



GLWQA Annex 6 - Aquatic Invasive Species

Annex 6 Co-leads:

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GLWQA Annex 6 Purpose

- **Purpose** - Address the threat posed by aquatic invasive species to Great Lakes water quality, including support for actions to prevent the related impacts to the function, health, and sustainability of native aquatic ecosystems.

Annex 6 Science/Action Priorities - Supported by work conducted through a network of Great Lakes AIS partnerships and collaboratives.

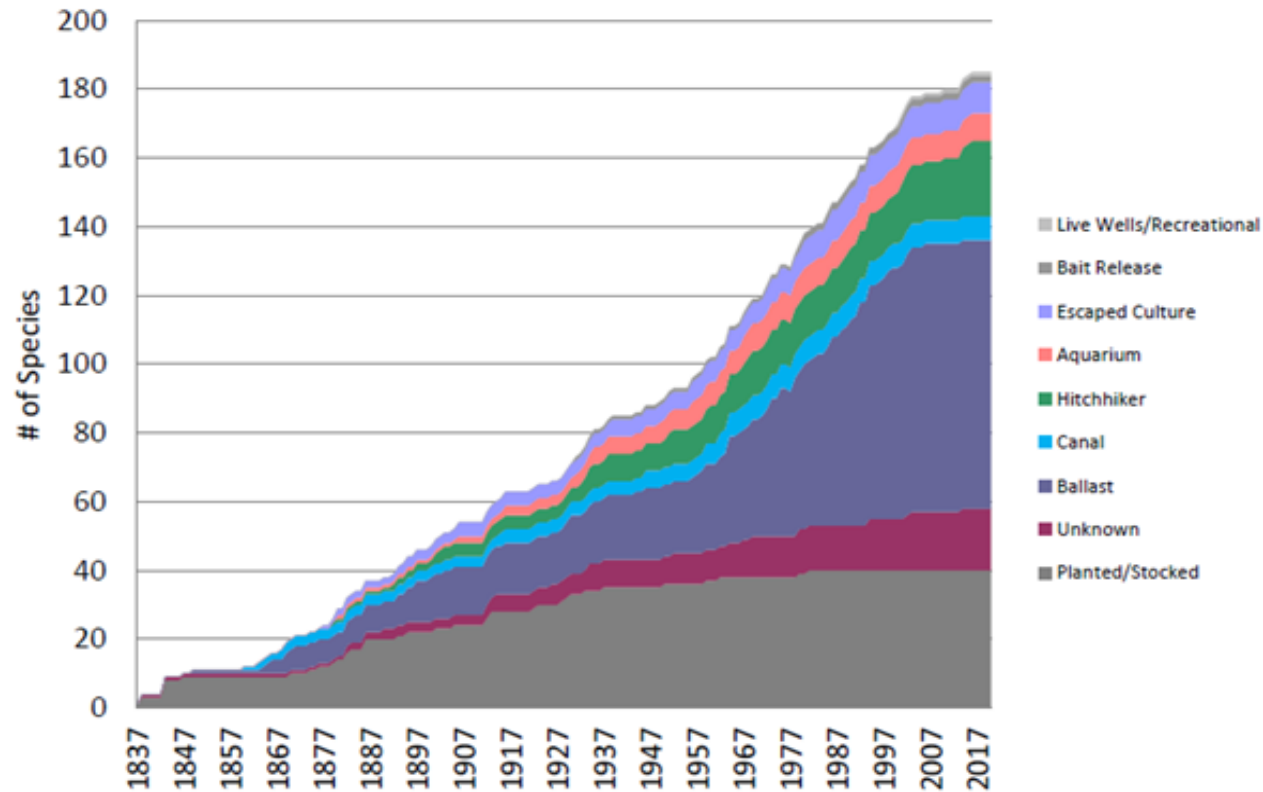
Partnership



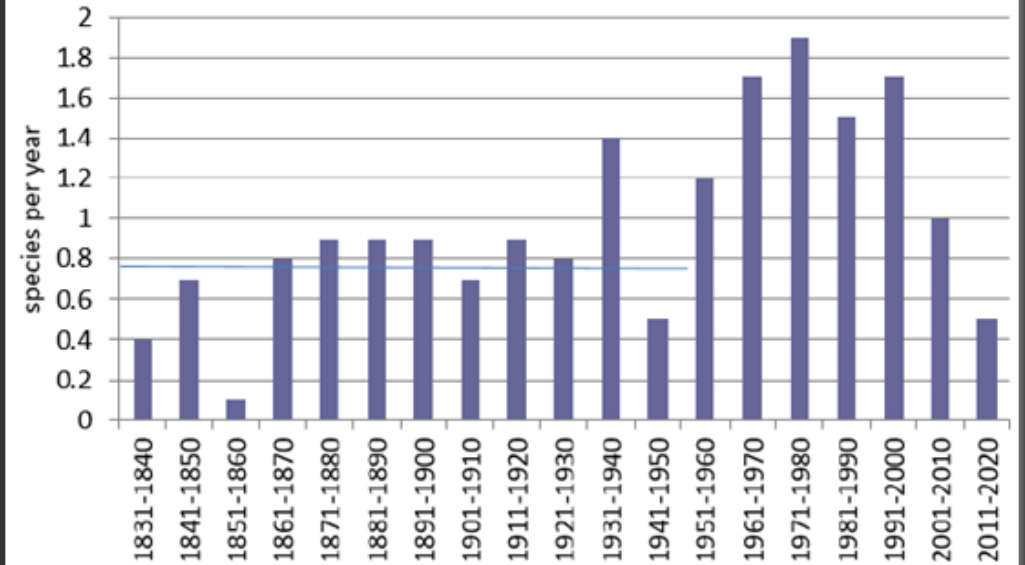
Canada

Great Lakes AIS Introduction and Establishment Trends

Cumulative Introductions to the Great Lakes Basin by Vector (STURTEVANT 2021)



Decadal Establishment Rate



2023-2025 Binational Priorities for Science and Action – Annex 6

Priorities for Science (3):

- Identify and research opportunities to use technology that prevents the spread of AIS.
- Develop and evaluate AIS early detection technologies and methods.
- Research and develop technologies and methods for the control and eradication of AIS.

Priorities for Action (6):

- Prevent introductions of new AIS into the Great Lakes (including silver, bighead, and black carp, and other species identified through risk screening/assessment).
- Enhance early detection for invasive carps and other high-risk AIS.
- Conduct response actions to prevent the establishment of grass carp and other high-risk species in the GLB.
- Implement control projects for AIS already in the GLB.
- Identify gaps in current AIS policies/regulations and reduce the risk from pathways into and within the GLB.
- Update the list of “Least Wanted” highest-risk species for the Great Lakes basin.

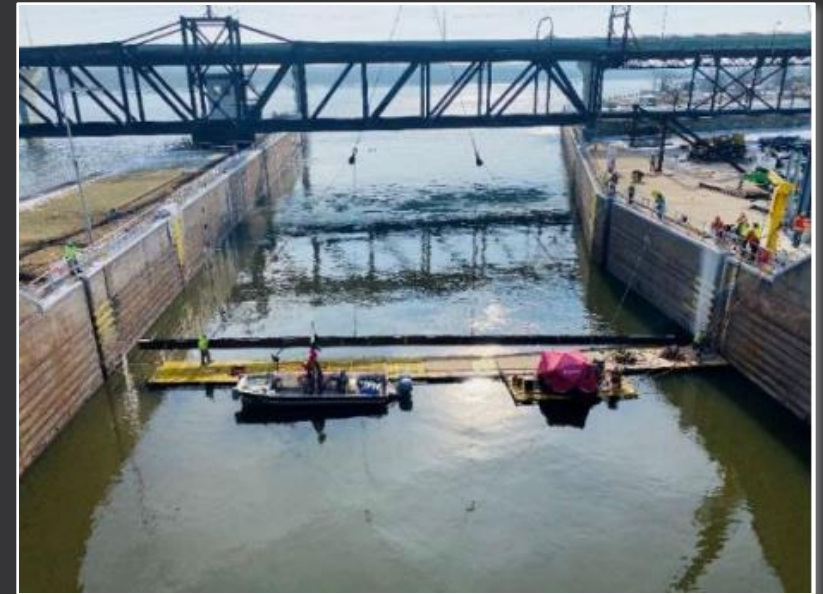


Priorities for Science

Research and identify opportunities to utilize, where feasible, technology that prevents the spread of AIS while allowing the movement of other ecosystem components through canals and waterways.

Implementation:

- Collaboration through the ICRCC to develop and test new technologies for Great Lakes protection from invasive carp (e.g., invasive carp deterrents (underwater acoustic barriers)).
- Collaboration through the ANSTF Great Lakes Panel and through partnerships addressing other key AIS in the basin.
- Work to address GLMRIS interbasin pathways.
- Interagency collaboration on development of the Brandon Road Interbasin Project.



Installation of underwater acoustic deterrent system, Lock No. 19 . Photo credit: Marybeth Brey, USGS



Priorities for Science

Develop and evaluate AIS early detection technologies and methods, including eDNA and genetic barcoding.

Implementation

- Continued use/refinement of comprehensive early detection monitoring for AIS in the Great Lakes basin.
- Collaborative work to further develop and use eDNA and other new genetics-based technologies for AIS early detection/surveillance.
 - Focused on rapid detection of high-risk AIS.
 - Additional work sampling urban stormwater management systems.



USFWS crew conducting eDNA sampling for invasive carp. (Photo credit: USFWS)

Priorities for Science

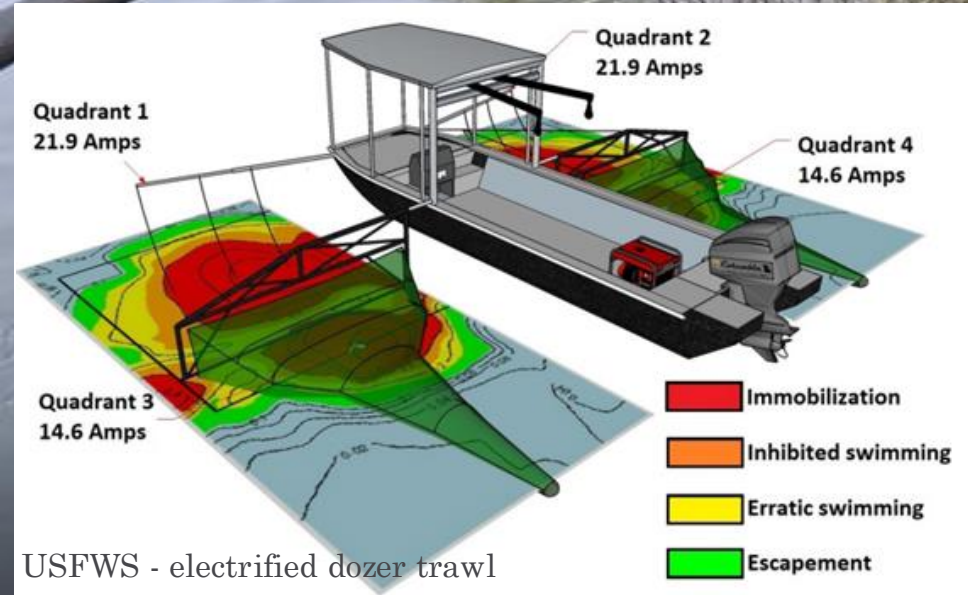
Research and develop technologies and methods for control/eradication of AIS.

Implementation

- Work by AIS collaboratives for control/eradication of plant/animal AIS (e.g., Invasive Crayfish, Invasive Mussels, European Frog-bit).
- Development/testing of new technologies supported through ICRCC Action Plan. Development of list of control tools and decision-support to inform use by managers.
- Updating of AIS population models to refine surveillance sties and control targets.



Rusty crayfish (Photo credit: Doug Watkinson, Fisheries and Oceans Canada)



Example CAD model of the electrical field of an electrified capture gear with colors indicating where behavioral responses of invasive carp will occur. This will be used to inform capture depths and ranges of existing electrified gears for more effective capture.

Priorities for Action

Prevent introductions of new invasive species into the Great Lakes, including silver carp, bighead carp, and black carp, and other species identified through risk screening and assessment.

Implementation:

- Implementation of annual Invasive Carp Action Plan/Monitoring and Response Plan.
- Comprehensive early detection monitoring for AIS in the GLB.
- New Great Lakes “horizon sanning” exercise underway.
- Completion of additional Ecological Risk Screening Summary reports.
- Collaboration on ‘Organisms in Trade’ in the GLB - Hitchhikers workgroup.
- Refinement of model to determine the response effort for detection/removal of populations of Asian carps in the GLB.
- Collaboration on model to determine potential spawning locations of Asian carps in a Canadian tributary (SpawnCast).



Priorities for Action

Enhance early detection for invasive carps and for other high-risk aquatic invasive species.

Conduct response actions to prevent the establishment of grass carp and other high-risk species in the Great Lakes.

Implementation:

- Implementation/update of Lake Erie Grass Carp Adaptive Response Strategy.
- In U.S. waters, expanded use of grass carp “strike teams”.
 - Lakes Ontario, Erie, Huron, and Michigan.
- In Canadian waters, early detection surveillance and response for grass, black, silver and bighead carps by DFO’s Asian Carp Program.
- Collaboration through the Tench Binational St. Lawrence River Working Group.
- Grass carp analyses to inform action: real-time analysis for egg collection, ploidy determination, and eDNA marker field validation.

Priorities for Action

Implement control projects for invasive species already in the Great Lakes basin, including red swamp crayfish, monecious hydrilla, water soldier, water chestnut, and phragmites.

Implementation:

- Population tracking and testing/use of novel control methods for invasive crayfish.
- Development of new GLB management/outreach strategy through the Invasive Crayfish Collaborative.
- Binational efforts to address hydrilla in the Niagara River corridor.
- Implementation of the Phragmites Adaptive Management Framework.
- Work to address phragmites, water soldier, and water chestnut in Ontario.
- Work to assess opportunities to manage common carp, rudd, and goldfish in Canadian waters.



Priorities for Action

Identify gaps in current AIS policies and regulations and reduce the risk of pathways into and within the Great Lakes basin.

Implementation:

- Completion of work under the GLRI AIS interjurisdictional project Evaluating Control of Priority Established Species: Species- and Site-based Analysis of Control Efforts in the Great Lakes Region to provide crosswalk of existing regulated species lists for various jurisdictions within the Great Lakes basin, and to identify potential gaps based on risk assessment reports.
- Use of GLC's GLDIATR to identify online sales of priority AIS.



Priorities for Action

Collaboratively update the list of “Least Wanted” highest-risk species for the Great Lakes basin.

Implementation:

- Updates of AIS lists, as warranted, based on new information from risk analyses.

Great Lakes Aquatic Nonindigenous Species Information System
<http://www.glerl.noaa.gov/res/Programs/glansis/glansis.html>

Some of the 184 Non-Native Species Established in the Great Lakes

GLANSIS
A one-stop source for information about non-indigenous species in the Great Lakes region

GLANSIS ENHANCEMENTS 2010-2011

The GLANSIS project has received funding under the Great Lakes Restoration Initiative (GLRI) for several improvements to support early detection and rapid response:

- Addition of "range expansion" species—those not in the portion of the Great Lakes but are considered invasive to other portions of the basin.
- Addition of high priority "invasive" species—those that have been identified in the literature as high risk for invading and becoming established in the Great Lakes.
- Updated and consistent "impact" information allowing cross-taxa comparisons that are better able to support risk assessment and management.
- Addition of management information—regulations, best management practices, and control methodologies—for all the species in the database.
- Enhanced bibliographic information, i.e. the Sea Grant.
- Addition of non-technical fact sheets for priority species of public interest, i.e. the Sea Grant.

GLANSIS NEEDS Your Verified Reports

Send reports to:
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