



Lake Abitibi Model Forest Project  
Information Note

## Fire History, Landscape Level Forest Dynamics and Old-Growth Forest Status in the Northern Section of the Lake Abitibi Model Forest

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### Introduction

This research begins the process of reconstructing the fire history of the northern portion of the Lake Abitibi Model Forest (LAMF). By understanding when fires have occurred in the region, it will be possible to accurately calculate the age of the trees and the range of forest types present in the area. This history will also allow the LAMF to identify any old-growth forest stands (areas where harvesting has not taken place) within the region.

The northern portion of the LAMF was chosen for this research because it has been relatively unchanged by human activity. It has largely been left to grow naturally without the application of forest management practices and therefore, is under a natural disturbance regime. This means that the



patterns of forest growth seen in the region have been created by naturally occurring forest disturbances, such as fire, and not by human activity, such as logging. It is the comparatively high level of human activity that makes defining forest growth, after fire, difficult in the southern portion of the Model Forest.

## General Approach

The fire history, forest growth patterns, structure, and biodiversity of LAMF are being compared with those of neighboring landscapes of the clay belt in Quebec. Once the fire history reconstruction is complete a map of fires, which have resulted in new tree stands, will be produced along with an information report on these results.

This information will assist in the creation of a model that examines the less complex forest growth patterns created by natural fire cycles. It will also allow for the development of forest management guidelines, which may encourage the inclusion of greater proportions of natural forest types.

The first year of the project, 1998-99, was devoted to gathering and converting to electronic form, the existing data on fire history and the current pattern of plant growth. This information was gathered: from available inventories, by determining the age of trees in the field, from old aerial photos, and from satellite imagery and historical records of past disturbances. At the end of the second year, using the results of the fire history and current pattern of plant growth, management guidelines are being developed, focusing on the age-class distribution and the arrangement of the forest types on the landscape.



In contrast with the Coastal Northwest forests, the status of old-growth forests

and their contribution to biodiversity remains poorly documented in Eastern Canada. Since the process of environmental certification of forest management requires biodiversity as one of its major criteria, there is a need to provide forest managers with indicators and methodologies to assess and monitor the state of biodiversity in managed forests.

Current thinking in ecosystem management circles assumes that if we maintain the variety of forest types that would normally result from natural disturbances - like fires for example - we will retain a similar level of biodiversity. By understanding the characteristics of forests that have resulted from natural disturbance, we possess key indicators for managing other forest areas in a sustainable manner.



Old-growth forests with their complex structure have been identified as critical to the survival of organisms and as a result are an important component of biodiversity.

Among the forest types that occur in natural forest landscapes, old-growth and mature forests are less likely to be present in managed forests under current practices, than in naturally disturbed forest landscapes. The need to assess the state of old-growth forests and their contribution to biodiversity, in the eastern boreal forest, is therefore crucial.

In the boreal forest, natural disturbances - such as fire - starts the growth of new tree types and helps to create the patterns of tree ages and types we see in the forest. Together with the physical arrangement of the landscape, natural disturbance helps keep forests diverse and healthy. This research will further our understanding of the natural systems and assist in finding new ways to manage the region's forests.

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