

Great Lakes Aquatic Nonindigenous Species Information System (GLANSIS)

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Overview

The goal of this project is to create a “one-stop” information source for all aquatic non-indigenous and invasive species in the Great Lakes. The source will be publicly accessible and published on the web. Except for a list of 162 invasive species gleaned from the literature managed by NCRAIS there is no comprehensive information source for Great Lakes aquatic invasive species.



Common Name	Scientific Name	Order	Species	Origin	Year	Location of First Capture	Mechanism	Lake	Release Date
Amphipod	<i>Ampelisca</i>	Amphipoda	<i>Amphipoda</i>	Europe	1980	Great Lakes	Shipping (Ballast Water)	GL	1980
Amphipod	<i>Ampelisca</i>	Amphipoda	<i>Ampelisca</i>	Europe	1980	Great Lakes	Shipping (Ballast Water)	GL	1980
Amphipod	<i>Ampelisca</i>	Amphipoda	<i>Ampelisca</i>	Europe	1980	Great Lakes	Shipping (Ballast Water)	GL	1980
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Amphipod	<i>Ampelisca</i>	Amphipoda	<i>Ampelisca</i>	Europe	1980	Great Lakes	Shipping (Ballast Water)	GL	1980
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We are currently working to make GLANSIS the Great Lakes “node” of a future geographical search function in the on-line distributed nonindigenous species (NIS) database system called NISbase. The target audience is the public, students, researchers, managers, and policy makers. The general public will benefit from having a resource for authoritative nonindigenous species information. Students will have access to organized biological information and scientific citations. Researchers, managers, and policy makers will have a reference tool to answer questions or glean information from related species in response to new threats.

There is global recognition of the need for regional nonindigenous species databases that can be cross-referenced and linked. Scientists in the Baltic countries of Europe have organized a Baltic Sea Alien Species Database, which was the subject of a U.S. sponsored workshop in Tallinn, Estonia in May 2002. The U.S. Geological Survey (USGS) Florida Integrated Science Centers - Gainesville, and the Smithsonian Environmental Research Center Marine Invasions Research Lab have established a formal agreement (Memorandum of Understanding) to develop a comprehensive database of all freshwater and marine nonindigenous species in the United States. To that end, the Gainesville Center is already well known for its spatially referenced National NAS Database (<http://nas.er.usgs.gov/>), which provides scientific reports, online/real-time queries, spatial data sets, regional contact lists, and general information. The

SERC Database contains extensive data on a species by species basis and presently provides on-line access to data on non-native species in the Chesapeake Bay, but will gradually expand to all marine coastal areas.

NOAA will partner with the SERC-USGS national database program to seamlessly integrate the Great Lakes regional database, when developed sufficiently, with their national database.

Great Lakes Aquatic Nonindigenous Species List

GLERL is currently maintaining a web-based Great Lakes nonindigenous species list compiled by the NOAA National Center for Aquatic Invasive Species Research (housed at GLERL) with the assistance of the University of Michigan's Cooperative Institute for Limnology and Ecosystems Research (CILER, Ann Arbor, Michigan).

This list will ultimately become an on-line relational database using the SERC template.

Relational Database Description

The primary goal of this database will be to provide a central resource that describes the community of nonindigenous aquatic organisms in the Great Lakes. The database will synthesize available information on a species-by-species basis, but when fully populated, can also serve as a research and management tool to test hypotheses about invasion patterns and processes.

For each species in the database, detailed information is sought and added about taxonomy (including synonymy and common names), invasion history (e.g., mechanism and date of introduction, source region, history of spread, etc.), population biology (including life-history characteristics and abundance), community ecology (e.g., habitat utilization, environmental tolerances, ecological interactions), economic impacts, and references for each topic area.

As a starting point, the information in Mills et al. (1993) and Ricciardi (2001) was extracted and entered on the web for immediate accessibility. This list was updated in 2006 to reflect new information. The same information is being ported and expanded on in GLANSIS. When GLANSIS is sufficiently developed, we'll implement a searchable web version via the national NAS database.

This is a multi-year open-ended project, primarily conducted "as time allows." The database will be built slowly, over a period of years. However, opportunities to seek outside funding and/or support will also be utilized, including expanded partnering with academic colleagues on a voluntary basis.

2006 Plans

- An advisory committee is being formed to comment on updates to the NCRAIS AIS list.
- Revise the list of Great Lakes nonindigenous species to reflect newly discovered species, add links to fact sheets customized for GLANSIS by USGS, and add a search function.
- Create guidelines to establish what biological criteria are necessary for a species to be considered cryptogenic or nonindigenous, as well as other classifications, through the Advisory Panel.

Products

Presentations

Great Lakes Invasive Species Information System, Regional Data Exchange (RDX) Conference, Detroit, MI, Oct. 2004.

References

Mills, E.L., J.H. Leach, J.T. Carlton, and C.L. Secor. 1993. Exotic species in the Great Lakes: a history biotic crises and anthropogenic introductions. *J. Great Lakes Res.* 19: 1-54.

Ricciardi, A. 2001 Facilitative interactions among aquatic invaders: is an "invasional meltdown" occurring in the Great Lakes? *Can. J. Fish Aquat. Sci.* 58:1-13.