



INDICATOR: FOREST COVER AND FOREST DISTURBANCE

STRATEGIC DIRECTION: Enhance Resilience

TARGET: N/A

THEME: State of Ecosystems and Species – Forests

Background Information:

Forests cover an estimated 30% of the world's land surface and play a disproportionate role in maintaining biodiversity and ecosystem services (MEA 2005). Globally, forests provide habitat for half or more of terrestrial animal and plant species and contain 80% of all terrestrial biomass (living matter) (MEA 2005). In addition to their role in sequestering carbon, forests provide many ecosystem services, such as water purification and protection of aquatic habitats, the provision of habitat for a multitude of species, soil retention, recreation, and the provisioning of fibre and timber. Forests also provide Ontarians with significant employment opportunities and economic benefits as well as supporting traditional Aboriginal uses such as hunting and trapping.

More than one half of Ontario's land base is forested (52%) (excluding treed wetlands - Figure 1). Ontario's forests (areas with more than 30% tree cover) include a broad range of tree species within three ecozones. The extent and composition of today's forests are closely related to climate and landscape characteristics, such as soil and topography, as well as landscape history. Forests in areas of the province with soil and topography relatively better suited to agriculture and settlement have been most altered. The composition of forests is also affected by timber harvest, fire, insects, disease, and climate change. Permanent loss of forest cover through conversion to other uses (e.g., residential, industrial, agricultural) negatively impacts forest-dependent species. Forest disturbances such as fire, insect damage and timber harvest change the age and composition of forests, but the forest cover on the landscape is maintained through regeneration. Fire is a vital ecological component of the boreal forest ecosystem.

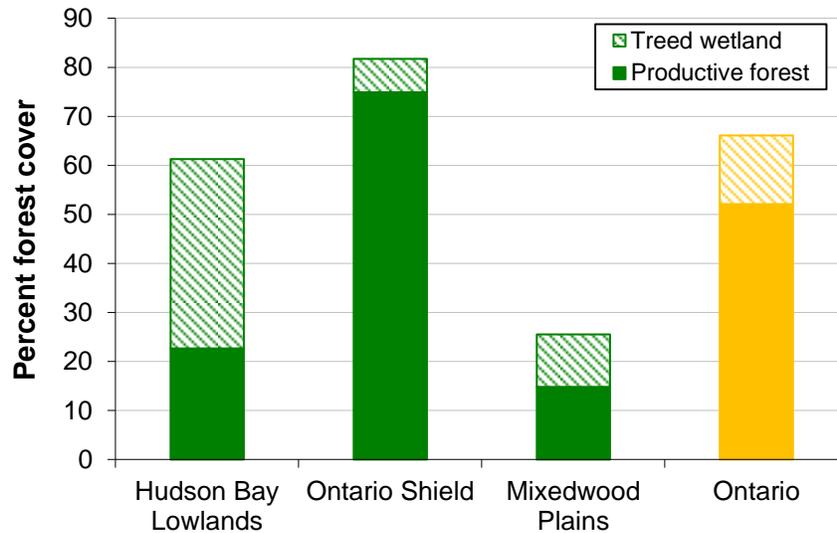


Figure 1. Percent forest cover for Ontario ecozones and entire province (data from Watkins 2011).

This indicator examines the total area of forest in Ontario’s ecoregions between 1998 and 2008, and the area of disturbed forest as a result of fire and harvest over the same period. Information on the amount of harvest versus allowable levels for the period 2002-2013 is also included.

Data Analysis:

The area of forested land in each of Ontario’s 14 ecoregions was compared for three time periods (1998, 2002 and 2008) based on detailed information presented in The Forest Resources of Ontario (OMNR 2001, 2006; Watkins 2011 – Figure 2). Information on the area of forest disturbance (burns and harvest within the previous 10 year period) were also assessed (Figure 3). The areas with burns also include a small amount of area attributed to other stand-replacing disturbances (severe blowdown). The area of forested land presented in the results section does not include treed wetlands that account for about 14% of Ontario’s land area. The annual area of forest harvest compared with the allowable harvest area for Ontario’s Crown forest management units from the period 2002-2013 are also presented (Figure 4). This information is maintained by the Ontario Ministry of Natural Resources and Forestry and is summarized in Annual Reports on Forest Management and the State of Ontario’s Forest Report (OMNR 2012). Allowable harvest areas are determined through modelling of the age distribution and productivity of forest classes in each forest management unit during the development of forest management plans.

Assessment of forest area and disturbance area for 1998 and 2002 was based on the interpretation of satellite imagery (Landsat 7). For 2008, information on harvest, burns and forest regeneration maintained by the Ministry of Natural Resources was used to update the 2002 forest cover (Watkins 2011). In southern Ontario, the forest cover reported for 1998 and 2002 were based on imagery compiled from 1985 to 1990. In 2008 the Southern Ontario Land Resource Information System (SOLRIS; OMNR 2008) was released providing high resolution land cover data for the period 2000-2002. Therefore, the 2008 figures for forest cover in southern Ontario (ecoregions 6E and 7E) reflect 15 to 20 years of change, rather than 6 years (Watkins 2011). Some of the losses in these ecozones may also reflect reclassification of productive forest into treed wetland classes with more recent data.



Results:

Trend: Mixed Data Confidence: Medium Geographic Extent: Provincial

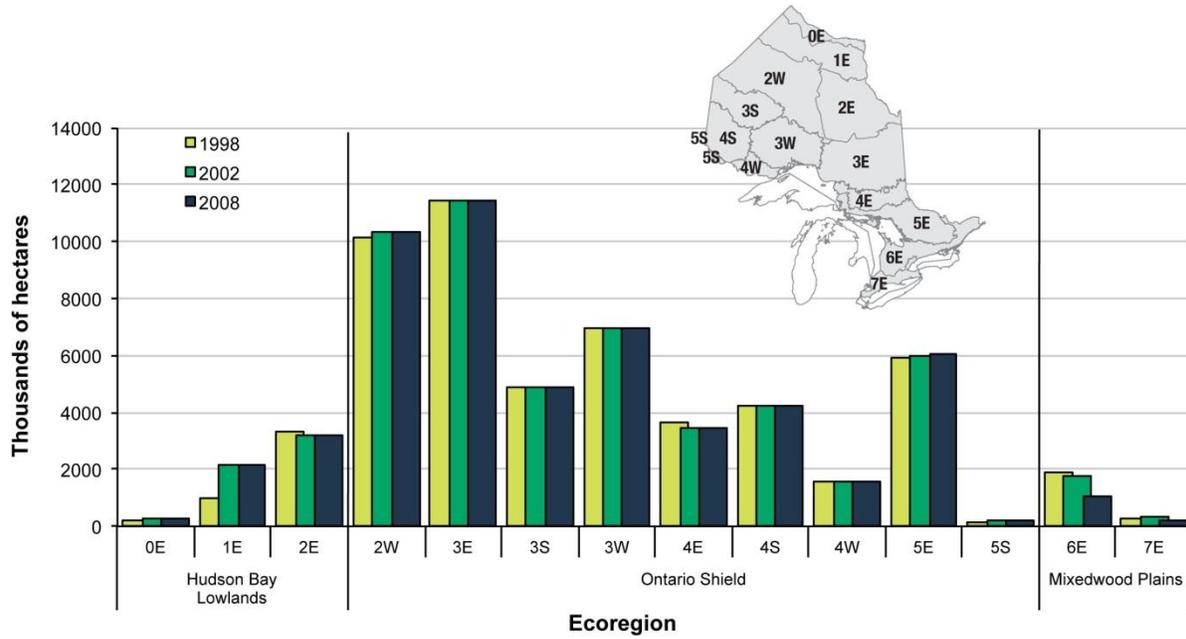


Figure 2. Total area of forested land by ecoregion in each ecozone in 1998, 2002 and 2008 (Inset map – Ontario’s ecoregions).

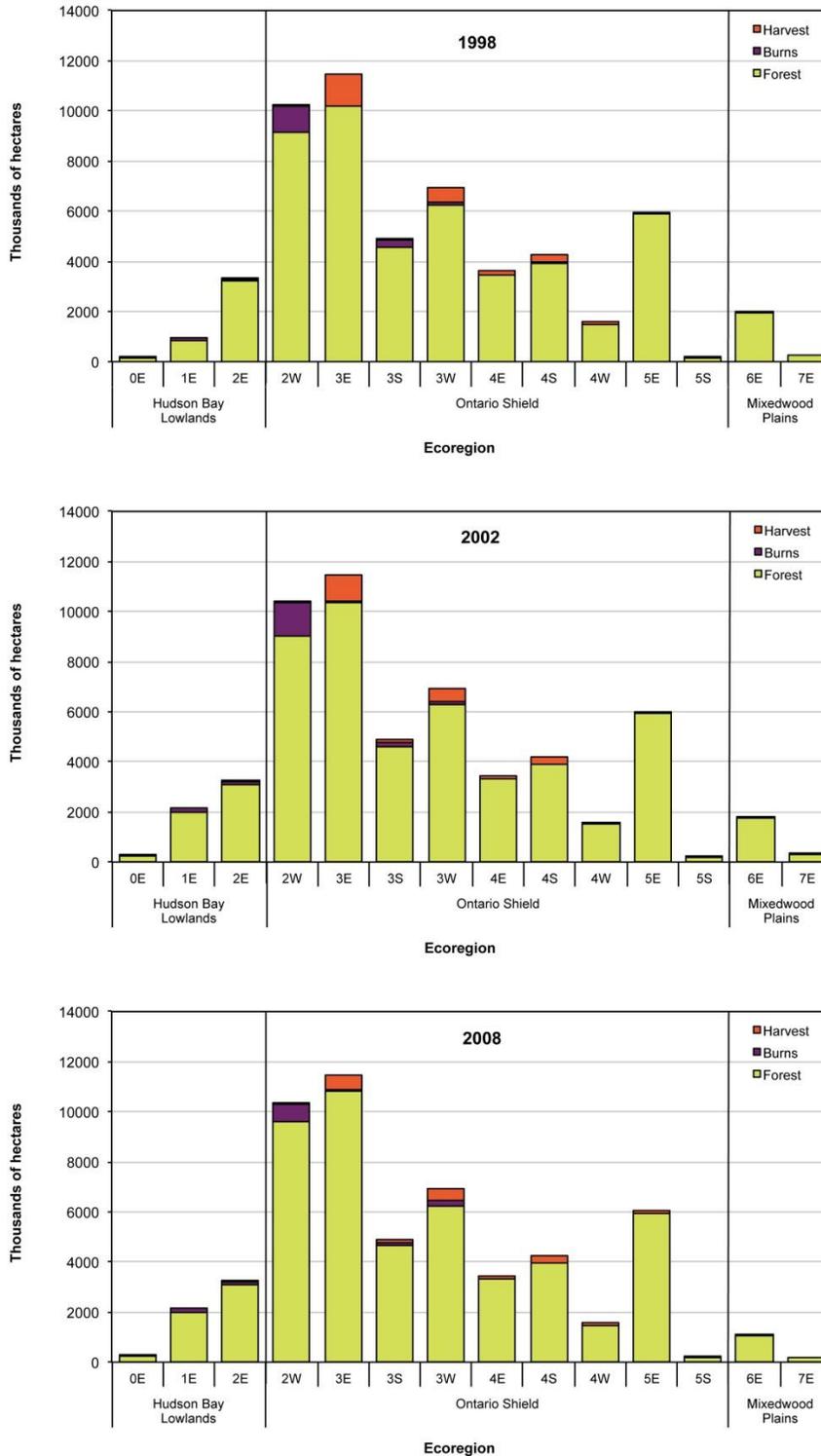


Figure 3. Total area of forest cover and area of recent disturbance from forest harvest and burns (1998-2008) by ecoregion based on satellite imagery.

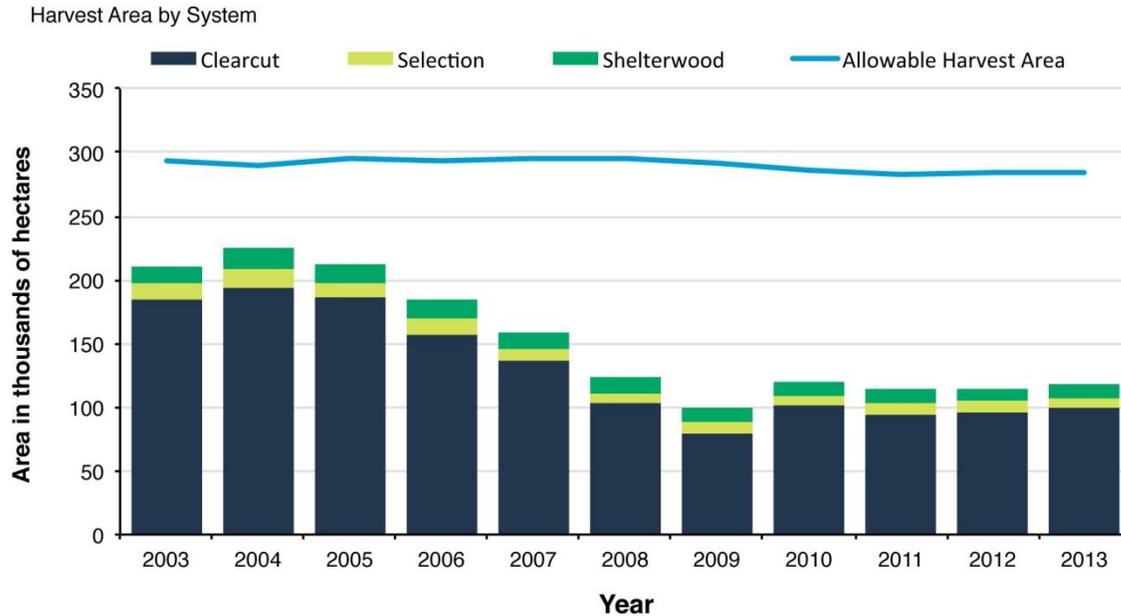


Figure 4. Forest area harvested under different management systems in Ontario’s Crown forest management units compared with the total allowable harvest area, 2003-2013.

Status:

- The total amount of Ontario’s forested land has remained relatively stable. Increases in northern ecoregions (0E and 1E) between 1998 and 2002 were due to increased resolution of satellite images and improved detection of forest cover (OMNR 2006). Losses of forest cover in southern Ontario (ecoregions 6E and 7E) reflect a longer period of change (i.e., 20 years) and perhaps reclassification of forest to treed wetland with more recent data.
- More than half of Ontario’s land base is forested, and 88% of the forested land is found in the Ontario Shield Ecozone.
- Disturbances associated with recent burns and forest harvest assessed from satellite imagery covered 6-8% of Ontario’s productive forest lands in 1998 and 2002.
- The average Crown forest harvest area was 152,540 hectares per year for the 2002-2013 period, a little more than 50% of the allowable harvest area. There has been a substantial decrease in annual forest harvest since 2005 associated with a downturn in Ontario’s forest industry.

Links:

Related Targets: N/A

Related Themes: Conservation Response – Sustainable Management



Web Links:

Ontario Ministry of Natural Resources and Forestry – Sustainable Forest Management

<https://www.ontario.ca/environment-and-energy/sustainable-forest-management>

Forest Resources of Ontario 2011 <https://www.ontario.ca/document/forest-resources-ontario-2011>

State of Ontario's Forests 2011 <https://www.ontario.ca/document/state-ontarios-forests>

References:

Millennium Ecosystem Assessment (MEA). 2005. Ecosystems and human well-being: biodiversity synthesis. World Resources Institute, Washington, DC.

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Watkins, L. 2011. The forest resources of Ontario 2011. Ontario Ministry of Natural Resources, Queen's Printer for Ontario, Sault Ste. Marie, ON.

Citation

Ontario Biodiversity Council. 2015. State of Ontario's Biodiversity [web application]. Ontario Biodiversity Council, Peterborough, Ontario. [Available at: <http://ontariobiodiversitycouncil.ca/sobr> (Date Accessed: May 19, 2015)].