



beyond our boundaries

2008-09 ANNUAL REPORT of the FOOTHILLS RESEARCH INSTITUTE

beyond our boundaries . . .

Foothills Research Institute goes beyond business as usual.

With a home research base of 2.75 million hectares and 17 years of science-based knowledge under our belt, we are going beyond our boundaries to work with new partners, on new projects, in new places and in new ways.

Our focus remains on ways to reduce the human footprint on the landscape, and ways to advance the goal of sustainability. What's new is our ever-increasing capacity to extend our practical knowledge to partners and policymakers far beyond our early plans and dreams.

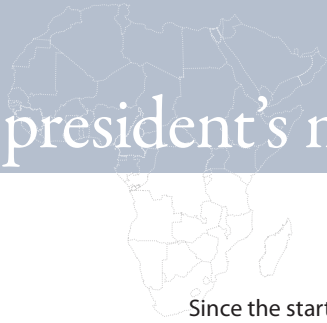
In turn, our shareholders and partners reap the rewards of world-class knowledge from around the globe being brought back to benefit the operations, the environment and the people of Alberta.

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president's message



Since the start of Foothills Research Institute in 1992, the success of virtually everything we do has been measured in part by our success in extending knowledge and tools to not only our partners, but also to policy makers and resource managers well beyond our boundaries.

The past year, 2008-2009, was notable for a significant surge in demand for our knowledge, tools and involvement on many fronts.

Natural Landscape Management has influenced landscape planning across various parts of Canada. Now it is forming the basis of a Healthy Landscape Planning paradigm that is drawing the interest of multiple stakeholders involved in the provincial government's Land Use Planning processes. Our Grizzly Bear Program is central to a research relationship developing between us and Scandinavian Brown Bear researchers.

The scope and geographic presence of the Foothills Landscape Management Forum has expanded greatly in the past year. The Yellowhead Ecosystem Group took its first developmental steps during the year, and the Mountain Pine Beetle Ecology Program has been asked by our partners to answer numerous questions relative to the mounting threat of the beetle's advance upon Alberta.

These few examples show the value of the institute's work not only to our immediate stakeholders, but also to broader provincial and global interests. I believe there are several reasons for this success, including:

- **Superior financial investment** – Core shareholders leveraged their dollars on average 10:1. Year over year, research investment is up 16 per cent. Our administrative expenses are held at less than five per cent of total spending.
- **Superior access to knowledge and investment** – due to increasingly robust data systems, growing information-sharing ability, administrative support and training, and ways for partners to deal with complex issues such as species recovery plans, integrated resource management and land use planning.
- **Superior linkage of research programs** – partners seeking practical solutions to complex and interrelated issues such as land use planning, provincial Water For Life strategies and climate change.

Today's economy reinforces the fact that the growing investment in the institute is a privilege we must continue to earn. Our shareholders and partners continue to face increasingly complex and interrelated issues around sustaining their interests on, and stewardship of, the provincial landscape. All this comes at a time when financial and physical resources are increasingly difficult to secure.

Our commitment is to provide the knowledge and the tools required to address these challenges, and to sustain the full range of economic, environmental and social values on landscapes here and around the world.

Jim LeLacheur
President



general manager's message

“Going beyond our boundaries” is a very real goal for Foothills Research Institute because by reaching out, we bring back enormous value for our funding partners and stakeholders.

This has been a year that dramatically illustrates the concept that we all can accomplish more, and benefit more, by generating research results that serve the wider world and provide us with collaborations, knowledge and tools that are of direct utility to landscape and resource managers in west central Alberta.

It's a two-way street, in other words, and the way we've been welcomed into global partnerships is, I believe, a testament to the quality, the dedication and the vision of our program leaders and research teams. The mix of clear-eyed, efficient leadership and research designed to solve practical problems has made our Institute and our region a model of how to achieve science-based progress.

On the international front, Foothills Research Institute maintains connections with the Canadian Model Forest Network and the International Model Forest Network, which gives us the benefit of sharing information gathered on forest landscapes across Canada and around the world.

A major accomplishment for us last summer was co-hosting the International Model Forest Network's "Global Forum." This event led to the identification of several strategic initiatives around community sustainability, adaptation to climate change and circumboreal issues.

The Scandinavian Brown Bear Project has formed a collaboration with our Grizzly Bear program through a Memorandum of Understanding that allows for the two-way exchange of knowledge and tools that, for our part, will be very relevant to the conservation of Alberta's grizzly bear population.

On the national and provincial stages, Foothills Research Institute hosted workshops and short courses on mountain pine beetle ecology and management implications, as well as on natural disturbance tools that are now being used across 90 per cent of Alberta's forested public lands and by Saskatchewan managers as well.

Just a few more examples – the Geographic Information Systems Program is collaborating with the GeoConnections project that exchanges data widely through an online decision-support system.

Our Aboriginal Involvement Program is taking locally-developed consultation engagement technologies and processes and applying them to other jurisdictions provincially. We are seeking opportunities to market these tools and approaches globally.

The Fish and Watershed Program has created a Field Classification Manual that provides riparian area management guidelines that can be used right across Alberta.

Next year we will be able to report on some exciting new programs now under way, ones that again stress the value of reaching beyond our boundaries. We look forward to showcasing how Healthy Landscapes, the Circumboreal Initiative, the Yellowhead Ecosystem Group, collaborations with EMEND (Ecosystem Management Emulating Natural Disturbance) and other initiatives demonstrate the return on investment to our valued core partners and stakeholders.

Tom Archibald
General Manager





PARTNERS

Partnership is the lifeblood of the Foothills Research Institute. Through our partners' contributions, our tools and knowledge are integrated into land and forest management policy, planning and practice. Hence the advancement of forest and land management in Alberta. The strength of our organization would not be what it is today without our partners' commitment and we are honoured to have contributions of all shapes and sizes.

SPONSORING PARTNERS

Alberta Sustainable Resource Development, Canadian Natural Resources Ltd., ConocoPhillips Canada, Encana Corporation, Jasper National Park of Canada, Petro-Canada, Talisman Energy Inc. and West Fraser Mills Ltd. are shareholders of the Foothills Research Institute.



FUNDING PARTNERS

Management Partners

Management Partners provide financial and in-kind support to the Foothills Research Institute. They are also responsible for land, resource, or forest management, and are interested in using research institute knowledge and tools in their businesses.

Alberta Energy
Alberta Newsprint Company
Alberta Pacific Forest Industries Inc.
Banff National Park of Canada
Blue Ridge Lumber Inc. – A division of West Fraser Mills Ltd.
BP Canada Energy Company
Canfor Corporation
Daishowa-Marubeni International Ltd.
Dennis Quintilio and Associates
Devon Canada Corporation
Elk Valley Coal Corporation
Fisheries and Oceans Canada
Foothills Forest Products Inc.
Government of British Columbia
- Environment
- Forests and Range
Grande Cache Coal Corporation
Husky Energy Inc.
Manning Diversified Forest Products Ltd.
– Manning Forestry Research Fund
Millar Western Forest Products Ltd.
Shell Canada Limited
Slave Lake Pulp – A division of West Fraser Mills Ltd.
Spray Lake Sawmills
Suncor Energy Inc.
Sundance Forest Industries Ltd.
Sundre Forest Products, A division of West Fraser Mills Ltd.
Teck Coal Limited
Tolko Industries Ltd.
TransCanada Pipelines Limited
Waterton Lakes National Park of Canada
Weyerhaeuser Company

Program and Project Partners

Program and Project Partners provide financial and in-kind support to specific programs or projects. These organizations believe in and support Foothills Research Institute.

Alberta Aboriginal Relations
Alberta Advanced Education and Technology - Alberta Forestry Research Institute
Alberta Chamber of Resources
Alberta Environment
Alberta Forest Products Association
Alberta Transportation
Aseniwuche Winewak Nation of Canada
Bandaloo Landscape-Ecosystem Services
Boreal Forest Research Centre
Bighorn Stoney First Nation
Calgary Zoo
Canadian Association of Petroleum Producers
Canadian Cooperative Wildlife Health Centre
Conservation Biology Institute
Earth Systems Institute
Encompass Strategic Resources Inc.
Environment Canada, Canadian Wildlife Service
F.C. Pollet Inc.
Foothills Ojibway Society
Forest History Association of Alberta
Forest Resource Improvement Association of Alberta
FP Innovations – FERIC
Hinton Training Centre
Margaret Donnelly Consulting
Mistik Management Ltd.
Moose Mountain Environmental Fund
Nackowinewak Nation
Natural Resources Canada, Canadian Forest Service
NatureServe Canada
National Sciences and Engineering Research Council of Canada (NSERC)
Ontario Ministry of Natural Resources
Peregrine Helicopters
Peter J. Murphy Forest Consulting
Petroleum Technology Alliance Canada
- Environmental Research Advisory Council
Royal Alberta Museum
Saskatchewan Institute of Applied Science and Technology
Silvacom Consulting
Sunchild First Nation
Tay River Environmental Fund
The Forestry Corp
Timberline Natural Resource Group

Town of Hinton
Trout Unlimited Canada
University of Alberta
University of British Columbia
University of Calgary
University of Montana
University of New Brunswick
University of Saskatchewan
University of Waterloo
West Athabasca Watershed Bioregional Society
Wildlife Habitat Canada
Wilfred Laurier University

Other Partners

The following associations, businesses and communities support the vision and goals of the Foothills Research Institute.

Alberta Caribou Committee
Alberta Forest Genetic Resources Council
Alberta Provincial Biodiversity Monitoring Institute
Alberta Tourism, Parks, Recreation and Culture
Arctos Ecological Consulting
AVID Canada
Canada Centre for Remote Sensing
Canadian Institute of Forestry
Canadian Model Forest Network
College of Alberta Professional Foresters
College of Alberta Professional Forest Technologists
Council of Forest Industries
Cows and Fish Program
Ember Research Services Ltd.
ENFORM
Forest History Society, Durham, NC
Forest Products Association of Canada
Golder Associates
Greenlink Forestry Inc.
Hinton Fish and Game Association
Hinton Historical Tracks & Trails Society
Inside Education
Integrated Ecological Research
International Model Forest Network
Jasper-Yellowhead Museum & Archives
Municipality of Jasper
Palisades Education Stewardship Centre
Sustainable Forest Management Network
Telemetry Solutions
West Central Caribou Landscape Planning Team
Woodlands Operation Learning Foundation
World Wildlife Fund Canada





partner perspectives 8



WAYNE CLOGG

**Senior Vice President , Woodlands
West Fraser Mills Ltd.**

The current economy continues to be the most challenging in our 54-year company history. More than ever before, investments of human and financial resources must significantly enhance the future of our business. We consider our 17-year commitment to Foothills Research Institute as a good example of just such a strategic, long-term investment.

West Fraser does not operate in isolation in the forests of Alberta. We are stewards of a publicly-owned resource and we operate in concert with numerous other stakeholders. Developing the knowledge and tools to sustainably manage the forest landscape must be cost efficient, adaptive to change and continually improving.

To West Fraser, the Institute represents an environment where partners develop sustainable management tools which we will use together in integrated management plans. It represents a cost-efficient investment leveraged with our partners and, perhaps most important, it provides us with management tools applicable to the larger provincial landscape on which we operate.

JEFF REYNOLDS

**Director, Issues Management
Alberta Sustainable Resource Development**

We regard the Foothills Research Institute as one of the leading and most credible organizations for forest and resource management research in Alberta. It has an outstanding reputation, conducts quality work and is very well managed.

Its value to the provincial government lies in the objective, concise and forward-looking advice that goes to our department – and it is usually advice that can readily be implemented.

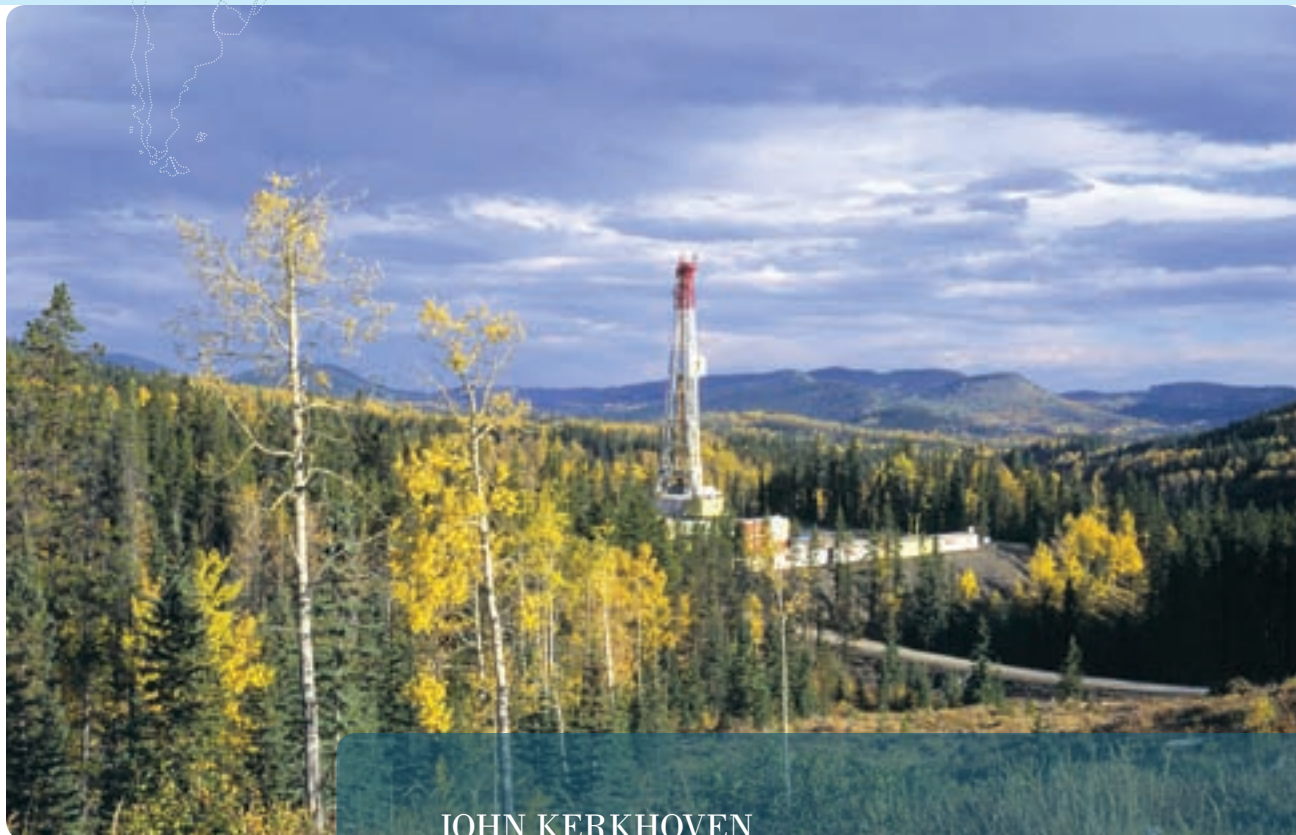
Forested landscapes make up 60 per cent of the province, making them an important resource of tremendous significance, with a wide range of values. They have to be managed for long-term sustainability and quality of life for the people who live and work here, and the Institute helps us make decisions around that responsibility.

The work of the Institute aligns very well with provincial priorities such as land use integration, wildlife and water. There's also a major payback in the way the Institute reaches out to other jurisdictions, for instance to Parks Canada and British Columbia, so that we can develop cooperative working relationships. It's a quality that goes beyond the solid research mandate to the realm of exploring synergies with others who can help us achieve our common goals.





partner perspectives



JOHN KERKHOVEN

**Manager, Stakeholder Relations
Petro-Canada, North American Natural Gas**

The biggest value of Foothills Research Institute for me, hands down, is the networking. At first glance the organization might appear quite forest-centric, but you soon find out that it has a much broader multi-stakeholder character to it. I have met people from all walks of life that otherwise I would not have, and that really helps advance our common goals such as reducing the industrial footprint and preserving wildlife habitat while maintaining industry's ability to conduct activity.

Research coming out of the Institute directly helps me in my work. Research information was used in preparation for regulatory hearings for a gas project in the southern foothills and is also pertinent to broader based initiatives such as the South Saskatchewan Regional Land-use Plan. I find that results of grizzly bear studies or the stream crossing program or natural disturbance research are of direct value to Petro-Canada.

It's clear that the Institute's work has relevance and application far beyond its own boundaries. I know of a number of other companies using the grizzly bear information, which has now become a provincial database. The natural disturbance work is finding application down in Kananaskis Country.

Science is important in the decision-making process. We want to avoid presumption and emotion as much as possible, and this type of research is what makes that possible.



GREG FENTON

**Superintendent
Jasper National Park, Parks Canada Agency**

Our prime goals are protection of natural and cultural resources, and facilitating quality visitor experiences and learning opportunities.

We recognize, however, that to be successful we must work with our partners and at the broader landscape scale. The Foothills Research Institute provides us with a unique and valuable opportunity to work with partners within the broader regional ecosystem to achieve results related to mutual goals and interests.

The institute also provides a unique opportunity to carry out joint research, share information on issues, policies and management activities and where appropriate, facilitate

discussions by management agencies to harmonize policies and practices. Examples include wildfire, mountain pine beetle, disease, grizzly bear and caribou populations, aquatic systems and water quality.

It is very useful for all the partners that Institute researchers are working beyond their nominal boundaries. Grizzly bear research, for instance, is happening all along the Rockies down to Waterton, the results of which allow for better protection and management of this species across jurisdictional boundaries.

When we work together, we connect managers and decision-makers at the most senior levels in their respective organizations. The Institute's relationships at the international scale, with regions such as South America, also provide us with opportunities for profiling what we do here and for developing working relationships that benefit everyone.

ROBIN CAMPBELL

**Member of the Legislative Assembly
West Yellowhead Constituency**

Every challenge you face in Alberta you will find in West Yellowhead – coal, forestry, oil and gas, tourism, agriculture, wildlife habitat, headwaters of major rivers and much more. This means the research done by Foothills Research Institute will play a key role in how we sustainably develop this area, and other parts of Alberta.

Science developed through research is a key part of the equation. It has to be integrated with common sense and experience in developing realistic decisions on how the landbase can best be managed for all its values.

Forestry is one of the true sustainable industries, simply because we plant at least as much as we cut, and the work done by the Institute continues to evolve that sustainability.

Equally important, it helps the provincial government by providing information on how we might tackle many of our priorities, from land use to water quality to habitat and community sustainability. I believe it's important that the research be applied beyond the Institute's boundaries, because there are so many synergies with challenges in the rest of the province, the rest of the country and the wider world.



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COMMUNICATIONS AND EXTENSION PROGRAM

Foothills Research Institute provides communications and knowledge transfer for the benefit of our partners as well as the broader community beyond our boundaries.

The objective of having Institute knowledge and tools integrated into forest and land management policy, planning and practice carries weight globally as well as locally, says C&E program lead Sean Kinney. "The research we're conducting generates information that we want to share with all who seek better ways to manage resources and landscapes in today's world."

The 2008 International Model Forest Network's Global Forum in Hinton was a prime example of this knowledge-sharing across borders. The event brought together 160 representatives from 35 countries to share experiences, challenges and solutions in forest management. One outcome of the forum was an agreement to establish the Circumboreal Initiative, and one early benefit of this effort is the Scandinavian Brown Bear project.

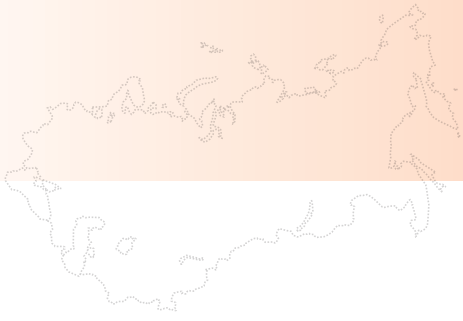
Leaders with Foothills Research Institute's Grizzly Bear Program are now working with researchers in Scandinavia on studies around stabilizing bear populations in developing landscapes. "We have a lot of good information to share, and given the multi-generational scope of Scandinavia's brown bear data, our partners in Alberta will benefit from the exchange also."

Another initiative under the agreement will focus on potential social and community impacts of climate change, which again takes the Institute's work onto the global stage.

The Institute's website has been revving up an RSS feed system that automatically collects news items and syndicates research findings to interested stakeholders around the world. The system allows users to choose which items they will receive, enhancing the value of the service even further.

Science coming out of the Foothills Stream Crossing Program, the Foothills Landscape Management Forum, the Natural Disturbance Program and many more is relevant and important to research, policy and operational managers anywhere, not just within the core study area of the Foothills Research Institute, Kinney says.

"In our communications, and our extension activities, we plan to be aggressive in finding more ways to reach the right people with the right information. The payback for our partners and stakeholders is increased collaboration, greater leveraging of research resources, more shared knowledge, and ultimately stronger confidence in the management tools and products created by the Foothills Research Institute."



FOOTHILLS GROWTH AND YIELD PROGRAM

The Foothills Growth and Yield Association, a collaboration of nine FMA holders, the Foothills Research Institute and Alberta Sustainable Resource Development, is one of the few organizations conducting research on the early growth and development of young lodgepole pine trees after reforestation.

This work has particular value to the development of Alberta's regeneration standards. For example, a recent examination of the Regenerated Lodgepole Pine project plots has shown a significant linkage between increases in mean average annual temperature and mortality in young lodgepole pine.

"This is one of the few studies in Canada examining impacts of climate change on survival and growth in regenerated stands," says program lead Bob Udell. "It suggests that scientists would do well to examine such linkages for other species also."

One implication is that forest companies replanting lodgepole pine could choose to increase the number of seedlings per hectare to ensure that provincial regeneration establishment targets are met. "They may also wish to consider alternative species choices, bearing in mind that the species they plant today will still be growing 80 years from now in a different environment," says Udell.

The work and findings of this program dovetail with another FGYA program that maintains a schedule of measurement and monitoring of historic lodgepole pine research plots, some dating back over 50 years.

There will be broad interest in results of two other program components, one aimed at helping apply an appropriate reforestation treatment for areas where lodgepole pine stands have been killed by the mountain pine beetle, the other detailing responses to enhanced management of lodgepole pine.

The information presented in the final reports will fill important knowledge gaps.



GRIZZLY BEAR PROGRAM

An agreement to collaborate with researchers in the Swedish Brown Bear Program will help the Hinton-based Grizzly Bear Program shave decades off data collection time, and help researchers better understand population dynamics in boreal forest ecosystems.

Scientists in both research groups will use data sets and new techniques to address important management questions for brown bears.

“The Scandinavian Brown Bear Project has a data set going back five generations in bear families,” says Grizzly Bear Program lead Gord Stenhouse. “They know the genetic history of bears over time.

The study areas in Scandinavia used to collect the data, one resembling a protected area and the other containing major forestry and human activity, are very similar to the diversity of grizzly bear habitat in Alberta.

For its part, Foothills Research Institute will share its pioneering work on grizzly bear health, which the Scandinavians have not pursued for a lack of monitoring techniques and tools. They have freezers full of historic samples, which Alberta researchers will

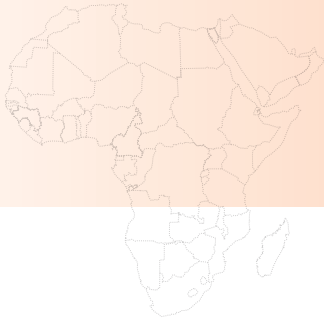
process to help them understand the health characteristics of their bear population.

The Institute has also developed an animal pathfinder system which helps provide fine-scale movement data and habitat images for bears. Sharing this technology will help Scandinavian researchers track the movement of their own bears in much greater detail.

The Scandinavians have witnessed powerful growth in their bear populations over past decades, Stenhouse says. “So they know how bear populations expand and repopulate in areas where they were basically extirpated. This might help us predict, for example, where bears might repopulate in Alberta.”

The Scandinavian program also provides Alberta researchers with ideas on how to work with stakeholder groups on grizzly bear management. For example, the Scandinavians use moose hunters to conduct inventory work and population monitoring.

“In Alberta, we could learn from that experience to help engage stakeholders and the public in long term grizzly bear management,” says Stenhouse.



MOUNTAIN PINE BEETLE ECOLOGY PROGRAM

Two years of work have resulted in the launch of a web-based resource that makes hundreds of mountain pine beetle-related research available to resource managers and researchers.

The compendium is wide-ranging, and available to people no matter where they live or work. So far it contains 356 projects and a tool that allows users to search by topic, region or project leader. It can be found on the Foothills Research Institute website, under the Mountain Pine Beetle Ecology Program link.

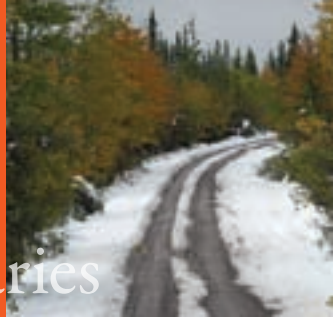
All information was provided voluntarily, with contributions from Alberta, British Columbia and the western United States. Reports describe projects conducted between 1996 and 2008, though Mountain Pine Beetle Ecology Program lead Don Podlubny says the Institute plans to update the database yearly.

“The compendium represents an invaluable resource for the public, and also for resource managers and researchers anywhere in the world who want access to the latest knowledge, and who want to avoid duplicating work that’s already been done,” he said.

The mountain pine beetle is a common pest throughout western North America, and down into Mexico. Other “bark beetles” are responsible for infestations elsewhere in the world, so there is wide interest in this work beyond the Institute’s boundaries.

Another project that will have broad application aims to evaluate how well the media and the public are interpreting messages from government and industry about the beetle situation in Alberta. Outcomes will help Institute partners evaluate how clearly their messages are being interpreted, whether there is a need to adopt a different strategy, and what factors may be influencing how the message is being perceived and transmitted.

Technical work and data analysis continue on two other beetle projects designed to deliver some valuable decision-support tools. One will help resource industry and government managers make long- and short-term planning decisions related to issues such as cut allocations and whether threatened forest stands should be harvested. The second tool will help resource managers decide on placement of culverts and road reconstruction based on how beetle infestations have affected sub-surface water conditions and flows. Preliminary results for both should be available in early 2010.



HEALTHY LANDSCAPES

The Healthy Landscapes approach to land management represents a fundamental change to the planning process, and is about to make its world debut in the Upper Athabasca watershed area of northern Alberta.

If the approach proves itself, its proponents at Foothills Research Institute are confident that it can be reproduced anywhere in Alberta or the world.

The decision to adopt Healthy Landscapes as an add-on to Alberta's new land-use planning process in the Upper Athabasca area was unanimous among 30 Institute partner representatives. They included holders of seven Forest Management Agreements, two oil and gas companies, Alberta Environment, Alberta Tourism, Parks and Recreation, three divisions within Alberta Sustainable Resource Development, and Jasper National Park. The demonstration area is approximately eight million hectares in size, stretching from the Canfor and Weyerhaeuser Forest Management Area in the north to the bottom tip of West Fraser Timber's Forest Management Area near Sundre, and east beyond Edson.

"Everybody, I think, was ready for a new idea," says Dave Andison, the Institute's program lead.

Rather than the traditional method of managing a landbase in pieces according to the wants and needs of individual

stakeholders, the Healthy Landscapes approach starts with a universal set of benchmarks that establish the historical range of patterns and structures on that landbase. Those benchmarks then become the starting point as to what constitutes a healthy landscape in that particular environment.

"If the landscape continues to operate within that natural range of variability, those historic patterns and trends, that is the ultimate measure of sustainability," says Andison. "We know that if we keep the landscape as close as possible to how it functioned historically, then the risk of losing any biological function or species is minimized."

This might mean ensuring timber harvest patterns mimic historic wildfire patterns, or allowing coarse woody debris to remain in waterways as it would in natural systems. Timber and fish and other ecological goods and services that were provided in abundance by historic patterns should thus be equally available on human-managed landscapes.

Institute researchers have started the technical work that will ultimately help partners design disturbance scenarios in the demonstration area. This will be completed by early 2010 and a final report will be completed soon after. It will then be available as a key foundation for the more detailed Alberta Land-Use Framework compliance work required on the Upper Athabasca watershed area in 2010.



WATER AND LAND

A family reunion of sorts has taken place with Foothills Research Institute's decision to treat land and water as fundamentally interconnected.

The Water Program will no longer be managed as a separate entity, and water characteristics and measures will now be used as indicators of landscape health under the more holistic Healthy Landscapes Program.

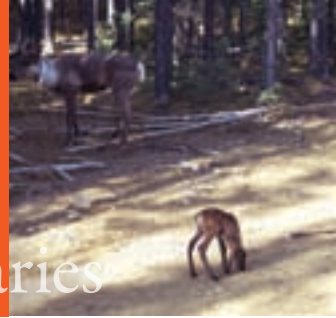
"Over the past few decades, one of the biggest artificial management divisions we have imposed has been separating land from water," says program lead Dave Andison. "As a society we have created institutions and regulations that effectively separated these two elements."

However, it is now commonly held within the research community that water and land cannot be managed separately if we are to define and maintain a healthy landscape. Research collaborations within the Institute have frequently brought watershed program researchers together with other program researchers on projects focused on riparian issues, large woody debris in streams and stream structure.

Andison says researchers plan to create a combination of tools and indicators as part of the process of applying the Healthy Landscapes model, with one of the key indicators being stream health. For example, the healthy landscapes model will establish rough estimates of naturally occurring stream sediment within the Upper Athabasca watershed demonstration project area, which land managers can then use prior to terrestrial disturbance to estimate the potential impact on stream sediments of resource activity and road, bridge and culvert installation.

Establishing benchmarks as to what constitutes a healthy aquatic environment within the demonstration area will be particularly important because the region's streams and rivers are all headwaters. This means that development disturbance that affects them could have consequences 300 to 400 kilometres downstream.

A Nova Scotia-based member of the brainstorming team that helped develop the Healthy Landscapes model has already recognized the value of this holistic approach to landscape management, and is using many ideas from the model to work through some water-related issues in her own region, in collaboration with Ontario water scientists.



YELLOWHEAD EcoTour

Two million people a year, from all over Canada and the world, are about to be invited to learn something new while driving through the Institute's research landbase.

The invite comes in the form of an EcoTour interpretive booklet similar to ones already produced for many other parts of Canada along the TransCanada Highway routes. The tours are popular with motorists passing through the area for the first time, and also prized by local residents interested in their own environment.

Foothills Research Institute's Adaptive Forest Management/History Program is guiding development of the EcoTour as a follow-up to its series of books delving into the natural and cultural history of west central Alberta. Former Canadian Forest Service Director General (and founder of the Canadian Model Forest Program) Fred Pollett has written a number of Canada's other TransCanada Highway EcoTour guides, and is now developing an edition that covers the highway from Hinton to Valemont, with side trips to Grande Cache, Lake Louise and the Cardinal Divide. Future plans call for the guide to be available as a GPS-guided audio-visual tour.

Members of the project team say the guide will do more than alert visitors to interesting sights along the road. It will link what

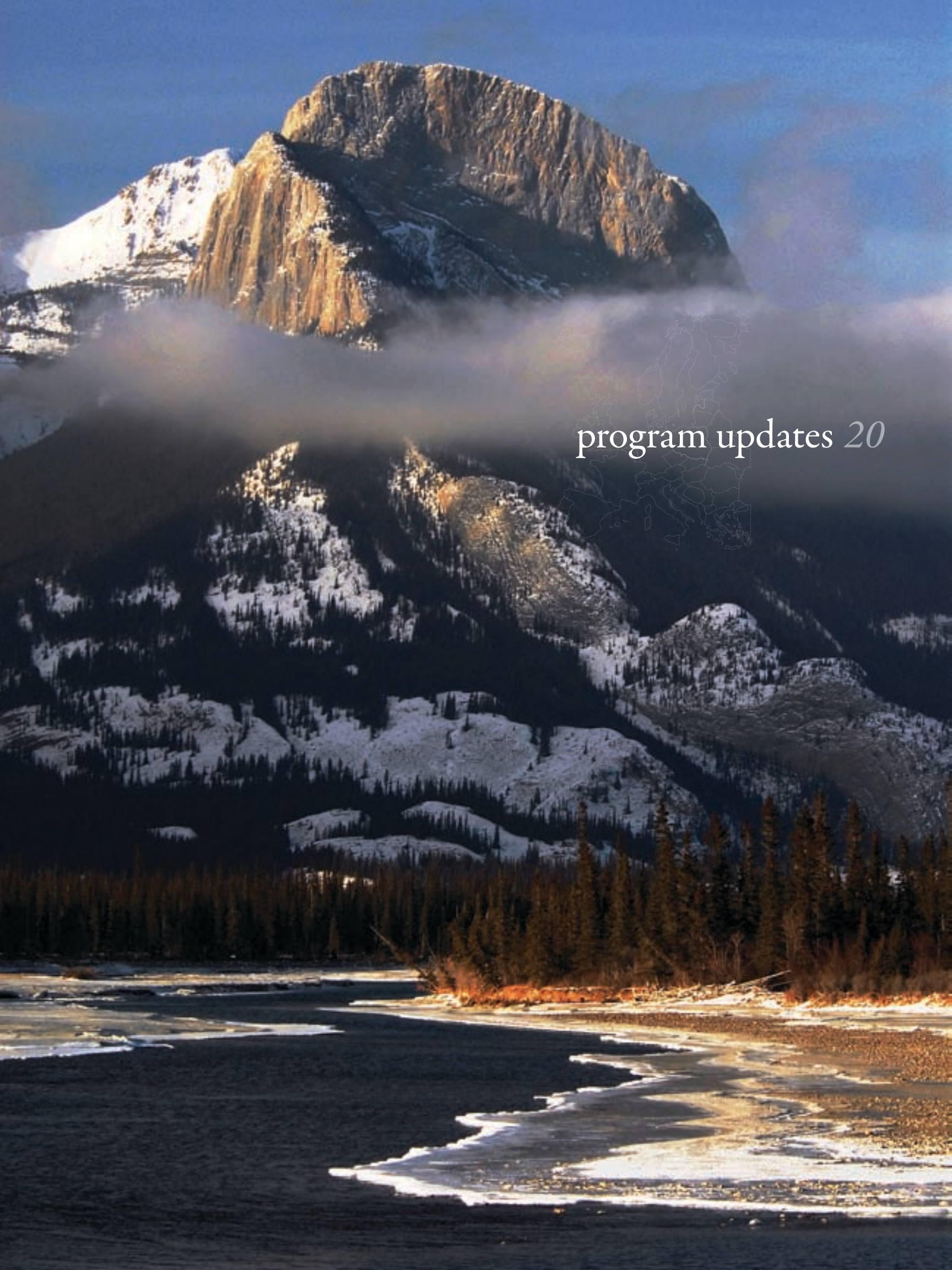
they see with what existed back through history, providing the social and natural background of the feature as well as, where appropriate, an explanation of management approaches that have been used. The aim, they say, is to prompt travelers to think and draw their own conclusions based on how the social and natural environments have evolved over time.

Visitors to the Beaver Boardwalk in Hinton, for example, will learn about a pelt currency that was the engine of the Canadian economy for 200 years, the importance of beaver pelts in Europe, conflict among trappers, and how the beaver went from near eradication in some parts of Canada to today's abundance.

Trips to Cadomin and Grande Cache raise discussion of land-use decisions related to coal and timber extraction. Another discussion might revolve around the decline of local caribou herds, and how local issues relate to broader woodland caribou issues stretching from coast to coast. Visitors will learn about the connection between melting glaciers and the levels of the world oceans, and the implications of climate change for the local environment.

The EcoTour guide will be available soon through www.foothillsresearchinstitute.ca.





program updates *20*

ABORIGINAL INVOLVEMENT PROGRAM

Three sub-program areas have brought this program to the point in 2009 of being ready for a pilot Aboriginal Engagement project that would bring aboriginal communities, government and industry together in a process of dealing with development proposals.

A multi-community land use mapping study in 2002, along with provision of technical support and training for communities, led to creation of a unique and detailed database of traditional usage and features on the landscape, with the intellectual property owned by aboriginal communities.

2006 saw roll-out of a referral process that gives industry and government a way to refer a development proposal to aboriginal communities likely to be affected and find out what buffering or avoidance measures need to be taken to preserve important spiritual and cultural sites.

Accomplishments include documentation of more than 2,600 quality-control reviewed sites identified by four communities; training of more than 25 community technicians who conduct interviews, record sites and populate the database; interviews with 52 community elders and the involvement of 89 youth participants.

One pilot run has been conducted with the Alberta government, and 20 with companies. Results include protection of 73 sites from potential disturbance, and savings to companies of \$10,000 to



\$30,000 per day in planning time. The land use mapping system has now become a national benchmark for others interested in this process.

Big-picture benefits can be summed up as documentation of important sites, co-existence between land users, respect between Nations, and innovation.

ADAPTIVE FOREST MANAGEMENT/HISTORY PROGRAM

By understanding our past, we shape our future. The Adaptive Forest Management/ History Program began in 1996. Its mission is to examine the historical roots of sustainable forest management in Alberta, particularly as they are reflected within the Institute's research landbase, so that the insights gained can benefit both the public and forest managers today and into the future.

The program has published three books and a number of other reports since its inception, with lots more to come. Most recently activity has centred on preparing a Hinton-to-Valemont EcoTour guide, as featured earlier in this annual report.

This past year saw publication of *Mountain Trails*, the third book in a series about the history of the forests and communities of west central Alberta. It features the memoirs of Jack Glenn, a Forest Ranger at Entrance, Alberta, from 1920 to 1945. Augmented with additional research and archival photographs, it provides an engaging on-the-ground view of early Forest Service history.

Other books published so far are *Learning from the Forest*, the history of forest management at West Fraser's Hinton operation, and *A Hard Road To Travel*, the story of a region that lies at the heart of Alberta and Canadian history.

Copies of these attractive and highly readable book may be ordered online at www.foothillsresearchinstitute.ca (click on Adaptive Forest Management Program and "view publications.")





program updates



FOOTHILLS GROWTH AND YIELD ASSOCIATION

The Foothills Growth and Yield Association is a collaborative effort of nine Alberta forest companies to continually improve forecasting and validation of managed stand growth and yield, particularly of lodgepole pine. Projects are selected based on their utility for stand level forecasting, their scientific defensibility, relevance and value to forest managers, and their cost effectiveness.

Association activity over the past year focused on four priority areas:

1. Regenerated lodgepole pine – 408 plots across the range of lodgepole pine in Alberta provide valuable insight into the early development of regenerated stands after harvest.
2. Cooperative management of historic research trials – Canadian Forest Service and Alberta Sustainable Resource Development trials dating back as far as 1938.
3. Enhanced management of lodgepole pine.
4. Decision support for regeneration management in a mountain pine beetle environment.

Regarding the regenerated lodgepole pine work, a 2008 analysis of regenerated plots showed remarkable linkages between climate and early mortality, with potentially serious implications given trends in climate change. On poor, wet sites characterized by the presence of Labrador Tea (*Ledum*), pine survival increases at warmer temperatures. On all other site types, mortality increases steeply with increasing average annual temperature.

The regeneration management project addresses the fact that high levels of mountain pine beetle infestation and mortality in Alberta's pine forests are expected, yet knowledge with which to address post-infestation treatment is rudimentary. This project seeks to provide tools for assessing treatment options (e.g. salvage, partial-cutting, site preparation, re-planting, fertilization, density management) and their growth and yield implications, for pure and mixed-species lodgepole pine stands attacked by mountain pine beetle.



COMMUNICATIONS AND EXTENSION PROGRAM

A key goal for the Communications and Extension Program is to help the Foothills Research Institute provide value to stakeholders by promoting the awareness and adoption of new knowledge and tools.

Activities in 2008-2009 included:

- Two Footnotes newsletters produced and distributed.
- Coordinated Institute's participation at meetings and events.
- Annual Report produced and distributed.
- Delivered tours to groups who will use Institute knowledge and tools including International Model Forest Network Global Forum, South American Journalist Tour, Russian Forester Tour
- Ongoing website development and enhancement

Another key extension activity has been our continued partnership with Pallasades Stewardship Education Centre and Grande Yellowhead School Division to develop curriculum and deliver programs to students based on Institute research and findings.

The theatrical interpretive program "Within Growing Distance" was delivered 10 times by interpreters in Jasper National Park.

FOOTHILLS LANDSCAPE MANAGEMENT FORUM

The Forum's work complements a holistic adaptive management plan that reduces industrial footprint, manages vegetation (habitat) over time, and partners with government to mitigate impacts on all values, with a focus on the Little Smoky and A La Peche caribou ranges.

We are partnering with Alberta Sustainable Resource Development on a pilot project for the development of an operational-scale integrated access management plan in the Berland Smoky area.

Our approach embraces the tenets of integrated land management and the goals of reduced impact on public land, respect for the range of economic, social and environmental values on the landscape, and appropriate access to resources. In addition to developing an Integrated Access Management Plan, we will develop processes acceptable to government and land users that can be repeated in any area of the province.

These processes include:

- Integrated access management and mitigation strategies across a variety of planning processes and time horizons,
- risk assessment/modeling,
- engagement and communication strategies,



- government of Alberta approvals,
- data compilation, maintenance, and storage, and
- monitoring and evaluation processes.

A second focus will be on the continual enhancement of resource data and research for managers. The Forum will maintain the access data layer and collect new information as required to support resource management.

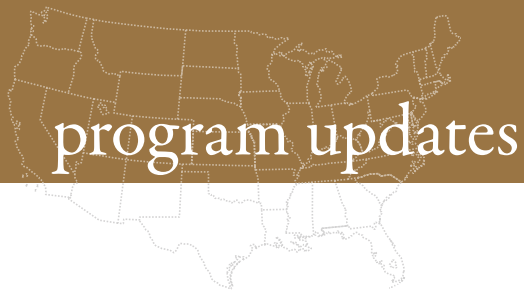
The emphasis in 2009 is to partner with Alberta Sustainable Resource Development to complete a full-scale digital vegetation inventory on historical lineal disturbances in the Little Smoky caribou range.

FOOTHILLS STREAM CROSSING PROGRAM

Activities in the past year included:

- Completion of remaining crossing inspections (103 in total) for members in the Forest Management Area, which represents the major portion of the Institute's study area.
- Completion of non-member crossing inspections in Pine and Nosehill Creeks watersheds (22 in total). The program decided to go ahead and inspect the non-member crossings for these two watersheds so the inventory work would be complete for the remediation plans.
- Remediation plans for Pine and Nosehill Creeks were submitted to federal and provincial authorities on March 1, 2009. These plans cover 87 crossings (62 for members, 25 for non-members).
- Fish monitoring work in Pine and Nosehill Creeks. As part of the remediation plans, fish inventory work was completed on 20 sites in Pine and Nosehill Creeks watershed. This will provide some base data on fish habitat at key locations in these two watersheds.
- Shell joined the program in September of 2008. Imperial Oil Resources joined last spring.





FISH AND WATERSHED PROGRAM

The program has focused on three areas: challenges posed by old “inherited” road and stream crossing deficiencies, development of tools to streamline future planning and compliance, and developing data that will support the Institute’s Healthy Landscapes initiative.

Stream crossings continue to present the highest risk to aquatic resources in the region. Their status is now reported in the Institute’s on-line indicators report. Specifically, inherited problems relate to stream crossings installed before 1982 that obstruct fish passage, or road construction that raises sedimentation levels in streams. Replacement and rebuilding are often required, though some sort of funding support similar to Alberta’s Orphan Well Program may be needed.

Development of new tools for integrating water and land management is aimed at two objectives – compliance at watercourse crossings and in riparian areas, and the shift from a rules-based approach to a risk/results-based approach.

Tools to assist with compliance help proponents know where streams exist and how they can be characterized. Older maps are frequently inaccurate, with air photos and LIDAR over-



predicting the extent of channels. The program uses extensive ground truthing to more accurately identify and characterize streams. Descriptors will include channel class, fish-bearing status, navigable waters status and number of downstream or upstream fish migration barriers by type. We are working with Earth Systems Institute to adapt their NetMap tool to make it easy for land managers and researchers to complete the watershed analyses that they require.

In the coming year we plan to contribute to the Healthy Landscapes initiative by assessing of the water quality in foothills streams. Sediment is the pollutant of greatest concern in streams across North America, therefore, we plan to compare current sedimentation rates in the managed landscape of the Foothills Research Institute to historic sediment accumulation rates in lakes within the region.



GRIZZLY BEAR PROGRAM

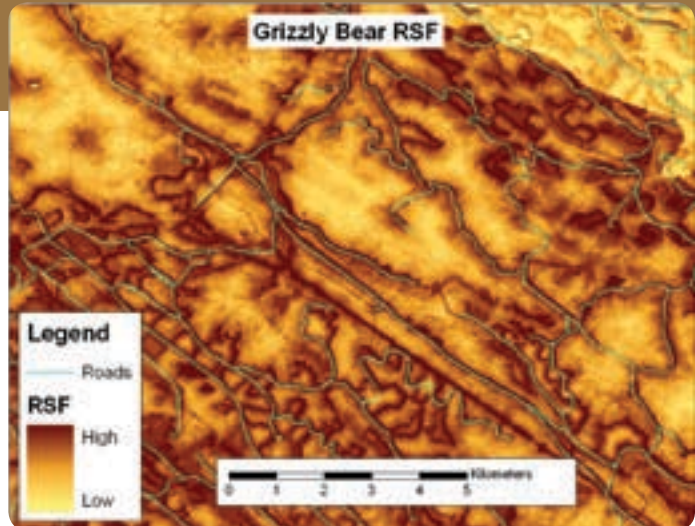
The goal of the Grizzly Bear Program is to provide resource managers with the knowledge and planning tools required to promote the long-term conservation of grizzly bears in Alberta. It has 69 sponsors across the whole range of industry, government and academia.

The program's approach involves creating maps and models for all grizzly bear habitat in Alberta along the entire western border. Work in habitat characterization and habitat use data (incorporating from 1999 through 2008, 205,610 GPS locations recorded since 1999) has supported development of models able to predict bear distribution, and occurrence by location. Users can see travel corridors, areas of higher mortality risk and "safe harbors" used by the bears.

The models incorporate landscape and habitat features layers on which proposed developments can be overlain to determine impacts on the bears. Proposed roads and cutblocks can be tested against potential mortality risk. Training in use of these tools has been taken on by Enform, a training arm of the petroleum industry.

Currently a meta-analysis is underway to understand the linkages between grizzly bear health and environmental conditions. This ground breaking research represents a fusion of 10 years of data collection across six scientific disciplines and will assist in the long term management of grizzly bear populations.

The new Animal Pathfinder goes beyond GPS tracking of collared animals to recording bear behavior in terms of foraging, searching and locomotion, providing an even more accurate picture of habitat use. Scientists in British Columbia, Alaska and Montana are using these new systems on a variety of wildlife species of management concern.



GEOGRAPHIC INFORMATION SYSTEMS PROGRAM

The GIS Program supports all research activities and programs within the Foothills Research Institute as required. Activities are based on the practice of sound data management and data sharing practices.

Some highlights from the last year include the following:

- Successful completion of the Foothills Research Institute Regional Online Sustainable Land Management Atlas User Needs Assessment project (in collaboration with partners and GeoConnections).
- Successful proposal submission to GeoConnections to undertake the creation of the Foothills Research Institute Regional Online Landscape Decision Support System.
- Amalgamated four Grizzly Bear Program microsite databases with data from 2001 to 2008 into one master database. This will help make the retrieval of information more efficient.
- Roads work: merging of Foothills Landscape Management Forum roads and Alberta Sustainable Resource Development roads (Integrated Access Management Roads). Replication of roads layer in collaboration with the government. This will result in less data duplication and improved data integrity.
- Delineated watershed units for the Foothills Stream Crossing Program and currently extracting watershed attributes to help define priority watersheds.
- Creation of a history database for the Adaptive Forest Management Program. This database captures information about archive historical documents, artifacts, sites (trees, facilities or other), photos and audio/video.
- Built an upgraded version of the current Foothills Landscape Management Forum online mapping site in ArcServer software.

program updates

LOCAL LEVEL INDICATORS PROGRAM

Foothills Research Institute released its first status report on Local Level Indicators of Sustainable Forest Management in 2003. This was followed up with further monitoring and reporting on 10 core indicators, with results now posted on the Institute's website. The Local Level Indicators Program is now concluded. The 10 indicators address the following:

- Activities that allow interested parties to participate in the decision-making process
- Adherence to Alberta soil conservation guidelines
- Forest area by protection status
- Forest conversion
- Livestock carrying capacity
- Number of historical resource sites identified through the referral and inventory processes
- Occurrence and severity of insect and disease pathogens
- Occurrence and severity of wildfire
- Regional income distribution
- Timber harvest relative to annual allowable cut

The results of indicator establishment and measurement over time using scientifically sound methods provide the basis for research to fill gaps in knowledge and to adapt management approaches as necessary.



MOUNTAIN PINE BEETLE ECOLOGY PROGRAM

This program is broadly focused on gaining a better understanding of beetle impacts on forests, fire and communities, and on ways in which forest management can be adapted to best deal with those challenges.

Researchers have spent the last year gearing up a project looking at the effects of a simulated beetle infestation on hydrology, vegetation and below-ground processes in lodgepole pine forests. The study area includes mature lodgepole pine at a density of 2,000 to 2,500 stems per ha.

Sample plots have been laid out and measurements taken for understory plant community composition, coarse woody debris, below-ground microbial activity and nutrient availability, and decomposition rates.



Another component focuses on monitoring of lodgepole pine permanent sample plots and the development of a stand decision support system for management in a mountain pine beetle environment. Collection of existing data and selection of candidate plots has occurred over the past year, along with stand projections using existing models and work on decision support tools.

Groundwork has also been laid for projects to gauge public perceptions of mountain pine beetle threats and management options, and to bring together a compendium of all available mountain pine beetle research reports.

NATURAL DISTURBANCE PROGRAM

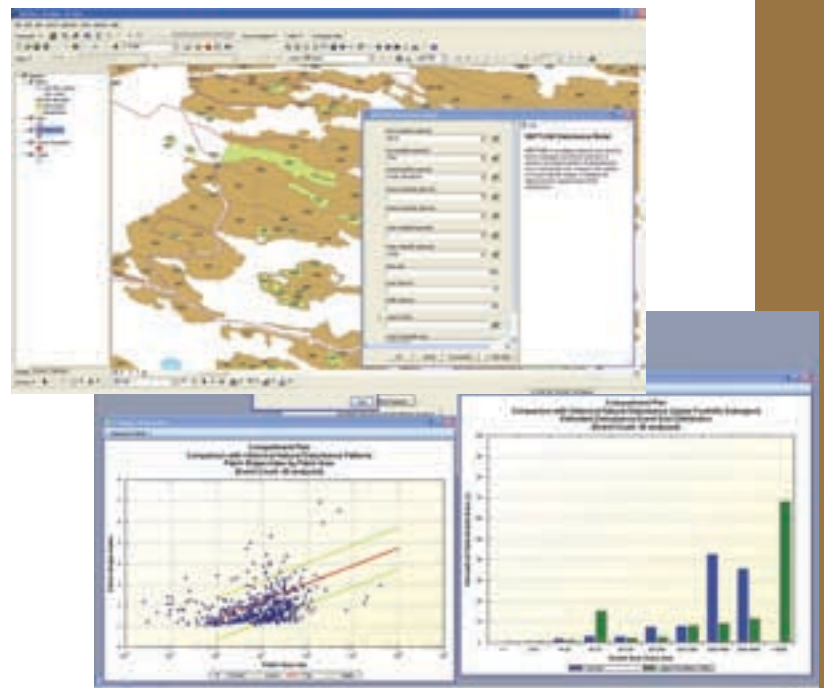
The goal of the Natural Disturbance Program is to understand patterns and processes of natural disturbance, and help partners integrate them into forest land management and planning.

With 11 years of research behind it, the program now focuses firmly on the delivery of solutions, rather than simply answers. Sensing and mapping technology now allow researchers to identify trees in groupings as small as three trees on landscapes affected by wildfire. To date 130 wildfires on 258,000 ha. have been mapped across Alberta and Saskatchewan, revealing complex patterns of disturbance.

The new Neptune software converts this spatial data into disturbance events and compares them with the natural range of variation for 10 key pattern types. The system has been calibrated for west central Alberta and Saskatchewan, with potential for use across all of Canada's western boreal region.

Users will ultimately be able to test their forest or landscape management plans against these disturbance events to evaluate the degree to which tomorrow's development falls with the historical natural range.

It is important that managers remember that natural range of variability is not a static condition, but an ongoing story. It ebbs and flows with variations in conditions, and in accordance with biological processes and dynamics associated with woody debris and sediment in streams, wildlife habitat use and more.

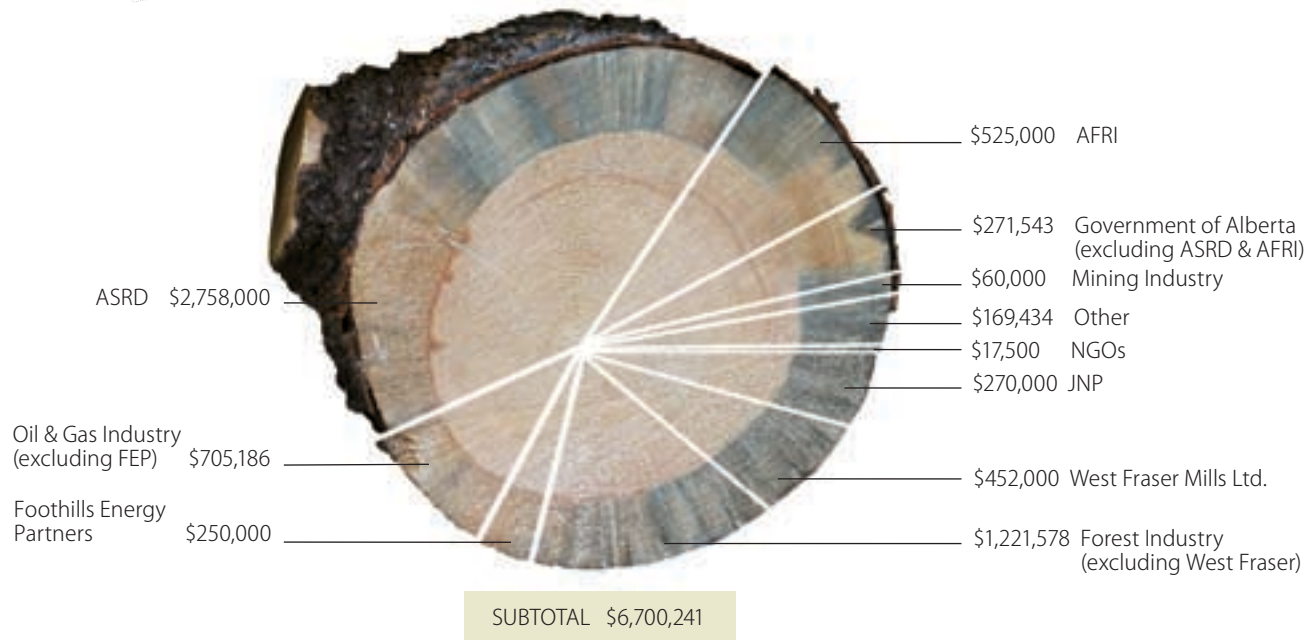




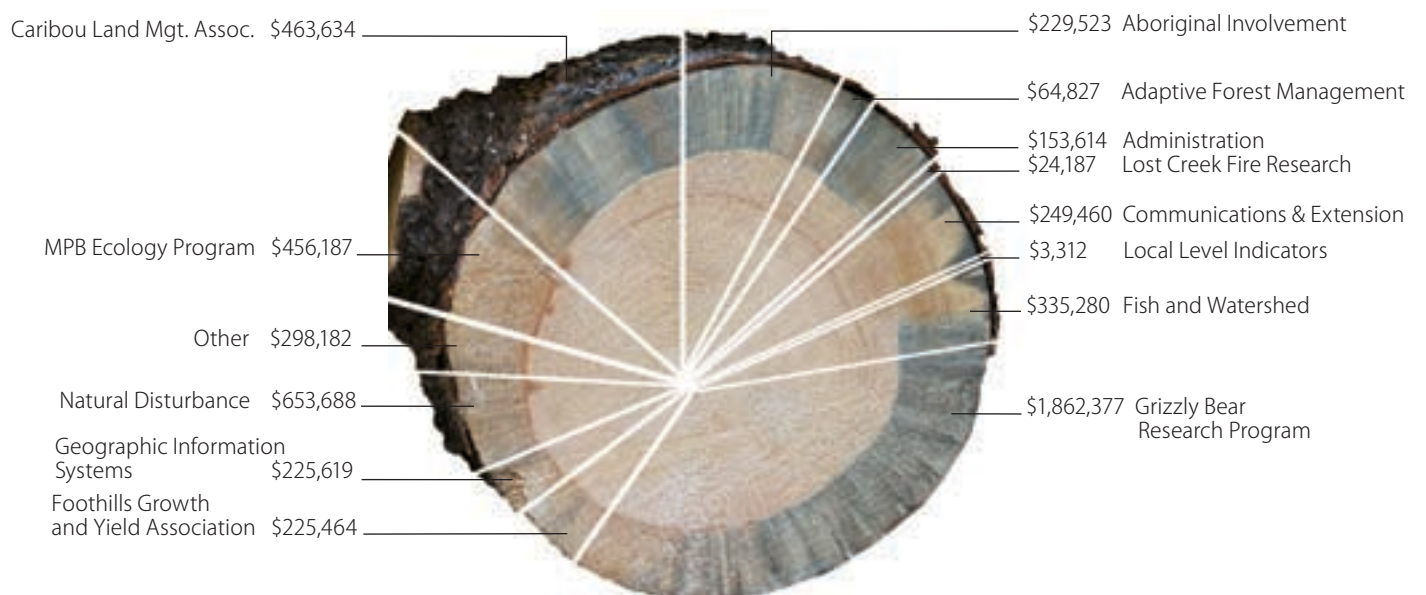
Unaudited

Audited financial statements will be available on our website at a later date.

REVENUE



PROGRAM EXPENSES



Total in-kind contributions for the last fiscal year amounted to almost \$1,395,000

Unaudited

Audited financial statements will be available on our website at a later date.

FUND BALANCES

Internally Restricted Funds \$2,906,267



Unrestricted Funds \$519,149

ASSETS

Bank/Cash \$3,882,191



Accounts Receivable \$438,093

Prepaid Expenses \$4,400

LIABILITIES

Accounts Payable \$474,276



Deferred Revenue \$425,000

board of directors

2008/2009



Ron Bjorge
Executive Director
Fish and Wildlife Division
Alberta Sustainable Resource
Development

Rick Bonar
Chief Biologist and Planning
Coordinator
Hinton Wood Products
West Fraser Mills Ltd.

Shawn Cardiff
Manager, Integrated Land Use
Policy & Planning
Jasper Field Unit
Parks Canada

Kyle Clifford
Area Manager
Parks and Protected Areas
Alberta Tourism, Parks, Recreation
& Culture

Phil Comeau
Associate Professor
Department of Renewable
Resources
University of Alberta

Conway Dermott¹
Environmental & Forestry Services

Greg Fenton
Superintendent
Jasper Field Unit
Parks Canada

Terry Fredin
General Manager
Elk Valley Coal – Cardinal River
Operations

Edwin Frencheater
Councillor
Sunchild First Nation

Rob Gibb
Surface Land & Community
Supervisor/Aboriginal Relations
Talisman Energy Inc.

Don Harrison²
Assistant Deputy Minister
Forestry Division
Alberta Sustainable Resource
Development

Cliff Henderson³
Assistant Deputy Minister
Forestry Division
Alberta Sustainable Resource
Development

Darcy Janko⁴
Group Lead - Land Use Planning
Environment Services
Encana Corporation

John Kerkhoven
Manager, Stakeholder Relations
Petro-Canada, North American
Natural Gas

Dave Kmet⁵
Director, Forestry
Alberta Forest Products Association

Stan Lagrelle
Chief, Sunchild First Nation

Jim LeLacheur
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Alberta Fibre Supply
West Fraser Mills Ltd.

Dave Lye⁶
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Encana Corporation

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Director, Science Policy and
Strategy, Forest Division
Alberta Sustainable Resource
Development

Rachelle McDonald⁷
Operations Manager
Aseniwuche Winewak Nation

Jimmy O'Chiese
Chief
Foothills Ojibway Society

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Jasper Field Unit
Parks Canada

Gary Sargent
Manager, Resource Access
Canadian Association of Petroleum
Producers

Doug Sklar
Executive Director
Forest Management Branch
Forestry Division
Alberta Sustainable Resource
Development

John Spence
Chair and Professor
Department of Renewable
Resources
University of Alberta

Murray Summers⁸
Chief Forester
West Fraser Mills Ltd.

Glenn Taylor
Mayor
Town of Hinton

Bill Werry⁹
Assistant Deputy Minister
Tourism, Parks, Recreation & Culture

Lorne West
Forestry Liaison Officer
Canadian Forest Service
Natural Resources Canada

foothills research institute officers

2008/2009

Bill Barclay
Legal Counsel
Foothills Research Institute;
Lawyer, Reynolds, Mirth, Richards &
Farmer LLP

Nicole Lawrence¹⁰
Treasurer
Foothills Research Institute;
Woodlands Controller
Hinton Wood Products
West Fraser Mills Ltd.

Paul Wallin¹¹
Treasurer, Foothills Research
Institute;
Woodlands Controller
Hinton Wood Products
West Fraser Mills Ltd.

Jim LeLacheur
President, Foothills Research
Institute;
Manager, Alberta Fibre Supply
West Fraser Mills Ltd.

1 Elected to the Board October 2008

2 Elected to the Board June 2008

3 Resigned from the Board June 2008

4 Elected to the Board October 2008

5 Resigned from the Board October 2008

6 Resigned from the Board October 2008

7 Resigned from the Board October 2008

8 Resigned from the Board February 2009

9 Resigned from the Board June 2008

10 Resigned from the position April 2008

11 Appointed to the position April 2008



Foothills Research Institute's core study area is in west-central Alberta, Canada, with an administrative office in Hinton, about three hours west of Edmonton.

The area covers about 2.75 million hectares (27,500 square kilometres), and includes Jasper National Park of Canada, Willmore Wilderness Park, William A. Switzer Provincial Park and the Forest Management Area of Hinton Wood Products, A division of West Fraser Mills Ltd. It also includes some provincial forest management units and the Hinton Training Centre's Cache Percotte Training Forest. Within its boundaries are three forest types – boreal, montane, and sub-alpine – and many forest uses including timber, petroleum and coal extraction, tourism and recreation.

Questions? Comments on this annual report?
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