

## 1. Goulais

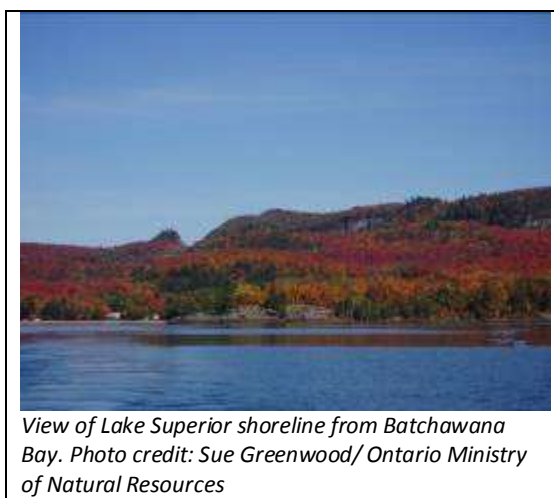
### HEALTHY WATERS REPORT CARD

OFFSHORE	NA	ISLANDS	A
NEARSHORE	B	COASTAL WETLANDS	B
EMBAYMENTS & INSHORE	B	COASTAL TERRESTRIAL	A
TRIBUTARIES & WATERSHEDS	B	<b>OVERALL B+</b>	



Report card denotes general condition/health of each biodiversity target in the region based on condition/stress indices. See introduction to the regional summaries.

<b>A</b> Very Good	<i>Ecologically desirable status; requires little intervention for maintenance</i>
<b>B</b> Good	<i>Within acceptable range of variation; may require some intervention for maintenance.</i>
<b>C</b> Fair	<i>Outside of the range of acceptable variation and requires management. If unchecked, the biodiversity target may be vulnerable to serious degradation.</i>
<b>D</b> Poor	<i>Allowing the biodiversity target to remain in this condition for an extended period will make restoration or preventing extirpation practically impossible.</i>
<b>Unknown</b>	<i>Insufficient information.</i>



View of Lake Superior shoreline from Batchawana Bay. Photo credit: Sue Greenwood/ Ontario Ministry of Natural Resources

### Summary/ Description

The Goulais regional unit is located in Ontario on the eastern shore of Lake Superior, and extends from the international boundary at the St. Marys River in the south to near the Montreal River Harbour in the north. This regional unit is 5,929.95 km<sup>2</sup> in size, including the associated nearshore waters. A number of provincial parks, conservation reserves and enhanced management areas are located in this regional unit. The largest community in the area, Sault Ste. Marie, Ontario is located near the southern end of this regional unit. Other communities in this regional unit include Goulais River, Havilland, Harmony Bay, Batchawana Bay, Obadjiwan (Batchewana<sup>1</sup>) First Nation and Searchmont. The jurisdictional area of the Sault Ste. Marie Region Conservation Authority overlaps with a small portion of this regional unit. The Goulais regional unit contains one tertiary watershed (Goulais) and 10 quaternary watersheds. The watersheds are dominated by forests, with only small areas of developed and agricultural lands. The coast is characterized by sand and cobble beaches, and includes some of the largest sand beaches on the Ontario side of Lake Superior. This region has more private lands than most other Ontario regions, and only 10% of the coast is in protected areas.

<sup>1</sup> The Batchawana spelling is used when referring to geographical places, while the Batchewana spelling is used when referring to the Obadjiwan First Nation.

**TABLE 1.1: Goulais BY THE NUMBERS**

<b>Land and Water Cover</b>	<b>Region (km<sup>2</sup>)</b>	<b>Region %</b>	<b>Lake Superior Total (km<sup>2</sup>)</b>	<b>Notes</b>
Agriculture	39.79	0.60	1,441.07	
Developed	10.38	0.16	389.55	
Forest	4,939.44	74.30	107,747.13	
Associated Nearshore Waters	1,529.16	23.00	17,868.03	
Other	71.28	1.07	8,227.57	
Water (inland)	58.17	0.87	9,473.05	
<b>Total Area</b>	<b>6,648.22</b>	<b>100</b>	<b>145,146.40</b>	
<b>Coastal Features</b>	<b>Region</b>	<b>Region %</b>	<b>% of Lake Superior Total for Coastal Feature</b>	
Coastline (km)	317.74	NA	5.45	Based on SOLEC shoreline
Sand Beaches (km)	95.08	29.92	14.77*	*% of Lake Superior Total Sand Beaches
Coastal Wetlands (km <sup>2</sup> )	33.78	7.54*	3.06**	*% of Regional Coastal Area ** % of Lake Superior Total Coastal Wetlands
Natural Cover in Coastal Zone (km <sup>2</sup> )	420.89	93.90*	6.82**	*% of Regional Coastal Area ** % of Lake Superior Total Natural Cover in Coastal Area
Number of Islands	145	NA	5.5	
<b>Condition</b>	<b>Region</b>	<b>Region %</b>	<b>% of Lake Superior Total</b>	
Population Density (persons/km <sup>2</sup> )	0.40	NA		
Road Density (km/km <sup>2</sup> )	0.49	NA		
Number of Dams and Barriers	1,627	NA	6.9	
Artificial Shoreline (km)	17.94	5.56	7.87	
<b>Land Ownership &amp; Protection</b>	<b>Region (km<sup>2</sup>)</b>	<b>Region %</b>	<b>Regional Area (km<sup>2</sup>)</b>	
Private	1,637.23	31.98	5,119.05	Regional area based on landmass
Public/Crown	3,022.86	59.05	5,119.05	
Tribes/ First Nations	7.40	0.14	5,119.05	
Parks & Protected Areas (total)	451.56	8.82	5,119.05	
Parks & Protected Areas (coast)	43.24	9.65*	448.21**	*% of Regional Coastal Area **Regional Coastal Area (km <sup>2</sup> )

## Important Biodiversity Features

### Nearshore and Inshore Waters

- The Goulais regional unit contains sites of Important Habitat for both Lake Trout and Lake Whitefish. Important Habitat sites for Lake Trout are found off the coast of the Goulais region, in the nearshore zone (Lake Superior Binational Program Habitat Committee 2006) (Figure 1.1).
- Goulais Bay contains one of the largest remaining populations of the threatened Lake Sturgeon (K. Rogers, pers. comm., December 5 2014). Goulais Bay and Batchawana Bay are noted as Lake Superior embayments which are important for Lake Sturgeon (Auer 2003). In the Goulais regional unit these embayments and the nearshore zone, which provides corridors for movement, are identified as critical management areas for Lake Sturgeon in the Lake Superior basin (Auer 2003).

## ***Lake Superior Biodiversity Conservation Assessment - Volume 2: Regional Unit Summaries***

- Recent surveys have found that a population of Muskellunge exist in Goulais Bay. The presence of Musky in the Ontario waters of Lake Superior is very unique and exhibits the profound biodiversity that is found in Goulais Bay and River. Muskellunge are an apex predator and an indicator of nearshore/coastal wetland health. Tiger Muskellunge (a hybrid between Northern Pike and Muskellunge) have also been found in Goulais Bay and River. The Goulais region is the only region in the Ontario waters of Lake Superior where Tiger Muskellunge are known to exist (K. Rogers, pers. comm., December 5 2014).

### **Coastal Zone and Islands**

- Ile Parisienne is noted as an Important Habitat site for Lake Whitefish (Lake Superior Binational Program Habitat Committee 2006). Important spawning areas for Lake Trout and Lake Whitefish are noted in the shoals and waters around the island (Figure 1.1). Most of the island (991 hectares) and a marine zone which extends 1.6 km from the shore of Ile Parisienne into Whitefish Bay are designated as a provincial conservation reserve, which is 4,669 hectares in total size (OMNR 2005a).
- The waters near the islands of Sandy Islands Provincial Park are Important Habitat for both Lake Trout and Lake Whitefish (Lake Superior Binational Program Habitat Committee 2006) (Figure 1.1).
- The Goulais River Beach Ridges Conservation Reserve protects an area containing ancient beach ridge landforms. The majority of the site is made up of wetlands, including bogs, fens, swamps and marshes; these wetlands may be of provincial significance. Moose and a number of bird species are often found in the wetlands. Upland forests have developed on the raised beach dunes that are interspersed between the wetlands (OMNR 2005b).
- This regional unit also contains Important Habitat Areas and Important Habitat Sites. Many of the Important Habitat Sites are located near the shore, while some are located further inland (Lake Superior Binational Program Habitat Committee 2006) (Table 1.3, Figure 1.3).
- Portions of the 2,937 hectare Great Lakes Coast – Sault Ste. Marie Enhanced Management Area (EMA) are located within the Goulais Region. This EMA contains islands and parcels of Crown land, located along Lake Superior’s eastern coast, and the north shore of the St. Marys River and Lake Huron. This EMA contains geographically diverse areas, including provincially significant wetlands and habitat for fish and wildlife species. Many recreational activities are permitted throughout the area (OMNR 2007a).

### **Tributaries and Watersheds**

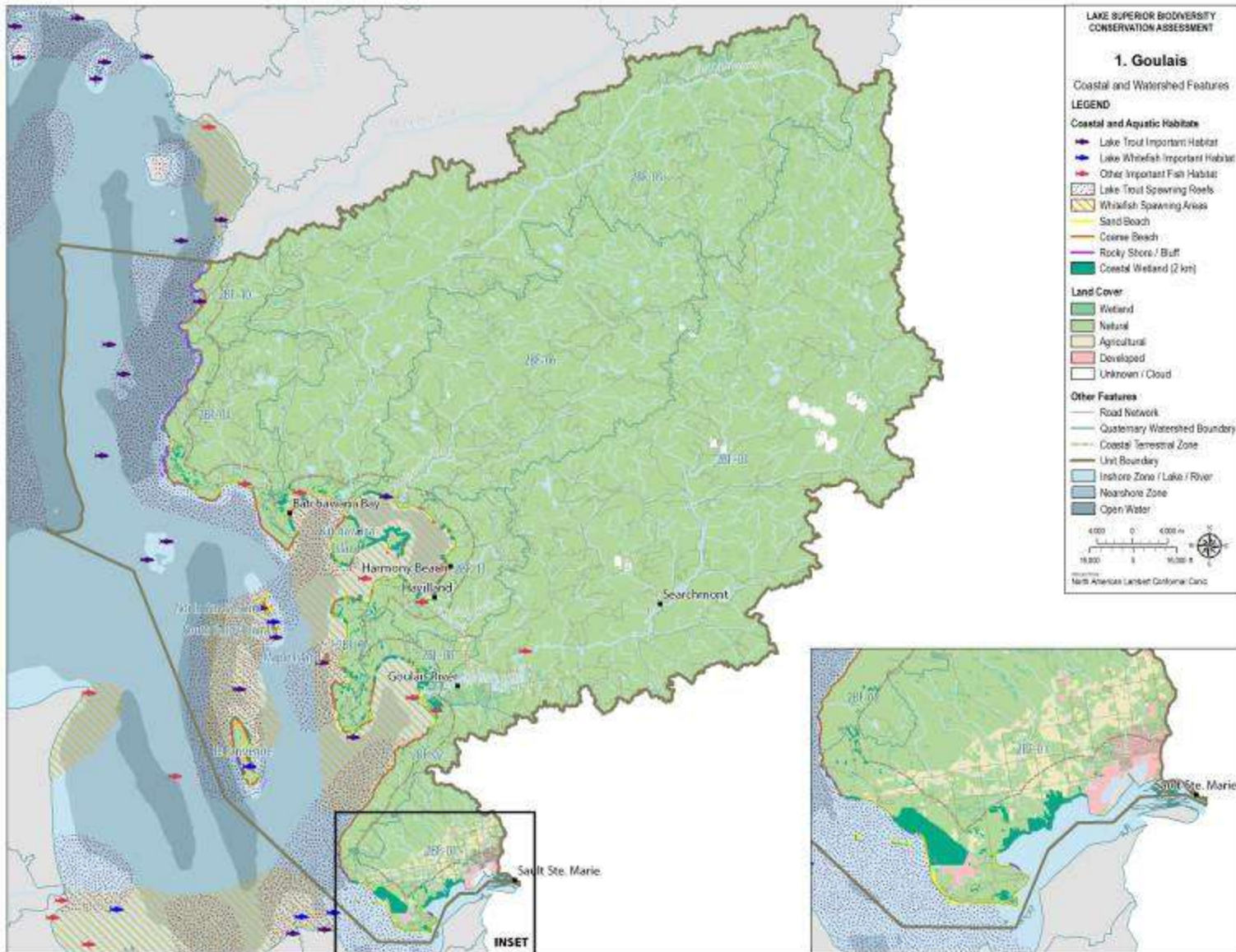
- A number of tributaries in the Goulais region were historically used by Lake Sturgeon for spawning, including the Batchawana River, Chippewa River and Goulais River; the current status of the Lake Sturgeon populations in these rivers is being investigated. The OMNR is actively engaging in research of Lake Sturgeon populations in the Batchawana, Chippewa and Goulais Rivers, and Batchawana and Goulais Bays (S. Greenwood, pers. comm., March 11 2013). The Batchawana River population status is extant, while the population trajectory is unknown. The Chippewa River population status and population trajectory are both unknown. The Goulais River population status is extant, while the population status is unknown (Golder Associates Ltd. 2011); however there is not recent evidence of natural reproduction in the Gravel River (Lake Superior Lake Sturgeon Work Group 2012, unpublished data).
- Two additional tributaries in the Goulais regional unit, the Harmony River and Stokely Creek, were identified as historical spawning tributaries for Lake Sturgeon. The population status for both tributaries is extirpated (Golder Associates Ltd. 2011). There is some uncertainty as to whether these tributaries, which can be described as shallow and flashy, ever supported Lake Sturgeon spawning. A naming error in a chart for the area, which refers to the Chippewa River as the

## ***Lake Superior Biodiversity Conservation Assessment - Volume 2: Regional Unit Summaries***

Harmony River, could have caused some of this uncertainty (S. Greenwood, pers. comm., February 3 2013).

- A Lake Sturgeon Rehabilitation Plan for Lake Superior (Auer 2003) identifies the Batchawana, Chippewa and Goulais Rivers as three of the seventeen tributaries to Lake Superior in which there should be a focus on Lake Sturgeon rehabilitation.
- The Goulais and Batchawana Rivers are noted historically as important Walleye spawning rivers. Walleye stocks were almost extirpated in the 1960's (Hoff 2002) and have not made significant recovery since that time (S. Greenwood, pers. comm., March 11 2013)
- The Goulais River is approximately 67 kilometres long, and is classified as a provincial park. The river supports a self-sustaining Brook Trout population. Some shoreline wetlands are present (OMNR 2006b).
- The Goulais River Beach Ridges Conservation Reserve protects the Goulais River environment, which is described as exceptional in quality (OMNR 2005b). Cranberry Creek is located in the western section of the Goulais River Beach Ridges Conservation Reserve. This creek provides habitat for Brook Trout and Rainbow Trout (OMNR 2005b).
- Brook Trout populations which are self-sustaining are found in the Batchawana River (OMNR 2006a).
- Records of native northern lamprey (*Ichthyomyzon*) larvae exist for many eastern tributaries, including West Davignon Creek, Little Carp River, Cranberry Creek, Goulais River, Haviland Creek, Stokely Creek, Chippewa River and Batchawana River. Since *Ichthyomyzon* larvae can only be identified to genus, not species, it is possible that the larvae are Silver Lamprey (*Ichthyomyzon unicuspis*). However, they are most likely Northern Brook Lamprey (*Ichthyomyzon fossor*). While listed as "Historical" (Table 1.4), further study may determine that Northern Brook Lamprey are currently present in the Goulais regional unit (M. Steeves, pers. comm., June 17 2015).

Figure 1.1: Goulais - Coastal and Watershed Features



**TABLE 1.2: Goulais CONDITION AND TRENDS**

Target (Data Source)	Condition	Trends
Offshore <sup>1</sup>	NA	NA
Nearshore <sup>1</sup>	B (0.62)	Unknown
Embayments and Inshore <sup>1,2</sup>	B (0.67)	Unknown
Coastal Wetlands <sup>2,3</sup>	B (0.762)	Unknown
Islands <sup>4</sup>	A	Unknown
Coastal Terrestrial <sup>3</sup>	A (0.955)	Unknown
Tributaries and Watersheds <sup>2</sup>	B (0.71)	Unknown

<b>A: Very Good</b>	<i>Ecologically desirable status; requires little intervention for maintenance</i>
<b>B: Good</b>	<i>Within acceptable range of variation; may require some intervention for maintenance.</i>
<b>C: Fair</b>	<i>Outside of the range of acceptable variation and requires management. If unchecked, the biodiversity target may be vulnerable to serious degradation.</i>
<b>D: Poor</b>	<i>Allowing the biodiversity target to remain in this condition for an extended period will make restoration or preventing extirpation practically impossible.</i>
<b>Unknown</b>	<i>Insufficient information.</i>

1: Great Lakes Cumulative Stress (GLEAM 2012, Allan et al. 2013)

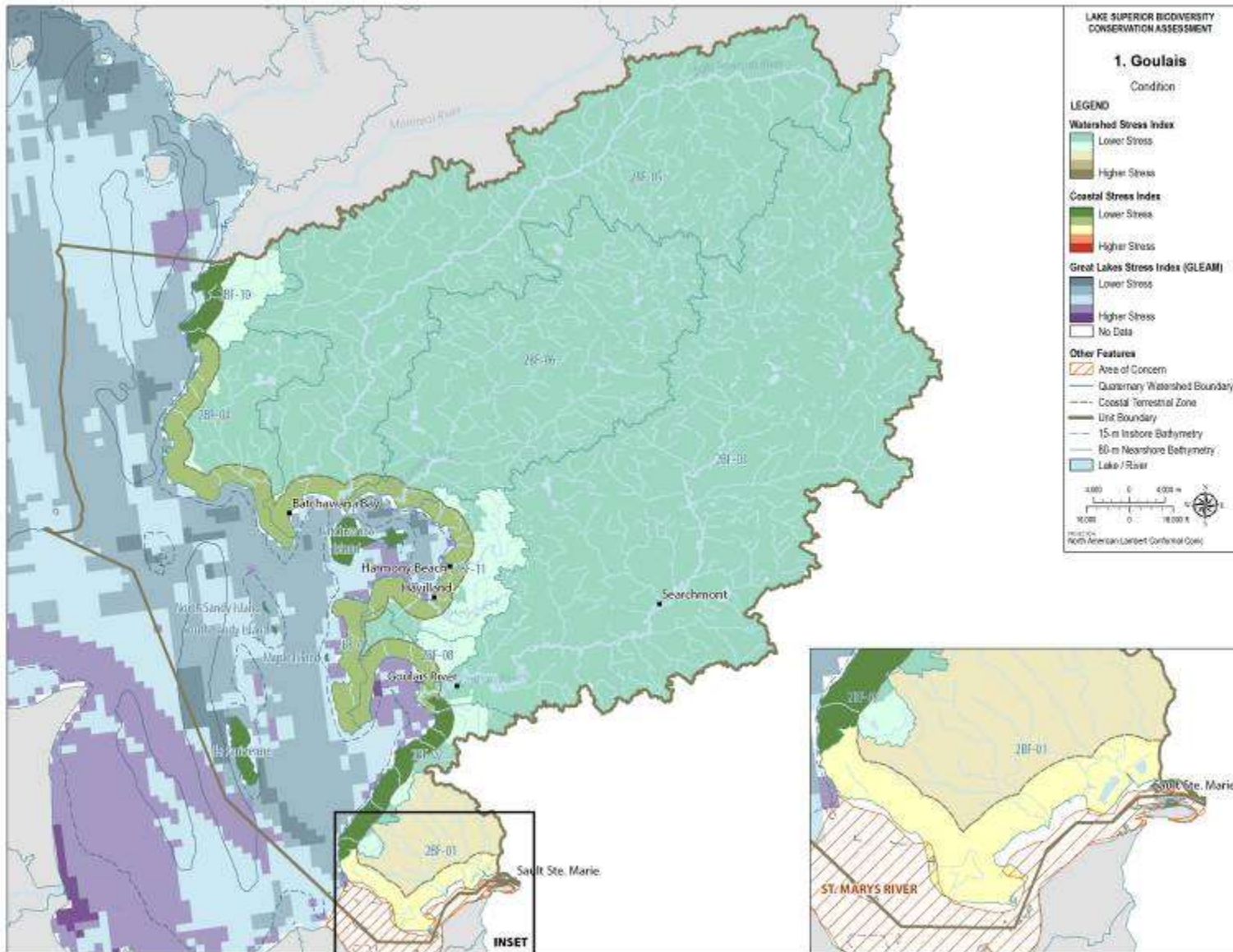
2: Watershed Stress Index (GLEI 2013)

3: Coastal Condition Index (developed for this report)

4 : Island Condition Score (Henson et al. 2010)



Figure 1.2: Goulais - Condition



## Important Issues & Threats

- The rehabilitation of lean Lake Trout and Lake Whitefish in the nearshore waters of the east end of the lake has not progressed to the same extent as the remainder of the lake. Ensuring that the unregulated fish harvests in the region are at levels that maintain sustainable populations will provide for the opportunity to resume cooperative rehabilitative fish stocking efforts.
- The presence of Emerald Ash Borer (EAB) has been detected within the boundaries of the nearby City of Sault Ste. Marie, Ontario. The entire area of the city is now regulated, meaning a number of regulated articles (e.g. firewood of all species; trees, nursery stock or other materials from the Ash (*Fraxinus*) genus) cannot be moved without permission (CFIA 2012).
- The Prince Wind Farm is a 300 hectare 126 turbine wind farm on the south shore of Goulais Bay. The Prince Wind Farm is operated by Brookfield Renewable Power (Canadian Wind Energy Association 2008). Several other wind farms are in development.
- The St. Marys River Area of Concern (AOC) is located between two regional units, the Goulais and Tahquamenon, Waiska and St. Marys regional units. A number of point and nonpoint sources have contributed to beneficial use impairments, and sediments are contaminated with arsenic, cadmium, chromium, copper, cyanide and lead. Ten beneficial use impairments were identified in the St. Marys River AOC (U.S. EPA 2013a).

## Conservation In Action

### Parks & Protected Areas

- Algoma Headwaters Provincial Park
- Goulais River Provincial Park
- Batchawana River Provincial Park
- Batchawana Bay Provincial Park
- Pancake Bay Provincial Park
- Sandy Islands Provincial Park
- Lake Superior Provincial Park Addition
- Goulais River Beach Ridges Conservation Reserve
- Ile Parisienne Conservation Reserve
- Great Lakes Coast - Sault Ste. Marie Enhanced Management Area
- Algoma Highlands Conservancy King-Mountain and Robertson Cliff properties

### Existing Programs & Projects

- Two Provincially Significant Wetlands (PSWs) are located in the Goulais regional unit. Carp Rivers PSW (157.89 hectares) and Shore Ridges Wetland PSW (497.39 hectares) are both located in the southern end of the regional unit. The two PSWs provide a combined total of 655.29 hectares.
- The Algoma Highlands Conservancy owns more than 1200 hectares that are maintained under a designation of conservation forest. This is intended to provide protection for plants and animals at risk, and to provide low-impact recreation and environmental education opportunities. A system of multi-use trails are maintained in conjunction with partners, and uses including hunting, fishing, the use of motorized vehicles, and the harming of plants or wildlife are prohibited (Algoma Highlands Conservancy No date).
- Peregrine Falcons have been reintroduced to Ontario, including in the Lake Superior basin, following their extirpation as a breeding species in Ontario in the early 1960s (Ontario Peregrine Falcon Recovery Team 2010). The Ontario Ministry of Natural Resources (OMNR), Canadian Wildlife Service and many naturalist organizations and corporations have been involved in the re-establishment of Peregrine Falcons across Ontario (Ontario Peregrine Falcon Recovery Team 2010).



## ***Lake Superior Biodiversity Conservation Assessment - Volume 2: Regional Unit Summaries***

Project Peregrine is a project of the Thunder Bay Field Naturalists, supported by the OMNR. Established in 1989, Project Peregrine now conducts an intensive monitoring program with volunteers and OMNR staff in a number of areas throughout the Ontario portion of the Lake Superior Basin (Thunder Bay Field Naturalists No Date, Ontario Peregrine Falcon Recovery Team 2010). In the 2010 Ontario Peregrine Falcon survey, 72 of the 119 identified territories in Ontario were located in the Lake Superior basin. In Ontario the Lake Superior basin is the location of the highest quality of cliff nesting sites and supports the highest increase in the number of territories, and the highest density of cliff nesting birds (Chikoski and Nyman 2011). Peregrine Falcons born and banded in Ontario have also been observed nesting in Minnesota, Wisconsin and Michigan (Redig et al. 2010 as cited in Chikoski and Nyman 2011). Peregrine Falcons are listed as Special Concern by the Committee on the Status of Species at Risk in Ontario (COSSARO) and the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) (OMNR 2013a, COSEWIC 2011a).

**TABLE 1.3: Goulais IMPORTANT HABITAT SITES AND AREAS**

<i>Code</i>	<i>Site/ Area</i>	<i>Important Habitat Site/Area Name</i>	<i>Key Features</i>
ON-005	Site	Batchawana Island	Coastal wetland; rare animal habitat, migratory bird habitat
ON-006	Site	Batchawana River	Fish spawning area
ON-007	Site	Batchawana Bay	Staging area and brood habitat for migratory waterfowl
ON-007	Area	Batchawana Bay	Staging area and brood habitat for migratory waterfowl
ON-015	Site	Bojack and Bone	Nesting site for water birds
ON-019	Site	Chippewa River	Excellent Moose habitat, little access
ON-024	Site	Deadman's Cove	Wetland, fen with rare plants
ON-033	Site	Flowerpot Islands	Colonial water birds
ON-041	Area	Goulais River Delta	Fish spawning area, rare species habitat
ON-044	Site	Harmony River	Fish spawning habitat (largest run of rainbow smelt in area) feeding area for heron
ON-050	Site	King Mountain	High biodiversity value; old growth forest pockets; representative landscape
ON-056	Site	Marlette's Bay	Waterfowl staging area, brood habitat
ON-070	Site	Chippewa River Mouth	Fish spawning habitat
ON-092	Site	Pancake River	Fish spawning area
ON-102	Site	Robertson Cliffs	Rare animal habitat
ON-104	Site	Sand Point	Yellow perch habitat; perch numbers declining
ON-126	Site	Turkey Lakes	Old growth maple and birch; high biodiversity value (wildlife); roadless area; fish spawning area
ON-128	Site	Upper St. Mary's River	Fish spawning area
ON-128	Area	Upper St. Mary's River	Fish spawning area
ON-130	Site	Whiskey Point	Significant staging area for waterfowl
ON-132	Site	Wily Lake	Fish spawning area
ON-136	Site	Gros Cap Corridor	Migratory fish habitat; commercial fishery; colonial water bird habitat; Gros Cap reef



**TABLE 1.4: Goulais LIST OF SPECIES AND COMMUNITIES OF CONSERVATION CONCERN**

At least 39 species and communities of conservation concern have been documented in the regional unit. 13 of these have viability rankings which indicate the species or community is currently present, or was at the date of last sampling. The viability rankings of these species varies from A to E (A – Excellent predicted viability, B – Good predicted viability, C – Fair predicted viability, D – Probably not viable, E – Verified extant). 26 species and communities were once known to occur here, but have current conservation ranks of H (Historical).<sup>2</sup>

<i>Present Records (Viability Rankings of A to E)</i>	
Scientific Name	Common Name
American Dune Grass - Beach Pea - Sand Cherry Dune Grassland Type	American Dune Grass - Beach Pea - Sand Cherry Dune Grassland Type
Bat Colony	Bat Hibernaculum/Nursery
<i>Calamovilfa longifolia</i> var. <i>magna</i>	Great Lakes Sand Reed
<i>Carex argyrantha</i>	Silvery-flowered Sedge
Common Reed Grass Organic Shallow Marsh Type	Common Reed Grass Organic Shallow Marsh Type
<i>Falco peregrinus</i>	Peregrine Falcon
<i>Glyptemys insculpta</i>	Wood Turtle
<i>Haliaeetus leucocephalus</i>	Bald Eagle
<i>Hudsonia tomentosa</i>	Woolly Beach-heath
<i>Juncus greenii</i>	Greene's Rush
<i>Prunus pumila</i> var. <i>pumila</i>	Sand Cherry
<i>Tanacetum bipinnatum</i>	Floccose Tansy
<i>Trichophorum clintonii</i>	Clinton's Clubrush
<i>Historical Records</i>	
Scientific Name	Common Name
<i>Acipenser fulvescens</i> pop. 3	Lake Sturgeon (Great Lakes - Upper St. Lawrence River population)
<i>Anaptychia setifera</i>	A Lichen
<i>Arigomphus cornutus</i>	Horned Clubtail
Black Spruce Coniferous Organic Swamp Type	Black Spruce Coniferous Organic Swamp Type
<i>Carex wiegandii</i>	Wiegand's Sedge
<i>Dicranum brevifolium</i>	A Moss
<i>Diplophyllum taxifolium</i>	A Liverwort
<i>Elymus glaucus</i>	Blue Wild Rye
<i>Frullania bolanderi</i>	A Liverwort
<i>Galium kamtschaticum</i>	Boreal Bedstraw
Great Lakes Arctic-Alpine Basic Open Bedrock Shoreline Type	Great Lakes Arctic-Alpine Basic Open Bedrock Shoreline Type
<i>Hieracium venosum</i>	Rattlesnake Hawkweed
<i>Huperzia appressa</i>	Mountain Firmoss
<i>Ichthyomyzon fossor</i>	Northern Brook Lamprey
<i>Lampropeltis triangulum</i>	Milksnake
<i>Myotis leibii</i>	Eastern Small-footed Myotis
<i>Myotis septentrionalis</i>	Northern Myotis

<sup>2</sup> Data included here were provided by the Ontario Ministry of Natural Resources and Forestry. Copyright Queen's Printer for Ontario (2012).

**Lake Superior Biodiversity Conservation Assessment - Volume 2: Regional Unit Summaries**

Ophiogomphus carolus	Riffle Snaketail
Perimyotis subflavus	Eastern Pipistrelle
Pisidium equilaterale	Round Peaclam
Polystichum braunii	Braun's Holly Fern
Pseudoleskeella tectorum	A Moss
Pterospora andromedea	Woodland Pinedrops
Scapania gymnostomophila	A Liverwort
Somatochlora elongata	Ski-tailed Emerald
Vaccinium ovalifolium	Oval-leaved Bilberry