

## BHI Partners:

### Local Governments:

Beaver County  
Lamont County  
Leduc County  
Strathcona County

### Government of Alberta:

Agriculture and Rural Development  
Environment  
Municipal Affairs  
Sustainable Resource Development  
Tourism, Parks, and Recreation  
Alberta Research Council

### Government of Canada:

Elk Island National Park,  
Parks Canada Agency  
Agri-Environment Services Branch,  
Agriculture & Agri-Food Canada

### Academia:

University of Alberta

### Industrial Partners:

Alberta Industrial Heartland Assoc.  
Northeast Capital Industrial Assoc.  
Fort Air Partnership  
Strathcona Industrial Assoc.

### Non-Government

#### Organizations:

Alberta Invasive Plants Council  
Alberta Fish and Game Association  
Alberta Conservation Association  
Alberta Lake Management Society  
Alberta Land Trust Alliance  
Beaver Hills Dark Sky Preserve  
Ducks Unlimited Canada  
Edmonton & Area Land Trust  
Kalyna Country  
Nature Conservancy of Canada  
North Saskatchewan Watershed Alliance  
Royal Astronomical Society of Canada

## Wetland Health: Challenges and Opportunities in implementing Alberta's Wetland Policy

The BHI is partnering with a UofA research team and several other agencies to assess the ecologic and social challenges in implementing Alberta's new Wetland Policy: The assessment will include indicators of wetland health, ecosystem services, decision support systems and analysis of social barriers that will allow better regional planning and implementation of the wetland policy.

Wetlands are nature's 'kidneys'; they filter and trap sediment, and purify our water supplies. Wetlands can be important groundwater discharge areas, and in dry years are important drought refuges for wildlife and livestock, and also form important natural fire breaks. In wetter years they control flooding and prevent erosion by absorbing large amounts of water and releasing it slowly.

Historically, the loss of wetlands in Alberta was predominantly due to agricultural activities, however, in recent years losses are primarily due to residential and industrial development rather than agriculture. Climate warming and reduced spring run-off is also expected to significantly reduce the number and areal extent of wetlands.

One major goal of the *Water for Life* strategy was to develop and implement a new Alberta Wetland Policy. The overall goal of the policy is to maintain or increase wetland extent in Alberta. That is, wetlands affected by proposed developments will be either protected (maintained), developed with mitigation measures, or replaced with new wetlands constructed to compensate for destroyed wetlands. Some of the challenges to implement the new policy include: choosing size and location of 'replacement' wetlands; assessing differences in wetland classes and functions; devising quantitative ways to assess wetland quality; choosing techniques to incorporate wetland area and function into regional planning initiatives, and finally, overcoming stakeholder resistance to adopting wetland policy regulations.

Since 2003 an interim wetland policy requires developers, both industrial and residential in some parts of the province, to compensate every hectare of damaged or destroyed wetlands with 3 hectares of new or restored wetlands, but these replacement wetlands may not function or be of the same quality as those lost. Alberta could lose extensive wetland benefits even if the absolute area of wetlands remained the same if the replacement wetlands were poorly located or designed. The BHI will assist researchers at the UofA to find ways to evaluate, create, restore, and replace wetland functions through scientifically defensible guidelines applicable to implementing Alberta's new wetland policy.

Dr. Lee Foote, Ph.D.  
Dept. Renewable Resources  
University of Alberta



## Bio-Monitoring Air Quality

The BHI is partnering with researchers at the UofA to explore the relationship between air quality and its effects on the diversity and abundance of bryophyte species [mosses] in the Beaver Hills and surrounding areas. Lichens and mosses are the most common types of plants used in bio-monitoring of air pollution. Analysis of plant tissue provides direct quantitative information on relative concentration loads. Alternatively, observing plant responses is a simpler and less expensive technique and can be used as early warning systems. This project began in 2006 and involves two phases over four years.

Phase 1 is nearly complete and involved the selection of 30 sites; 15 sites west of Edmonton [control sites] and 15 east of Edmonton [study sites] in Elk Island National Park and surrounding area. The site selection criteria included areas that were: protected from development, contain 25m X 25m aspen over-storey, and were at least 100m apart. The sites were GPS'd for ease of future monitoring and data collection. At each site the bryophytes have been inventoried by species and abundance, and other factors such as canopy cover, shrub density, tree diameter, frequency of dead wood and decay rates has been measured. Results to date show a greater diversity of moss species west of Edmonton and at some sites, the diversity of moss species from year to year at the same site is variable. Additional analysis will be conducted to determine why these differences are occurring.

Phase 2 is to establish air quality measurement and sampling protocols with the objective to correlate existence of air quality contaminants with health/growth of mosses. In addition to the sites selected, either moss bags or other mosses on-site at each air quality monitoring station will be used to compliment existing air quality monitoring station data collected in the BHI.

Dr. René Belland, Ph.D.  
Devonian Botanical Garden  
University of Alberta

## Creating a Wildland Legacy



Located in the heart of the

Cooking Lake Moraine and approximately 27 km east of the City of Edmonton is the 1509-acre Golden Ranches.

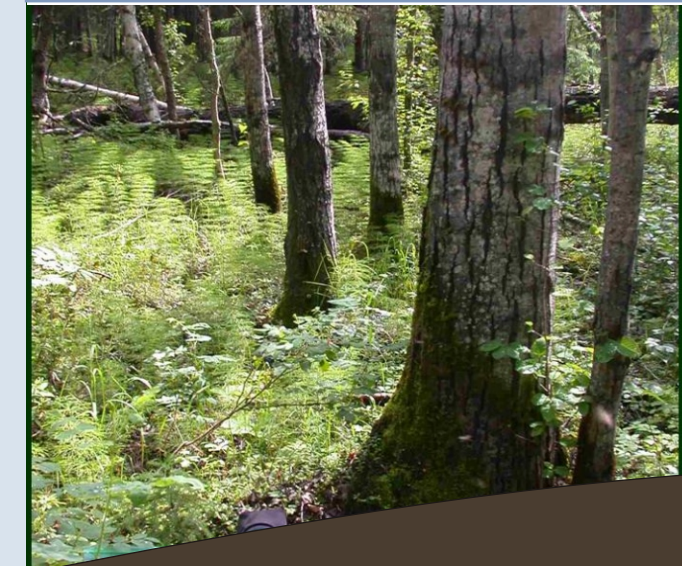
Purchased by its current owners in the early 1950s, the Golden Ranches represents the largest working ranch remaining in Strathcona County and the Cooking Lake Moraine [aka Beaver Hills].

Currently, seven partners are working together to create a wildland legacy.

Golden Ranches provides more than four miles of important riparian habitat along North Cooking Lake. Centrally located between Elk Island National Park, Hastings Lake, Cooking Lake-Blackfoot Recreational Area and Ministik Game Bird Sanctuary, this diverse landscape functions as a critical wildlife corridor with an abundance of vegetative cover, ungulates, waterfowl, song birds and other small mammals.

In May 2009, over 134 acres of important riparian habitat were purchased by the Nature Conservancy of Canada, Alberta Conservation Association and the Alberta Fish & Game Association.

Juanna Thompson  
Nature Conservancy Canada



# Beaver Hills Initiative

**Innovations in:**  
**Data and information sharing**  
**Strategic coordination of planning**  
**Partnership building**

## Biodiversity in Wetlands:

BHI is partnering with researchers at Augustana Faculty, UofA, to assess the differences between wetlands in agricultural areas and wetlands in parks and protected areas. The loss of wetlands in the context of continued development [land use change] combined with a warming climate and increased incidence of drought have created a synergistic relationship between climate change and land use.

How biotic [living plants and animals] and abiotic [water chemistry or pond size/shape] qualities of agricultural wetlands differ from natural wetlands is poorly understood, especially in areas where agricultural activities do not completely remove riparian cover and adjacent forest zones or tree cover. The Beaver Hills provides a perfect opportunity to examine how a gradient of landscape alteration affects wetland biodiversity and the abiotic factors that help support it.

Typical measures of wetland biodiversity include plants, reptiles, amphibians, invertebrates, and birds. For this research, amphibians, invertebrates, water birds, semi-aquatic mammals, and riparian vegetation will be assessed to determine three levels of biodiversity: 1) species richness, 2) changes in diversity between ecosystems, and 3) overall diversity within the southern Beaver Hills. These measures will then be used to assess the effects of varying land uses on different levels of biodiversity.

To fully succeed in innovative land management approaches, the Beaver Hills Initiative requires ongoing research to better understand the critical relationship between the remaining biological resources and historic and existing land use.

Dr. Glynnis Hood, Ph.D.  
Augustana Faculty  
University of Alberta

## Transferable Development Credits:

**Natural capital** is receiving increasing attention in the wake of recent growth pressures and concerns about the sustainability of our landscapes. For many years the BHI has fostered stewardship and conservation of the region's natural capital. Experience shows that the conservation of natural capital, far from hurting the economy, delivers a number of important services that contribute to the high quality of life to Albertans, including clean water, flood protection, and recreational opportunities at a low cost to taxpayers.

In 2007, the BHI investigated the feasibility of using *Transferable Development Credits* (TDCs) to provide incentives to private landowners to secure natural capital investments. TDCs allow landowners in areas with valued natural capital to sell development credits in areas targeted for more intensive development. TDC programs can be targeted to promote multiple community development and conservation objectives. The initial study showed that the BHI already meets many of the requirements for a successful TDC program including the identification of conservation objectives, and a land management framework.

The objectives of this project include building education and awareness on the potential opportunities associated with such instruments. The results of the project will illustrate how TDC markets might evolve in the rest of Alberta. The BHI will be working closely with community members, the Government of Alberta and the land trust community to ensure lessons learned are shared.

Copies of the Initial Feasibility Study are available at:  
<http://www.ducks.ca/province/ab/partners/beaver/tdc/index.html>

Dr. Marion Weber  
Alberta Research Council

# Working Together

For a sustainable region, through  
shared initiatives and  
coordinated action



## Summer 2009 Newsletter

### BHI Upcoming Events

#### June

10 - Josephburg Chicken Supper and Market  
14-18 - Advancing Local Action for Sustainability - ICLEI World Congress at Edmonton  
16 - Emerald Awards at Edmonton  
20 - Ardrossan Parade and Picnic  
27 - Century Day at Elk Island National Park

#### July

8-11 - National Stewardship & Conservation Conference at Calgary  
11 - Josephburg Bat and Bake  
24-26 - Lamont Summer Sizzler Rodeo and Fair

#### August

6 - Potato Growers of Alberta Field Day at CDC North, Edmonton  
29-30 - Strathcona Vintage Tractor Association Annual Antique Tractor Pull

#### October

30-2 - Canadian Institute of Planners 2009 at Niagara Falls, Ont

#### November

19-20 - The Green Industry Show and Conference at Edmonton, Shaw Conf Centre

### Executive Director's Greetings

Welcome to our 7<sup>th</sup> edition of the BHI Newsletter. Thank you for taking the time to read about our on-going activities.

The BHI is continuing to move forward with science-based projects that will assist our decision makers in planning sustainable communities today and for future generations. Action and tremendous dedication of members and partner agencies are ensuring conservation and stewardship of the environment, fundamental to our quality of life, is not forgotten in these challenging times.

On behalf of the BHI and all of our partners, I hope the projects you read about will intrigue you and encourage you find a moment to go out and explore the many beautiful areas of the Beaver Hills. Return of the song birds and seeing new life on the landscape, I know will lift your spirit.

Be good to nature, and you will be good to yourself.

Brenda Wispinski  
Executive Director

### Benefits of the BHI Partnership:

Integration of expertise across disciplines and jurisdictions, sharing of resources by joint implementation of projects, leveraged funding

Development of a world-class model of a sustainable community, addressing social, economic and environmental factors equally

Data sharing and access for regional land use planning and ongoing land management



Visible beaver runs  
due to drought



Brenda Wispinski, Executive Director  
E-mail: [wispinsk@strathcona.ab.ca](mailto:wispinsk@strathcona.ab.ca)  
Phone: 780-464-8280