



Lake Superior Committee

REPRESENTING THE FISHERY MANAGEMENT AGENCIES OF LAKE SUPERIOR

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1854 TREATY AUTHORITY
CHIPPEWA-OTTAWA
RESOURCE AUTHORITY
GREAT LAKES INDIAN
FISH AND WILDLIFE
COMMISSION
MICHIGAN DNR
MINNESOTA DNR
ONTARIO MNR
WISCONSIN DNR

November 7, 2019

Lake Superior Committee Environmental Priorities

As detailed in a *Joint Strategic Plan for Management of Great Lakes Fisheries* (Joint Strategic Plan), degradation of water quality, destruction of physical habitat, and impairment of ecosystem components essential to the well-being of fish remain a major cause of impairment of Great Lakes fish communities and fisheries. Strategic procedures identified in the Joint Strategic Plan direct lake committees to identify environmental issues that may impede achievement of their fish-community objectives and to work within governmental initiatives, such as the Great Lakes Water Quality Agreement, that provide opportunities for achieving, refining, and assessing progress toward environmental and fish-community objectives.

In 2016, the Council of Lake Committees (CLC) adopted its *Environmental Principles for Sustainable Fisheries in the Great Lakes Basin* to help guide individual lake committees as they identify and prioritized environmental issues that impede achievement of their Fish Community Objectives. The CLC recognized that diverse functional habitats are required for sustainable fish production; protection and improvement of fish habitat should occur systematically, cumulatively, and collaboratively; fishery value should be accommodated in decisions that affect functional habitats; and manageable sources of anthropogenic stress are pathways for addressing impediments to functional fish habitats.

Using the above strategic guidance, the Lake Superior Committee (LSC) developed a short-list of high priority environmental impediments and recommended actions that are critical for achievement of the Fish Community Objectives in Lake Superior. The Lake Superior Technical Committee conducted a technical inventory and assessment of functional habitats in Lake Superior, as they relate to production of fish stocks of common concern, identification of impediments to productions of fish stocks of common concern that provide broad benefits to fisheries, and recommended actions to address these impediments. The technical inventory and assessment was then prioritized based upon the Lake Superior Committee's determination of benefits associated with the outcomes of the actions identified in the inventory and assessment. Results of that process identified a short-list of high priority regional and site-specific actions that, if achieved, would move the Lake Superior Committee closer to achievement of its Fish Community Objectives.

The environmental priorities chosen by the Lake Superior Committee for this five-year period should improve the production potential of fish species of common concern, including lake sturgeon, lake trout, lake whitefish, walleye, and brook trout as these priorities are addressed. The environmental priorities are detailed below.

1. Hydrologic modification of regulated tributary flows within the basin to provide minimum flows that meet reproductive and early life-history requirements for migratory species including lake trout, walleye, brook trout, and lake sturgeon. Specific focal areas to address hydrological modifications that impact fish production include:
 - Montreal River
 - St. Louis River
 - Michipicoten River

Actions might include modifications of water management plans to ensure minimum base flows and moderated flows when species identified above are utilizing the tributaries for reproduction and early life-history.

2. Hydrologic modification of unregulated tributary flows within the basin to provide minimum flows to meet reproductive and early life-history requirements for brook trout. Specific focal areas to address hydrological modifications that impact fish production include tributaries along the south shore of Lake Superior Wisconsin and on the Bayfield Peninsula (including the Brule, Bark, Cranberry, Flag, Sioux, and Onion rivers, and Fish, Frog, Thompson, and Whittlesey creeks). Priority actions include implementation of land conservation measures that reduce surface runoff and sedimentation, and increase infiltration.
3. Protection of Buffalo Reef and nearshore areas in Traverse Bay from further encroachment of stamp sands, and long-term mitigation. Buffalo Reef serves as an important reproductive and nursery area for lake trout and lake whitefish that support fisheries in Lake Superior.
4. Additional habitat restoration in the St. Louis River and Bay area including restoration of connected coastal wetlands and floodplains and enhancement of spawning habitat for additional lake sturgeon and walleye production.



Seth Moore
Lake Superior Committee Chair
1854 Treaty Authority



Lake Michigan Committee

REPRESENTING THE FISHERY MANAGEMENT AGENCIES OF LAKE MICHIGAN

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CHIPPEWA-OTTAWA
RESOURCE AUTHORITY

ILLINOIS DNR

INDIANA DNR

MICHIGAN DNR

WISCONSIN DNR

April 8, 2020

Lake Michigan Committee Environmental Priorities

As detailed in a *Joint Strategic Plan for Management of Great Lakes Fisheries* (Joint Strategic Plan), degradation of water quality, destruction of physical habitat, and loss of ecosystem components essential to the well-being of fish remain a major cause of impairment to Great Lakes fish communities and fisheries. Strategic procedures identified in the Joint Strategic Plan direct lake committees to identify environmental issues that may impede achievement of their Fish-Community Objectives and to work within governmental initiatives, such as the Great Lakes Water Quality Agreement, that provide opportunities for achieving, refining, and assessing progress toward environmental and fish community objectives.

In 2016, the Council of Lake Committees (CLC) adopted its *Environmental Principles for Sustainable Fisheries in the Great Lakes Basin* to help guide individual lake committees as they identified and prioritized environmental issues that impede achievement of their Fish-Community Objectives. The CLC recognized that diverse functional habitats are required for sustainable fish production; protection and improvement of fish habitat should occur systematically, cumulatively, and collaboratively; fishery value should be accommodated in decisions that affect functional habitats; and manageable sources of anthropogenic stress are pathways for addressing impediments to functional fish habitats.

Using the above strategic guidance, the Lake Michigan Committee (LMC) developed a short-list of high priority environmental impediments and recommended actions that are critical for achievement of the Fish-Community Objectives for Lake Michigan. The Lake Michigan Habitat Task Group conducted a technical inventory and assessment of functional habitats, as they relate to production of fish stocks of common concern, identified impediments to production of fish stocks of common concern that provide broad benefits to fisheries, and recommended actions to address these impediments. The technical inventory and assessment was then prioritized based upon the LMC's determination of potential fishery benefits, considering several factors, including fish species and population importance, certainty in proposed actions and outcomes and feasibility of implementation. The prioritization process resulted in a short-list of high priority regional and site-specific actions that, if achieved, would move the LMC closer to achievement of its Fish-Community Objectives.

The environmental priorities chosen by the LMC for the next 5-year period should improve the production potential of fish stocks of common concern, including walleye, lake whitefish, lake sturgeon, lake trout, yellow perch, salmonines,

esocids, and centrarchids as these priorities are addressed. The LMC considered priority actions across a broad range of action categories including protection, coastal wetland restoration/reconnection, reef restoration, tributary connectivity/fish passage, shoreline complexity/nearshore vegetated habitat restoration, in-stream habitat restoration, and water quality. The environmental priorities are detailed below.

- **Protection** of high quality in-lake and connected coastal wetlands and nearshore vegetated functional habitats from degradation across Lake Michigan is critical to supporting production of fishes critical to interjurisdictional fisheries, including walleye, lake whitefish, yellow perch, esocids, and centrarchids.
 - Broadly, functional coastal wetlands and nearshore vegetated habitats provide critical spawning and nursery areas for multiple species of common concern across the basin
 - Specific focal areas for protection strategies include:
 - Big Bay de Noc
 - Little Bay de Noc
 - Protective actions in this focal area will ensure sustainable spawning and nursery habitats for among other species, lake whitefish and walleye which support important recreational, commercial, and tribal fisheries in both Green Bay and northern Lake Michigan
- **Reef restoration** of degraded reef habitats, which provide critical spawning and nursery areas for multiple species of common concern across Lake Michigan including lake trout, lake whitefish, and cisco.
 - Specific focal areas to implement reef restoration actions in Lake Michigan are in the Charlevoix/Harbor Springs, Michigan area
 - Implementation of actions to address aquatic invasive species impacts on physical and biological structure of reefs, spawning habitat augmentation, and reduction of cladophora impacts is critical to restore functional habitat and enhance fish production
- **Coastal wetland reconnection/restoration, softening of shorelines, and increasing submerged aquatic vegetation**, which provide critical spawning and/or nursery habitats for multiple species of common concern across Lake Michigan, including lake sturgeon, lake whitefish, yellow perch, esocids, and centrarchids.
 - Specific focal areas for coastal wetland reconnection restoration, softening of shorelines, and increasing submerged aquatic vegetation actions should occur at priority locations including:
 - The western shoreline of Green Bay
 - The eastern shoreline of Green Bay
 - The southern basin nearshore of Lake Michigan
- **Tributary connectivity/fish passage restoration** is critical for providing access of adult species of common concern, including lake sturgeon and lake whitefish, to reproductive and nursery habitat across the Lake Michigan Basin.

Consideration of sea lamprey control remains paramount for all tributary connectivity/fish passage restoration projects.

- Terminal barriers are impacting the ability of the LMC agencies to achieve Fish-Community Objectives and are compromising production of priority species that support recreational and commercial fisheries throughout the basin
- Specific locations where connectivity is limiting production of priority species includes:
 - The Peshtigo River
 - The Oconto River
- **In-stream habitat restoration** is critical for providing suitable reproductive habitat for multiple species of common concern, particularly lake sturgeon and salmonines.
 - Specific focal areas for in-stream habitat restoration include locations in the Grand River, Michigan, particularly below the Sixth Street Dam.

Adopted by the Lake Michigan Committee on April 8, 2020

A handwritten signature in blue ink, appearing to read "Vic Santucci".

Vic Santucci
Chair, Lake Michigan Committee



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RESOURCE AUTHORITY
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Lake Huron Committee

REPRESENTING THE FISHERY MANAGEMENT AGENCIES OF LAKE HURON

May 4th, 2021

Lake Huron Committee Environmental Priorities

As detailed in a ***Joint Strategic Plan for Management of Great Lakes Fisheries*** ([Joint Strategic Plan](#)), degradation of water quality, destruction of physical habitat, Aquatic Invasive Species (AIS), contaminants, and loss of ecosystem components essential to the well-being of fish remain a major cause of impairment to Great Lakes fish communities and fisheries. While many of these impairments are inter-related or associated with other basinwide issues, for example, AIS continue to modify habitat, negatively impact food webs, and impair production of valuable fish populations, the LHC believes that identification of **specific actions** in **critical locations** designed to increase fish production will help the LHC make measurable progress towards achievement of their [Fish Community Objectives](#) and [Environmental Objectives](#).

Strategic procedures identified in the Joint Strategic Plan direct lake committees to identify environmental issues that may impede achievement of their Fish Community Objectives and to work within governmental initiatives, such as the Great Lakes Water Quality Agreement, that provide opportunities for achieving, refining, and assessing progress toward environmental and fish community objectives. In 2016, the Council of Lake Committees (CLC) adopted its [Environmental Principles for Sustainable Fisheries in the Great Lakes Basin](#) to help guide individual lake committees as they identified and prioritized environmental issues that impede achievement of their Fish-Community Objectives. The CLC recognized that diverse functional habitats are required for sustainable fish production; protection and improvement of fish habitat should occur systematically, cumulatively, and collaboratively; fishery value should be accommodated in decisions that affect functional habitats, and manageable sources of anthropogenic stress are pathways for addressing impediments to functional fish habitats. Using the above strategic guidance, the Lake Huron Committee (LHC) developed a short-list of high priority environmental and habitat impediments and recommended actions that are critical for achievement of the Fish-Community Objectives for Lake Huron.

The Lake Huron Technical Committee conducted a technical inventory and assessment of functional habitats, as they relate to production of fish stocks of common concern, identified impediments to production of those fish stocks that provide broad benefits to fisheries, and recommended actions to address these impediments. The technical inventory and assessment was then prioritized based upon the LHC's determination of potential fishery benefits, considering several factors, including fish species and population importance, types of actions proposed, and certainty in proposed actions and outcomes. The prioritization process resulted in a short-list of high priority regional and site-specific actions that, if achieved, would move the LHC closer to achievement of its Fish Community Objectives. The environmental priorities chosen by the LHC for the next 5-year period should improve the production potential of fish stocks of common concern, including walleye, lake whitefish, lake sturgeon, lake trout, salmonines, and esocids, as these priorities are addressed. The LHC considered priority actions across a broad range of action categories including dam management/fish passage, coastal wetland restoration/reconnection, reef restoration

including removal/control of invasive species, tributary connectivity/fish passage, in-stream habitat and hydrologic restoration, and water quality. The LHC's environmental priorities are limited to those important actions that could be undertaken over the near term (5 years) and include:

Dam management/fish passage restoration is critical for providing access of adult species of common concern, including lake sturgeon and walleye, to reproductive and nursery habitat across the Lake Huron Basin, while ensuring that AIS impacts are minimized.

- Terminal barriers are impacting the ability of the LHC agencies to achieve Fish Community Objectives and are compromising the production of priority species that support recreational, commercial, and tribal fisheries throughout the basin.
- Specific locations where dam management, and/or lack of selective fish passage, are limiting production of priority species includes:
 - The Tittabawassee River, MI (DOW Dam)
 - The Saugeen River (Denny's Dam)

Reef restoration of degraded reef habitats, including evaluation and assessment of conditions, removal/control of invasive species and mitigating impacts of sedimentation on reefs, which provide critical spawning and nursery areas for multiple species of common concern across Lake Huron, are necessary for the achievement and maintenance of self-sustaining populations of lake whitefish, cisco, lake trout, and walleye.

- Specific focal areas to implement reef restoration actions in Lake Huron include:
 - The Fishing Islands, ON
 - The Mary Ward Shoals, ON
 - The Thunder Bay Reefs, MI
 - The Saginaw Bay Reefs, MI
 - The Northern Main Basin region, MI/ON
- Implementation of actions to address aquatic invasive species impacts on physical and biological structure of reefs, spawning habitat augmentation, sedimentation, and connected nursery habitat restoration is critical to restore functional habitat and enhance fish production.

Coastal wetland habitat restoration/reconnection which will provide critical spawning and nursery habitats for multiple species of common concern across Lake Huron, including esocids and walleye.

- Continued invasive species (phragmites) control in wetland habitats along the coastline of Lake Huron, Georgian Bay and the North Channel.
- Specific focal areas for coastal wetland reconnection and restoration include locations in Saginaw Bay.

In-stream habitat restoration and enhancement is critical for providing suitable reproductive habitat for multiple species of common concern, particularly lake sturgeon and walleye.

- Specific focal areas for in-stream habitat evaluation and restoration include locations near Port Severn at Bayview Dam, Mississagi River, Whitefish River, and Kirk Creek in McGregor Bay.

The identified environmental priorities are intended as recommendations to help influence and align the work of funding organizations and habitat practitioners with Lake Huron's binational Fish Community and Environmental Objectives. The priorities will be updated as new information

becomes available. The LHC envisions an adaptive approach for tracking progress on environmental priority implementation and future updates to the environmental priorities.

Adopted by the Lake Huron Committee on May 4, 2021.

A handwritten signature in black ink, appearing to read "Tom Gorenflo".

Tom Gorenflo
Chair, Lake Huron Committee



Lake Erie Committee

REPRESENTING THE FISHERY MANAGEMENT AGENCIES OF LAKE ERIE

March 11, 2019

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MICHIGAN DNR
NEW YORK DEC
OHIO DNR
ONTARIO MNRF
PENNSYLVANIA F&BC

Lake Erie Committee Environmental Priorities

As detailed in *A Joint Strategic Plan for Management of Great Lakes Fisheries* (Joint Strategic Plan), degradation of water quality, destruction of physical habitat, and impairment of ecosystem components essential to the well-being of fish remain as major causes of impairment of Great Lakes fish communities and fisheries. Strategic procedures identified in the Joint Strategic Plan direct lake committees to identify environmental issues that may impede achievement of their fish-community objectives and to work within governmental initiatives, such as the Great Lakes Water Quality Agreement , that provide opportunities for achieving, refining, and assessing progress toward environmental and fish-community objectives.

In 2016, the Council of Lake Committees (CLC) adopted its *Environmental Principles for Sustainable Fisheries in the Great Lakes Basin* to help guide individual lake committees as they identified and prioritized environmental issues that impede achievement of their Fish Community Objectives. The CLC recognized that diverse functional habitats are required for sustainable fish production; protection and improvement of fish habitat should occur systematically, cumulatively, and collaboratively; fishery value should be accommodated in decisions that affect functional habitats; and manageable sources of anthropogenic stress are pathways for addressing impediments to functional fish habitats.

Using the above strategic guidance, the Lake Erie Committee (LEC) developed a short-list of high priority environmental impediments and recommended actions that are critical for achievement of its Fish Community Objectives in Lake Erie. The LEC Habitat Task Group conducted a technical inventory and assessment of functional habitats in Lake Erie, as they relate to production of fish stocks of common concern, identification of impediments to production of fish stocks of common concern that provide broad benefits to fisheries, and recommended actions to address these impediments. The technical inventory and assessment was then prioritized based upon the Lake Erie Committee's determination of benefits associated with the outcomes of the actions identified in the inventory and assessment. Results of that process identified a short-list of high priority regional and site-specific actions that, if achieved, would move the Lake Erie Committee closer to achievement of its Fish Community Objectives.

The environmental priorities chosen by the LEC for this five-year period should improve the production potential for fish species of common concern, including lake sturgeon, lake whitefish, walleye, yellow perch, and muskellunge as these priorities are completed. These environmental priorities are detailed below.

- Regional nutrient reduction strategies to reduce phosphorus loading and achieve mesotrophic conditions in the western, central, and nearshore waters of the eastern basins and embayments.
 - Broadly, excessive nutrients are impacting the ability to achieve FCOs and fisheries production basinwide (west, central, and east basin) in 12 priority management areas
 - Specific focal areas for nutrient reduction strategies include:
 - Maumee River watershed
 - Thames River watershed
 - Actions in these two focal watersheds are critical because they directly impact eight identified priority management areas in the western basin of Lake Erie
- Increase connectivity of select tributaries for LEC migratory fish species of common concern
 - Terminal barriers are impacting the ability of LEC agencies to achieve FCOs and are compromising production of priority fish species that support recreational and commercial fisheries throughout the basin
 - Specific locations where connectivity is limiting production of FCO species includes:
 - Black River, MI – Wingford Dam
 - Huron River, MI – Flat Rock Dam
 - Grand River, ON – Dunnville Dam
- Increase shoreline/nearshore complexity through softening of shorelines, rehabilitation of connected coastal wetlands, and increases in submerged aquatic vegetation
 - Shoreline alterations including shoreline hardening and diking of coastal wetlands has reduced habitat complexity and decreased the extent of submerged aquatic vegetation, which impacts the ability of LEC agencies to achieve FCOs and are compromising production of priority fish species that support recreational and commercial fisheries throughout the basin
 - Specific locations where shoreline alterations (hardening, diking, etc.) are limiting production of FCO species includes:
 - Sandusky Bay
 - Huron-Erie Corridor
 - Grand River, OH
 - St. Clair River Delta



Lake Ontario Committee

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NEW YORK DEC
ONTARIO MNRF

May 14, 2020

Lake Ontario Committee Fish Habitat Priorities

As detailed in a ***Joint Strategic Plan for Management of Great Lakes Fisheries*** (Joint Strategic Plan), degradation of water quality, destruction of physical habitat, and loss of ecosystem components essential to the well-being of fish remain a major impairment to Great Lakes fish communities and fisheries. Strategic procedures identified in the Joint Strategic Plan direct lake committees to identify environmental issues that may impede achievement of their Fish-Community Objectives and to work within governmental initiatives, such as the Great Lakes Water Quality Agreement, that provide opportunities for achieving, refining, and assessing progress toward environmental and fish community objectives.

In 2016, the Council of Lake Committees (CLC) adopted its ***Environmental Principles for Sustainable Fisheries in the Great Lakes Basin*** to help guide individual lake committees as they identified and prioritized environmental issues that impede achievement of their Fish-Community Objectives. The CLC recognized that diverse functional habitats are required for sustainable fish production; protection and improvement of fish habitat should occur systematically, cumulatively, and collaboratively; fishery value should be accommodated in decisions that affect functional habitats; and manageable sources of anthropogenic stress are pathways for addressing impediments to functional fish habitats.

The Lake Ontario Committee (LOC; New York State Department of Environmental Conservation [DEC] and the Ontario Ministry of Natural Resources and Forestry [OMNRF]) strongly endorses protection of existing functional fish habitat including key aquifers and has developed a series of priorities intended to improve or restore lost or degraded fish habitats to enhance fish production and help achieve the Lake Ontario Fish Community Objectives (FCOs). Fish habitat is protected in both Canada and the US through legislation, regulations and policy (in Canada see <http://www.dfo-mpo.gc.ca/pnw-ppe/index-eng.html>; in New York State see NYS Environmental Conservation Law Articles 15 & 24).

A technical working group from US and Canadian agencies systematically identified fish habitat impediments thought to be impacting the status of FCO species at the lake level, as well as potential actions to address them. A fulsome list of opportunities for habitat action was identified, with several common themes of habitat improvement across broad geographic scales. The LOC initiated a prioritization exercise to identify priority habitat actions based on several criteria including their alignment with FCOs, how actionable the

work was, as well as confidence in a successful outcome. Prioritization also considered potential benefits to other species or interests (e.g. water quality) as well as risks of negative outcomes or trade-offs for other valued species.

The LOC's fish habitat priorities are limited to those important actions that could be undertaken over the near term (5 years), and include:

- Enhance or restore effective upstream passage for adult Atlantic Salmon on select streams to allow access to spawning and juvenile rearing habitat.
 - Restore passage for adult Atlantic Salmon around Pratt Dam on Cobourg Brook
 - Improve fish passage efficiency on the Credit River
- Restore nearshore open coast, cold-water spawning and nursery habitat for Lake Trout, Whitefish and Cisco.
 - Restore/enhance the ecological function of degraded or lost spawning and nursery habitat along the Greater Toronto Area shoreline
- Restore degraded stream habitat to improve reproductive capacity in streams that are managed for wild fish production.
 - Install riverbank stabilization/fish habitat improvement structures and instream flow enhancement features for Atlantic Salmon and Rainbow Trout on the Salmon River (system-wide) including Trout and Orwell brooks
 - Add spawning substrate (gravel) for Walleye and Lake Sturgeon downstream of Dexter Dam on the Black River
 - Atlantic Salmon stream habitat restoration in the Credit River, Duffins Creek and Cobourg Creek as identified in the OMNRF Lake Ontario Atlantic Salmon Restoration Program, Phase 3 Habitat Plan
- Restore the ecological function of coastal wetlands to enhance Northern Pike, Muskellunge and other members of the wetland-dependent fish community.
 - Complete level ditching and potholing to increase fish spawning and nursery habitat in coastal wetlands, including Lakeview Wildlife Management Area, Port Bay, and Sodus Bay.
 - Promote restoration and rehabilitation of lost coastal wetlands.
- Reduce hydroelectric turbine mortality of outmigrating American Eel at the Moses/Saunders Dam on the St. Lawrence River

The identified habitat priorities are intended as recommendations to help influence and align the work of funding organizations and habitat practitioners with Lake Ontario's bi-national Fish Community Objectives. The priorities will be updated as new information becomes available. LOC envisions an adaptive approach for tracking progress on habitat action implementation and future updates to habitat priorities.