

## Arrow and Dog Regional Plan

This is one of twenty Regional Plans that support implementation of the Lake Superior Biodiversity Conservation Strategy (Strategy). The Strategy, prepared and overseen by the Lake Superior Partnership, contains information and 62 sub-strategies to provide guidance to restoring and protecting biodiversity ([www.natureconservancy.ca/superiorbca](http://www.natureconservancy.ca/superiorbca)).

Regional Plans are intended to be adaptive documents that support and respond to local conservation efforts and contribute to lakewide biodiversity goals. To contribute an update to this Regional Plan, please contact: [greatlakes-grandslacs@ec.gc.ca](mailto:greatlakes-grandslacs@ec.gc.ca).

## 8. Arrow and Dog



The Arrow and Dog regional unit is home to the largest city on the lake, Thunder Bay. The port is an important transportation link for shipping western Canadian goods on the Great Lakes and to the east coast. The city has a long connection with the forestry and manufacturing sector and has growing medical and educational sectors. Within and beyond the

city, at least 96 species and communities of conservation concern have been documented in this regional unit, including Bald Eagle and American Badger<sup>1,2</sup>. Lake Sturgeon, Walleye, Cisco, Lake Trout, Brook Trout, and Lake Whitefish are all native fish species that rely on portions of the region for important habitat. Unique to this region, Thompson Island Provincial Park contains Paleohelikian gabbro dikes and sills that were formed approximately one billion years ago, as well as raised cobble beaches and rare arctic-alpine vegetation.

### Report Card<sup>3</sup>, Overall Grade: B-

Conservation Target	Grade	Conservation Target Notes
Nearshore	D	The Thunder Bay Area of Concern is located within this regional unit; 22 ha of sediment are contaminated with organic fibre and mercury in the north inner harbour.
Embayments and Inshore	C	Local fish populations have been stressed by degraded water quality, habitat loss, and the introduction of aquatic invasive species.
Islands	A	Most of the 46 islands have little to no documented threats and generally remain as undeveloped intact wilderness.
Coastal Wetlands	C	Urban and industrial development along the coast of the City of Thunder Bay has degraded some coastal wetlands.
Coastal Terrestrial Habitats	A	A large stretch of the coastal zone is rugged rock and cliffs, spectacular scenery with recreational opportunities, and some archaeological sites.
Tributaries & Watershed	C	The City of Thunder Bay is the largest urban area along the north shore, resulting in a higher watershed stress to Lake Superior.

<sup>1</sup> Data provided by the Ontario Ministry of Natural Resources and Forestry. Copyright Queen's Printer for Ontario, 2012.

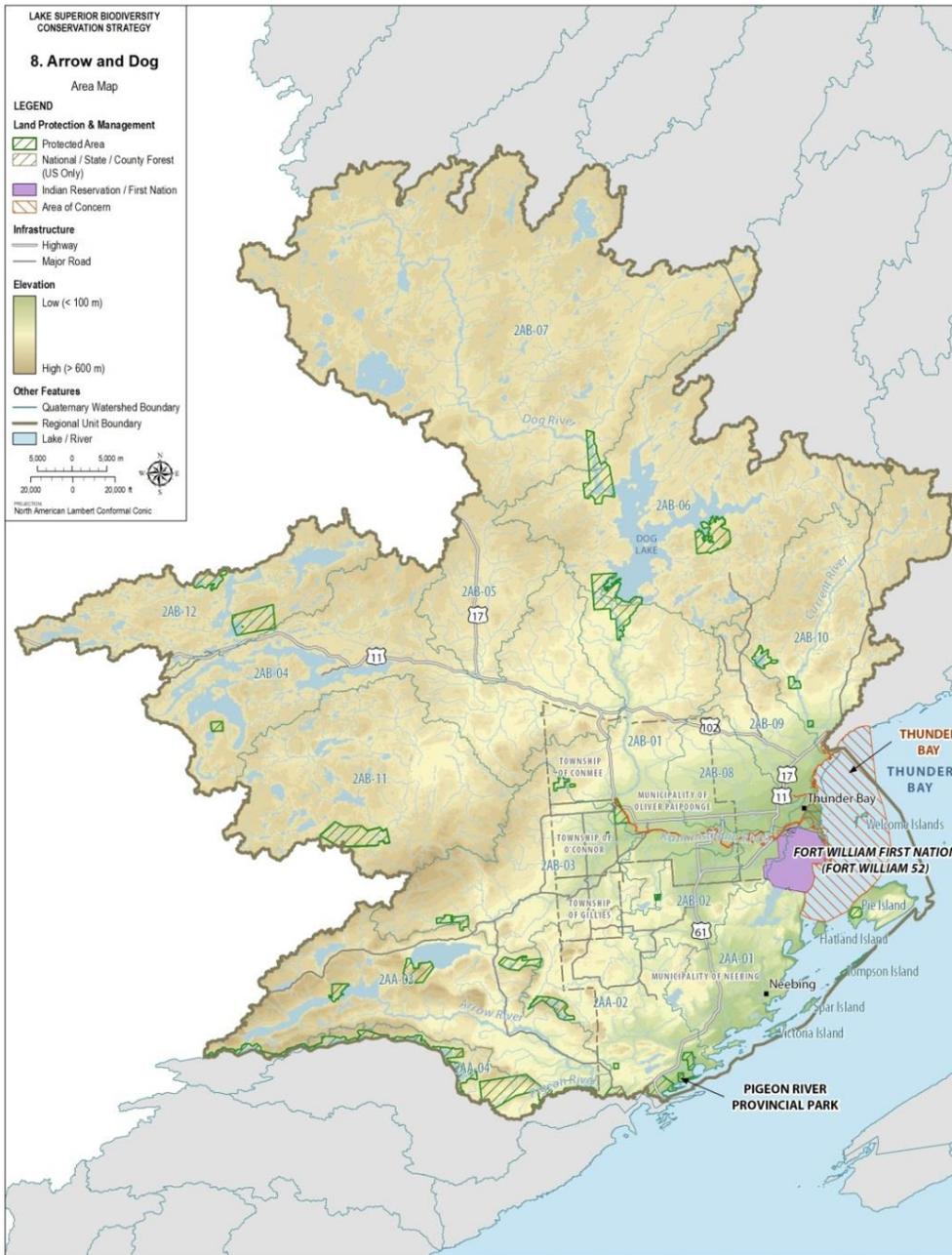
<sup>2</sup> For a full list please see the corresponding [regional unit chapter](#) in Vol. 2 of the Lake Superior Biodiversity Conservation Assessment.

<sup>3</sup> Report Card grades are intended to denote relative (within Lake Superior basin) condition/health and stresses for each biodiversity target in the region based on available condition and stress indices. A more detailed explanation and expert comments on grades are available in the Lake Superior Biodiversity Conservation Assessment – Volume 2: Regional Unit Summaries.

## Overview of Conservation Opportunities

A small percent (2.6%) of the region and eight percent of the coast is a park or protected area, including the 2010 purchase of an addition 159 hectares of land along the Pine Bay shoreline on Lake Superior, by the Thunder Bay Field Naturalists. Identifying and ensuring protection of existing provincially significant wetlands, such as William’s Bog, will help conserve biodiversity of the region. A significant effort and investment is being

made to restore the Thunder Bay Area of Concern, including the management of contaminated sediment in the north inner harbour. The region benefits from having a Conservation Authority (Lakehead Region), which provides a number of programs and services including erosion control, water control, and forest management. A growing number of partners including Ontario Power Generation, Lakehead University, North Shore Steelhead Association, and others are making commitments to help restore and protect important fish habitats and increase the natural habitat connectivity between the lake and the watershed.



## Conservation Actions

The Lake Superior community has a strong an ongoing history of action to restore and protect the lake’s extraordinary biodiversity. Actions are already occurring at all scales – from national, state, provincial, tribal, First Nations, Métis, and municipal programs, to lakewide initiatives and local projects by communities, businesses, and households. Some important habitats currently have a conservation designation with a corresponding management strategy, and active supervision of these areas is essential to sustaining biodiversity. The table below presents next steps for conserving and protecting biodiversity in this regional unit. Other existing plans relevant to conserving habitats and species in this region should continue to be implemented. A list of existing plans relevant to the next steps presented below is presented at the end of this document.

### Regional Plan Next Steps

There is some variation among Regional Plans in how future actions from existing plans were incorporated into this document, based on advice from the implementers of those plans in the region. Similarly, implementation approaches vary greatly among regional units. The Lake Superior Partnership serves an important role in facilitating cooperation among agencies to support on-the-ground action. Priority implementation actions developed through the Partnership are identified in the Lake Superior LAMP, Lake Partnership committee work plans, and agency specific action plans.

Regional Objective	Next Step	Conservation Target	Primary Lakewide Strategy <sup>i</sup>
Lakewide Strategy 1: <b>Restore and protect a system of representative, high quality habitats.</b>			
<i>Common Actions For All Region Plans</i>			
	<ul style="list-style-type: none"> <li>- Maintain or enhance areas where large blocks of land with natural cover exist or could be expanded.</li> <li>- Preserve sites that have high species diversity and/or critical habitat for fish or wildlife.</li> </ul>	Multiple	1.1
Protect the habitats of biological significance with special consideration of important fish spawning sites in tributaries.	Determine the highest quality cold water habitats and prioritize projects to protect and connect habitats.	Tributaries & Watersheds	1.3
Restore the habitats of potential biological significance with special consideration of post-industrial lands along the coast and tributaries.	Identify additional habitat restoration opportunities, including wetland restoration, in post-industrial areas along the Kaministiquia River, McKeller Island, and the Thunder Bay coastline.	Multiple	1.1

Regional Objective	Next Step	Conservation Target	Primary Lakewide Strategy <sup>1</sup>
Protect Provincially Significant Wetlands from development and other stressors.	Evaluate and map remaining wetlands within the region with regard to identification and protection of Provincially Significant Wetlands.	Coastal Wetlands	1.9
Restore and delist the Thunder Bay Area of Concern.	Remediate mercury contaminated sediment in the Thunder Bay north harbor.	Embayments and Inshore	1.4
<b>Lakewide Strategy 2: Manage plants and animals in a manner that ensures diverse, healthy, and self-sustaining populations.</b>			
<i>Common Actions For All Region Plans</i> - Review lists of regional species of conservation concern and identify gaps in monitoring, planning, and related conservation actions.		Multiple	2.7
Restore and protect self-sustaining Brook Trout populations in as many of the original, native habitats as is practical.	Assess the status and distribution of Brook Trout populations in Lake Superior and in tributary streams within this regional unit.	Multiple	2.7
	Assess tributaries where lake-run Brook Trout historically occurred and determine feasibility and priority for habitat restoration.	Tributaries & Watersheds	2.3
	Identify and protect terrestrial groundwater recharge areas that provide cold groundwater upwellings to Brook Trout spawning sites.	Tributaries & Watersheds	2.3
Achieve and maintain genetically diverse self-sustaining populations of Lake Trout that are similar to those found in the lake prior to 1940.	Undertake the Fish Community Index Netting program to track the dynamics of fish populations and their recovery outside and within the Thunder Bay Area of Concern.	Nearshore	2.9
	Conduct annual surveys to determine Lake Trout population status and trends.	Nearshore	2.3
Restore and protect self-sustaining Walleye populations in their historic range.	Determine harvest pressure on Walleye within Thunder Bay and the Kaministiquia River; if exploitation is high, then take steps to reduce this source of mortality.	Embayments and Inshore	2.3
Restore and protect self-sustaining Lake Sturgeon populations in each tributary they historically used to spawn (i.e. minimum 1500 adults).	Track status and undertaken rehabilitation action for Lake Sturgeon populations in the Pigeon and Kaministiquia rivers.	Tributaries & Watersheds	2.4

Regional Objective	Next Step	Conservation Target	Primary Lakewide Strategy <sup>1</sup>
Restore and protect self-sustaining Lake Whitefish populations at or above abundances observed in 1990-99.	Conduct annual surveys to determine Lake Whitefish population status and trends.	Nearshore	2.3
<b>Lakewide Strategy 3: Reduce the impact of existing aquatic invasive species and prevent the introduction of new ones.</b>			
<i>Common Actions For All Region Plans</i> - Control high priority infestations of aquatic and terrestrial species, including continued control of Sea Lamprey.		Multiple	3.2
Prevent the introduction and spread of aquatic invasive species in Thunder Bay.	Undertake annual early detection monitoring for aquatic invasive fish in Thunder Bay.	Multiple	3.12
	Develop rapid response protocols to deal with new invasives.	Multiple	3.1
	Develop and implement education program for public, local tourist operators, and commercial fishermen on how to prevent the introduction and spread of AIS.	Multiple	3.11
	Deliver in the City of Thunder Bay and surrounding area the Invading Species Awareness Program, focusing on education and outreach and programs designed to monitor the occurrence and distribution of invasive species.	Multiple	3.11
Prevent the spread of the invasive sea lamprey.	Monitor and track trends of sea lamprey induced fish mortality and wounding rates in Thunder Bay.	Nearshore	3.4
<b>Lakewide Strategy 4: Adapt to climate change.</b>			
<i>Common Actions For All Region Plans</i> - Incorporate climate change model projections and adaptive management measures into natural resource management plans.		Multiple	4.1
Reduce the impact of stormwater on local waterways.	Develop and implement stormwater management plan for the City of Thunder Bay.	Tributaries and Watersheds	4.12
	Develop and implement sub-watershed management plan for McVicar Creek.	Tributaries and Watersheds	4.12
<b>Lakewide Strategy 5: Reduce the negative impacts of dams and barriers by increasing connectivity and natural hydrology between the lake and tributaries.</b>			

Regional Objective	Next Step	Conservation Target	Primary Lakewide Strategy <sup>1</sup>
<p><i>Common Actions For All Region Plans</i></p> <ul style="list-style-type: none"> <li>- Address barriers to fish passage created by dams, hydroelectric generation, or misplaced or wrong sized culverts.</li> <li>- Maintain flows and water levels on managed streams, rivers, and lakes that emulate natural conditions (i.e., magnitude, duration, timing, and pattern).</li> </ul>		Tributaries and Watersheds	5.2
Maintain flows and water levels on the Kaministiquia River that emulate natural conditions.	Work with hydro power generators to manage flow regimes and water levels on the Kaministiquia River to ensure habitat protection from drawdown.	Tributaries and Watersheds	5.3
Improve access to spawning habitat for migratory Brook Trout in tributary streams.	Inventory road/rail stream crossings and identify barriers to upstream fish passage.	Tributaries and Watersheds	5.2
<p>Lakewide Strategy 6: <b>Address other existing and emerging threat that may impact important habitat or native plant and animal communities.</b></p>			
Prevent the introduction and spread of terrestrial invasive species.	Develop outreach and citizen science monitoring programs to communicate and collect information on terrestrial invasive species in this regional unit.	Multiple	6.7

## Regional Plan Development

Regional Plans are informed by a technical assessment, including maps of: 1. Coastal and Watershed Features; 2. Condition, and; 3. Important Habitat Sites. This information is available at: [www.natureconservancy.ca/superiorbca](http://www.natureconservancy.ca/superiorbca).

The public and stakeholders who are connected to these areas provided input to the Next Steps in each Regional Plan. Oversight was provided by a Steering Committee from the Lake Superior Partnership. All input was considered and incorporated whenever possible and when relevant to lakewide biodiversity conservation targets and threats. To contribute an update to this Regional Plan, please contact: [greatlakes-grandslacs@ec.gc.ca](mailto:greatlakes-grandslacs@ec.gc.ca).

### Existing Plans

Other existing plans relevant to conserving habitats and species in this region should continue to be implemented, including but not limited to:

- Provincial Parks and Conservation Reserve Policy direction for the protection, development and management of provincial parks, conservation reserves and their resources

- Great Lakes Fishery Commission: Fish-community objectives for Lake Superior; A lake sturgeon rehabilitation plan for Lake Superior; A brook trout rehabilitation plan for Lake Superior; A lake trout restoration plan for Lake Superior; A rehabilitation plan for walleye populations and habitats in Lake Superior
- Ontario's Provincial Fish Strategy: Fish for the Future
- Lake Superior Aquatic Invasive Species Complete Prevention Plan
- Ontario Invasive Species Strategic Plan, 2012

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<sup>i</sup> To access the full Biodiversity Conservation Strategy, other Regional Plans and supporting technical information and maps, please visit the project website: [www.natureconservancy.ca/superiorbca](http://www.natureconservancy.ca/superiorbca)