NATURAL HERITAGE INFORMATION CENTRE (NHIC)
Science and Research Branch

Natural cover monitoring for the Lake Simcoe watershed: Supporting the Lake Simcoe Protection Plan (LSPP)

Natural heritage and terrestrial vegetation in the Lake Simcoe Watershed have been exposed to many stresses over the years. These stressors include land development, urbanization, habitat fragmentation, intensification of agriculture, invasive plants, and climate change.

About the Lake Simcoe Protection Plan

The Lake Simcoe Protection Plan (LSPP) is the first legislation in Canada to explicitly focus on watershed-level environmental protection and integrity. The LSPP recognizes that natural heritage features and their functions are critical to:

Figure 1: The Lake Simcoe Protection Plan covers the lake and the watershed.

- Maintaining water quality and quantity in the watershed
- Watershed resilience to human and natural disturbances
- Integrated watershed-level management and planning

The LSPP introduces policies to address impacts associated with terrestrial shorelines and other natural heritage features, such as forests, riparian areas, and grasslands.

The LSPP also establishes some targets, including:

- Increasing the proportion of natural vegetative cover in large, high quality patches
- Achieving at least 40 per cent high quality, natural vegetative cover in the watershed

In order to assess impacts on natural heritage features and to identify and measure progress in terms of natural vegetative cover, the LLSP requires development and establishment of a terrestrial monitoring program.

Terrestrial monitoring and landscape management

Baseline conditions of natural vegetation are needed in order to detect and measure changes which may occur on a landscape, understand cause and effect relationships, define trends, and forecast changes and uncertainties. Ultimately, strategic and timely monitoring information provides evidence to support landscape management and planning, conservation, restoration and management decisions.

NHIC role

- Lead science and research related to development of terrestrial monitoring protocol and a monitoring strategy
- Engage in partnership with the Faculty of Forestry, University of Toronto, and with the Ministry of Environment and Climate Change.

Ontario

- Build upon site level sampling from 2011 and coordinate delivery of research sampling for 2014
- Support Vegetative Sampling Protocol (VSP) data management, analysis and reporting

LSPP natural cover monitoring project

Landscape level monitoring

Landscape level monitoring for the watershed is based on natural cover and land use maps produced at regular intervals, which allow for measurement of two types of indicators:

- amount of natural cover
- natural cover fragmentation.

Site level monitoring

Site-level monitoring involves measuring vegetation structure and composition at chosen sites in the watershed. These detailed measurements are used to assess and establish baseline conditions. This information also allows us to assess the quality of natural cover at the site level and to make inferences about the quality of natural cover at the landscape level.

High quality natural cover

From baseline field monitoring data, indicators of natural cover quality were tested and selected for forests, wetlands, alvars, and grasslands. They are used to develop a working definition of high quality natural cover at the site-level.

Site level natural heritage monitoring in the watershed uses the Vegetation Sampling Protocol (VSP). VSP supports data collection on vegetation communities, species distribution and abundance and also captures information relevant to invasive plant species and climate change in southern Ontario.

Monitoring questions that were defined based on objectives of the LSPP were incorporated into the sampling design. For example, the amount of development surrounding a site and fragmentation measures were included in the stratified sampling design developed for the watershed.
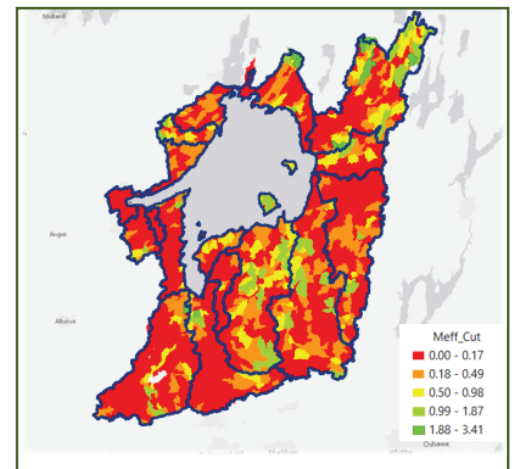

Figure2: Map depicting fragmentation expressed as effective mesh size by catchment area. Red represents most fragmented areas, green represents least fragmented areas.
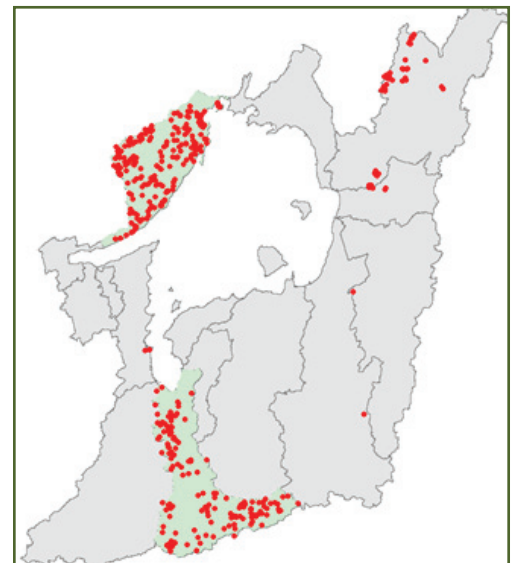

Figure 3: Red represents a subset of VSP plots selected to be sampled in 2014 as part of a research project in partnership with Faculty of Forestry, University of Toronto.

For more information about VSP, please contact danijela.puricmladenovic@ontario.ca

Need access to NHIC data or have questions?

Contact the nhicrequests@ontario.ca

The amount of development surrounding sample locations.