

DEFORESTATION IN NORTH AMERICA: PAST, PRESENT AND FUTURE

Tara L. Tchir and Edward Johnson

Department of Biological Sciences, University of Calgary, Calgary, Canada T2N 1N4

Lawrence Nkemdirim

Department of Geography, University of Calgary, Calgary, Canada T2N 1N4

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Summary

The history of deforestation in Canada and the United States can be divided into three main periods. Period one, which lasted from the arrival of the first Europeans until the first quarter of the eighteenth century was characterized by subsistence farming practiced by both indigenous people and European immigrants. More intensive and specialized agriculture followed in period two (the nineteenth century to early twentieth century) which also saw the beginning of logging for timber as a major industry. Land use patterns stabilized in period three (early twentieth century to near present) when patterns of settlements and forest resource exploitation became more or less predictable. In each period, deforestation was largely the result of forest removal for agriculture and settlements rather than logging for timber. Logged land generally reverted to forest, once abandoned. Although growth rates in the succeeding secondary forest were good, those forests tended to be significantly different, and frequently poorer, in terms of biodiversity, genetic pools and geometry. Present access roads to forests, logging practices such as clear cutting, and even selective logging fragment forests, enable further human encroachment, provide pathways for pests and disease, and compromise the environmental integrity of the forest. New measures, designed to reverse these adverse impacts and preserve the forest and its function, include programs such as sustainable forestry, new forestry, sustained yields, special places and conservation of

forest products. Present indicators suggest that the future of North America's forests is not bleak. The growth of access roads is slower, actual cuts are lower than allowable cuts, growth-removal balance is positive and some endangered wild life species have been taken off the list. However, some of the long-term damage such as the destruction of spawning ground for fish and reduction of genetic pools of original forest may be irreversible. Public education and environmental activism may offer the forest its best protection yet.

1. Introduction

For both Canada and the United States, forests play significant roles in life and its supporting systems. Commercial forestry is a major provider of employment and economic benefits. In Canada, close to one-half of one million people are directly employed in forestry related activities. The forest sector contributes about \$20 billion to the country's gross domestic product (Environment Canada and Natural Resources Canada, 1999). America enjoys much the same package of benefits from its 308 million hectares (33 percent of total land area) occupied by forests (Faulkner et al., 1993). In both countries, forests provide habitat to approximately 150 000 wild life species, produce oxygen for, and remove carbon dioxide from, the atmosphere. Forests purify water, moderate the climate, stabilize soils, and regulate water flow (Nkemdirim, 1990). Given these vital roles, it is imperative that the forests of North America and their integrity be preserved.

Deforestation refers to the long-term removal of the forest from the landscape. Logging practices that encourage sustainable management and regrowth of the forest do not constitute deforestation. Agricultural settlement was and still is one of the primary processes of deforestation in North America. This deforestation process is predictable since good agricultural areas tend to remain clear while marginal lands, cleared initially because of socio-economic pressures or lack of experience, are usually abandoned and revert eventually to forest (Clawson, 1979). However, secondary growth may be insufficient replacement for the original forest's role as a storehouse for biodiversity, genetic pools, and their continuity.

The first part of this review (section 2) presents the history of deforestation in North America. It argues that early deforestation of the sub-continent was primarily driven by agriculture, settlements and subsequent urbanization rather than by logging for timber. The second part (sections 3, and 4) examines the present state of the forests and the cumulative impacts of more than five centuries of forest removal on the environment. The third part (sections 5 and 6) highlight new measures that are being taken to sustain timber yield and protect and preserve the integrity of what is left of the original forest.

2. Land Use and Deforestation

Present land use in North America is now relatively stable (Clawson et al., 1960). However, the transformation of large parts of the continent from forested landscape to agricultural fields was one of the most significant events in American history. The historical relationship that exists between economic development and changes in forest cover means that deforestation can be divided into three periods of land use: the first

period characterized by subsistence agriculture, the second by intensive agricultural practices, and the third by land use stabilization. The goal of the first two periods was to cultivate as much land as possible. As part of the clearance process, logging in North America preceded settlements and was used to clear the forest for agriculture. By the third period, logging was no longer used solely as a tool for clearance, but often as one for sustainable forestry.

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Biographical Sketches

T. Tchir (MSc) is Planning Ecologist with the Upper Thames River Conservation Authority, Ontario, Canada. She is an expert on forest fragmentation and ecological effects of land use.

E.A. Johnson (PhD) is Professor of Ecology and Director of Kananaskis Field Stations at the University of Calgary, Canada. His area of research is disturbance ecology and forest dynamics.

L. Nkemdirim (PhD) is Professor of Geography at the University of Calgary, Canada. His area of research is meteorology and climatology. He is chair of the International Geographical Union Commission on Climatology.