



# Conserving wetlands in British Columbia

## High concern for wetlands

From a biodiversity perspective, both the 2008 report *Taking Nature's Pulse: The Status of Biodiversity in British Columbia* and the recently released *Biodiversity Atlas of British Columbia* ([www.biodiversitybc.org/](http://www.biodiversitybc.org/)) stress the high conservation concern for wetlands and the species that depend on them. Wetlands comprise only 7% of the province's total land area—including bogs, fens, swamps, and marshes—yet they provide vital habitat for more than 30% of BC's animal and plant species of conservation concern. Mainly because of the different types of development and the associated land conversion, significant areas of wetlands in British Columbia have been impaired. These changes are particularly alarming in the two major drainages of great conservation concern: the Columbia River Basin and the Fraser River Basin.

by Pedro Lara Almuedo, Extension Specialist, Conservation Biology, and Jackie Morris, Columbia Mountains Institute of Applied Ecology

Have you ever looked at a marsh and wondered what is good about a wetland? From a water-quality perspective, wetlands have a remarkable ability to filter, cleanse, and replenish water supplies. As water control systems, they provide a buffer against environmental extremes, such as floods or droughts, by absorbing water quickly and releasing it slowly. Despite the wide array of environmental and social benefits that wetlands provide, the conservation of these unique systems has not always been a frontline topic in British Columbia. However, the impacts that natural resource development and climate change are having on wetlands, in light of future water needs, are drawing increasing attention to their environmental and social relevance.

On May 28 and 29, 2009, the Columbia Mountains Institute of Applied Ecology (CMI) organized a successful 2-day conference on "Conserving Wetlands in BC" in Revelstoke. Sponsored by BC Hydro, BC Ministry of Healthy Living and Sport, Columbia Basin Trust, Creston Valley Wildlife Management Area, Ducks Unlimited Canada, Fish and Wildlife Compensation Program, Nature Conservancy of Canada, and the Revelstoke Community Forest Corporation, this event gathered over 90 participants from different corners of the province to share their views and experiences. This article summarizes the highlights of this conference.

**Doug Adama** (CMI Director) and **Antoinette Halberstadt** (City of Revelstoke) warmly welcomed all the participants. **Bruce Harrison** (Ducks Unlimited) offered great insight on the relevant value of wetlands in British Columbia and the benefits and services that wetlands provide, both from an environmental and social perspective, including drinking water quality, flood control, and carbon sequestration. Harrison showed some of the work that Ducks Unlimited ([www.ducks.org/](http://www.ducks.org/)) is doing with wetlands conservation, highlighting the economic benefits of wetlands as natural capital ([www.ducks.ca/aboutduc/news/archives/pdf/ncapital.pdf](http://www.ducks.ca/aboutduc/news/archives/pdf/ncapital.pdf)), and the need to promote environmental stewardship and improve communication and education on wetlands. **Dr. Martin Carver** (BC Ministry of Healthy Living and Sport), told participants that wetlands make a significant contribution to human health and improved water quality from an anthropocentric perspective and that this contribution is

supporting the conservation of natural wetlands and the development of artificial wetlands. Carver said there is a need to gather more information on the benefits of wetlands on human health.

**Dr. Suzanne Bayley** (University of Alberta) presented on the natural forms and functions of montane marshes in Jasper National Park. She gave insights into her work on the effect of transportation (railway) corridor modification versus beaver channel modification on the productivity and diversity of montane floodplain wetlands in the Athabasca River Basin. Bayley also highlighted the important role of levees in maintaining wetlands, the different effects that the hydrologic processes (high-flood versus low-flood periods) have on wetland conditions, and the need to restore hydrological processes and also permit beaver activity in channels to increase structural diversity. **Marc-André Beaucher** (Creston Valley Wildlife Management Area) shared his experience in managing a dyked wetland at the Creston Valley Wildlife Management Area, addressing key points about the costs and implications of water-level management, dyke maintenance, and wetland restoration. Among future management considerations for this particular wetland system, Beaucher mentioned restoring natural hydrologic regimes, developing new methods of vegetation control, and investing in monitoring the effects of different management practices. Beaucher also suggested that wetlands should be kept natural where possible to avoid costly intensive management. **Irene Manley** (Fish and Wildlife Compensation Program) talked about the results of a project that is assessing the impacts of dam construction on wetland ecosystems in the Columbia River Basin.

**Eileen Delehanty Pearkes** (artist and writer) showed a documentary entitled "The Course of History" ([www.touchstonesnelson.ca/store/shop.php](http://www.touchstonesnelson.ca/store/shop.php)) produced by Touchstones Nelson as part of a three-short-films chronicle on hydro development in the Canadian portion of the Columbia River Basin. The documentary gave an amazing perspective on the history of dam construction in BC and the resulting cultural and environmental losses for local communities. Pearkes also gifted the workshop participants with a beautiful elegy to wetlands (reproduced in the sidebar with permission from the author).

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# Resource development and climate change

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**Kyle Hawes** (Ecoscape Environmental Consultants) reviewed the status of wetlands in Kelowna, stressing the importance of incorporating wetlands in municipal landscape-planning processes and recognizing the critical role that wetlands play in supporting species at risk and biodiversity values. Hawes showcased a project that developed and integrated wetland mapping and inventory information with relevant urban/suburban development information through a Geographic Information System application.

**Heather Lescheid** (East Kootenay Integrated Lake Management Partnership) told participants about an initiative that has developed shoreline management guidelines for Windermere Lake (Invermere), creating an inventory of identified sensitive habitats. Linked to this particular initiative, Lescheid also discussed the role of the BC Lake Stewardship Society ([www.bclss.org/](http://www.bclss.org/)) in promoting environmental stewardship of lakes throughout the province. **Kristina Robbins** (BC Ministry of Environment) shared her experience on a wetland inventory and mapping assessment project developed last summer within the Okanagan Region, showcasing the high conservation value of small wetland features such as vernal ponds to support species at risk in general and amphibians in particular. Robbins also stressed the direct and indirect impacts that roads have on wetlands in this region.

**Barb Houston** (Fish and Wildlife Compensation Program) raised awareness about

chytridiomycosis in BC wetlands—an infectious fungal disease affecting amphibians—and discussed how it has affected the endangered Northern Leopard Frog population. **John Krebs** (Fish and Wildlife Compensation Program) shared his experience on an amphibian study completed in 2008 in west Kootenay, which addressed species abundance at randomly selected sites, and also looked into wetland classification and wetland condition description. **Elke Wind** (E. Wind Consulting) discussed the effects of forest harvesting on small wetlands and amphibian populations and the related management implications. She introduced a successful wetland and amphibian assessment field card that was developed for forest practitioners ([www.forrex.org/publications/jem/ISS47/vol9\\_no1\\_art5.pdf](http://www.forrex.org/publications/jem/ISS47/vol9_no1_art5.pdf)). Wind stressed the importance of mapping wetland features for incorporation into forest management planning.

**Dr. Fred Bunnell** (University of British Columbia) talked about the effects of climate change on wetlands. Bunnell stressed the importance of wetlands to support the wide array of associated or dependent wildlife species, particularly in the context of the current alarming rates of species extinction. It is risky, he said, to underestimate the rate of climate change and how this global phenomenon is particularly impacting wetlands. Modelling work recently developed at UBC is predicting how the distribution of different types of wetlands is affected by different climate change scenarios, with one general conclusion: the wetlands and the species that depend on them are disappearing fast. Bunnell provided insight on how adaptation to, and mitigation of, climate change for both natural and human systems need to be entwined, and how the principles of adaptive management can be useful in addressing the climate change dilemma.

After Bunnell's evening talk, **Lisa Larson** (Parks Canada) led a group of 15 people to a site on Mount Revelstoke in Mount Revelstoke National Park to view the habitat of nocturnal Coeur d'Alene Salamanders.

The second day of the conference started with a presentation from **David Polster** (Polster Ecological Services) on wetland restoration projects. Polster illustrated how to assist the natural recovery of wetlands by identifying a suitable reference ecosystem and addressing the restoration of wetlands processes and patterns. Polster stressed the importance of the concept of natural capital and the role that wetland restoration has in rebuilding this

## An Elegy to Wetlands

by Eileen Delehanty Pearkes

Could there be such a thing as a dam that encourages rather than destroys the lush disorder of our landscape?

Could there be industry that facilitates moist abundance and supports the emergence of a community of shining lanterns?

What are the lost values of the modest wetland corners that once thrived in these mountain valleys?

Places that offered a wet, secretive complexity.

Places where rushes scoured and settled the passing water, where leaves floated toward an imagined end.

Here, amidst the ooze and ripple of the seasons, appetites could be satisfied by spears of new cabbage by eventual fruit of gooseberry, by the beauty of charming coltsfoot.

Here, there were friends, and foes.

Wetlands once entangled water and land in tarnished chaos allowing willows to dream of a larger purpose.

Imagine the dense gatherings of cottonwood that once crowded the littoral, shining with new life aching to replace the lost qualities of landscape.



# Conferences bring attention to conserving wetlands

capital. **Darryl Arsenault** (EBA Engineering Consultants) presented an ongoing project that started back in 2000 as an opportunity for wetland rehabilitation in the context of the City of Vernon Waterfront Neighbourhood Plan. Arsenault explained the planning and design details of this particular wetland restoration project, and remarked on the need for community involvement in these types of projects. **Doug Adama** (BC Hydro) shared his experience on wildlife physical works for riparian and wetland habitat enhancement with a project that was initiated in 2008 in the Arrow Lakes Reservoir. Complex co-ordination efforts have been one of the many challenges, said Adama, who also shared details on four other pilot restoration experiences currently being planned.

**Dr. Linda Wilson** (BC Ministry of Agriculture and Lands) presented an overview of the biology, ecology, and management of some of the key 23 aquatic invasive plant species present in BC. Invasive species may soon surpass habitat loss, said Wilson, adding that fragmentation is the major cause of ecological disintegration and that identifying and addressing the different pathways of invasion is critical. **Bob Jamieson** (Columbia Wetlands Stewardship Partners) shared his experience with the Columbia Wetland Stewardship Partners in managing a complex floodplain river and wetland system in Invermere, showing the importance of building partnerships and community engagement when trying to plan, develop, and deliver this type of initiative. **Andrea Barnett** (Ducks Unlimited) introduced the audience to the Wetland Stewardship Partnership, as well as to the Wetland Action Plan and its related projects. Barnett highlighted the relevance of the recently launched Living Water Smart initiative ([www.livingwatersmart.ca/](http://www.livingwatersmart.ca/)), the Green Bylaws Toolkit initiative ([www.greenbylaws.ca/](http://www.greenbylaws.ca/)), and a new document entitled *Wetland Ways: Interim Guidelines for Wetland Protection and Conservation in British Columbia*. The Wetland Stewardship Partnership is currently finalizing this report (to be posted soon at [www.ducks.ca/](http://www.ducks.ca/)), which will provide best management guidelines for wetland conservation in a wide array of management scenarios.

Following these presentations, the participants had the chance to join the following field trips:

Accidental Bird Habitat in a Reservoir Drawdown Zone: **Michael Morris** (local naturalist) led a group of 10 people on an examination of the history of land use in the Arrow Lakes Reservoir drawdown zone and adjacent area near the Revelstoke airport.

One of the topics discussed was the fragments of good bird habitat that exist as a consequence of gravel excavation for the airport and the power of 40 years of plant succession.

Western Painted Turtles: **Ross Clarke** (Fish and Wildlife Compensation Program) led a group of 20 people on a trip just south of Revelstoke to look at the biology, distribution, and habitat requirements of painted turtles.

BC Hydro's plans for habitat improvements: **Doug Adama** took a group of 10 people south of Revelstoke to Cartier Bay to view a number of sites that BC Hydro is planning to treat in 2010. Their goal is to enhance habitat values for water birds, amphibians, and reptiles.

British Columbia's wetlands face an uncertain future because of resource extraction, reservoir creation, settlement expansion, and climate change. At this conference, participants learned how a combination of management, stewardship, and restoration can conserve the benefits of our wetlands for present and future generations.

A conference summary is also available from the CMI website ([www.cmiae.org](http://www.cmiae.org)). The authors would like to acknowledge **Eileen Delehanty Pearkes** and **Melanie Plett** for their in-kind support in the development of this article. 🌲



Eileen Delehanty Pearkes: photo

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