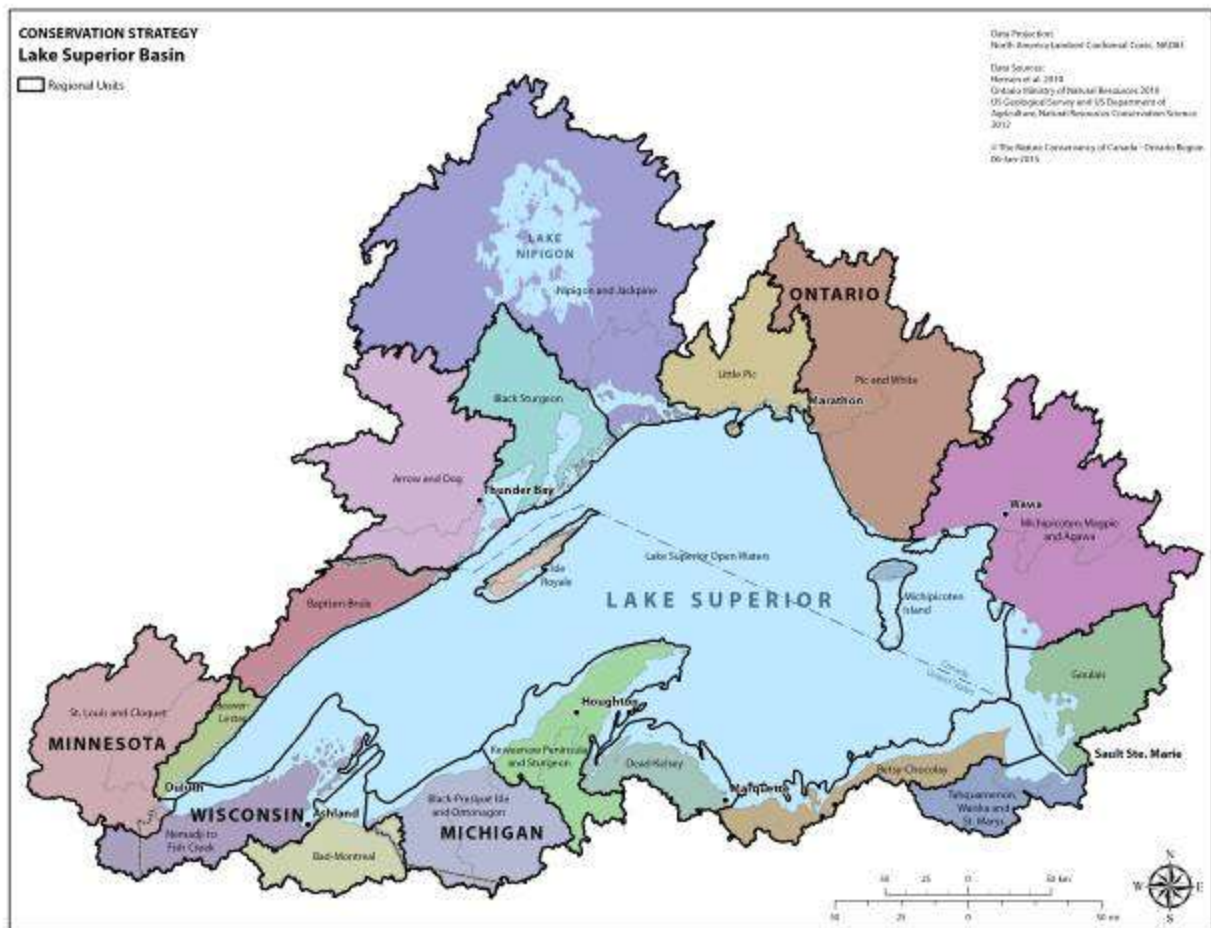


A Biodiversity Conservation Assessment for Lake Superior



Volume 2: Regional Unit Summaries

Prepared by the Superior Work Group of the Lake Superior Lakewide Action and Management Plan

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Disclaimer

This report reflects the best efforts of the preparers (Dan Kraus and Megan Ihrig) to accurately represent and interpret the available expertise and information on Lake Superior and the views and opinions of project participants. Every effort to ensure the accuracy of the information contained in this study has been taken. We welcome suggestions for improvements.

Data Sources

For a full list of the Data Sources and Methods used to create the Tables and Figures throughout this Regional Unit Summaries report please see Appendix A: Spatial Data Catalogue and Methods.

Volume 1: Lakewide Assessment & Volume 2: Regional Summaries

Please note that this report includes two volumes. Volume 1 includes an assessment of lakewide biodiversity target health and threats. Volume 2 contains regional summaries and maps that are presented in this document. It is recognized that many regions contain additional information and mapping on biodiversity and threats that could not be fully reflected in this report. Wherever possible, regional and local data and spatial information on biodiversity targets and threats has been noted in the text.

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This report has been prepared by a project Steering Committee from the Superior Work Group (SWG) of the Lake Superior Lakewide Action and Management Plan (LAMP) with coordination and support from the Nature Conservancy of Canada. The Steering Committee members included:

1854 Treaty Authority: Tyler Kaspar

Environment Canada: Rob Hyde

Environmental Protection Agency: Elizabeth LaPlante

Great Lakes Indian Fish and Wildlife Commission: Ann McCammon Soltis, Jennifer Vanator

Michigan Department of Environmental Quality: Matt Preisser, Stephanie Swart

Minnesota Department of Natural Resources: John Jereczek

National Park Service: Joan Elias (retired)

Nature Conservancy of Canada: Megan Ihrig, Dan Kraus

Ontario Ministry of Natural Resources and Forestry: Marilee Chase, Neil Dawson, Sue Greenwood (retired), Kyle Rogers

Parks Canada: Ray Boudreau

U.S. Fish and Wildlife Service: Henry Quinlan

USDA Forest Service: Mark Fedora

USDA Natural Resources Conservation Service: Dana Raines

Wisconsin Department of Natural Resources: Cherie Hagen, Michele Wheeler

The Steering Committee acknowledges the valuable input provided by the following reviewers:

Andrew Ecclestone	Anishinabek/Ontario Fisheries Resource Centre
Julie Van Stappen	Apostle Islands National Lakeshore
Cyrus Hester	Bad River Band of the Lake Superior Tribe of Chippewa Indians
Naomi Tillison	Bad River Band of the Lake Superior Tribe of Chippewa Indians
Tom Gorenflo	Chippewa Ottawa Resource Authority; St. Marys River
Mike Ripley	Chippewa Ottawa Resource Authority; St. Marys River
Laurie Wood	Environment Canada
Katheryne O'Connor	Environment Canada/ Canadian Wildlife Service
Daryl Seip	Environment Canada/ Canadian Wildlife Service
Scott Millard	Emeritus, Department of Fisheries and Oceans
Tom Pratt	Fisheries and Oceans Canada
Nancy Schuldt	Fond du Lac Band of Lake Superior Chippewa, Environmental Program
Seth Moore	Grand Portage Band of Chippewa
Lucinda Johnson	Great Lake Environmental Indicators Project/ University of Minnesota
Sigrid Smith	Great Lakes Environmental Assessment and Mapping Project
Erin Johnston	Keweenaw Bay Indian Community
George Beck	Lac Vieux Desert Band of Lake Superior Chippewa Indians
Anne Hokanson	Michigan Department of Environmental Quality
William Taft	Michigan Department of Environmental Quality
David Caroffino	Michigan Department of Natural Resources
Amy Clark Eagle	Michigan Department of Natural Resources
Christopher Hoving	Michigan Department of Natural Resources
Glenn Palmgren	Michigan Department of Natural Resources
Phil Schneeberger	Michigan Department of Natural Resources
Shawn Sitar	Michigan Department of Natural Resources
Sue Tangora	Michigan Department of Natural Resources
Bruce Carlson	Minnesota Department of Natural Resources
Maya Hamady	Minnesota Department of Natural Resources
Ethan Perry	Minnesota Department of Natural Resources
Annie Bracey	Natural Resources Research Institute, University of Minnesota Duluth

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Gerald Niemi	Natural Resources Research Institute, University of Minnesota Duluth
Tom Beechey	Nature Conservancy of Canada
James Duncan	Nature Conservancy of Canada
Nick Lapointe	Nature Conservancy of Canada
Chris Maher	Nature Conservancy of Canada
Brenda Koenig	Ontario Ministry of Natural Resources and Forestry
Wasył Bakowsky	Ontario Natural Heritage Information Centre
Mike Oldham	Ontario Natural Heritage Information Centre
Don Sutherland	Ontario Natural Heritage Information Centre
Christine Drake	Parks Canada
Cavan Harpur	Parks Canada
Chantal Vis	Parks Canada
Matthew Hudson	Sigurd Olson Environmental Institute, Northland College
Carl Lindquist	Superior Watershed Partnership and Land Trust
Mary Khoury	The Nature Conservancy
Doug Pearsall	The Nature Conservancy
Linda Wires	University of Minnesota
Sue Eggert	U.S. Forest Service
Dale Higgins	U.S. Forest Service Chequamegon-Nicolet National Forest
Gary Cypinski	U.S. Dept. of Interior, Fish & Wildlife Service
Brian Huberty	U.S. Dept. of Interior, Fish & Wildlife Service
Janet Keough	U.S. Environmental Protection Agency
Daniel Yule	U.S. Geological Survey
Gary Caspar	University of Wisconsin Milwaukee Field Station
Kate Barrett	Wisconsin Department of Natural Resources
William Blust	Wisconsin Department of Natural Resources
Diane Daulton	Wisconsin Department of Natural Resources
Andrew Fayram	Wisconsin Department of Natural Resources
Lynelle Hanson	Wisconsin Department of Natural Resources
Martin Jennings	Wisconsin Department of Natural Resources
Frank Koshere	Wisconsin Department of Natural Resources
Steve LaValley	Wisconsin Department of Natural Resources
Ryan Magana	Wisconsin Department of Natural Resources
Ryan O'Connor	Wisconsin Department of Natural Resources
Paul Piszczek	Wisconsin Department of Natural Resources
Peter Stevens	Wisconsin Department of Natural Resources
Fred Strand	Wisconsin Department of Natural Resources
Scott Toshner	Wisconsin Department of Natural Resources

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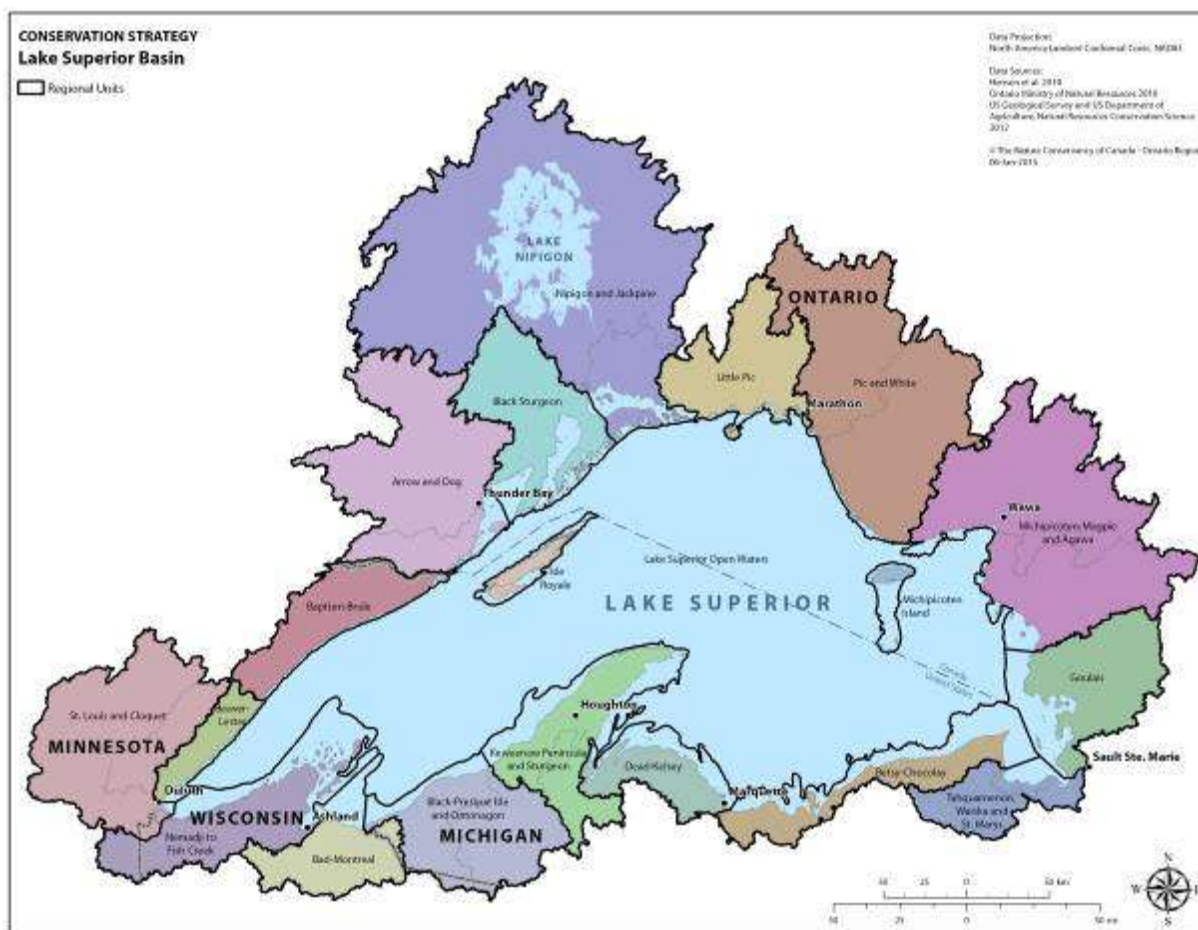
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Guide to the Lake Superior Regional Unit Summaries

Volume Two of the Lake Superior Biodiversity Conservation Assessment provides more detailed information and mapping on 20 regional units (Figure I.1). These units are based on quaternary watershed boundaries that were grouped based on coastal environments identified from Lake Superior. In addition to the watershed and coast, each regional unit includes associated inshore and nearshore waters. In some regions, offshore waters were also incorporated to include islands. One unit that encompasses all of the Lake Superior offshore waters was also included. Maintaining the open waters as a single unit was recommended by the Aquatic Community Committee/Lake Superior Technical Committee.

Figure I.1: Lake Superior Biodiversity Conservation Assessment Regional Units



This regional information is intended to compliment the lakewide assessment provided in Volume One, and to provide additional detail to support the development of place-based conservation actions. Information in the regional summaries was based on a review of the literature and expert input. Spatial information was calculated for this project using the data sources outlined in the data catalogue (see Appendix A in this volume). It is recognized that many regions contain additional information and mapping on biodiversity and threats that could not be fully reflected in this report. Wherever possible,

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regional and local data and spatial information on biodiversity targets and threats has been included in the text.

This introduction provides some detail on the different sections of the regional unit summaries.

Healthy Waters Report Card

The grades provided in the report card, and conditions and trend table are intended to denote relative condition/health and stresses for each biodiversity target in the region based on available condition and stress indices (see below). **These grades are intended to help highlight where the biodiversity targets are likely in better or worse health than the lakewide average, and to inform discussion about priority areas for conservation and restoration.** This automated assignment on the relative regional health of biodiversity targets was subject to expert review, and in cases where the experts felt the grade did not reflect actual conditions, the results were overridden with this expert input. Expert opinions were also reflected in the trends section of the conditions and trend table.

For each regional unit, a regional average of all stress/condition indices was calculated based on the individual scores of each sub-unit within the region (see Volume One) For example in Regional Unit 1 (Goulais), each of the 92 quaternary watersheds has a watershed stress index value (in this case ranging from 0 to 0.754, max=1). The regional score is based on an average of these sub-units. For the watershed stress index and Great Lakes Cumulative Stress, the average was subtracted from 1. For the Coastal Condition Index, the average was subtracted from the maximum possible score. These regional average values were then applied to the biodiversity targets. For some targets only one average index was used (e.g. the average value of the watershed stress index was used for the tributary and watershed target). For other targets, the condition/stress is likely reflected by a combination of the indices (e.g. embayment health), and the average of multiple indices was applied. The final score/grade is an average of the score for all biodiversity targets.

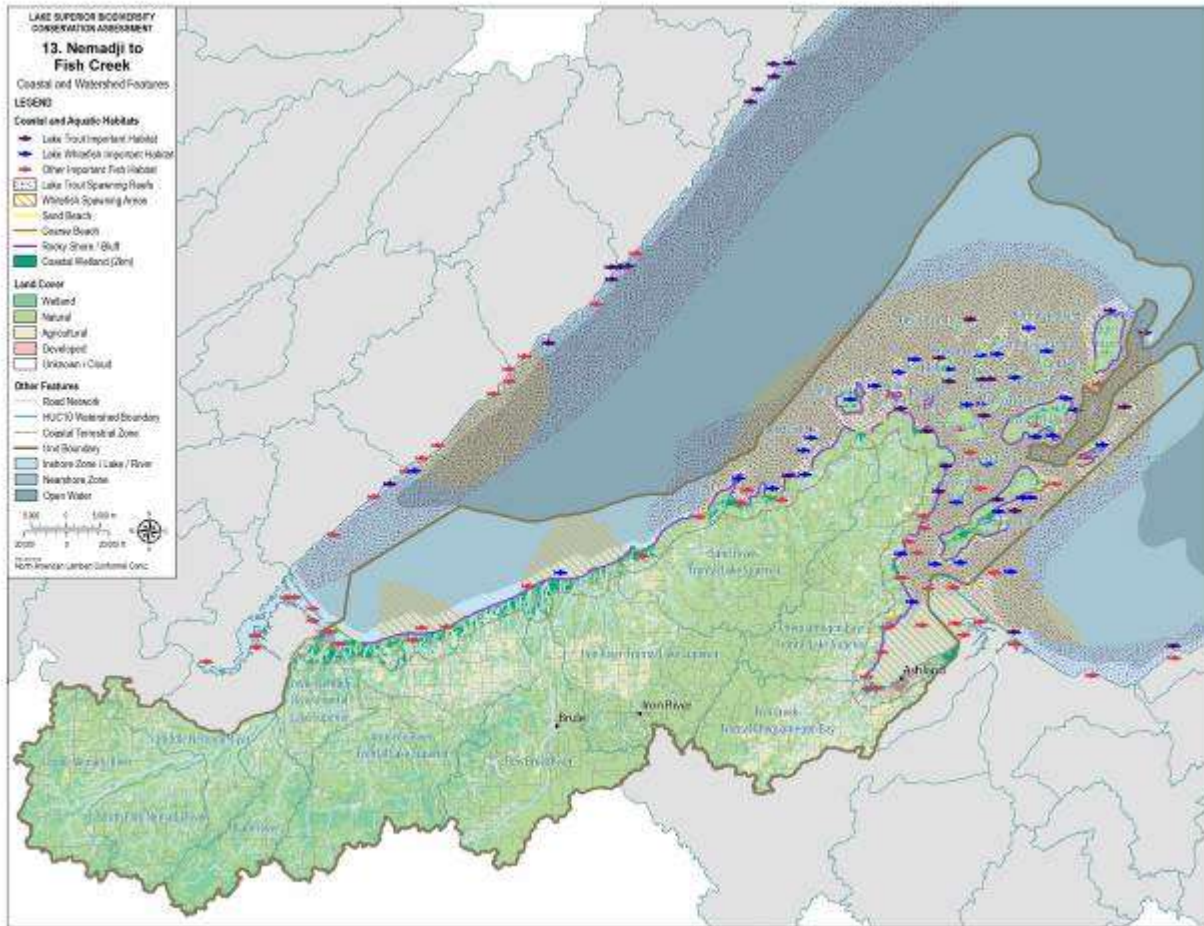
By the Numbers Table

This table provides a summary of information on land/water cover, coastal features, condition and land ownership and protected areas for each region. Where applicable, this information is put into context from a regional and Lake Superior-wide perspective. For example, the Goulais regional unit has 95.1 km of sand beaches. This amount of sand beaches make up almost 30% of the total coastline for the Goulais region, and represents 14.8% of all sand beaches on Lake Superior. The notes column provides some clarification on the different calculations for some attributes.

Coastal and Watershed Features Map Series

This map series depicts land cover, sub-watershed boundaries, coastal habitats (e.g. cobble beach, coastal wetlands) and fish spawning areas. The shaded areas denote current and historic spawning areas for Lake Trout and Lake Whitefish. The point data generally reflect more accurate locations of current spawning areas. This map is intended to provide an overview of the biodiversity targets in the region. Figure I.2 provides an example of the Coastal and Watershed Features map from the Nemadji to Fish Creek regional unit.

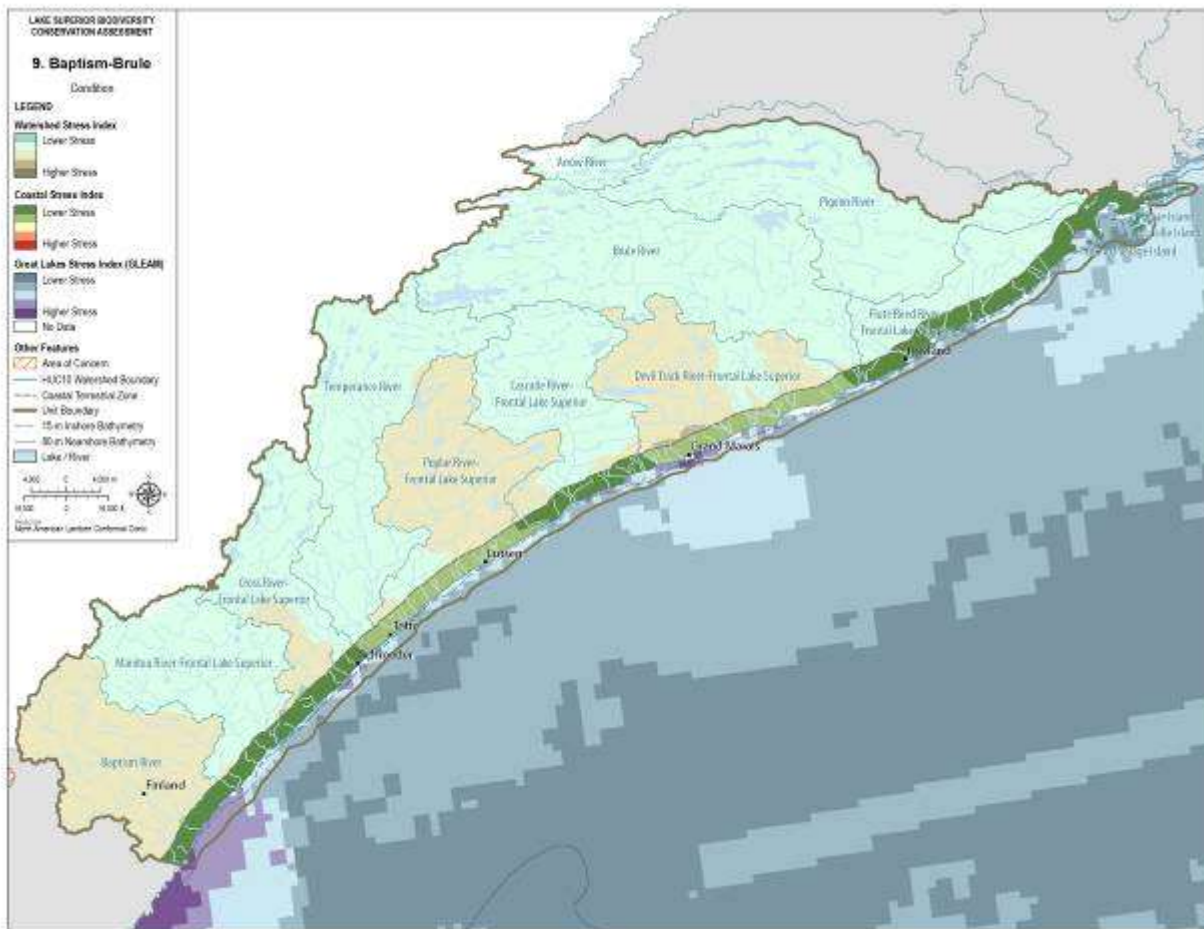
Figure I.2: Coastal and Watershed Features in the Nemadji to Fish Creek regional unit



Condition Map Series

This map series details the stress/condition indices: Watershed Stress Index, Great Lakes Cumulative Stress and the Coastal Condition Index. This map (in combination with the report card) is intended to provide information on the health of the biodiversity targets and highlight potential issue areas. Figure I.3 provides an example of the Condition map from the Baptism-Brule regional unit.

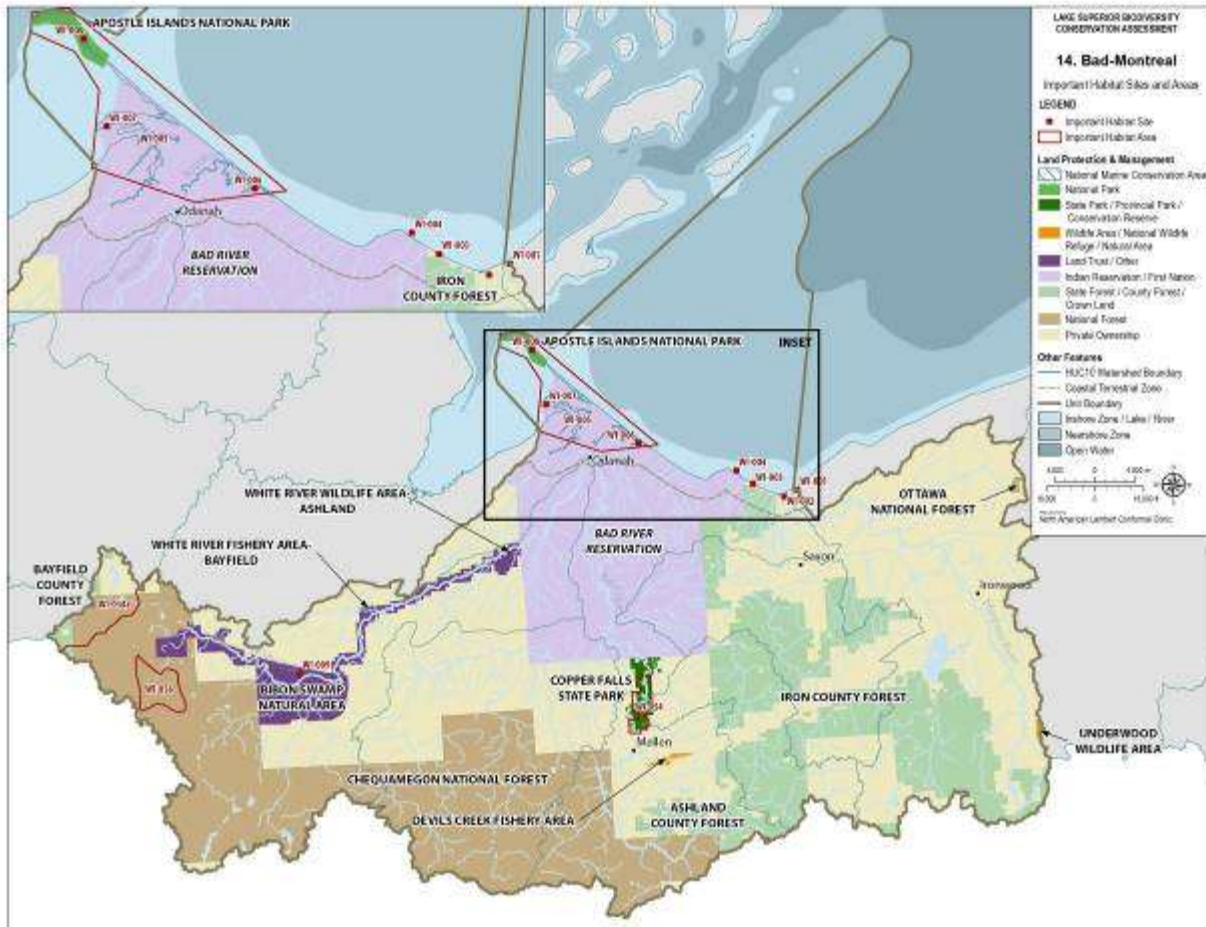
Figure I.3: Condition in the Baptism-Brule regional unit



Important Habitat Sites and Areas Map Series

This map series shows the Important Habitat Sites and Important Habitat Areas mapped by the Lake Superior LAMP (Lake Superior Binational Program [LSBP] Habitat Committee 2006), in the context of the protected areas and land ownership and management (e.g. public lands, national parks) in each regional unit. Additional important habitat areas may occur in some regions, and not all categories of land protection and ownership are reflected. Box 1 provides the criteria that were used to select these sites. Conserving or restoring these system components are of highest priority to maintaining Lake Superior biodiversity, recognizing that other important habitat areas inevitably exist, most notably in remote expanses of Lake Superior’s east and north shores where habitats are largely undisturbed. Figure I.4 provides an example of the Important Habitat Sites and Areas map from the Bad-Montreal regional unit.

Figure I.4: Important Habitat Sites and Areas in the Bad-Montreal regional unit



Box 1: Criteria for the Identification of Biodiversity Features in the Lake Superior Watershed

Ecosystems

1. Large, relatively unfragmented areas most representative of the Lake Superior basin ecosystem that support natural community assemblages where ecosystem dynamics are intact or can be restored.
2. Nationally significant ecosystems. Areas that have wildlife and plant habitat values that go beyond local values in that they provide substantial benefits that extend beyond the basin.
3. Old Growth Forest. Tracts of varying size supporting native old growth forest. Tracts that with restoration and proper management could support high quality, native old growth forest.
4. Coastal shore or coastal wetland ecosystems. Sites that have, or with restoration could develop, high quality, diverse ecosystems that are representative of the interacting communities unique to the Lake Superior shoreline.
5. Areas that support high biological and ecological diversity. Sites that support, or with restoration could support the compositional, functional, and structural elements associated with diverse ecosystems.
6. Habitats that contribute to, or with restoration could contribute to maintaining ecosystem integrity on a landscape scale. These areas could include buffering communities around currently protected ecosystems, core areas within a managed area, or may be connecting corridors between important habitat sites.

Communities

1. Rare communities. Communities that are of high quality, or have high restoration potential, or are critically endangered. Examples include: calcareous fens, beach dunes, interdunal wetlands, red clay wetland complexes, bedrock beaches and cliffs.
2. Plant and wildlife habitats that are rare in the Lake Superior basin, or are rare globally.
3. Plant and wildlife habitats that occur only in the Great Lakes basin.
4. Communities that are, or that with restoration could be, outstanding representatives of the natural (i.e. pre-settlement) ecosystem.

Species

1. Sites (large or small) that serve as habitat for vulnerable, endangered, threatened or special concern species (or candidate species) during any stage of their life cycle. Currently occupied habitats and sites with potential for future colonization or reintroduction are included. Prioritization of potential sites depends on status of the species (i.e. rarity at global, sub-national, and basin scales), likelihood of occupation and the quality (or restoration potential) of the site.
2. Sites that serve, or with restoration may serve, vital functions in the life cycle of species named in appropriate planning documents (e.g. Lake Superior Ecosystem Objectives, Fish-Community Objectives for Lake Superior, Tribal resource plans, etc.)
3. Habitats required for the conservation of migratory wildlife (e.g. neotropical migrant birds, migratory fish, etc.), including staging areas, migration corridors and routes.
4. Spawning and nursery grounds for reptiles, amphibians, fish, or aquatic invertebrates. Colonial water bird nesting sites.
5. Habitats that can contribute to the conservation of species most likely to be at risk from human activity.
6. Habitats that support species that provides important ecological functions (e.g. nutrient cycling or chemical detoxification.)

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