

GLANSIS

GREAT LAKES
AQUATIC NONINDIGENOUS SPECIES
INFORMATION SYSTEM

Invasive Species Impacts to the Great Lakes

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GLANSIS is:

- A Great Lakes specific **node** of the USGS Nonindigenous Aquatic Species (NAS) database.
- A NOAA **project** to enhance access to information on non-native species in the Great Lakes region.

GLANSIS provides:

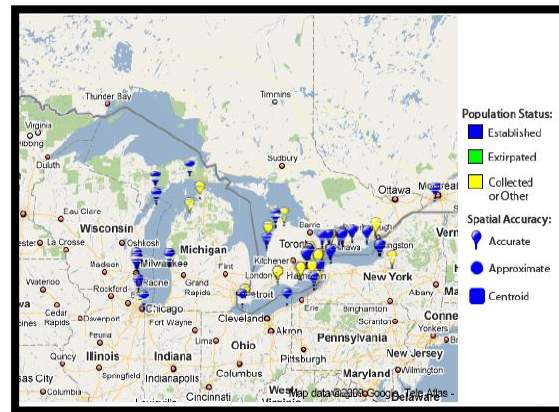
- A simple interface for accessing Great Lakes specific content from the national (USGS NAS) database.
- Advanced search capacity supporting research on the patterns and particulars of Great Lakes invasion biology.

The screenshot shows the GLANSIS web interface. At the top, there's a navigation bar with links: Home, Staff, Status, Search, Report, Projects, Glossary, Links, Kids. Below this is the 'NAS Database' section with a 'Generate a NonIndigenous Species List' button. A note says 'Select your criteria below'. A list of nonindigenous species that matches the criteria will be generated. Species with fact sheets will have links to the fact sheets. There's a 'SEARCH HELP' section with various filters: Group (All), Lake (HUC): All Great Lakes Drainages (seen on right), Ignore Native: ☐, Genus: , Species: , Common Name: , Status: All, Freshwater/Marine: All, Pathway: All, Exotic/Transplant: All (relative to U.S. borders), Sort by: Taxonomic Group. A 'Submit' button is at the bottom. A small map of the Great Lakes is on the right.

<https://www.glerl.noaa.gov/glansis/>

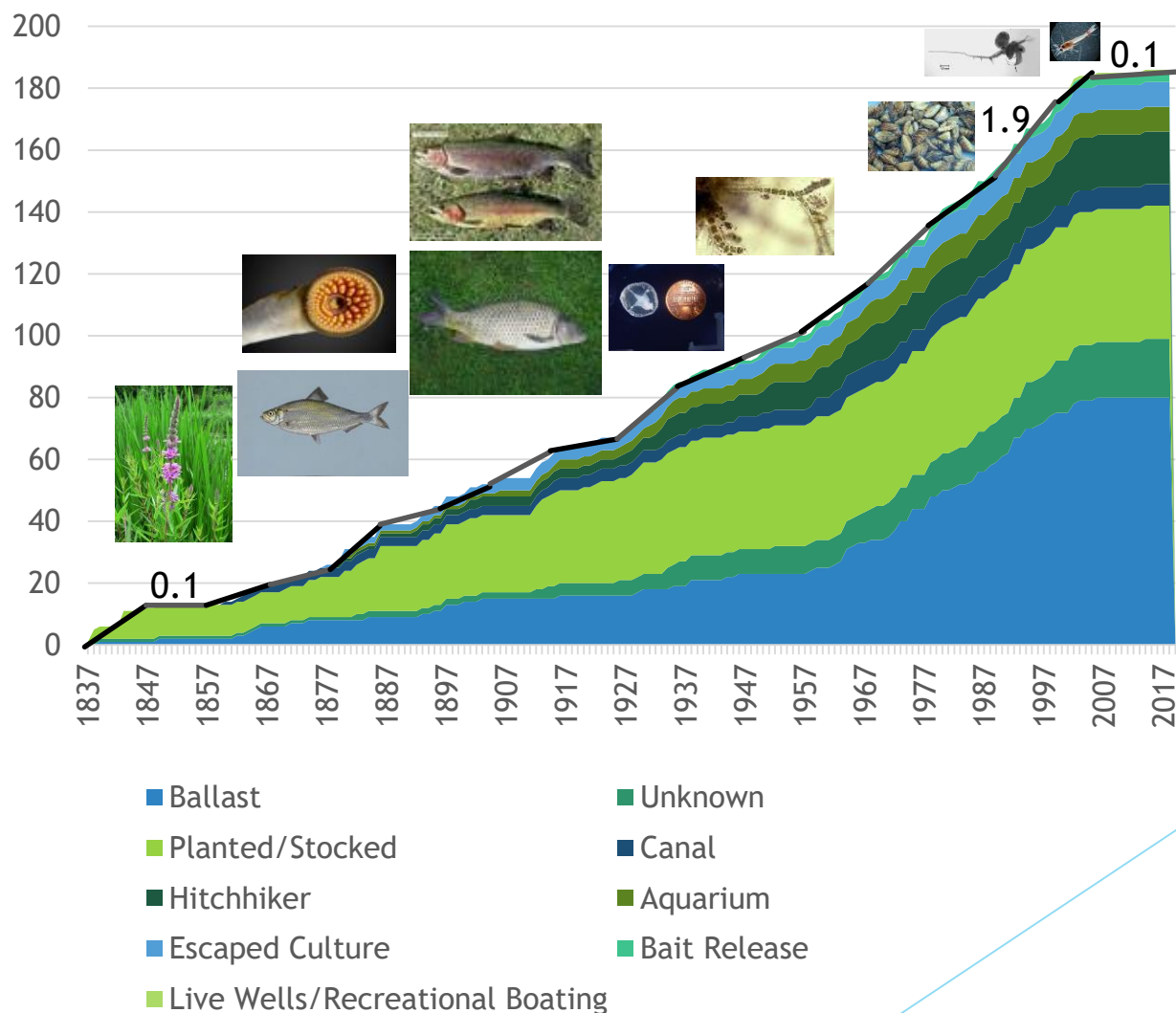
GLANSIS contains:

- Comprehensive technical fact sheets on each of the 187 non-native species established in the Great Lakes, 16 species identified as expanding ranges within the Great Lakes, and 67 species identified as at risk of invading the Great Lakes.
- Species-specific information supporting early detection, rapid response, risk assessment and control efforts.
- Detailed collection records for thousands of individual reports of non-native species in the Great Lakes basin.



History of Invasions to the Great Lakes Basin

(Sturtevant 2018)



Most Recent Invaders

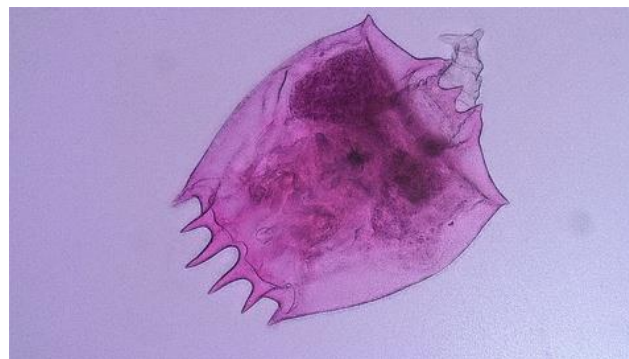
- ***Thermocyclops crassus*** (2014)

- Similar to the native copepod *Mesocyclops edax*
- Found in the western basin of Lake Erie in samples collected from 2014 through 2016
- Detected in 1991 in Lake Champlain (Vermont) but remains rare



- ***Brachionus leydigii*** (2016)

- A single specimen was collected in the western basin of Lake Erie in 2016
- Not yet established



Impacts of Aquatic Invaders

- **Environmental**

- Invaders may prey on or outcompete native species, disrupt food webs, alter habitat, or spread disease.

- **Socioeconomic**

- Management efforts for invaders may be expensive and time-consuming
- These species may damage the economic, aesthetic, or cultural value of a water body.

- **Beneficial**

- Nonetheless, some nonindigenous species are introduced for bait, sport, or as ornamentals, and may have recreational or economic value.



Watchlist: Asian Carp

- Grass Carp – (high probability for intro/establishment, high potential Env. impact)



–In 2012, 4 juvenile grass carp were captured in the Sandusky River (Kocovsky et al., 2013). Analysis confirmed that the individuals were diploid and were most likely spawned in the Sandusky River. However, it's currently inconclusive whether there are self sustaining, naturally reproducing populations of Grass Carp in Lake Erie and its tributaries.

- Silver Carp – (moderate probability for intro/establishment, high impact)



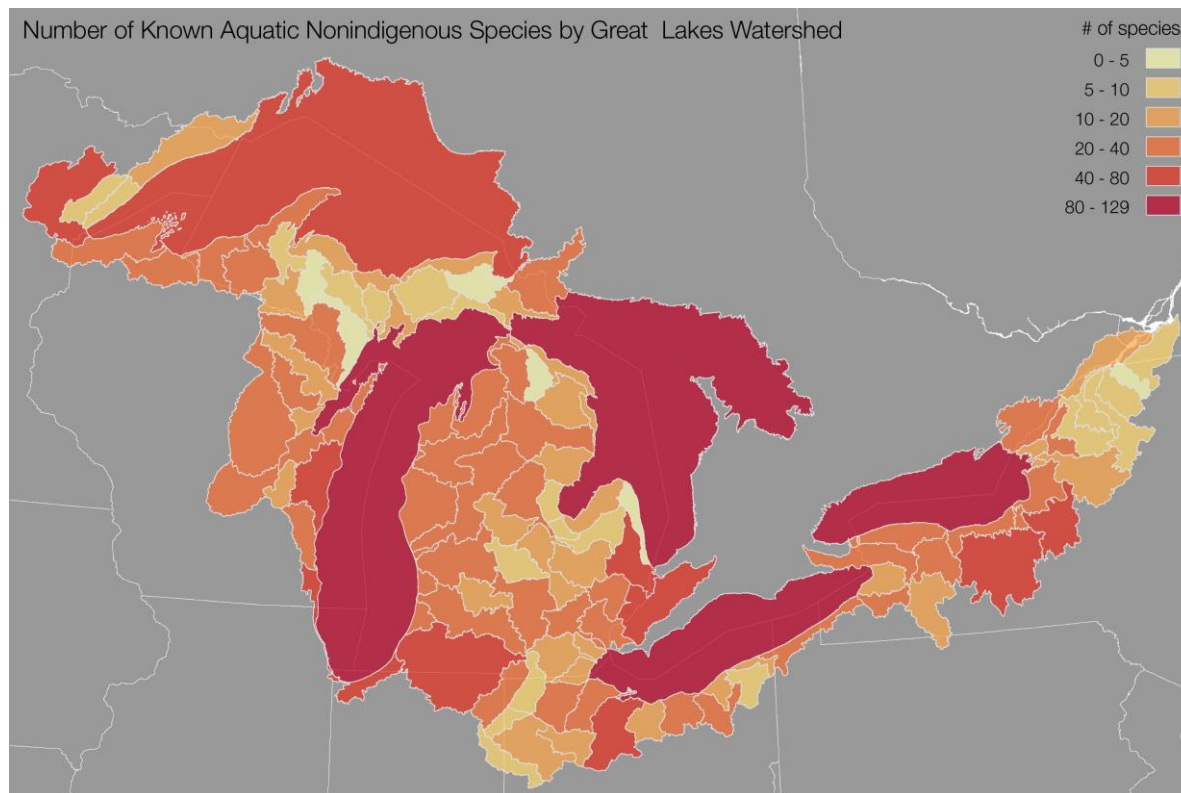
– captured below T.J. O'Brien Lock and Dam on 6/22/2017 above USACE barrier

- Bighead Carp – (moderate probability for intro/establishment, high impact)



–Several pulled from the Chicago lagoons and ponds 2003, 2008, 2010, 2011 – but no evidence of reproduction. Nearest reproducing population is the Dresden Island Pool (well below the electric barrier)

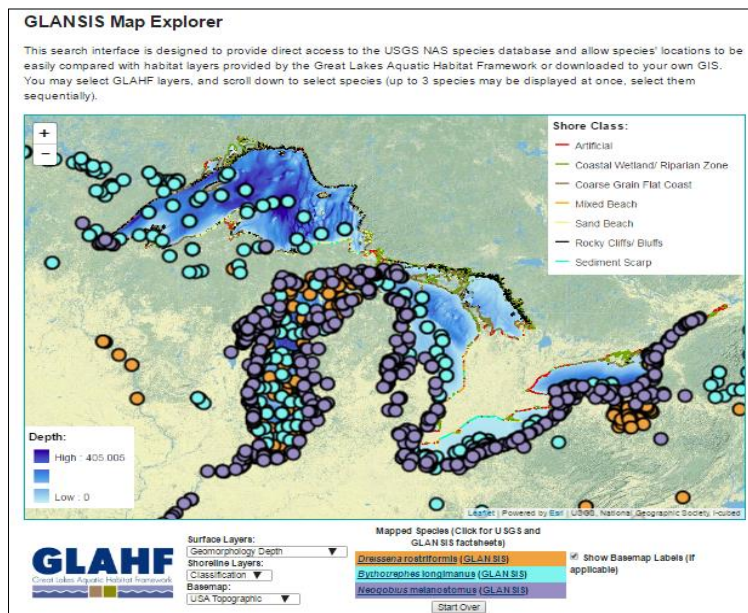
Distribution of Invasive Species By Watershed



[Not every species is in every watershed]

GLANSIS Highlights

- **List generator**
 - Species profiles and customized lists
 - Search by species, taxonomic group, basin, pathway, and status
- **Map explorer**
 - Quick mapping for “hot button” species



GLANSIS GREAT LAKES NONINDIGENOUS SPECIES INFORMATION SYSTEM

This is a test site for GLERL and cannot be viewed by the public - pages are works in progress.

Generate a Customized Non-Indigenous Species List and Access Fact Sheets

NOTE: all results must be interpreted as a minimum, and no query will return a list of all nonindigenous species in the Great Lakes.

Species:

Category:

Lake (HUC):

Genus:

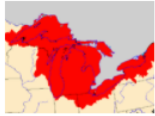
Species:

Common Name:

Status:

Pathway:

Sort by:



Results (187)

Click a column header to sort by that column.

Photo	Taxonomic Group	Family	Scientific Name (Click for technical fact sheet)	Common Name (Click for nontechnical fact sheet)	Continent of Origin	Year First Collected	Status (In selected HUCs)	Category
	Algae	Hemidiscaceae	Actinocyclus normanii f. subaëria	Diatom	Europe	1938	established	Nonindigenous
	Algae	Bangiaceae	Bangia fuscopurpurea	Red alga	Europe	1944	established, failed, unknown	Nonindigenous
	Algae	Chaetocerotaceae	Chaetoceros muelleri	Diatom	Unknown	1978	established	Nonindigenous

Data

Below are the results of your most recent query in tab delimited format. Copy, paste into a text editor, and save as 'insert_file_name.txt'. You should then be able to open it in your favorite spreadsheet program.

Taxonomic Group	Family	Scientific Name	Common Name	Continent of Origin	Year First Collected	Status (In selected HUCs)
Algae	Hemidiscaceae	Actinocyclus normanii f. subaëria	Diatom	Europe	1938	established, Nonindigenous
Algae	Bangiaceae	Bangia fuscopurpurea	Red alga	Europe	1944	established, failed, unknown, Nonindigenous
Algae	Chaetocerotaceae	Chaetoceros muelleri	Diatom	Unknown	1978	established, Nonindigenous
Algae	Phycomenaceae	Chorodactylon ornatum	Red alga	North America	1984	established, Nonindigenous

Next Steps



- Risk assessment clearinghouse

- Hosting both in-house (TM-169) and external partners' risk assessments and reports

- Contents include:

- Probabilities and confidence levels of introduction and establishment in the Great Lakes for a given species
- Environmental, socioeconomic, and beneficial impacts

- Habitat Mapping

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Some of the 150 182 154 187 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 provides full species profiles for all 187 nonindigenous species established in the Great Lakes. These include information on:

- Identification
- Distribution
- Ecology and Life History
- Status in the Great Lakes
- Environmental and Socioeconomic Impact in the Great Lakes
- Benefits (if any) to the Great Lakes region
- Federal and State (Great Lakes) Regulations
- Management Options
- Bibliography

Our new interface (June 2017) will serve distribution data as GIS layers and provide an interface to manipulate those layers in combination with other ecological data from the Great Lakes Aquatic Habitat Framework (GLAHF).

GLANSIS NEEDS YOUR VERIFIED REPORTS!

Send reports to:
nas.er.usgs.gov/SightingReport.aspx

Or, contact:
NOAA Great Lakes Environmental Research Laboratory
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Ann Arbor, MI 48108
734-741-2235
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