

GIS technologies continually evolving

Geographic Information Systems have been a cornerstone of the Foothills Model Forest since the program began in 1992. During phase I (1992-1997) GIS resources focused on developing infrastructure for data collection and analysis, as well as GIS technology transfer.

“Most of the dollars invested went toward hardware purchases to establish a workable infrastructure,” notes Christian Weik, GIS Coordinator at the Foothills Model Forest. “Shortly after establishing that infrastructure, including a plotter worth nearly \$80 000, a fire destroyed all the hardware prompting a second round of hardware purchases.”

With new hardware in place, the GIS program developed a comprehensive data model to provide a decision support system for forest planning. “Unfortunately, the gaps in software applications and the demands of the decision support system did not result in a workable model for forest planning,” notes Weik. “Nevertheless, the modeling process provided knowledge for future GIS work at the model forest.”

Phase II (1997-2002) found GIS technicians working in a project support capacity generating maps while undertaking new modeling projects that capitalized on technology advances. “A watershed assessment model was our first successful foray into modeling,” notes Weik. “Our experience with the assessment model provided a fairly effective method for delineating watersheds.”



After a fire destroyed the Foothills Model Forest's first round of GIS hardware purchases in 1992 the GIS program initiated a modeling process that would eventually set a course for future GIS work at the Model Forest.

Photo Credit: Foothills Model Forest

One of the major limitations GIS technicians became aware of while developing the watershed assessment model and supporting research was the need to better manage data. By the start of Phase III (2002-2007), the GIS team began focusing on effective data management to ensure standard tools for data capture and storage were in place.

“Data consolidation and integration between spatial and non-spatial databases has allowed us to realize the value of data over time”, said Weik. The result has been the ability

to develop effective modeling products, including resource selection function models for grizzly bears and fish, which have proven to be valuable planning tools for land and resource managers.

The next step in the evolution of GIS is the development of an Internet Mapping Service that will allow researchers and land managers greater access to model forest data when planning activities on the land base.

For more information contact Christian Weik at christian.weik@gov.ab.ca.

GLIMPING THE FUTURE... As the Foothills Model Forest and the Canadian Model Forest Network begin planning their future beyond Phase III one thing is clear, the business of the model forest program is changing. On November 18 and 19, 2005, the Foothills Model Forest hosted a futures workshop aimed at setting a strategic direction for the organization beyond March 2007.

Attended by the Board of Directors, staff, and representatives from the federal and provincial government, forest industry, and the oil and gas sector, the workshop provided a forum through which participants discussed those components of the Foothills Model Forest that have made it a successful organization over the past fifteen years.

Through a series of facilitated sessions, a number of key areas of focus were identified for the next phase of the Foothills Model Forest and beyond. The Board of Directors must now discuss these focus areas and set out a strategic vision and plan for the Foothills Model Forest as it looks forward.

Data model presents opportunities for information exchange



With input from Jasper National Park, Alberta Sustainable Resource Development and West Fraser Mills Ltd., the GIS and Fish and Watershed Program staff at the Foothills Model Forest have developed a new data management system for fish inventory data. “Based on the Arc Hydro data model framework, the key objectives in undertaking the development of a new data management system were to increase built in quality control and quality assurance during data input, consolidate data into a single system, and tightly integrate spatial and non-spatial data,” notes Richard McCleary, Fish and Watershed Program Manager.

Fisheries researchers and managers have traditionally stored field data in non-spatial spreadsheets and databases. This approach can lead to problems with data accuracy and duplication, as well as inefficiencies in summarizing, reporting and mapping inventory data. “At the Model Forest our approach has always been to clearly define data collection protocols and to develop databases and data collection tools before going into the field. The investment at the project onset and the new data model have

paid off during quality assurance and reporting,” says McCleary.

During the 2003-04 fiscal year the Foothills Model Forest spent two person months fixing data problems. “The level of effort being placed on fixing problems at the backend prompted us to start looking for a new data structure that would reduce this effort,” says Christian Weik, GIS Program Coordinator. Arc Hydro, a data structure that links hydrologic data to water resources modeling and decision making methodologies, was one alternative model forest staff considered.

Developed collaboratively by the “Consortium for GIS in Water Resources” in Austin Texas, Arc Hydro has a series of templates that can be downloaded and deployed quickly in Microsoft Access. “The templates are designed to provide a base on which we can make modifications to reflect our business requirements,” says Christian Weik, GIS Program Coordinator. “The adaptation of the Arc Hydro data model template accelerated the process of implementing Geodatabase technology and our ability to take advantage of the functionality Arc Hydro offers”.

The adaptability Weik refers to includes the creation of topology layers and feature classes that build on Arc Hydro while retaining existing Arc Hydro features for potential future use. “If other agencies in Alberta and British Columbia adopt the Arc Hydro data model template, we can realize the data exchange opportunities presented by adopting common data models,” says Weik.

Arc Hydro has received wide recognition in the United States. The United States Geologic Survey, for example, developed the National Hydrography Dataset in parallel with Arc Hydro, resulting in two systems with considerable interchange. “It is this interchange that makes common data models an appealing approach,” says Weik.

For more information contact
Rich McCleary at rich.mccleary@gov.ab.ca.



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Photo Credit: Foothills Model Forest

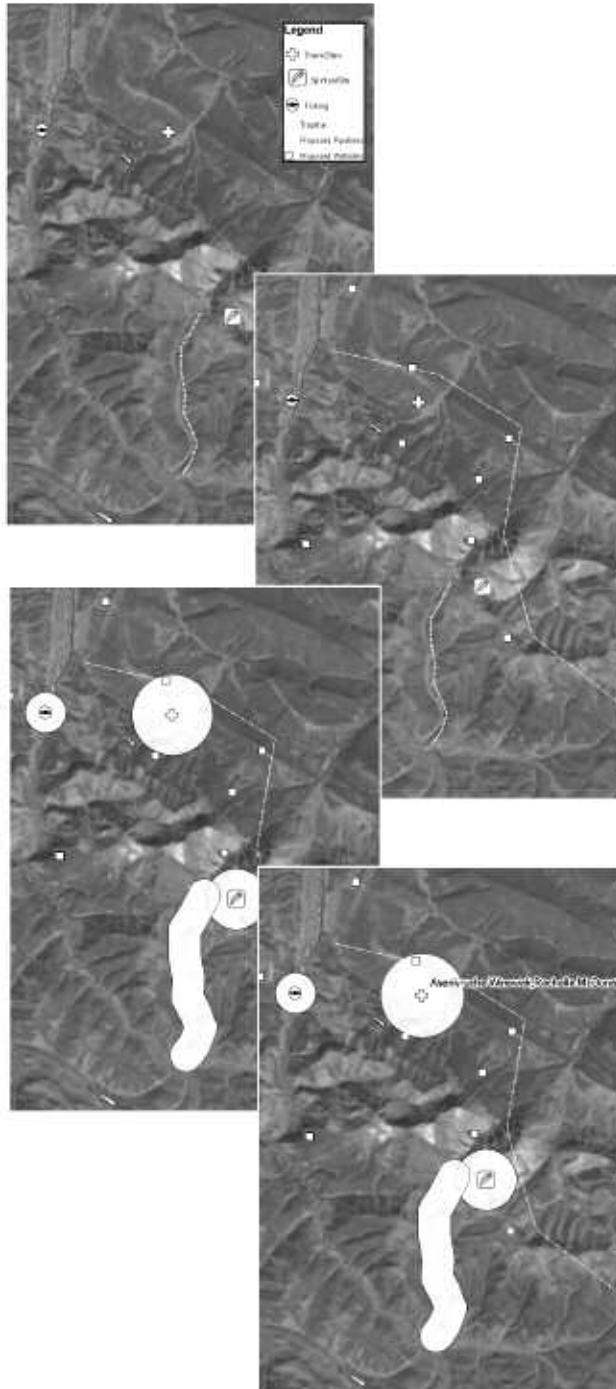
Traditional culture studies gaining momentum

The Aboriginal Involvement Program has reached working agreements with three Aboriginal communities, Aseniwuche Winewak Nation, Foothills Ojibway Society and Nakcowinewak Nation and is continuing work to foster relationships with a fourth community that has expressed interest in the program. “The three communities signed on have made tremendous headway on their traditional culture studies,” notes Don Podlubny, General Manager at the Foothills Model Forest. “The first interviews and site visits were completed last year. Since then over 350 sites have been identified and numerous interviews with community elders have been completed.”

The Traditional Culture Studies Podlubny refers to are designed to preserve traditional ways of knowledge by identifying culturally important areas and documenting traditional ways and the resulting ties to the land. “The information being collected is owned and controlled entirely by the Aboriginal communities in which the traditional culture studies are conducted,” says Podlubny. “The next step in the program is to work out the details of a referral process that will provide important information to the communities as well as industry.”

Once Aboriginal communities have identified culturally significant locations those sites will be entered into a Geographic Information System (GIS). Industry will then supply information on their proposed activities, which will also be entered into a GIS. Culturally important locations within areas with proposed industrial activities can then be flagged, allowing the referral process to assist industry in contacting the appropriate Aboriginal communities.

“The referral process will essentially function as a mechanism for establishing discussions between the two parties,” says Podlubny. “It is important to note that the referral process will not identify the precise locations of culturally significant sites. The Aboriginal communities own that information,” he says.



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For more information contact
Don Podlubny at don.podlubny@gov.ab.ca.

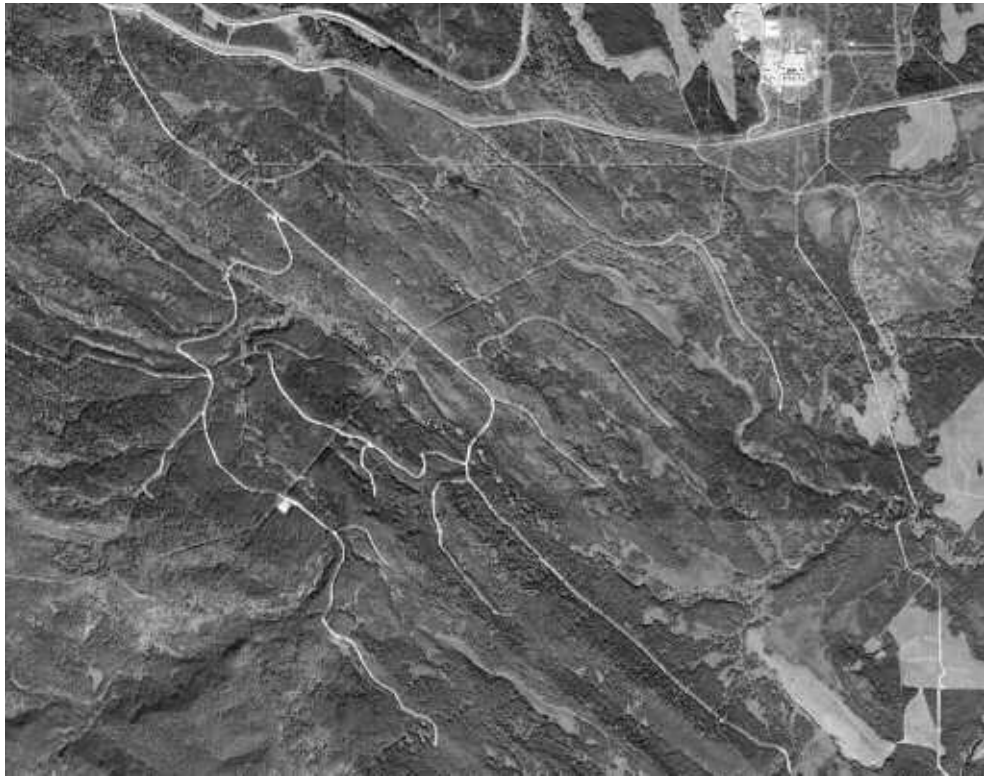
Local level indicators helping identify change

In 1995 the Canadian Council of Forest Ministers identified six national criteria of sustainable forest management, which require local acceptance and adoption to be effective. In response, the Foothills Model Forest, in 1998, developed its Local Level Indicators (LLI) Program to assess the national criteria at a local level. At that time, 27 local goals and 30 local level indicators were identified for measurement against the original six criteria.

“When viewed in conjunction with a local set of goals and the national criteria, this information will enable Albertans to make informed decisions about our forested lands,” says Christian Weik, LLI Program Coordinator. “By measuring and monitoring indicators over time, the LLI Program can reveal changes and trends within Alberta’s forests as they occur. These changes and trends measure progress toward local and national sustainable forest management.”

In 2003, the Foothills Model Forest released its Initial Status Report. The report provided benchmark reporting on a starter set of 39 indicators. “After the initial status report was released in 2003, a process to refine indicators was initiated. This process, finished in 2005, resulted in a reduction of identified local goals to 23, with a suite of 50 local level indicators,” says Weik. “The challenge now is to shift the data collection priorities so that research programs are being driven by criteria and indicators requirements.”

The Foothill Model Forest has worked closely with forest companies and government to adopt its indicators and methods of indicator-development when designing forest management plans. In doing so, organizations inside and outside the Foothills Model Forest partnership can begin measuring and demonstrating progress toward their own sustainable use objectives and toward sustainable forest management in general.



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For more information contact

Christian Weik at christian.weik@gov.ab.ca.

MILESTONES

Fish species returning to Hardisty Creek

Bull Trout and Mountain Whitefish have returned to Hardisty Creek. The main catalyst for re-establishing both fish species in Hardisty Creek has been the remediation of a key stream crossing on West Fraser's mill property. Last summer West Fraser Mills Ltd. removed two culverts, replacing them with a single span concrete bridge, opening access to several kilometers of fish habitat in Hardisty Creek for fish migrating out of the Athabasca River.

"You have to go back almost 20 years to find the last record of either bull trout or mountain whitefish being caught in Hardisty Creek," says Richard McCleary, Fish and Watershed Program Manager. "Two years ago we only counted 14 fish over 300 meters of stream channel, including rainbow and brook trout species. After the remediation work on West Fraser's stream crossing, we caught over 70 fish in less than 100 meters of stream, including rainbow trout, bull trout, brook trout and mountain whitefish."

For more information contact Rich McCleary at rich.mccleary@gov.ab.ca.

GIS as a tool for environmental education

Held as part of National Geographic Society's Geography Awareness Week and Geography Action Initiative, GIS Day is an international grassroots event designed to promote geographic literacy in schools, communities, and organizations.

"The Foothills Model Forest's approach toward GIS Day is to introduce GIS technology to students, giving them a feel for the technology and how it is used in their day-to-day lives," says Greg Nelson, Communications and Extension Coordinator. "More importantly, we want students to understand how GIS is being used as an important tool in the research and monitoring of sustainable forest management," says Nelson.

Since the program began three years ago over 400 grade seven and eight students have visited the Hinton Training Centre for the half-day program. During the day, students participate in a variety of activities including an introduction to Geographic Information Systems (GIS) and a field session where students work with Global Positioning Systems (GPS). Time is also spent working with data and GIS systems to generate maps.

"One of the most important elements of the program is linking the map making component to the Alberta Learning curriculum," Nelson says. "Grade eight students,

for example, generate maps of Hinton that includes both the Hardisty Creek and Happy Creek watersheds. They are then tasked with locating various features in the community and identifying which watershed those features are found in."

The next step in the advancement of GIS Day is to capture the same students in successive years. That will free up more time for inquiry based learning and less time spent learning how to actually work with the GIS system.

For more information contact Greg Nelson at greg.nelson@gov.ab.ca.



Grade 8 students visiting Hardisty Creek as part of their GIS Day program watched as fisheries biologists confirmed the first capture of a bull trout on the creek in over 20 years.

Photo Credit: Foothills Model Forest

NEWS AND UPCOMING EVENTS

INNOVATION AND SCIENCE GRANT AWARD

The Foothills Model Forest Grizzly Bear Research Program was selected as one of 17 projects across the Province of Alberta for the Innovation and Science Grant Award. The award will enable the research program to conduct further research into linkages between the health profiles of individual grizzly bears and the landscape structure and change within grizzly bear home ranges. The group will also focus research dollars on developing advanced remote sensing maps and models to identify key grizzly bear habitat and to track landscape change.

SUMMER INTERPRETIVE PROGRAMS

Foothills Model Forest delivers Interpretive Programs about its research and science in Jasper National Park and William A. Switzer Provincial Park. For a complete listing of interpretive programs visit www.fmf.ab.ca/pa_EI.html or contact Greg Nelson at 780 865-8311 or greg.nelson@gov.ab.ca.

2006 ALBERTA'S ENVIRONMENT CONFERENCE MAY 2-5, 2006.

Alberta's Environment Conference 2006 will profile key environmental initiatives, activities and policies of government departments and agencies in the areas of air, land, water, waste and climate change with a focus on sustainable resource and environmental management. Hosted by the Government of Alberta, the conference runs May 2-5, 2006. For more information, visit: www.environment2006.com

ALBERTA AT THE SMITHSONIAN JUNE 30 – JULY 11, 2006.

The vitality and diversity of the Province of Alberta will be celebrated in the heart of America's capital in summer 2006 as part of the internationally renowned Smithsonian Folklife Festival. Held outdoors on the National Mall in Washington DC for 10 days, the Province of Alberta will be presenting an educational "exhibition" of Alberta's living cultural heritage. Different sectors

and cultures from across the Province, including the Foothills Model Forest, will be included in the event, which runs from June 30 – July 11, 2006. For more information, please visit: www.folklife.si.edu/festival/2006/Alberta/index.html

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Box 6330 Hinton Alberta Canada T7V 1X6 T: 780.865.8330 F: 780.865.8331

email: fmf@fmf.ab.ca

web: www.fmf.ab.ca



In 1992, Natural Resources Canada, through the Canadian Forest Service, initiated Canada's Model Forest Program. The program has successfully built partnerships and conducted sustainable forest management research across Canada. Emphasis is now shifting to the application of model forest research and tools.

The Foothills Model Forest, located in Hinton, Alberta, is an original member in the Canadian Model Forest Network. The sponsoring partners of the Foothills Model Forest are Alberta Sustainable Resource Development, Canadian Forest Service, Jasper National Park and West Fraser Mills Ltd. Each sponsor makes a five-year commitment to the organization. The land that each partner manages is included in the 2.75 million hectare Foothills Model Forest land base. Together these sponsors demonstrate their commitment to advancing sustainable forest management in Alberta and Canada.

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