete a review of existing standards, identify gaps in this information and prioritize future needs for BMP development. To ensure that the Consultant team includes all BMPs related to conservation lands that are pertinent to British Columbia, we are asking that you forward any BMP documents or operational standards/guidelines that address land management activities on conservation or ecologically significant lands to the Project Team.

Electronic versions or literature references can be forwarded directly to:

Rachel Holt; Veridian Ecological Consulting

e-mail: rholt@netidea.com

Phone: 250 352-6932 FAX: 250 352-6933

There is a workshop planned for September 25th at the Institute of Ocean Sciences in Sidney, BC to present information and findings of the review of Best Management Standards and discuss and consider what gaps exist between existing BMPs for Conservation Lands and priorities for developing new BMPS on selected land management issues, and consider tasks under a possible Phase II of this project (proposed with funding from the BC Trust for Public Lands)

If you have further questions, please contact either Jim Hope (on behalf of the Committee jhope@naturetrust.bc.ca. @ 604 924-9771) or Rachel Holt (contacts listed above).

GALIANO CONSERVANCY'S KEN MILLARD - CHANGE MAKER FOR HABITAT

Early this spring CBC's BC Almanac ran a series called "Imagine BC" inviting nominations for change makers in the categories of Health, Habitat and Livelihood. Ken Millard was interviewed by Host, Mark Forsyth on the 20th anniversary of the Exxon Valdes Oil Spill. The Galiano Conservancy was formed 20 years ago. They spoke about the work of the Conservancy acquiring and protecting land, Environmental Education and Habitat Restoration.

The Conservancy's Environmental Education programs were begun in response to taking some inner city youth on a tour and the discovery that many of them had never been in a forest before. Ken was astounded and the youth were overwhelmed. The Education programs have expanded to include as many as 25 school field trips per year which range from one to three days as well as developing the programs with the local school. Some three day camping/field trips include a Forest Restoration component.

Many European university students have found the Galiano Conservancy and completed Volunteer Internships from 3 to 6 months with the Conservancy.

Asked about the Environmental Restoration Program, Ken explained how the Conservancy has done six years of restoration in a 160 acre, 30 year old Douglas-fir plantation which has made changes he never expected to see in his lifetime. All the work has been done with hand tools. We have now been informed that the Galiano Conservancy has also been awarded this year with Wildlife Habitat Canada's Forest Stewardship awards.

When asked about his metamorphoses from physicist to violin maker to full time volunteer as co-coordinator of GCA Ken explained that it wasn't as difficult as you would think. When he decided to make a change in his life he took up violin and bow making and left the city to live on Galiano Island. When he developed health problems from working with exotic woods he had to give that up too. Forced to retire 20 years ago he took on his work with the Conservancy to fulfill his life.

Ken not only inspires environmental action for our own community but he is seen as a role model for citizen participation by leaders and communities throughout the region.

Any organization interested in participating in Conservancy Programs or beginning their own are welcome to contact them at conservancy@galianoconservancy.ca



MO MOORE, CONSERVATION VOLUNTEER OF THE YEAR RECIPIENT

By acclamation, the LTABC Volunteer Award Committee agreed that Mo Moore's contribution to conservation in BC over the last few years, deserves considerable recognition!

She worked tirelessly, initially independently, and then with TLC The Land Conservancy of BC and the Salt Spring Island Conservancy to protect the Creekside Rainforest!

Creekside Rainforest is 19.46 acres of stunning natural beauty and biodiversity located within the lower Cusheon watershed on Salt Spring Island. In September 2007, this green, forested valley and salmon-bearing stream was in danger of imminent subdivision, and Maureen (Mo) Moore became the catalyst that coordinated and organized the community (from schoolchildren to artists, scientists, citizens, and businesses) to recognize, raise awareness and funds to preserve this crucial habitat and special place.

Mo had never been involved in organizing a land-saving campaign before, but she has innate leadership qualities that kept this campaign on track and within 7 months the necessary funds (\$1million) had been raised to finish the campaign and protect the land. The Creekside campaign used some ground-breaking techniques such as YouTube to reach out to potential funders. The Creekside campaign has already provided inspiration and ideas for new campaigns in BC and as far away as New Brunswick,

Release of LTABC's report, Credible Conservation Offsets for Natural Areas in British Columbia.

This seminal report published by The Land Trust Alliance of BC, was released this May at the 2009 BC Land Summit. Written by Dr. Richard J. Hebda and Dirk Brinkman, leaders in their respective fields of reforestation and ecology, the report makes recommendations on how BC's internationally important biodiversity and carbon storing forests and other natural area lands should be part of Climate Offset Markets, internationally and within BC, including the government of BC's Pacific Carbon Trust. Download the report summary at www.landtrustalliance.bc.ca/docs/LTABC-report09-

ENVIRONMENT & CONSERVATION NEWS

Protection of the Chemainus Estuary. Over 200 hectares of coastal habitat and one of the south coast's most important wetlands near Duncan, has been secured through a land purchase agreement through Ducks Unlimited Canada (DUC) and through contributions from the BC Trust for Public Lands, Catalyst Paper Corporation, and international partnerships under the North American Wetlands Conservation Act, North American Wetlands Management Plan and US Fish and Wildlife Service. As a diversified complex of fields, forests and intertidal flats, the estuary supports a wide variety of wildlife. In combination with the nearby Cowichan Estuary and freshwater lakes, it forms a habitat of international importance to waterfowl and other birds.

932 Hectares Joins Sooke Potholes. The Land Conservancy of BC (TLC) and the CRD have completed a landmark acquisition of 932 hectares of dedicated parkland located adjacent to Sooke Potholes Regional Park, funded in part by donations through Shaw and the Larry Talarico Memorial Campaign. This will positively impact TLC and CRD's long-term plan to create the Sea-to-Sea Green Blue Belt, a visionary undertaking to create a 10,000 hectare corridor of protected wilderness and parkland.

Protection for the Great Bear Rainforest. The BC government has acted on their promise to protect one-third of the Great Bear Rainforest. In a five-year plan, 6.4-million-hectares along BC's central and north coast (roughly the size of Ireland) will be legally protected from logging, and \$120 million will be available to First Nation communities to help kick-start a new conservation economy. The three leading environmental groups that have worked with the government on this program are ForestEthics, Greenpeace and the Sierra Club BC.

Nahanni becomes one of the world's greatest parks. The Canadian Parks and Wilderness Society is celebrating the historic announcement by Environment Minister Jim Prentice and DehCho First Nations Grand Chief Gerald Antoine of the final boundaries for the greatly expanded Nahanni National Park Reserve in the Northwest Territories. The world famous park reserve is now nearly seven times the size of the original one established in 1972. It will permanently protect over 30,000 km² of Boreal wilderness - an area the size of Vancouver Island. <http://cpaws.org/news/archive/2009/06/nahanniforever.php>

The United Nations has declared 2010 International Year of Biodiversity. The Canadian Biodiversity Informa-

tion Network (www.cbin.ec.gc.ca) will launch a website featuring biodiversity stories from NGOs, governments, Aboriginal Peoples, artists and businesses. If you have a story to submit, please contact Dianne.Watkins@ec.gc.ca or Krista.Blackborow@ec.gc.ca. **The Flathead River Valley is under threat**, from a proposal for mountain top removal coal mining and other energy and mining developments. The Valley is considered one of the most diverse and ecologically intact natural ecosystems in the temperate zones of the world. CPAWS, Sierra Club BC and Wildsight are campaigning to protect the valley as a National Park. Help the Flathead at <http://www.friendsoftheflathead.ca> and sign the online petition at <http://www.sierraclubbc.ca/flathead/main.html>

Blue whales return to BC's coast. After avoiding BC's coast for decades, blue whales are returning to our waters to feed in the areas where they were once hunted to near extinction. Read the news story at <http://www.timescolonist.com/Technology/Blue+whales+return+coast/1498185/story.html>

Yale Study Finds Evidence that Damaged Ecosystems Can Recover Rapidly A recent study by Yale University's School of Forestry and Environmental Studies reports that if humans commit to the restoration effort, most ecosystems can recover from very major disruption within decades to half-centuries. The study was written by Holly P. Jones and Oswald J. Schmitz and will appear in the June edition of the journal PLoS ONE. According to the study, researchers compiled information from 240 independent studies conducted since 1910 that examined large, human-scale ecosystems recovery following the termination of both human and naturally imposed disruption....To view the research article by Jones and Schmitz, visit:<http://www.plosone.org/article/info%3Adoi%2F10.1371%2Fjournal.pone.0005653>

National Group Bands Together To Fight Invasive Species Threatening Biodiversity. Invasive species groups recently formed a National Invasive Species Working Group to work collaboratively across jurisdictional boundaries and support actions and information that can help reduce the threat and impacts of invasive species. Membership is free and open to anyone willing to work collaboratively. Find out more at www.invasiveplantcouncilbc.ca

Ensure that the Climate Change Accountability Act Becomes Law. Bill C-311, the Climate Change Accountability Act has passed second reading. If Bill C-311 passes third reading and it is approved by the Senate, it will commit Canada to firm targets for reducing emissions of greenhouse gases. The bill incorporates recommendations of the Nobel Prize-winning Intergovernmental Panel on Climate Change

(IPCC). Sierra Club need your help, to ensure that the Climate Change Accountability Act becomes law. http://www.cen-rce.org/eng/action_alerts/09_04_C-311.html

Our Right of Navigation. Proposed amendments to the Navigable Waters Protection Act (NWPA) threaten the longstanding public right to navigation, including the right to recreational navigation. For more information and to take action, visit <http://www.ispeakforcanadianrivers.com/>

Canada to Match U.S. Green Legislation. In response to draft legislation titled The American Clean Energy and Security Act of 2009, Canadian Environment Minister Jim Prentice said that Ottawa would match it with green legislation comparable to what the U.S. Congress passes. <http://www.allheadlinenews.com/articles/7014729923>

Canadian and U.S. Green Leaders Unite: Joint-Declaration Outlines Collaboration on Climate Negotiations, Dirty Fuels and Arctic Protection. For the first time, CEOs from 30 environmental groups based in Canada and the U.S. have agreed to work together to address key environmental problems threatening both countries. The joint-declaration can be found here: http://docs.nrdc.org/energy/ene_09060301.asp

Canada to protect endangered Orcas. Following a 2008 lawsuit filed by Ecojustice, the federal government has issued a landmark Order to provide legal protection for BC's endangered Orca population habitat. This is the first Order Canada has ever issued under the Species at Risk Act to protect critical habitat. For more information, visit <http://www.ecojjustice.ca>

UPCOMING EVENTS & WORKSHOPS

The Centre for Arts, Ecology & Agriculture: Summer Workshops. July-September, Salt Spring Island. The newly launched Centre for Arts, Ecology & Agriculture at Foxglove Farm has been established to demonstrate the vital connections between farming, land stewardship, food, the arts, and community well being. From July - September, the Centre will offer a series of fascinating one-to-five day workshops with well-known artists, musicians, foresters, farmers, and ecologists. Workshops cover a diverse range of topics - from wild crafting; painting natural landscapes; artisan baking; to stewarding your own forest. *The Art of Wild Crafting.* July 7-10, Salt Spring Island. \$195 + GST (includes meals). Led by renowned naturalist and geographer Briony Penn. The programs will take place at the historic 120 acre Foxglove Farm on beautiful Salt Spring Island. For more information and registration, visit www.foxglovefarmbc.ca

TLC Conservation Holidays. Not your usual holiday, but one you will never forget. By participating in the work that goes into caring for TLC properties people will gain a new understanding about conservation projects from agriculture to salmon habitat. Our holidays are for people looking to try something different during their vacation. For more information, visit www.conservationholidays.ca or email holiday@conservancy.bc.ca

Strengthening Stewardship Conference, July 8-11, Calgary, AB. 4th National Stewardship & Conservation Conference. For more information, visit www.stewardship2009.ca

Ecological Restoration Conference. July 15 deadline for submissions for posters, papers and field trip leaders. Conference November 5-7, Naramata, BC. SER-BC's annual conference theme for 2009 is "Shared responsibility for a sustainable landscape: Working co-operatively to restore Okanagan-Similkameen ecosystems and sustainable communities". The SER-BC has teamed up with the Okanagan Similkameen Conservation Alliance to host this conference. For information and instructions for submissions, visit www.ser.org/serbc

Wetlands Institute 2009. July 21-27, Kamloops, BC. Participants will emerge from the Institute with an excellent set of wetland skills and a clear project plan to steward a wetland at home. This year it is held in Kamloops by the BC Wildlife Federation. For more information and to apply, visit: <http://www.bcwfb.bc.ca/programs/wetlands/wetlandsinstitute.html>

Whistler BioBlitz. August 8 – 9, Whistler, BC. Scientists from all over will invade Whistler for its 3rd BioBlitz. BioBlitz is a 24-hour race to count as many species as possible: animals, plants, fungi, algae, you name it. Real science is done, but the emphasis is to show people how much biodiversity there is in their own backyard. Contact Bob Brett bob@whistlerbiodiversity.ca; 604-932-8900. Visit the website at www.whistlerbioblitz.ca

Wild Links 2009. September 23 & 24, Osoyoos, BC. Registration is open now. Wild Links provides an amazing opportunity to share information on a landscape that is critical to wildlife in our region. This year's focus – how to better coordinate across the US and Canadian border for wildlife and wildlife habitat. For information visit <http://www.conservationnw.org/wildlife-habitat/wild-links-briefing>. Register online at <http://www.brownpapertickets.com/event/67724> or email jwatkins@conservationnw.org

2009 Canadian Land Trust Conference. September 24-26, Halifax, NS. The Canadian Land Trust Alliance invites all land trust supporters to join us for our 3rd an-

nual conference. Our host group is the Nova Scotia Nature Trust. There will be three days of land trust workshops and seminars with leading speakers from across North America. Make sure to join us for the premier land trust event in Canada. <http://www.clta.ca/en/events/>

The National Land Conservation Conference “Rally 2009”. October 11-14, Portland, Oregon. Register before August 17 and save \$60. The premier land conservation learning experience. Includes 100+ seminars and workshops; field trips; special government partner sessions; plus there are increased number of scholarships available this year. Conference details and on-line registration at <http://www.landtrustalliance.org/learning/rally/rally-2009>



RESOURCES

Biodiversity Atlas of BC. BC's human population is expected to climb from four to nearly six million over the next 20 years, accelerating pressure on other species competing for the same habitats. That's the conclusion of researchers who have completed the Biodiversity Atlas of BC, which finds that BC's natural environment remains in relatively good condition compared to other places in the world. Download the pdf at <http://www.biodiversitybc.org>

2009 Endangered Rivers List for BC. This is the most comprehensive initiative of its kind in North America. Read the full press release and view the entire list of twelve rivers at the Outdoor Recreation Council's website at <http://www.orcbc.ca>

The Conservation & Ecology News. Environmental, conservation and sustainability issues relating to our local and global communities. The “CEN” is issued throughout the year for special articles or urgent issues of concern to the Georgia Basin/Puget Sound Eco-Region. Contact Pamela Zevit at adamah@telus.net <http://www3.telus.net/public/adamah/cen/cenindex>

BC Ecological Gifts Program. New application form is available at <http://www.cws-scf.ec.gc.ca/egp-pde/default.asp?lang=En&n=2085440C-1>

Now Available - Proceedings from the Haig-Brown Symposium on Sustaining Wild Salmon: Moving from Words to Action The Centre for Coastal Studies at Simon Fraser University organized this dynamic event as part of their Speaking for the Salmon Series in collaboration with The Haig-Brown Institute, Canadian Wildlife Service - Environment Canada, BC Conservation Foundation, The Ritchie Foundation and Fisheries and Oceans Canada. This symposium was part of the yearlong Haig-Brown Centenary celebrations (www.haigbrowninstitute.org/centenary.html)

The proceedings are available at: <http://www.sfu.ca/cstudies/science>

Accessible Website Authoring Tool for Everyone. The Hunter-Clyde Watershed Group has set up a website using a cheap, effective on-line authoring tool that anyone can use. There is no need for specialized knowledge. These tools allow a group to create a website using a simple on-line editor editme.com, which costs \$75 per year. Visit the group's new website at <http://hcwg.editme.com> to see the results, and visit <http://editme.com> to sign up.

Canada Revenue Agency's Charities & Giving Updates. The following updates are now available on the Charities and Giving website: Revised Summary policy CSP – D15, Dissolution clause <http://www.cra-arc.gc.ca/tx/chrts/plcy/csp/csp-d15-eng.html> Types of registered charities <http://www.cra-arc.gc.ca/tx/chrts/pplyng/trcd-eng.html> Forms and publications <http://www.cra-arc.gc.ca/tx/chrts/pplyng/frp-eng.html> Factors that will prevent an organization from being registered <http://www.cra-arc.gc.ca/tx/chrts/pplyng/ftwp-eng.html>

American Friends of Canadian Land Trusts, support cross-border conservation programs. Recent updates, new application forms and templates can be found on their website at <http://www.nsnt.ca/afocl>

COSEWIC Assessments. Link to the results of the COSEWIC Spring assessment meeting 2009 at http://www.cosewic.gc.ca/rpts/Short_Species_Assessments_e.htm

Gardening with Native Plants. Want attractive, easy to maintain, drought tolerant gardens that attract birds and butterflies? The best plant choices for gardens are often the native plants that thrive naturally in our region. Download the free pdf or contact the Habitat Acquisition Trust office for a printed copy. <http://www.hat.bc.ca/>

The Garry Oak Gardener's Handbook. 2nd edition is now available from GOERT. Download the free pdf or purchase a print copy (\$15). http://www.goert.ca/at_home_garryoak_gardener.php. Native Plant Propagation Guidelines at <http://www.goert.ca/>

Habitat Atlas for Wildlife at Risk – S. Okanagan/Lower Similkameen. Produced by the BC Government, this extensive atlas is available online at http://wlapwww.gov.bc.ca/sir/fwh/wld/atlas/introduction/intro_index.html

Frontiers in Ecology & the Environment. “Ecosystem services key to future conservation efforts”, researchers say in this special issue. Researchers use novel tools to report some of the first quantifiable results that place values on nature's services to humans. The on-line journal is produced by the Ecological Society of America. <http://www.frontiersinecology.org/>

EcoBC. BC Environmental Network's on-line bulletin is available at http://www.ecobc.org/who_we_are/index.cfm

Pure Salmon Campaign Canada Salmon Farming News: <http://www.puresalmon.org/canada.html>

New Tools for reporting invasive plants in BC. You can call the new provincial toll-free hotline at 1-888-WEEDS-BC or report a weed through the BC Ministry of Forests and Range, Invasive Alien Plant Program at <http://www.for.gov.bc.ca/hra/Plants/raw.htm>.

BC Invasive Plant Research Database. If you are interested in invasive plant research in BC, explore the new research database at <http://www.invasiveplantcouncilbc.ca/resources/invasive-plant-research-database>. For database submissions, contact <http://www.invasiveplantcouncilbc.ca>

The Canadian Environmental Certification Program. A 3rd party validated certification program that helps to differentiate the self-proclaimed experts from the real environmental professionals. The Canadian Environmental Certification Approvals Board (CECAB), offers a professional designation that has been designed specifically for environmental practitioners and is the only national certification of its kind. For more information, email info@cecab.org or visit <http://www.cecab.org/public/default.aspx>

Grow Me Instead & Garden Smart T.I.P.S. IPCBC booklets to help gardeners and landscapers make informed choices. <http://www.invasiveplantcouncilbc.ca/resources/targeted-invasive-plant-solutions-tips>

Wildlife and Landscape Science News. E-news for scientists, practitioners, managers, policy makers and others working to understand, conserve and manage Canada's wildlife and habitats. Sign up at <http://www.ec.gc.ca/scitech/default.asp?lang=En&n=E1DDE718-0>

2009 State of the Fraser Basin Report. The Fraser Basin Council reports on the environmental, social and economic well-being of the Fraser Basin and its communities. <http://www.fraserbasin.bc.ca/publications/indicators.html>

Evaluation of the Executive Director, Compasspoints Non-Profit Services. Because the ED is so central to the success of an organization, their evaluation is an important part of the board's responsibilities. A comprehensive evaluation template is available at <http://www.compasspoint.org/boardcafe/details.php?id=74>

Nature Guides BC. New and improved Nature Guides BC website <http://www.natureguidesbc.com>

Birds of BC – Species Update. Biodiversity Centre for Wildlife Studies updated species accounts in their bi-annual journal 'Wildlife Afield'. Available on-line as a pdf at www.wildlifebc.org

Forest Management Effects on Groundwater Hydrology. Report on the role of groundwater in watersheds, presents an overview of BC's groundwater resources, and describes the influence of management activities and natural disturbances on these resources. http://www.forrex.org/publications/jem/ISS50/vol10_no1_art4.pdf

The BC Guide to Watershed Law & Planning. Published by West Coast Environmental Law, this valuable resource is now available on-line at <http://67.222.8.149/~wcel/wordpress/>



BC Gaming Commission Direct Access Grants - Environment. Apply between July 1 - August 31. <http://www.hsd.gov.bc.ca/gaming/grants/directaccess.htm>.

Victoria Foundation. Expressions of Interest deadline August 15. Please review their on-line guidelines and contact a granting staff member at 250-381-5532 to review eligibility prior to applying. <http://www.victoriafoundation.bc.ca/web/grantingprograms/available>

Environmental Damages Fund. Deadline for application is August 31. Please visit their website, review the funding available for this year and contact an EDF officer prior to application: <http://www.ec.gc.ca/edf-fde/default.asp?lang=En&n=060B0BF1-1>.

Canadian Wildlife Foundation. Next deadline is September 1. <http://www.cwf-fcf.org/en/what-we-do/foundation/eligibility-and-selection.html>

Mountain Equipment Co-op (MEC). Next deadline is September 10. http://www.mec.ca/Main/content_text.jsp?FOLDER%3C%3Efolder_id=1408474396038943&FOLDER%3C%3EbrowsePath=1408474396038943&bmUID=1244579362775

Vancity Community Project Grants. Next deadline is September 30. <https://www.vancity.com/MyCommunity/NotForProfit/Grants/CommunityProjectGrants/>

TD Friends of the Environment. Deadline three months prior to start date of project (TD Boards do not meet during July, Aug & Dec). Eligibility criteria and application at <http://www.fef.td.com/funding.jsp>

Real Estate Foundation of BC. Due to a significant decrease in funding there will be three grant cycles instead of four. The September letter of inquiry has been removed and the Board will not award grants in December 2009. The next deadline is November 30 for early 2010 grants. Visit <http://www.realestatefoundation.com/>

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