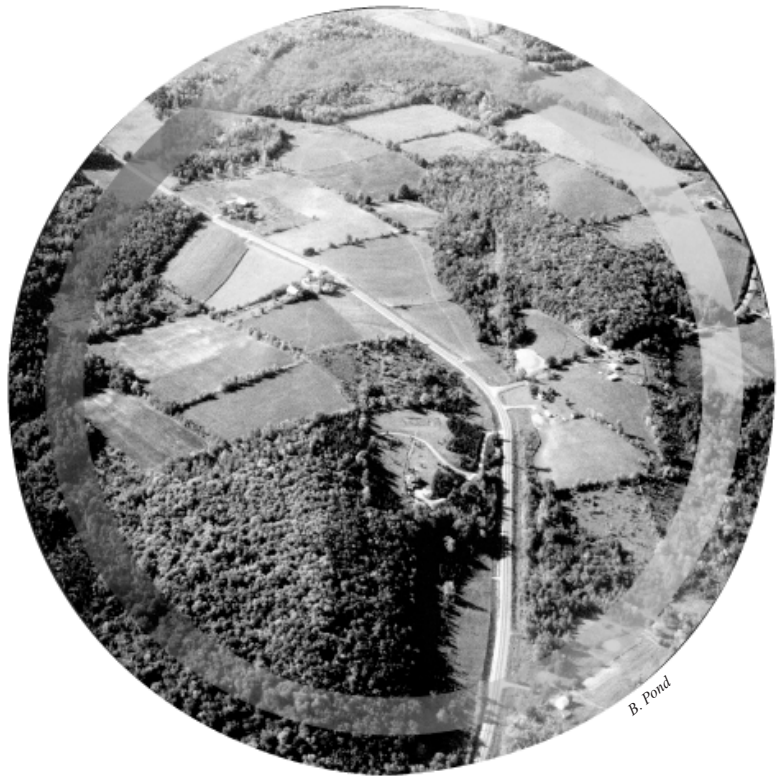


Section 1

Introduction



B. Pond

by Silvia Strobl and David Bland

THE CONTEXT

The information contained in this silvicultural guide applies to the management of forests growing in southern Ontario. This area is represented by Site Regions 6E and 7E (see **Appendix A**). It extends from the Ontario-Quebec border in the east, along the north shores of Lake Ontario and Lake Erie, up the eastern shoreline of Lake Huron to the end of the Bruce Peninsula, around Georgian Bay to Midland, and eastward through Orillia and Marmora to Ottawa.

In several ways, the forests within this region are unlike any others in the province. They have the most diverse tree composition, with more than 60 native hardwood and conifer species growing in a variety of associations (Hosie 1979). There are more different forest types than are found elsewhere. Generally more favorable site and climatic conditions allow the majority of trees here to grow bigger and faster than elsewhere in Ontario. These forests also support a greater diversity of plant and animal species, including far more rare, threatened, and endangered species, than are found in the rest of the province. On average, the forests in this region are much smaller in area and more fragmented than those in other parts of the province and originated after man-made, not natural disturbances. Often they are managed for a multitude of landowner objectives. In addition, a greater proportion of them are severely degraded due to past activities.

The regional context in which these forests are found is also unique. The overall percentage of forest cover within southern Ontario is much lower than in the rest of the province despite the fact that most of this region was once covered by trees. A much larger population density and greater number of roads throughout a region with proportionately less forest cover means that most stands are subjected to greater human impacts on a frequent basis. Increased fire prevention and suppression, forest fragmentation, and the mesic or wetter site conditions in many stands in this region combine to limit fire as a large-scale disturbance factor.

Ownership of forested land is another important difference; in southern Ontario, most of it (i.e., 87 %) is privately owned (OMNR 1993). Furthermore, at least 82 % of the provincially listed vulnerable, threatened, or endangered (VTE) species (excluding fish species) occur on these private lands (D. Sutherland and W. Bakowsky, OMNR, personal communication 1998). The OMNR Natural Heritage Information Centre tracks rare species in Ontario. To date they have tallied 186 unique species for Site Region 6E and 460 unique species for Site Region 7E (W. Bakowsky and K. Brodribb, OMNR, personal communication 2000).

Forest management in most of southern Ontario that is not on the Canadian Shield occurs in a different context than in the rest of the province. This area is more heavily populated and less forested, and land values are much higher. It has a highly developed economy in which forestry plays a relatively small part. Harvesting, related processing, and forest product manufacturing industries employ a far smaller proportion of the total workforce than the forestry related sector in central and northern Ontario. This contributes to the public position that tends to support the protection of all forest values at least as much as timber extraction.

Regrettably, there is also a lack of information about privately owned forests and landowner objectives for them. Answers to the following questions are still needed. How many landowners are there? How large are the forests they own? Where are they? What is their annual and potential productivity? What is the current volume of merchantable wood? How much is being harvested annually? How are they being managed and used? The most recent survey of landowners was conducted in 1981, and provided information on private lands, landowner characteristics, and descriptions of their forests (Smyth and Nausedas 1981), but it is now out-of-date. Furthermore, the economic importance of the forests of southern Ontario resulting from domestic and industrial wood use is difficult to define due to the movement of wood in and out of the area and the lack of detailed statistics.

The forest industry of southern Ontario is also different. Generally, it is made up of a large number of small operations, both in the logging and primary utilization sectors. Most of the forest industry in southern Ontario is engaged in the secondary manufacture of products from wood harvested in northern Ontario or out of the province. The majority of logging consists of single-skidder operations for veneer, sawlogs, pulpwood, and fuelwood, and most milling is done in small mills with circular saws.

In parts of southern Ontario there is the potential to derive higher valued products from the more productive sites. In these areas the potential economic value added from a cubic meter of wood resulting from careful management can be higher than anywhere else in the province.

These differences have several important implications for forest management in southern Ontario. First and foremost, in most of this region, since so little forest cover remains, silvicultural guidelines should emphasize that the maintenance and protection of this existing cover and all associated forest values take priority over large-scale timber extraction. Second, silvicultural activities must be carefully planned and implemented in ways that not only maintain or improve stand quality, but also protect the site from damage that will affect its important ecological functions such as the provision of wildlife habitat and maintenance of biological diversity. This guide addresses these two management implications and others by providing fairly stringent recommendations and guidelines that were developed to encourage ecological sustainability of forested sites.

Although much has been learned about forests during the last 20 years, these are complex ecosystems that will require further study. Furthermore, most trees are slow growing and site and stand conditions can vary in barely discernible ways that often change over time. Therefore, it may take at least 80 years or more (i.e., one rotation) to better understand just some of the impacts of silvicultural activities on a site or stand. It seems reasonable then, to suggest that landowners and forest managers exercise considerable precaution when managing any forest.

The need for a southern Ontario silvicultural guide

The unique nature of the forests and surrounding landscape of southern Ontario and the lack of an existing silvicultural guide led to the production of this document. Other provincial silvicultural guides exist, including *A Silvicultural Guide for the Tolerant Hardwood Forest in Ontario* (OMNR 1998a), *A Silvicultural Guide for the Great Lakes-St. Lawrence Conifer Forest in Ontario* (OMNR 1998b), and *Silvicultural Guide to Managing for Black Spruce, Jack Pine and Aspen on Boreal Forest Ecosites in Ontario* (OMNR 1997). Also some guides developed in the United States have application to some of the forest stands of this region. However, more specific silvicultural guidelines pertaining to southern Ontario forests are required to help resource managers to determine the most appropriate practices to ensure sustainable forest management in this region. In addition, such guidelines will enable landowners to prepare management plans to qualify for the *Managed Forest Tax Incentive Program* (MFTIP) and provide municipalities with sufficient information to competently regulate the cutting of trees within their jurisdiction.

Excellent opportunities exist in southern Ontario for the prudent application of sustainable forest management. A range of silvicultural prescriptions exist that can not only improve timber production, but also help to protect ecological, recreational, educational, and aesthetic values. Also as more people choose to live outside urban areas, rural perspectives about remaining natural areas including forested lands, are changing. Today more landowners and resource managers not only want to ensure a sustainable flow of forest products from managed forests, but also wish to conserve the non-commodity forest values that can result from sustainable forest management. Landowners deserve credit for their interest in sustainable forest management. Many of them are eager for information that will help them to better manage their land.

Many opportunities for sustainable forest management are found in non-traditional areas. For example, degraded stands provide opportunities for restoration and control of non-native species. Fragmented stands provide opportunities for linkage and subsequent wildlife habitat improvement across a larger scale. In some parts of southern Ontario overall forest area is increasing as abandoned farmland and plantations succeed to immature forests. Many of these younger stands can provide additional opportunities for management. Also some of the older stands could be managed to provide both future old growth forests that are important to many species and high-value veneer logs.

WHAT ARE SILVICULTURAL GUIDES?

Silvicultural guides provide information and recommendations to forest managers, workers, and other interested people on the planning, development, and implementation of ecologically sustainable silvicultural practices. They represent a synthesis of current knowledge, research, and experience.

INTENDED AUDIENCE

This document is intended primarily for use by staff of Conservation Authorities, people who are preparing and/or approving MFTIP plans, forestry consultants, tree-markers, tree bylaw officers, managers of natural areas (e.g., reserves owned by the Nature Conservancy, the Federation of Ontario Naturalists, Land Trusts), stewardship coordinators/councils, woodlot owners, and district foresters in southern Ontario. Some of the information and language are of a technical nature. Readers without a formal background in forestry are encouraged to read selected *Extension Notes*, available from the Land Owner Resource Centre (613/692-2390) and their internet web site: www.lrc.sympatico.ca. These clearly written fact sheets cover a variety of resource management topics.

THIS GUIDE

A Silvicultural Guide to Managing Southern Ontario Forests provides numerous guidelines based on research in southern and central Ontario, the Great Lake States, and the northeastern United States, as well as on practical experience with the development and implementation of silvicultural prescriptions in southern Ontario.

The guide describes the important forest types of southern Ontario. Descriptions of the regeneration and growth characteristics of the most important tree species include information about their distribution; preferred site characteristics; associated forest cover; reproduction and growth to maturity; reaction to competition; factors limiting development, growth, and health; and stand structure and dynamics.

This guide provides recommendations for the management of the most important forest types in this part of the province. It explains how to conduct site assessments, and select and implement the most appropriate silvicultural prescriptions designed to promote regeneration, rapid growth, and enable efficient harvest, while minimizing harm to the site, stand, and the greater forest ecosystem. It details regeneration, tending, and thinning procedures for a variety of different forest types, and where applicable, discusses other forest values and their protection.

A Silvicultural Guide to Managing Southern Ontario Forests has relied on two principle sources of information: *A Silvicultural Guide for the Tolerant Hardwood Forest in Ontario* (OMNR 1998a) and *A Tree-Marking Guide for the Tolerant Hardwoods Working Group in Ontario* (Anderson and Rice 1993). However the present guide complements these documents through the inclusion of silvicultural practices that better apply to the ecosites and forests types of southern Ontario, especially the hardwood forests. Also this guide addresses regional concerns arising from the high proportion of private land and an often different emphasis on management objectives (e.g., control of invasive non-native species; management of rare forest types or small woodlots; protection of Carolinian, rare, threatened and/or vulnerable species).

LIMITATIONS OF THIS GUIDE

A Silvicultural Guide to Managing Southern Ontario Forests does not address the management of plantations or the *Managed Forest Tax Incentive Program* (MFTIP); this information is available elsewhere.

ORGANIZATION OF THIS GUIDE

Table 1.1 provides a brief summary of the contents provided in each section of *A Silvicultural Guide to Managing Southern Ontario Forests*.

Section 2 provides a summary of good forestry practices and bylaw officers can excerpt it for use. Readers should be especially familiar with **Section 4** as this information provides a critical basis for sustainable forest management.

Table 1.1: Overview of A Silvicultural Guide to Managing Southern Ontario Forests.

Section	Brief description of contents
Section 2	Good Forestry Practices and the Role of Silviculture provides a brief overview of good forestry practices and their relationship to silvicultural activities discussed in this guide.
Section 3	Silvicultural Systems describes the silvicultural practices that are most appropriate for use in the forests of southern Ontario as well as considerations for choosing a silvicultural system.
Section 4	Silviculture and Forest Ecosystem Management discusses important information that influences the selection of the most suitable and effective silvicultural systems including: <ul style="list-style-type: none">• the physical setting (e.g., climate, microclimate, physiography, soils, site productivity)• forest ecology (e.g., succession, disturbances, hydrological and nutrient cycling)• regional and historical perspectives (e.g., human impacts on amount of forest cover, stand structure, species composition)• autecology of principle forest tree and exotic invasive species• conservation of wildlife habitat
Section 5	Assessing Stand and Site Conditions <ul style="list-style-type: none">• defines forest inventory• explains how ecosites are described by the OMNR Ecological Land Classification (ELC) for southern Ontario• describes 7 general forest cover types and their equivalent ELC ecosites• describes how to analyze stand stocking, structure, and quality in both even-aged and uneven-aged stands• introduces simplified tree classification systems

Table 1.1: continued

Section 6	<p>Silvicultural Guidelines describes silvicultural prescriptions applicable to the 7 general forest types in southern Ontario:</p> <ul style="list-style-type: none"> • Upland Tolerant Hardwood Forests • Upland Oak Forests • Lowland Hardwood Forests and Swamps • Early Successional or Intolerant Hardwoods • Pines (white pine and red pine) • Cedars (white cedar and red cedar) and cedar swamps • Hemlock <p>Each sub-section discusses a forest cover type and gives the equivalent ELC ecosites. A table or key is presented to help to select the most applicable silvicultural systems for the management of the cover type. Then each applicable silvicultural system is detailed. Finally, silvicultural options for unique conditions are discussed.</p>
Section 7	<p>Predicting Effects of Silvicultural Treatments introduces growth and yield research and how information about it can be used to develop silvicultural prescriptions, and presents summary statistics from the first re-samplings of southern Ontario growth and yield plots in 1997, 1998, and 1999.</p>
Section 8	<p>Implementing Silvicultural Prescriptions provides practical considerations for:</p> <ul style="list-style-type: none"> • vegetation management • tree marking • careful harvesting
Section 9	<p>Literature Cited provides citations for all literature cited in the text.</p>
Latin Name Index	<p>Lists common and Latin names used in text.</p>
Appendix A	<p>Site District Descriptions describes the 2 Site Districts (6E and 7E) that make up southern Ontario.</p>
Appendix B	<p>Autecology of Southern Ontario Tree Species provides summaries on habitat, reproduction, growth, response to silvicultural treatment, and uses by wildlife for most tree species that occur in the forests of southern Ontario.</p>
Appendix C	<p>Performing a Forest Stand Inventory briefly outlines the steps involved in collecting information about tree species composition, density, and structure that are essential to developing a silvicultural prescription.</p>
Appendix D	<p>Guide to Tree Species Suitability for Site Regions 6E and 7E provide an indication of growth productivity for selected tree species growing over a range of field recognizable soil properties.</p>
Appendix E	<p>Stocking Guides for Some Southern Ontario Species presents guidelines on how to use stocking guides and guides for 12 tree species.</p>
Glossary of Terms	<p>Defines technical terms that are used in this guide.</p>