

St. Marys River Area of Concern  
(Canadian section)

**Status of the**  
***Degradation of Fish and Wildlife Populations***  
**Beneficial Use Impairment**

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## Executive Summary

In 1987, Canada and the United States designated the St. Marys River as one of 43 Areas of Concern (AOC) in the Great Lakes basin, and both countries committed to restoring it under the Canada-U.S. Great Lakes Water Quality Agreement. The fish component of the *Degradation of Fish and Wildlife Populations* was identified as one of ten beneficial use impairments (BUI) in the St. Marys River Stage 1 Remedial Action Plan (RAP) in 1992 and again in the Stage 2 RAP (2002). The wildlife component was never deemed impaired, but instead was determined to “Require Further Assessment”.

Designated as impaired, the delisting criteria for the fish component of the *Degradation of Fish and Wildlife Populations* states that the BUI will no longer be impaired when: ‘*The overall fish community health within the AOC is comparable to that of a suitable reference site, as assessed using an index of biotic integrity through a minimum of two consecutive studies*’.

Since the river was designated as an AOC, vast improvements have been made to help restore water quality and ecosystem health. This report provides a summary on these improvements that have helped to support healthy fish and wildlife populations in the St. Marys River.

This document serves as an official record to account and recommend a change in status, on the Canadian side of the St. Marys River AOC, of the *Degradation of Fish and Wildlife Populations* BUI to “Not Impaired”. The re-designation is supported by studies that address the Stage 2 RAP recommended actions on fish and wildlife and that showcase how the delisting criteria have been met. Specifically:

- Fisheries and Oceans Canada completed an overall assessment of the AOC fish community using the index of biotic integrity (IBI) approach in two separate studies. Both studies conclude the St. Marys River is home to a relatively healthy fish community that is complex, diverse, and dominated by native species (Appendix 1).
- Results from the binational St. Marys River Fisheries Task Group’s fish community gillnet survey and the river-wide Creel survey were used to confirm the status of managed<sup>1</sup> fish populations, with key findings revealing that managed fish populations appear to be stable or increasing (Appendix 2a, 2b).
- The wildlife component of the *Degradation of Fish and Wildlife Populations* BUI was designated as “Requires Further Assessment” in the Stage 1 and Stage 2 RAP reports (never deemed Impaired), and there were specific monitoring actions recommended in the Stage 2 RAP as the means to study the matter (i.e., Actions FFM-2, FFM-5, FFM-6, and FFM-8). These actions were completed, and an assessment of wildlife populations completed in September 2018 (Derickx, 2018) found wildlife to be in good condition and conclude it is not impaired (Appendix 3a-c).

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<sup>1</sup> These studies helped to assess the sport fisheries and to supplement the Index of Biotic Integrity approach that looks at nearshore fish communities. All the studies combined help to complement each other and showcase a picture of the fish populations in the St. Marys River as a whole.

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## 1.0 Introduction

### 1.1 The St. Marys River Area of Concern

The St. Marys River is a 112km binational waterway that connects Lake Superior to the North Channel of Lake Huron. The St. Marys River is one of the 43 Great Lakes Areas of Concern originally identified under *the Canada-United States Great Lakes Water Quality Agreement* (GLWQA). An Area of Concern (AOC) is a location with historically significant environmental impairment resulting from human activities at the local level. The St. Marys River, as a connecting channel, is one of five AOCs jointly shared by Canada and the United States.

The Canadian portion of the AOC extends from its head at Gros Cap in Whitefish Bay downstream to St. Joseph Island via Lake George to Quebec Bay in the St. Joseph Channel and downstream to Hay Point on the western shore of St. Joseph Island (Figure 1).

The St. Marys River AOC has a Remedial Action Plan that identifies the original beneficial use impairments and guides efforts to restore beneficial uses. Beneficial Use Impairments (BUIs) are reductions in the chemical, physical, or biological integrity of the area sufficient to cause environmental issues. These environmental problems were first identified in the Stage 1 RAP report (1992). In 2002, a number of remedial actions and monitoring initiatives to address the problems were identified, and restoration efforts have been underway since.

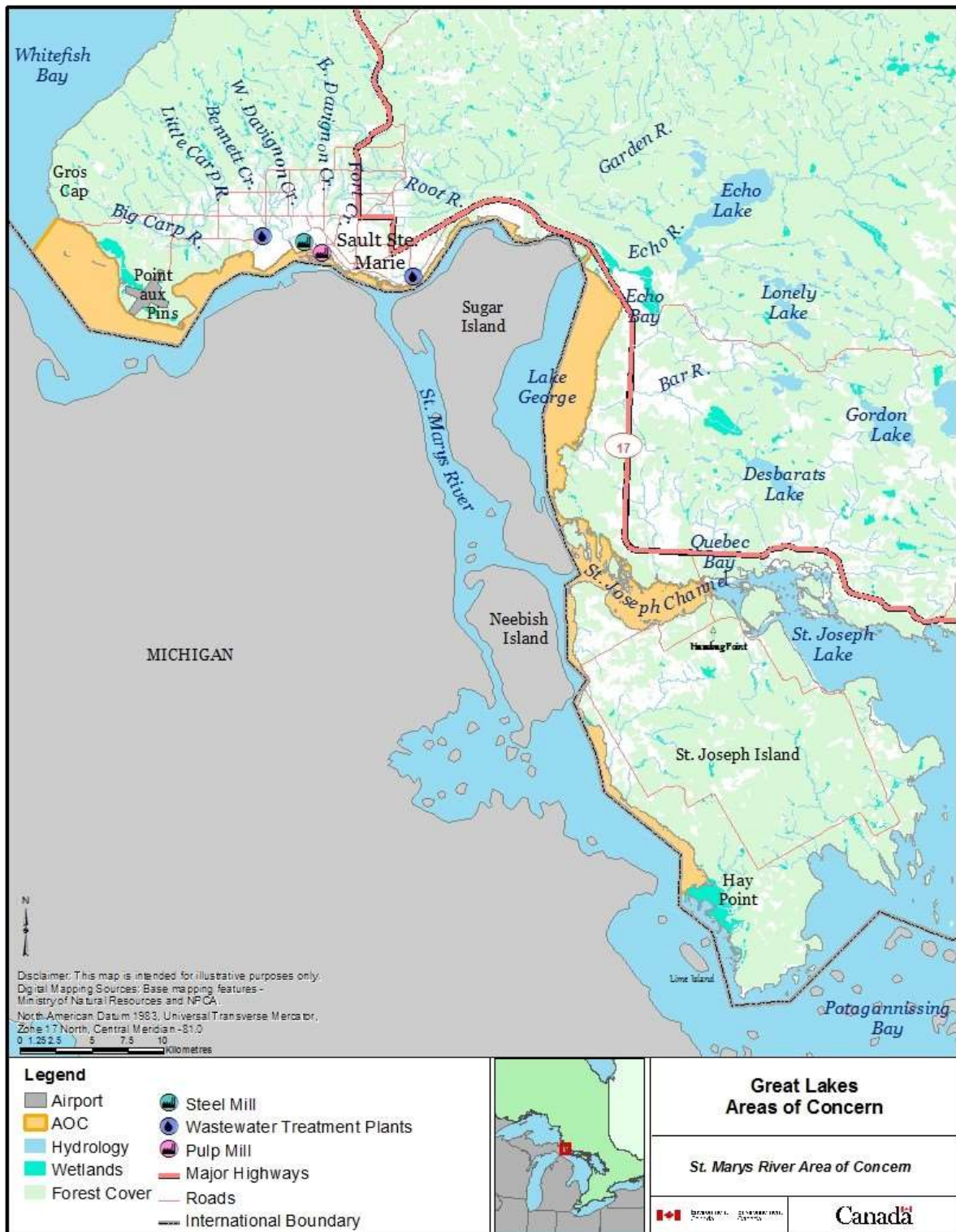


Figure 1: St. Marys River Area of Concern Map.

## 1.2 Beneficial Use Impairment

The *Degradation of Fish and Wildlife Populations* BUI was listed as “Impaired” in the Stage 1 RAP report (1992) because native fish populations were being effected by habitat alteration, overfishing, pollution and invasive species. Although at the time wildlife populations appeared to be stable or increasing, it was noted that assessment criteria were needed to determine whether wildlife populations were impaired; and therefore further assessment was required.

The Stage 2 RAP report (2002) outlines a strategy to remediate the impaired beneficial uses identified in the St. Marys River AOC. It details 57 recommended actions to restore beneficial uses on both the Canadian and U.S. side of the AOC. The specific recommended actions for the *Degradation of Fish and Wildlife Populations* BUI on the Canadian side of the AOC are:

### **Fish Populations**

Action FF-7: Develop a 10-year fisheries assessment program for the river

Action FF-8: Continued support for Sea Lamprey control efforts

Action FFM-3: The Fish Harvest Survey

### **Wildlife populations**

Action FFM-2: Continued support for the Marsh Monitoring Program

Action FFM-5: Complete an assessment of Common and Black Tern populations for the area

Action FFM-6: Analyze contaminant levels in eggs from Herring Gull, Black Tern, and Common Tern nests in the AOC

Action FFM-8: Assessments of Herring Gulls, Black Terns and Common Terns within the AOC

## 1.3 Additional Actions

In addition to the actions outlined in the Stage 2 RAP report, other actions have been implemented that have helped to improve conditions for fish and wildlife populations. These actions are outlined below and are documented in the St. Marys River Interactive Map<sup>2</sup>. The online map highlights projects and progress made since the St. Marys River was first designated as an Area of Concern under the Great Lakes Water Quality Agreement.

- Fort Creek Clean-up:
  - In 2009, the Sault Ste. Marie Region Conservation Authority (SSMRCA) completed improvements to Fort Creek south of Second Line by planting trees, improving flow through sediment and garbage removal, and by establishing a pond to attract wildlife.

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<sup>2</sup> The interactive map can be accessed here: [http://bpac.algomau.ca/?page\\_id=76](http://bpac.algomau.ca/?page_id=76)

- Bar River Restoration Project:
  - The community-driven Bar River Habitat Project improved stream bank and riparian zone conditions through the planting of trees and the restriction of livestock to the St. Marys River. The project was formed in 1999 by a local chapter of Scouts Canada as well as teachers and students from Central Algoma Secondary School, who worked with Environment and Climate Change Canada and the Ministry of Natural Resources and Forestry to plant spruce, cedar and hardwood species along three areas in the upper reaches of the Bar River while reinforcing banks against erosion (CWS, 2013).
- Improvements to Water Quality:
  - The East End Waste Water Treatment Plant was upgraded in 2006, which has improved water quality by reducing suspended solids, phosphorus levels, biological oxygen demand, and significantly reducing nitrogen and ammonia levels in water discharged. These upgrades allowed for secondary treatment of water, including Ontario's first biological nutrient removal and ultraviolet light disinfection, which prevents chlorine from being released into the St. Marys River.
  - A study conducted by Algoma University from 2013-2015 found no large algal blooms or high concentrations of microscopic algae. There was also no evidence of unnatural colour, odour, or turbidity indicating resolved problems associated with degraded aesthetics (Ginou, 2016).
  - Starting the early 1980s, Algoma Steel has worked to improve its operations and to reduce the impact it has on the quality of the river and the surrounding environment. Algoma Steel has worked to improve sources of water pollution in many ways such as the creation of a main water filtration plant, decommissioning of settling ponds, installation of a biological treatment facility and toxicity control system, as well as improving overall water re-use efficiency.
  - Once a source of historical pollution for the river, the St. Marys Paper Mill was decommissioned in 2012, seeing the site dismantled and removing it as a pollution source for the river.

## 1.4 Delisting Criteria

In 2015, the suite of BUI delisting criteria were finalized for the Canadian side of the AOC, including that for the *Degradation of Fish and Wildlife Populations* BUI to account for local circumstances, link to relevant regulations or guidelines, and to be specific, measurable, achievable, relevant, and time-oriented ("SMART"). The delisting criteria for fish component of the *Degradation of Fish and Wildlife Populations* states that the BUI will no longer be impaired when:

*The overall fish community health within the AOC is comparable to that of a suitable reference site, as assessed using an index of biotic*



*integrity through a minimum of two consecutive studies.*

At the time, it was decided that other information/data sources would be used to supplement the IBI approach. Specifically, results from the binational St. Marys River Fisheries Task Group's fish surveys would be used to confirm the status of "managed" fish populations.

In the Stage 1 and 2 RAP reports, the wildlife portion of the BUI was never deemed "Impaired" but instead "Required Further Assessment" because assessment criteria were absent to help determine the status. Delisting criteria are only appropriate for when a beneficial use is impaired, but the assessment of the wildlife component follows established methods for evaluating wildlife health and ecosystem conditions so as to conclude if there is impairment. These studies are summarized in section 3.2 and included in full in Appendix 3a-c.

## 2.0 Degradation of Fish Populations

### 2.1 Summary of Impairment

At the time of the Stage 1 RAP report in the early 1990s, reductions in fish populations in the St. Marys River was suspected due to alteration of fish spawning habitat, overfishing, exotic species and decreases in benthos populations. In 2002, the Stage 2 RAP report recommended looking at fish population dynamics in order to assess whether local environmental conditions support healthy, self-sustaining communities of fish. This was not to be limited to population levels, but overall fish community health. Similar to concerns raised during in the Stage 1 RAP report, the Stage 2 RAP report also noted that native fish populations were being stressed by habitat alteration, over-fishing, pollution, and invasive species. Concerns with fish body burdens were also identified in the Stage 2 RAP report linked to polycyclic aromatic hydrocarbons (PAHs), polychlorinated biphenyls (PCBs), and resin acids. Since the impact of these contaminants on fish are addressed in other BUIs, namely *Restrictions on Fish Consumption* and *Fish Tumours and Other Deformities*, the focus of this BUI was kept to fish population dynamics when the delisting criteria were revised in 2015.

### 2.2 Stage 2 Recommended Remedial Actions Specific to Fish Population Dynamics

#### *2.2.1 Develop a 10 year fisheries assessment program for the river (Action FF-7)*

In 2002, the St. Marys River Fisheries Task Group completed a Fisheries Assessment Plan. This plan provides a standardized approach for regular assessment of the river's fishery and aquatic resources. Included are approaches for fish community assessment, fish harvest estimates and reporting, lower trophic level monitoring, and habitat mapping and data collection. The plan serves as a mutual and coordinated approach to



assessment and ensures coordination of management actions for the St. Marys River Fishery through the Great Lakes Fishery Commission's Lake Huron Committee (Gerbhardt et al. 2002).

As part of the Fisheries Assessment Plan, the St. Marys Fishery Task Group has ongoing fish community surveys that occur every 3-5 years. These surveys provide managers with the necessary information and data to make informed decisions about the management of fish communities within the river. Fish community objectives for the St. Marys River are currently being developed (Godby et al. 2019).

This action is considered addressed because fisheries resource management is led by the binational St. Marys River Fishery Task Group under the Great Lakes Fisheries Commission, which functions independently of the RAP.

### *2.2.2 Continued support for Sea Lamprey control efforts (Action FF-8)*

Although the production of Sea Lamprey from the St. Marys River has been a serious problem for salmonine management in the Great Lakes, the overall presence of migrating adults in the river is not believed to be a significant factor affecting the rest of the river's fish community (Gerbhardt et al. 2002).

Overall, Sea Lamprey wounding rates remain low in the St. Marys River with 0.2% of the total fish collected during a 2017 fish community survey exhibiting a Sea Lamprey wound. Sea Lamprey management within the St. Marys River encompasses both the assessment of adult and larval populations within the river as well as targeted treatment of larval populations. Sea Lamprey assessment and control within the St. Marys River is an ongoing priority operation of DFO's Sea Lamprey Control Centre in Sault Ste. Marie, Ontario (O'Connor et al. 2019).

This action is considered addressed because aquatic invasive species are a lake- and basin-wide management issue, and not a local AOC-specific issue. And as noted above, there are dedicated programs led by the Sea Lamprey Control Centre under DFO, which functions independently of the RAP.

### *2.2.3 The Fish Harvest Survey (Action FFM-3)*

In order to quantify the sport fisheries, the Michigan Department of Natural resources (MDNR) and the Ontario Ministry of Natural Resources and Forestry (MNRF) undertook an open water access creel survey of sport anglers (Godby et al 2019). This was accompanied by a fish community gillnet survey of the river by the St. Marys River Fisheries Task Group (SMRFTG) and its member agencies. The general conclusion is that managed fish populations are stable or increasing, with key findings from Godby et al. that include:

- Northern Pike harvest and harvest rate are still lower than they were historically but are trending upwards.
- Smallmouth Bass are plentiful in the river and angler harvest and harvest rate remain substantially higher than in 1999.
- Walleye continue to be an important sport fish in the St. Marys River. Overall harvest and harvest rate of Walleye have declined since 2007, but both are higher than they were in 1999.
- Yellow Perch support a popular fishery in the river. Although overall harvest of Yellow Perch is down in 2017 compared to previous years, harvest rate has remained stable over the survey series (Godby et al. 2019).

And the key findings from the 2017 fish community gillnet survey (O'Connor et al. 2019) include:

- Walleye catch per unit effort (CPUE) has remained stable from 2006-2017, after increasing from a survey low in 2002. Overall in 2017, Walleye appear to be well distributed throughout the St. Marys River.
- In 2017, Northern Pike CPUE continued to improve, reversing the downward trend that began in 2002. Although the CPUE has not returned to pre-2002 levels, it has rebounded to more than double that of its lowest point, measured in 2009.
- Yellow Perch abundance decreased in 2017 but the mean CPUE is just below the survey average and the overall trend remains positive since the first survey in 1975.
- Cisco appear to be less abundant in recent years although the overall trends in gillnet CPUE were not significantly different (O'Connor et al. 2019).

#### *2.2.4 Assessment of Fish Populations using Index of Biotic Integrity*

In 2009, DFO (Pratt & O'Connor, 2011) compared the status of communities from four distinct areas of the river including the upper river above the compensating works, the main river, Lake George and the lower river. They provided an overall assessment of the fish community using an index of biotic integrity (IBI) approach. An IBI is a scientific tool used to identify and classify faunal communities. Several matrices are used to provide an overall assessment of fish community including mortality rates, age-class structure, survival to spawning age, reproductive success, total biomass, productivity, richness, assemblage, and abundance. The study concluded that the overall health of the St. Marys River fish community compared favourably with healthy reference sites from Lake Huron.

In 2014, DFO (O'Connor & Pratt, 2017) initiated a follow-up 2-year survey that again used the IBI approach called for in the BUI delisting criteria, and relied on the Mississagi River near the North Channel as the reference site. Key findings from this study include:

- Using the Great Lakes scoring system, the overall IBI score for the St. Marys River AOC is 60.3 which borders between fair (>41 -60) and good (>61-80).

- A small decline in IBI was observed between 2006-2009 and 2014-2015. The lower IBI scores can be attributed to more generalist species, lower percent piscivorous community, and lower biomass. However, these are expected and reflective of a cold-water, lower productivity, riverine environment such as the St. Marys River.
- The St. Marys River maintains a native fish community that is complex, diverse, and healthy.

Together, these studies directly answer the BUI delisting criteria and present a case for not impaired status, because: fish community health was assessed using an index of biotic integrity approach and in these two consecutive studies the health of the AOC fish community was found to be comparable to suitable reference sites.

## 2.3 Conclusions for Fish Populations

The delisting criteria for the *Degradation of Fish and Wildlife Populations* states that the BUI will no longer be impaired when *the overall fish community health within the AOC is comparable to that of a suitable reference site, as assessed using an index of biotic integrity through a minimum of two consecutive studies*. The two fish community studies by DFO that use an IBI approach show AOC fish populations “compare relatively well” to reference areas and the IBI score for the St. Marys River fish community borders between fair and good. In addition, supplemental assessments and work completed under Actions FF-7, FF-8, and FFM-3 (described above) all show that the St. Marys River is home to a relatively healthy fish community that is complex, diverse and dominated by native species, and has managed fish populations that are stable or increasing. It is therefore recommended a change in status from Impaired to Not Impaired.

## 3.0 Degradation of Wildlife Populations

### 3.1 Summary of Impairment

In the Stage RAP reports, the wildlife portion of the *Degradation of Fish and Wildlife Populations* BUI was designated as “Requires Further Assessment”. Although wildlife populations appeared to be stable or increasing, it was noted assessment criteria were needed to evaluate their status. In the early 1990s, Common Tern (*Sterna hirundo*) populations were declining while Ring-billed Gull (*Larus delawarensis*) numbers were increasing. As stated in the Stage 1 RAP report, habitat loss and alteration were causing a reduction in nesting habitat and the larger, earlier nesting Ring-billed Gulls were displacing Common Terns along with other smaller species from nesting sites. In addition, both the Stage 1 and 2 RAP reports noted chemical contaminants within the tissues of waterfowl, particularly mercury and polychlorinated biphenyls (PCBs).

In response to this, the Stage 2 RAP report recommended an assessment of wildlife habitat conditions (Action FFM-2), an assessment of Common Tern and Black Tern (*Chlidonias niger*) populations for the entire St. Marys River (Action FFM-5) and a reproductive assessment of

Herring Gulls and Black and Common Terns (Action FFM-8, which fell under the *Bird and Animal Deformities or Reproductive Problems* BUI). The Stage 2 RAP report also recommended a full analysis of contaminant levels in the eggs of Herring Gulls and Black and Common Terns within the AOC (Action FFM-6). These actions and the associated studies are discussed below, because they serve to evaluate the health of wildlife populations in the AOC.

## 3.2 Stage 2 Recommended Remedial Actions Specific to Wildlife Populations

### 3.2.1 *Continued Support for the Marsh Monitoring Program (Action FFM-2)*

In 2011, the Canadian RAP agencies and Binational Public Advisory Council (BPAC) discussed the need for a comprehensive assessment of wildlife habitat conditions (specifically coastal wetlands) and associated wildlife populations, and to evaluate the degree of impairment, if any. A multi-year study by Environment and Climate Change Canada's (ECCC) Canadian Wildlife Service (Darwin, 2016) started in 2012, and in August 2016, the 5-year monitoring effort was completed. The study assessed baseline wildlife habitat conditions and evaluated coastal wetland water quality, and breeding bird, amphibian, aquatic macroinvertebrate and submerged vegetation communities within the AOC, concluding the wildlife habitat and populations are not impaired. The full report is provided in Appendix 3a, but key findings included:

- Water quality within the AOC's coastal wetlands is comparable to non-AOC reference sites; suggesting overall water quality can be considered not impaired. Algoma University's water quality survey (2013-15) supports this (Ginou 2016).
- Breeding marsh birds in the AOC are in relatively undisturbed condition, and sites inside and outside the AOC are in comparable condition; suggesting there is no impairment.
- There is no clear response disturbance within the amphibian and aquatic macroinvertebrate communities, suggesting those populations are not impaired.
- There are some differences between submerged aquatic vegetation communities in the AOC versus non-AOC reference sites, but the overall area is not impaired for this community type.

### 3.2.2 *Complete an Assessment of Common and Black Tern Populations for the Area (Action FFM-5)*

The Canadian RAP agencies and BPAC discussed the need to assess the populations of Common Terns and Black Terns within the AOC as per the recommendation in the Stage

2 RAP report. In 2014, ECCC completed the population assessment based on nest count surveys conducted between 2010 and 2013, which was supplemented with historical breeding data from 1978-80, 1989, 1999-00, and 2007-08 (Hughes et al. 2014b, see Appendix 3b). Population trends for colonial waterbirds breeding on the North Channel of Lake Huron were included to provide a broader context of trends in diversity and abundance within the AOC. The study concluded Commons Terns and Black Terns are breeding within the AOC, and that there is no evidence that breeding status within the AOC differs from that outside of AOC. Also, nesting and population patterns are influenced by life history strategies of the species and factors that are regional or basin-wide in nature, and not specific to influences within the AOC. The full report is provided in Appendix 3b, but key findings include:

- Despite natural fluctuations, Common Tern populations have had no significant change over the past 30 years, with 70 nests found in 1978-80 versus 78 in 2007-08.
- Evidence from nest count surveys between 1980 and 2013 suggest trends in populations of nesting Common Terns in the AOC are likely related to factors consistent with the life history strategies of the species, and are not specific to influences in the AOC.
- Black Terns seem to be limited on the Ontario side of the river, with a breeding colony found only at Echo Bay. It is not possible to report on temporal trends in abundance of Black Terns in the AOC due to limited data. However, based on the data that is available, there is no evidence to suggest that breeding status of Black Terns nesting within the AOC differs from those nesting at sites downstream in the North Channel.
- The relative low population of nesting Black Terns is likely reflective of low densities reported throughout the region, Ontario and the Great Lakes basin and not due to AOC-specific conditions.
- Overall, the total number of colonial waterbird nests on the Ontario side of the St. Marys River increased by almost 23% between 1999 and 2008; largely driven by dramatic increases in Ring-billed Gulls.

### *3.2.3 Analyze Contaminant Levels in Eggs from Herring Gull, Black Tern, and Common Tern Nests in the AOC (Action FFM-6) and complete Reproductive Assessments of Herring Gulls, Black Terns and Common Terns within the AOC (Action FFM-8)*

In parallel to the above-mentioned assessment of Common Tern and Black Tern populations within the AOC, in 2014, ECCC also completed a three-year Common Tern and Herring Gull study based on fieldwork and laboratory analysis to assess deformities, reproductive health, and chemical contamination in eggs of these indicator species (under the *Bird and Animal Deformities or Reproductive Problems BUI*). The study report (Hughes et al. 2014a) concludes that there is no evidence of impaired reproduction or deformities in colonial waterbirds attributable to local contamination effects within the AOC, and the reproductive success for birds studied within the AOC is

similar to that from outside the AOC. The full report is provided in Appendix 3c, but the key findings include:

- Contaminant levels are low overall and not sufficiently elevated to have an adverse impact on reproductive success and development (which is an impact related to polychlorinated biphenyls (PCBs) and other organochlorines, dioxins/furans, heavy metals like mercury, and polybrominated diphenyl ethers (PBDEs)).
- No physical deformities have been detected within gull or tern chicks (the original issue identified by the RAP). There is a low incidence of embryonic deformities that cannot be linked to contaminant burdens or geographical area (i.e., there is no significant difference between AOC and non-AOC bird colonies); and the reproductive success for Herring Gulls within the AOC is high, and that of Common Terns is similar to the rest of the region.

The report supported the official re-designation of the *Bird and Animal Deformities or Reproductive Problems* BUI from “Requires Further Assessment”, as identified under the Stage 2 RAP report (2002), to “Not Impaired” in January 2016 via a notification letter to the International Joint Commission. This is consistent with the same change in BUI status by the United States Environmental Protection Agency in 2014.

### 3.3 Conclusions for Wildlife Populations

All recommended remedial and monitoring actions pertaining to the wildlife component of the *Degradation of Fish and Wildlife Populations* BUI have been completed. The assessments and work completed under Actions FFM-2, FFM-5, and FFM-8 described above show that the overall health of wildlife in the St. Marys River is comparable to non-AOC areas. It is therefore recommended a change in status from Requires Further Assessment to Not Impaired.

## 4.0 Status of the Degradation of Fish and Wildlife Populations BUI in Sault Ste. Marie, Michigan

The *Degradation of Fish and Wildlife Populations* BUI removal on the U.S. side of the St. Marys River AOC became final on September 23, 2019. Subsequent to engaging BPAC on findings relating to both the *Degradation of Fish and Wildlife Populations* and *Loss of Fish and Wildlife Habitat* BUIs, the U.S. Environmental Protection Agency re-designated both BUIs to “Not Impaired” on the U.S. side of the AOC upon the recommendation of the Michigan Department of Environment, Great Lakes and Energy Michigan’s delisting criteria for both BUIs state:

*“The two fish and wildlife BUIs will be considered restored in the Michigan portion of the St. Marys River AOC upon completion of the Little Rapids project at Sugar Island, which would restore approximately 50 to 70 acres of fish and wildlife habitat.”*

The Little Rapids restoration project was carried out between 2015 and 2016. More than 50 acres were positively impacted by the change in flow regime resulting from the removal of a causeway and construction of a bridge with 600 feet of free-flowing water beneath it. The project successfully achieved the target of restored habitat area acreage and the two BUIs were deemed “Not Impaired” in 2019 (Riley, 2019).

## 5.0 Conclusions and Recommendations Regarding Re-designation

The fish component of the *Degradation of Fish and Wildlife Populations* BUI was identified as “Impaired” in both the Stage 1 and Stage 2 RAP reports. The delisting criteria states that the BUI will no longer be impaired when: *the overall fish community health within the AOC is comparable to that of a suitable reference site, as assessed using an index of biotic integrity through a minimum of two consecutive studies*. Fisheries and Oceans Canada completed an assessment of the AOC fish community using the index of biotic integrity (IBI) approach in two separate studies, encompassing fieldwork and data analysis in 2006-08 and 2014-15. Both studies conclude the St. Marys River is home to a relatively healthy fish community that is complex, diverse, and dominated by native species. These results were shared and discussed with BPAC in October 2017. Other information and data sources have been used to supplement the IBI approach. Specifically, results from the binational St. Marys River Fisheries Task Group’s fish community gillnet survey and the river-wide Creel survey was used to confirm the status of “managed” fish populations and show they are stable or increasing.

The wildlife component of the *Degradation of Fish and Wildlife Populations* BUI was designated as “Requires Further Assessment” in the Stage 2 RAP report, and wildlife populations have since been assessed through the completion of Actions FFM-2, FFM-5, FFM-6, and FFM-8 and three studies as discussed above. Wildlife populations are found to be in good condition.

Based on the lines-of-evidence presented in this report, it is recommended that the *Degradation of Fish and Wildlife Populations* BUI for the Canadian side of the St. Marys River AOC be re-designated to “Not Impaired” since the BUI delisting criteria, as endorsed by BPAC, has been fulfilled.



## 6.0 References

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