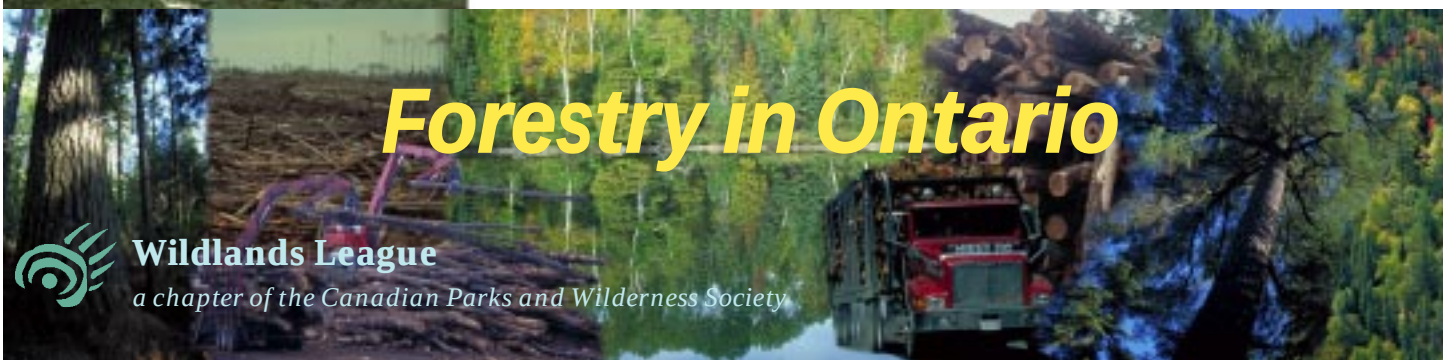
Fact Sheet #1: Shoreline Forests



This series of fact sheets has been produced to increase public understanding of the impacts of forestry in Ontario, and to present innovative ideas on how these impacts can be mitigated. Forestry is the single largest use of public lands in Ontario and forestry activities can have a major impact on ecosystems. The Wildlands League is committed to improving forestry practices and reducing the ecological impact of logging by working directly with government and industry and by improving public awareness and involvement in forestry issues.

Shoreline Forests

INTRODUCTION

Shoreline forests are diverse zones where land and water interact along streams, rivers and lakes. Vegetation near the shoreline is typically denser, has a more complex structure and supports a greater number of plant and animal species than in the neighbouring upland forest. [1] This unique zone of interaction between land and water can extend beyond the immediate shoreline, reaching as much as 80 metres inland from the water's edge.

IMPORTANCE OF SHORELINE FORESTS

Shoreline forests play a critical role for both land and water ecosystems. They support a high diversity of plant and animal species, and are used by up to 70% of terrestrial animals at some point in their lives.[2] Many birds rely on shoreline forests for shelter, nesting or feeding. Amphibians and reptiles breed near the shore and both aquatic and land insects depend on shoreline vegetation. Shoreline forests also form corridors for the movement of species along waterways.

Gary McGuffin

John Mitchell/Earth Images

Shoreline forests have high species diversity.

The vegetation found along the shore also helps to shape aquatic ecosystems. It has been estimated that 90% of all lake organisms depend on the land-water interface in some way.[3] Leaves and other plant material from shoreline vegetation, for example, provide a source of nutrients for plankton and aquatic insects, which play a critical role in aquatic food chains. Large pieces of wood that fall into the water from shoreline forests help create a diverse aquatic habitat near the shore that is used by fish for feeding and breeding. This woody habitat also serves as a refuge from predation and provides a long-term source of nutrients.[4]

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Gary McGuffin

Shoreline forests affect the physical and chemical properties of the water as well. The shade provided by trees along the shore moderates the water temperature and the amount of light that penetrates the water. Shoreline forests regulate the flow of nutrients and water from upland forests, prevent soil from eroding into the water and stabilize the banks of rivers and lakes.[2] These functions are critical for maintaining water quality and a healthy aquatic ecosystem.

Lori Labatt

Is cutting shoreline forests natural?

Unlike logging, forest fires usually leave trees standing.

Another type of disturbance that impacts shoreline forests is fire, leading some to conclude that disturbing shoreline forests is natural. The differences between logging and fire, however, are significant and important. Fire, for example, leaves most trees standing, allowing them to continue to act as terrestrial habitat and, as they die, to provide a source of wood for water-based habitats. Logging also results in very different water-quality impacts than fire. For example, a recent study showed that high levels of mercury, a neurotoxin that can work its way up the food chain, were released following logging. [6,7]

Shoreline forests also have cultural and social values. Their beauty and richness leads many people to use shoreline forests for recreational purposes, such as camping and canoeing. Aboriginal people also value shoreline forests as places of spiritual and cultural importance.

IMPACTS OF FOREST HARVESTING ON SHORELINE FORESTS

Logging forests around streams and lakes can have serious impacts on both terrestrial and aquatic ecosystems. The removal of a shoreline forest has a direct and immediate impact on the diverse species that depend on it for habitat. This loss of habitat is also significant for species that might rely on shoreline forests for survival when their upland habitats are logged. For example, studies of shoreline buffer strips have shown that these areas can support both shoreline and interior forest birds following clearcut logging of upland forests, thus providing critical habitat in a disturbed landscape. [9]

Lori Labatt

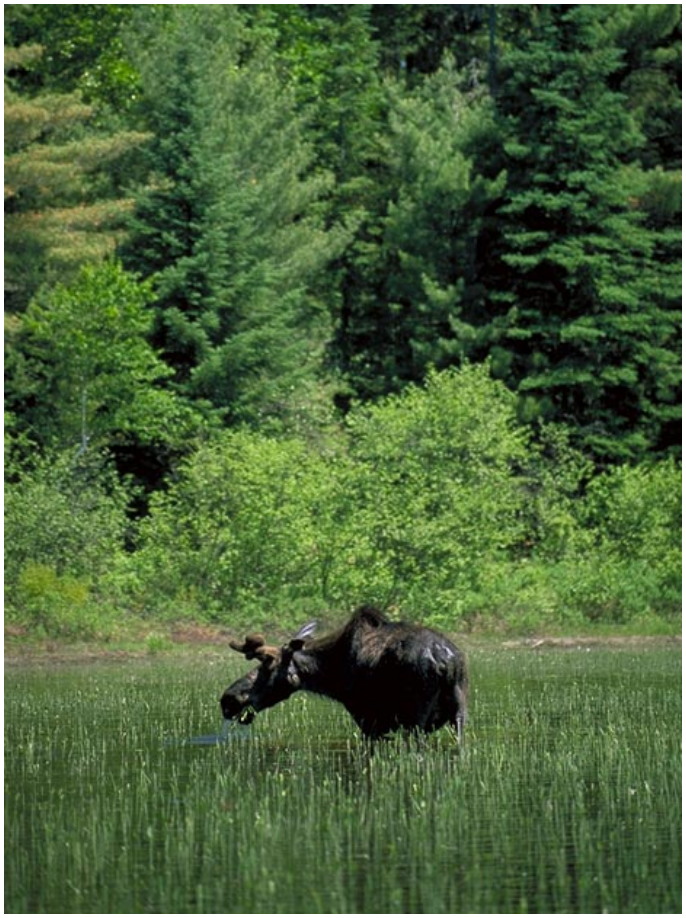
Logging can have a serious impact on the habitat and food sources in shoreline forests, even if it doesn't affect the shore itself.

Clearcut logging removes both the forest's tree canopy and its ground litter, exposing soils to wind and rain and causing erosion. Shoreline forests help trap soil in runoff and prevent it from entering the water after nearby forests have been logged. Without shoreline forests, runoff from clearcut areas can decrease water quality through increased sedimentation, nutrient overloading and decreased water clarity.[5] This has an impact on fish habitat, plankton communities and aquatic plants. A recent study of shoreline harvesting along three coldwater lakes in northwestern Ontario suggests that streams may be the most likely to experience these severe impacts following harvest.[10, 11]

Logging shoreline forests also decreases the flow of plant material, such as leaves and large pieces of wood, into the water, which can decrease the amount of food, structure and habitat available for aquatic species.[5] The removal of trees near the shore also increases light penetration and changes the water temperature, both effects that can harm the aquatic ecosystem. These impacts can last for hundreds of years.[5]

Can shoreline forests protect lakes from logging?

Although reserves around water bodies help protect many of the values associated with shoreline forests and aquatic ecosystems, it is also necessary to consider the total area around a water system that has been logged. If the percentage of cleared forest becomes too high, impacts on water quality may occur despite the protection offered by shoreline reserves. Therefore, limiting the percentage of land logged in the area around lakes and rivers is an equally important measure to protect water quality and aquatic habitats from the impacts of harvesting.



WL files

Gary McGuffin

Moose browse in aquatic areas, including shoreline marshes

PROTECTING SHORELINE FORESTS

Currently, the only required protection of shoreline forests during logging in Ontario is the establishment of no-cut reserves around some water bodies to prevent water-quality impacts on fish habitat. These no-cut reserves, or buffers, help protect fish by trapping and filtering sediment in runoff, maintaining bank stability and regulating water temperature.[8]

However, as discussed above, there are many other shoreline-forest values deserving protection, including unique terrestrial and aquatic habitats, opportunities for wildlife movement and social and cultural values. While some of these values may receive some protection through no-cut reserves or water-quality protection guidelines, these guidelines only apply to some water bodies, leaving many shoreline forests unprotected. Also, some values require a greater degree of protection than others, so it is important that all values be considered in establishing protection requirements.

WL files

Bruce Litteljohn

Shoreline forests extend well beyond the water's edge.

Shoreline forests also have unique ecological characteristics, including species composition, stand structure, and response to disturbance, that will help determine the impacts and the degree of forest recovery after logging. Because of their unique attributes, it is important to treat shoreline forests as unique environments, rather than treating them as a continuation of the upland forest. To protect all the values of the shoreline forest, management practices and protection standards need to be developed to address the unique character and the many values of the shoreline forest.

WILDLANDS LEAGUE

a chapter of the Canadian Parks and Wilderness Society

The Wildlands League was founded in 1968 to protect wilderness in Ontario and became a chapter of the Canadian Parks and Wilderness Society (CPAWS) in 1980. We are solutions oriented and we get results. We are respected for our science-based campaigns to establish new protected areas, our efforts to ensure that nature comes first in the management of protected areas, and success at addressing issues of resource management and community development.

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great blue heron

Lori Labatt

Forestry in Ontario

Other fact sheet topics in this series

- Forestry Certification
- Intensive Forest Management
- Control of Public Forests
- Conserving Biodiversity at the Forest Landscape and Stand Level
- Monitoring Forestry Operations

Deborah Freeman

Montage photos, from left to right: Lori Labatt, WL files, Deborah Freeman, Bruce Litteljohn, WL files, Lori Labatt, Lori Labatt, Bruce Litteljohn