

## The State of Ontario's Forests

# Undercutting Our Natural Capital

*The first three fact sheets in this series focus on employment in Ontario's forest industry - particularly the close relationship between increasing mechanization and declines in both job opportunities and forest health. This fact sheet — the fourth in the series — looks in more detail at the changing state of the province's forests.*

Ontario's forests are in trouble, and trouble in the forest means trouble for forest-dependent communities. Healthy forest ecosystems provide the natural *capital* that is the basis for the long-term economic survival of our communities. Overcoming the threats to the province's forests will not be easy. But the first step in achieving sustainable forest ecosystems (and, as a result, sustainable communities) is to understand how and why Ontario's forest landscape has changed.

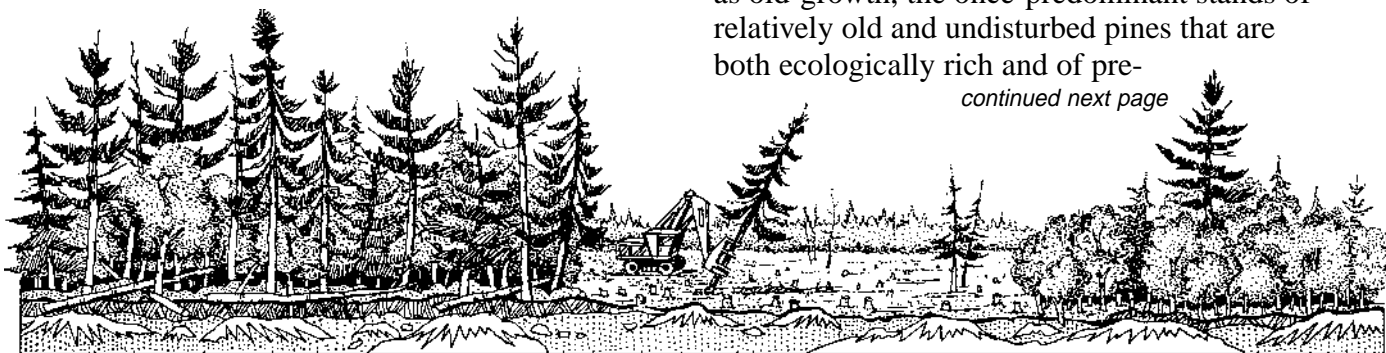
When European settlers first arrived, southern Ontario's Deciduous Forest Region (see map, page 4) contained dense woodlands. In Kent County near Windsor, "so thick was the overhanging foliage that it not only shut out the sunshine, but almost the daylight."<sup>1</sup> Today, intensive agricultural land clearing, logging and urban development have destroyed much of this forest, leaving as little as 3% of some rural southern Ontario municipalities in woodland.<sup>2</sup> The tiny patches of forest that still survive are crisscrossed by roads, power and com-

munication corridors and altered by other human disturbances. Reintroducing healthy forest ecosystems onto this landscape will require major restoration work — a complex, expensive and exhaustively time-consuming process.

Farther north, segments of healthy intact forest still remain, although they are under intense pressure. The Great Lakes-St. Lawrence Forest Region — a mix of deciduous (eg. maple, yellow birch and oak) and conifer species — was once largely dominated by white pine. One report from the early 1850s describes the Ottawa Valley as an area of "inexhaustible" pine forests, with "timber enough here to supply the world for thousands of years."<sup>3</sup>

However, indiscriminate logging devastated these vast pine forests to supply worldwide timber markets eager for this strong, easily-worked and lightweight wood. Today, pine has declined to less than 3% of Ontario's productive forest lands; and only a tiny fraction of this remainder has survived as old-growth, the once-predominant stands of relatively old and undisturbed pines that are both ecologically rich and of pre-

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**Species conversion — the decline of spruce in Ontario's boreal forest:** Clearcutting of spruce forests (on left) leaves poor conditions for spruce regrowth. The new site (on right) is often dominated by fast-growing hardwoods such as poplar and birch.

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mimum commercial value.<sup>4</sup>

### Pine Liquidation

A 'Management' Approach

Recent questionable forest practices have compounded the threats to pine survival. From the early 1960s to the early 1990s, the Ministry of Natural Resources prescribed "liquidation" harvesting of old-growth pine in response to the declining supply; approvals were written into selected Timber Management Plans for the quick (and profitable) elimination logging of mature red and white pine from portions of the productive forest landscape.<sup>5</sup>

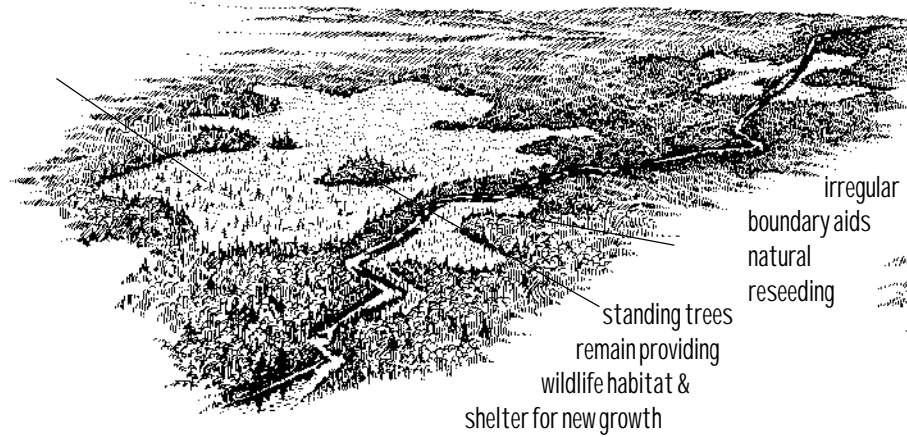
Farther north, Ontario's Boreal Forest Region is the backbone of the province's pulp-and-paper industry. Traditionally dominated by conifers (softwoods) such as black and white spruce, jack pine and balsam fir, the region's relatively flat terrain and large, uniform stands of trees allow for efficient, high-volume, highly-mechanized clearcutting (see Fact Sheet #1). Softwood fibre — particularly the long, strong fibre of black and white spruce from never-logged forests — is of premium quality for papermaking. As a result, extensive forest blocks have been clearcut.

Recent satellite data covering almost all of northeastern and northwestern Ontario reveals a massive increase in logging-related disturbance over the past 60 years. The disturbance rate has quadrupled from 2,000 km<sup>2</sup>/decade in the 1940s to 8,000 km<sup>2</sup>/decade in the 1980s. While fire only affected 4% of the surveyed area, 30% had been logged. The richest, most productive forest areas suffered the greatest impacts: for example, almost 100% of the outwash plains and 70% of the eskers

# Does Clearcutting Mimic

## FOREST FIRE

survival of forest patches in wet areas,  
provides habitat & seed source



- kills pathogens (rot, insects, fungi); smoke kills pathogens outside fire area
- breaks rocks through heating & cooling, builds soil
- releases the nutrients phosphorus & calcium from leaf litter into soil
- stimulates growth of nitrogen-fixing plants
- allows individual trees and forest patches to survive, providing seed source, wildlife habitat & old-growth features in new forest
- leaves standing trees, fallen logs & root networks, reducing sediment runoff
- encourages conifer growth; heat stimulates cone opening, reduces competition from hardwoods
- retains genetic diversity of tree species, allowing adaptation to new conditions

have been logged over since 1940.<sup>6</sup>

The province's boreal forest is adapted to periodic fires. In its natural state, the boreal landscape is a patchwork of forests in varying stages of regrowth after burning, often with trees of fairly uniform age, size and species composition.

### Disappearing Spruce

The Cost of Clearcutting

Many forest managers argue that clearcutting mimics the effects of the region's natural fires. However, there are a host of critical ecological differences (see table above). Fire plays a key role

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2. Byrnes, Brian. Saving the Countryside: Conserving Rural Character in the Countryside of Southern Ontario. Conservation Council of Ontario. 1994.
3. Mississippi Valley Conservation Report 1970: History. Department of Energy and Resources Management.
4. Interim Report on Conserving Old Growth Red and White Pine. 1993. Old Growth Policy Advisory Committee. Ontario Ministry of Natural Resources.
5. Ontario Ministry of Natural Resources. 1964 Management Plan for Temagami Management Unit for period April 1958 to 1978. OMNR, Temagami, Ontario.

\*Complete references available upon request

# How do we Measure the Effects of Fire?

## CLEARCUT LOGGING

abrupt boundary, clearing of wet areas  
habitat eliminated,  
seed distribution  
inhibited



- allows pathogens to survive
- heavy equipment promotes soil rutting, compaction, erosion
- removes nutrient-rich leaves/twigs from site
- discourages nitrogen-fixing plants
- completely removes standing trees; eliminates wildlife habitat, seed source, old-growth features
- clears site of trees, allowing high level of sediment runoff
- stimulates shade-intolerant hardwoods by creating full sun conditions without heating soil; supports species conversion of forest
- drastically reduces genetic diversity in regenerating forest

in maintaining the dominance of spruce and other conifers on a forest site. Clearcut logging activity — and, particularly, logging with heavy machinery — has been responsible for a “massive conversion” of boreal spruce forests to hardwood species such as poplar.<sup>7</sup> In an examination of more than one thousand boreal clearcut plots, a 1992 government-commissioned study confirmed the loss of conifers: the proportion of regenerating spruce has fallen by 77%, while poplar and birch have increased by 216%.<sup>8</sup> Fire-adapted tree species appear to need fire, not logging.

Poplar and white birch are fast-growing

hardwoods that require full sun. These species make up an increasing proportion of the boreal forest because they are often the first trees to re-establish after logging or other major disturbances. Under natural conditions, poplar and birch are often overtaken after one generation by other, more slow-growing, shade-tolerant tree species such as spruce, white pine or maple.

The problem for the forest industry — and for the health of forest ecosystems — is that the industry appetite for timber has far outstripped the pace of these natural, but relatively slow, regenerative processes. As logging intensifies, as the last remaining unlogged forests are cut and as other areas are re-cut on short rotations (50-60 year cutting cycles), disturbed areas are not allowed to recover to their pre-disturbance state. The proportion of poplar and birch grows, while conifer declines.

### Focus on Poplar

New Species, Old Story

Faced with the loss of premium-quality commercial tree species, the forest industry, with the support of the On-

tario Ministry of Natural Resources, is focusing on the development of new products and technology capable of utilizing huge quantities of hardwoods such as poplar and birch (see Fact Sheet #3). Unfortunately, there is nothing new about this so-called solution. It simply replays the old formula of indiscriminate logging with little consideration for long-term forest health or the integrity of natural ecosystems.

While the long-term ecological impact of high-volume poplar and birch cutting is not yet known, there are potential problems. Studies at

*continued next page*

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7. Carelton, T.J. and MacLellan, P. Woody vegetation responses to fire versus clear-cutting logging: a comparative survey in the central Canadian boreal forest. *Ecoscience*. 1(2). 1994.
8. Hearnden, K.W. Millson, S.V. Wilson, W.C. A Report on the Status of Forest Regeneration. The Ontario Independent Forest Audit Committee. Oct. 1992.
9. Stiel, W.M. Berry, A.B. Productivity of short-term open stands. *Forestry Chronicle*. 62: 10-15, 1986. [Note: This study was undertaken through the Petawawa National Forestry Institute.]

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the Petawawa National Forestry Institute have found that short-rotation cutting of poplar results in root rot and other stress-related conditions.<sup>9</sup> Machines used in clearcutting operations can cause soil compaction and erosion, reducing the future productivity of a site. The mills' increasing use of hardwood chips encourages the expansion of on-site chipping operations and other processes that consume whole trees, leaving little behind to replenish forest nutrients.

Ontario's forest history over the last two centuries reveals a gradual, but accelerating, change from a healthy, complex and biologically diverse landscape of forest ecosystems to an increasingly uniform



plantation of shade-intolerant hardwoods. Like an agricultural crop, these new simplified forests will be weaker and less stable than the ecosystems they replace, more vulnerable to disease, insects and other stresses.

Our forest resources are too important to the economy of Ontario to allow the depletion of one species of tree after another — exhausting our natural resources *capital* instead of using only the *interest* provided by the natural replacement and recovery of the forest. We, the people of this province, can rebuild our precious forest *capital* by becoming active stewards of our for-

ests, insisting on the restoration and maintenance of the full range of forest ecosystems in Ontario.

Produced by the **Wildlands League** through its Forest Diversity ♦ Community Survival Project, this series seeks to promote constructive dialogue between resource-dependent communities and forest conservation advocates (see Fact Sheet #1 for more details). We hope the information will be useful in developing economically sound approaches to forest stewardship in Ontario that can help to ensure sustainable economies and sustainable communities. To date, topics in this series include:

- *Ontario's Forest Industry: Where Have all the Loggers Gone?*
- *Ontario's Forest Products Industry: Cutting the Future Out of Prosperity*
- *Ontario's Forest Products Industry: A New Appetite in the Forest*

Upcoming:

*The State of Ontario's Forests: Biodiversity on the Chopping Block*

**Forest Diversity ♦ Community Survival** is a project initiated by the **Wildlands League**, and financially supported by the Richard Ivey Foundation and Ontario Hydro. For more information, mail or fax this coupon.

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**Wildlands League**, 401 Richmond St. W., Suite 380, Toronto, Ont. M5V 3A8 Phone (416) 971-9453, Fax 979-3155

The **Wildlands League**, an Ontario chapter of the Canadian Parks and Wilderness Society, has been working for more than 25 years to promote forest protection and sustainable forest management practices in the province.