

INTEGRATED LANDSCAPE MANAGEMENT IN THE FOOTHILLS MODEL FOREST

PLANNING AND MONITORING SYSTEM

INTRODUCTION

The Foothills Model Forest has been studying natural disturbance patterns in west central Alberta for over ten years. Thanks to this comprehensive long-term research project, more is known about the historical disturbance patterns of west central Alberta than almost anywhere else in North America. The Foothills Model Forest is now committed to establishing a new paradigm in Integrated Landscape Management that would see a shift in focus towards a natural dynamics approach.

NATURAL DYNAMICS

A natural dynamics approach toward integrated landscape management utilizes natural disturbance patterns as a foundational element in integrated landscape management. The idea is to demonstrate how an operational plan might take advantage of intimate knowledge of historical disturbance patterns towards developing a more sustainable plan. Despite selected incidents of integrating individual natural patterns into forest management as another decision-making filter (Figure 1.), no one has yet attempted to use an inclusive list of natural patterns as a true foundation for decision-making.

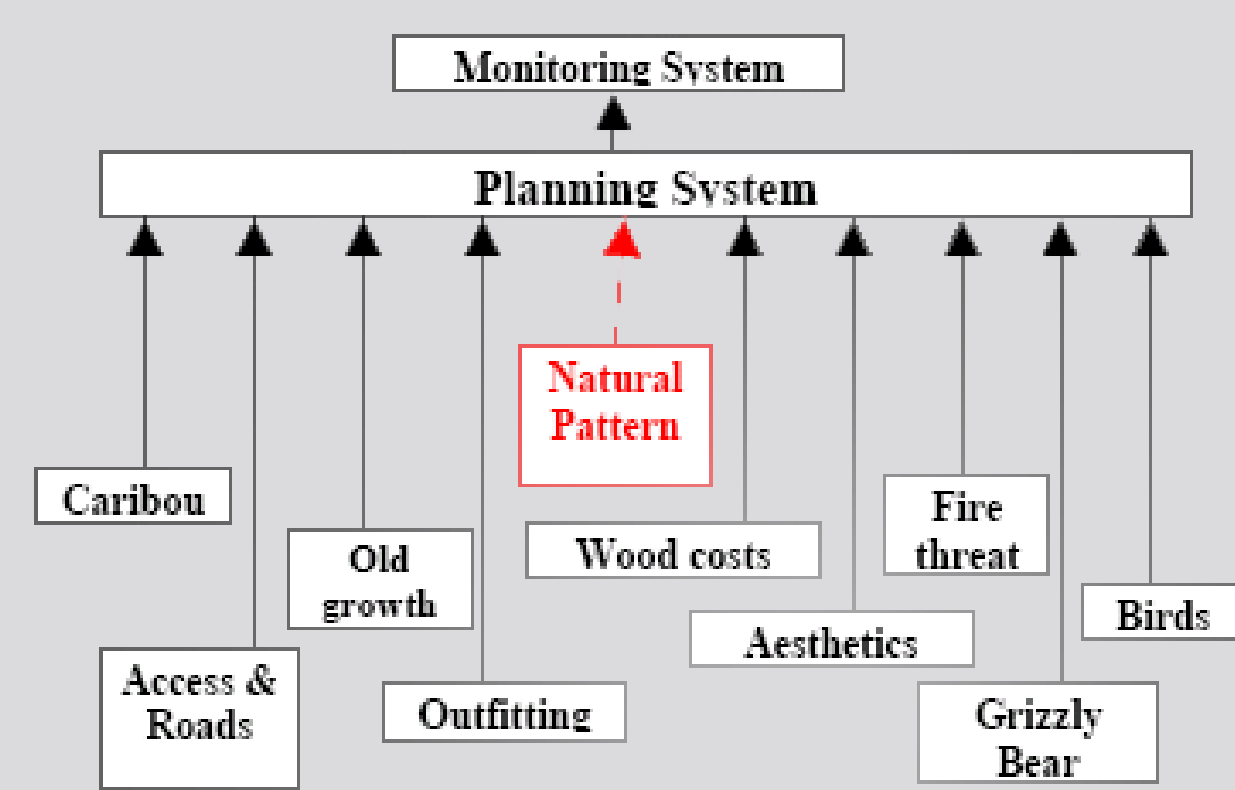


Figure 1. The current approach toward integrating natural disturbance patterns into forest management

The first question a planner would ask utilizing a natural dynamics approach is "what would Mother Nature do?". The difference may seem subtle, but creates some significant opportunities. For example, it provides a focused foundation for planning decisions that uses the same language as forest management planning. A desired future forest condition can be developed, understood, communicated, and monitored in terms of sizes, shapes, frequencies, and severity of disturbance activity. Furthermore, consistent with the ideals of ecosystem-based management, the proposed planning foundation is both science-based and ecological in nature.

CONCLUSION

There may often be legitimate economic, social, or ecological reasons why a particular natural pattern cannot be emulated (the elimination of all roads for example). However, for the first time we can say that all planning decisions begin with, and are evaluated against, an understanding of the ecosystem.

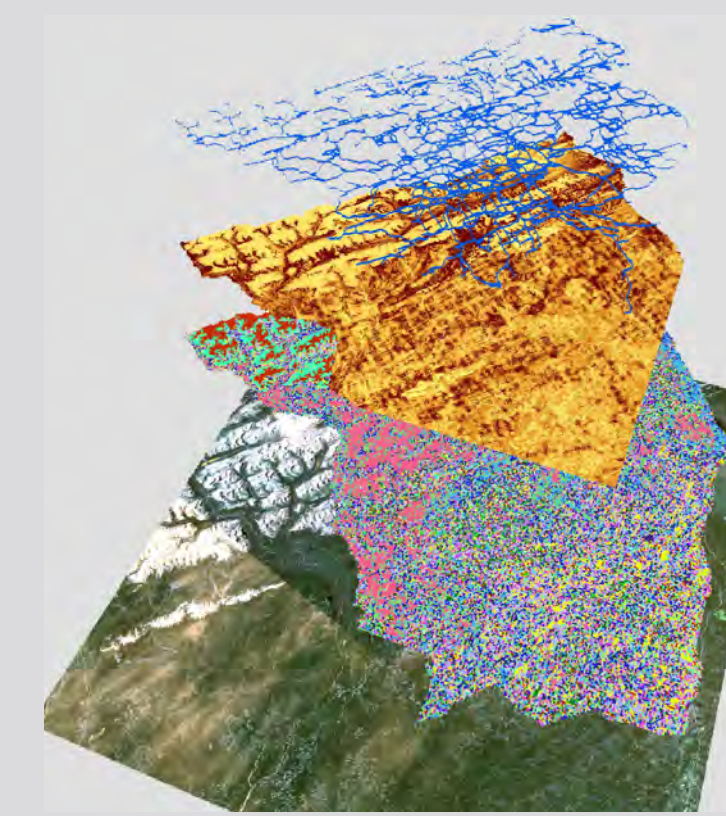
FOOTHILLS MODEL FOREST GRIZZLY BEAR RESEARCH



Initiated in 1999, the goal of the Foothills Model Forest Grizzly Bear Research Program is to provide land managers with the necessary knowledge and planning tools to ensure the long-term conservation of grizzly bears along Alberta's northeast slopes.

With a focus on "usable" maps and models that can aid in planning and decision making, we have now tested and validated several spatially explicit map products, including:

- Resource Selection Function Models (RSF models): identify the probability of grizzly bear occurrence on the landscape. RSF map products are used as a surrogate for habitat quality. New data from DNA inventories has now shown that these maps have predictive value in determining grizzly bear densities.
- Mortality Risk Models: show current mortality risk on the landscape and also where safe harbours are for grizzly bears based on existing landscape conditions.
- Graph Theory Models: identify where the most important movement corridors are for bears on the landscape.



When used together, these products are allowing companies like ConocoPhillips and others in the oil and gas and forestry sectors to better plan their activities on the land base to meet the habitat requirements, movement routes and mortality risks of grizzly bears along the eastern slopes of Alberta. This represents a significant step for sustainable forest and land management in Alberta.

SOCIAL SCIENCE



Sustainable forest management requires the incorporation of multiple forest benefits into planning and management decisions. In order to achieve this it is necessary to have an understanding and assessment of multiple benefits and the impacts of policy and management actions on these benefits. Biodiversity, wilderness, recreation, and community and economic stability are some of the benefits associated with the Foothills Model Forest.



Previous social science research at the Foothills Model Forest has focused on use values such as recreation and industrial activity. The Foothills Model Forest land base, however, provides other non-use benefits to society, such as biodiversity. These non-use benefits may test the public's understanding and acceptance of possible trade-offs that may be required to maintain these benefits.

Research at the Foothills Model Forest is exploring the populations willingness to make choices between preservation, industrial use of the forest (e.g., forestry and oil and gas development), and non-timber uses of the forest (e.g., recreational access to wilderness).

FOOTHILLS STREAM CROSSING PROGRAM



Stream crossings can have significant impacts on aquatic ecosystems. Concerns include sedimentation, barriers to fish movement, fish habitat loss or damage and crossing failures. Other values associated with stream crossings include safety, cost, navigation and recreation. Private companies and government agencies own stream crossings in Alberta. The Foothills Stream Crossing Program was officially formed in June of 2005 to bring the owners and regulators together to address the performance of stream crossings, including monitoring and maintaining these crossings, in west central Alberta.

The objectives for the Stream Crossing Program include:

- Develop an industry driven program to manage stream crossings
- Establish a standard process and protocols for inspecting crossings (both initial and maintenance)
- Establish a process to identify priorities for stream crossing maintenance and repair
- Improve the performance of stream crossings (safety, sedimentation, fish passage) and meet regulatory requirements

Project partners include: Anadarko Canada Corporation, Alberta Chamber of Resources, Alberta Sustainable Resource Development, BP Canada Energy Company, Burlington Resources, Canadian Natural Resources, CN, ConocoPhillips Canada, Devon Canada, Department of Fisheries and Oceans Canada, Foothills Model Forest, Hinton Wood Products, West Fraser Mills Ltd., Parks Canada, Petro Canada, Suncor Energy, Talisman Energy.

ABORIGINAL INVOLVEMENT



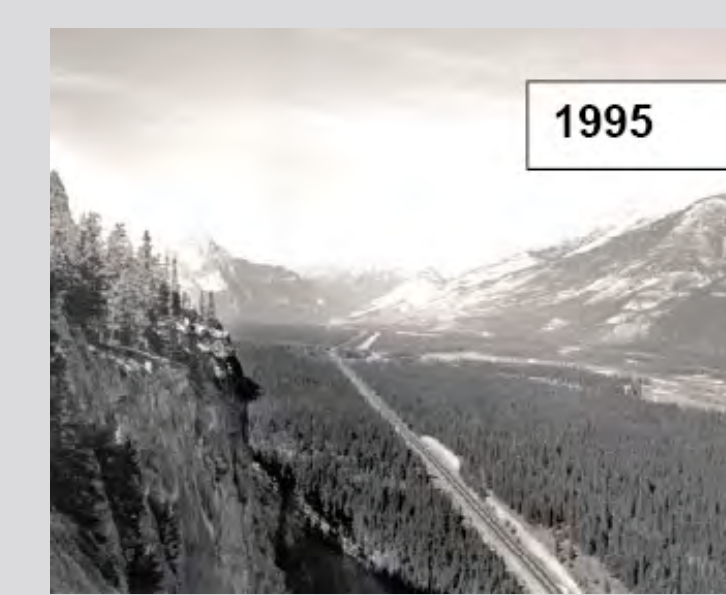
The Foothills Model Forest established its Aboriginal Involvement program in 2001. This unique Aboriginal-community-driven initiative is designed to help Aboriginal communities with ties to the model forest land base preserve their culture by (1) identifying culturally significant locations and (2) detailing their ways of life and how these ways of life connect them to the land. The Aboriginal Involvement Program has three components:

- 1) Traditional Culture Study: designed to identify culturally important areas and document ways of life and consequent ties to the land. The information acquired will be owned and controlled entirely by the Aboriginal communities in which the traditional culture studies are conducted.
- 2) Geographic Information Systems (GIS): Locations identified as part of the Traditional Culture Study will be entered into a GIS database managed by the Foothills Model Forest. Industry will then provide information to the model forest about proposed developments. The data will be entered into a GIS mapping program and mapped. Culturally important locations that fall within a predetermined buffer area will then be flagged.
- 3) Referral Process: When a culturally important location is flagged in the GIS program the referral process mechanism will point industry to the appropriate Aboriginal communities having ties to the land—and discussion between the two parties can begin. That said, the referral process will not identify precise locations of culturally significant sites; that information is owned solely by the Aboriginal communities with ties to those sites. The Foothills Model Forest will not act as mediator in the referral process.

FIRESMART - FORESTWISE COMMUNITY PROTECTION



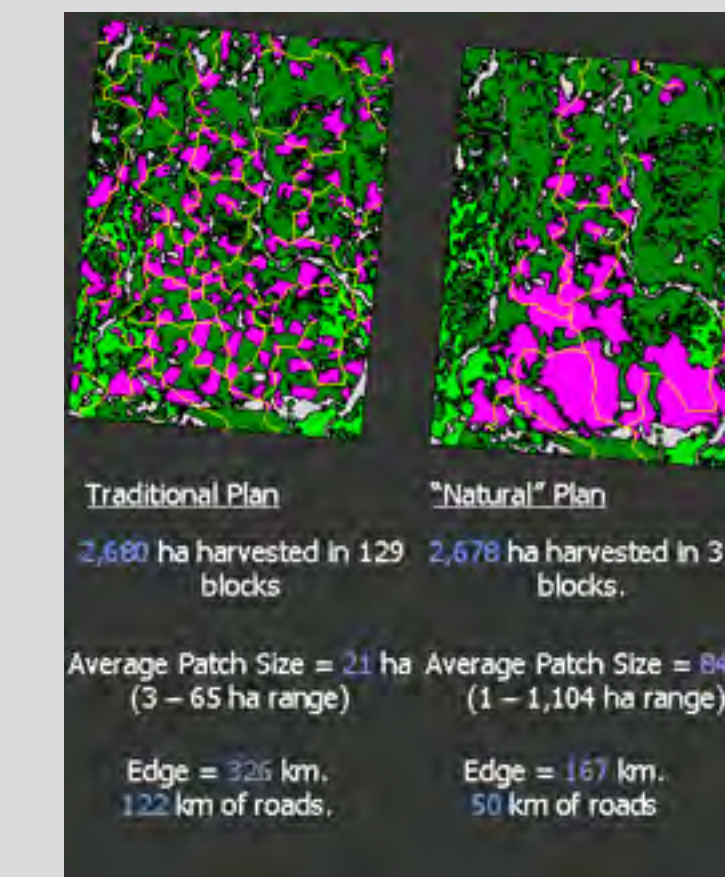
Fire plays a crucial role in the dynamics of fire dependant ecosystems (i.e., boreal forest, montane). As such, it is important to consider and manage the integration of fire and forest management, two disciplines that have primarily evolved separately.



Areas where structures (most notably private homes) and other human developments meet or are intermingled with forest and other vegetative fuel types are often referred to as Wildland Urban Interface areas. Any vegetative type (forest or grassland) that exists in close proximity to "interface zones" is a potential fuel source that can pose a serious risk to human life and property.

As a partner in both federal and provincial FireSmart initiatives in west central Alberta, the Foothills Model Forest and its partners are working to develop, implement and assess innovative, ecologically-based methods for managing forest fuels in ways that reduce wildfire risk to communities while restoring fire as an active natural disturbance process.

HIGHWAY 40 NORTH DEMONSTRATION PROJECT



Early attempts to integrate natural patterns into forest management have revealed many positive synergies. For example, more "natural" disturbance patterns create fewer roads and leave more residual forest islands, both of which have economic, social, and ecological benefits. However, despite this potential, no one knows whether or not adopting such a foundation will deliver a more sustainable forest management plan in the end. Through the Highway 40 North Demonstration Project the Foothills Model Forest and its partners are working together to test the "natural patterns" foundation on 70,000 hectares of forested land in west central Alberta.

Project partners are collaborating to develop a single, detailed, integrated ten-year disturbance plan (2005 - 2015) for the study area. The disturbance plan uses natural disturbance research and knowledge to guide operational activities. The disturbance plan will identify the timing, location and extent of all forms of cultural disturbance for the entire 70 000 hectares over a ten-year period. The tools used to execute the plan may include harvesting, prescribed burning, and coordinating the location and timing of road building. Although it is not always possible to emulate the patterns of natural disturbance, decisions will be based on an ecological foundation.

This is the first known attempt, in Canada, to integrate a full suite of natural pattern elements into a single operational plan including all possible cultural disturbance activities (i.e. forest harvesting, prescribed burns, roads, gas exploration).

Project partners include: Alberta Community Development, Alberta Energy, Alberta Newsprint Company, Alberta Sustainable Resource Development, Bandaloop Landscape-Ecosystem Services, Foothills Model Forest, Hinton Wood Products, West Fraser Mills Ltd.

CARIBOU LANDSCAPE MANAGEMENT ASSOCIATION



The Caribou Landscape Management Association, formed in June 2005, is working to develop and implement a plan that will ensure the long-term conservation of the Little Smoky and A La Pêche caribou herds in west-central Alberta. The project, which encompasses an area of approximately 5,000 square kilometers, is made-up of eleven forestry and oil and gas companies and one Aboriginal community.

The first initiative of the Caribou Landscape Management Association is an Integrated Industry Access Plan. The three main components of the plan, as identified and developed by all members of the Association, are:

1. Planned access corridors for future development
2. Deactivation and reclamation of existing roads
3. Monitoring and reporting the effectiveness of the access plan.

The Integrated Industry Access Plan is a significant step towards integrated landscape management. It encourages companies to work together to identify planned access corridors. It is expected that this approach, as compared to the current 'plan as you go' approach, will result in fewer kilometres of roads in the forest, thus minimizing impacts on caribou habitat.

Partners include: Alberta Newsprint Company, ATCO Electric, Aseniwuche Winewak Nation of Canadian (Grande Cache) Burlington Resources Canada Ltd., Canadian Natural Resources Ltd., Canfor Corporation (Canadian Forest Products) ConocoPhillips Canada, Devon Canada Corporation, Encana Corporation, Foothills Forest Products Inc. Hinton Wood Products (a division of West Fraser Mills Ltd.), Suncor Energy Inc, Talisman Energy Inc., Transcanada Pipelines Ltd.,

NATURAL DYNAMICS



Poster Created By: Greg Nelson, Foothills Model Forest
Don Podlubny, Foothills Model Forest
David Anderson, Bandaloop Landscape Ecosystem Services

We welcome inquiries: Box 6330, Hinton AB T7V 1X6
T: (780) 865-8330
F: (780) 865-8331
fmf@fmf.ab.ca
www.fmf.ab.ca

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