



GREAT LAKES
AQUATIC NONINDIGENOUS SPECIES
INFORMATION SYSTEM

Great Lakes Aquatic Nonindigenous Species Gap Analysis

ICAIS – October 28, 2019

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INFORMATION SYSTEM

www.glerl.noaa.gov/glansis

GLANSIS is:

- Great Lakes (GLs)-specific **node** of the USGS Nonindigenous Aquatic Species (NAS) database (DB)
- NOAA-led **project** to enhance access to information on GL nonindigenous species

GLANSIS provides:

- Simple interface to access GLs specific content...





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GLANSIS contains:

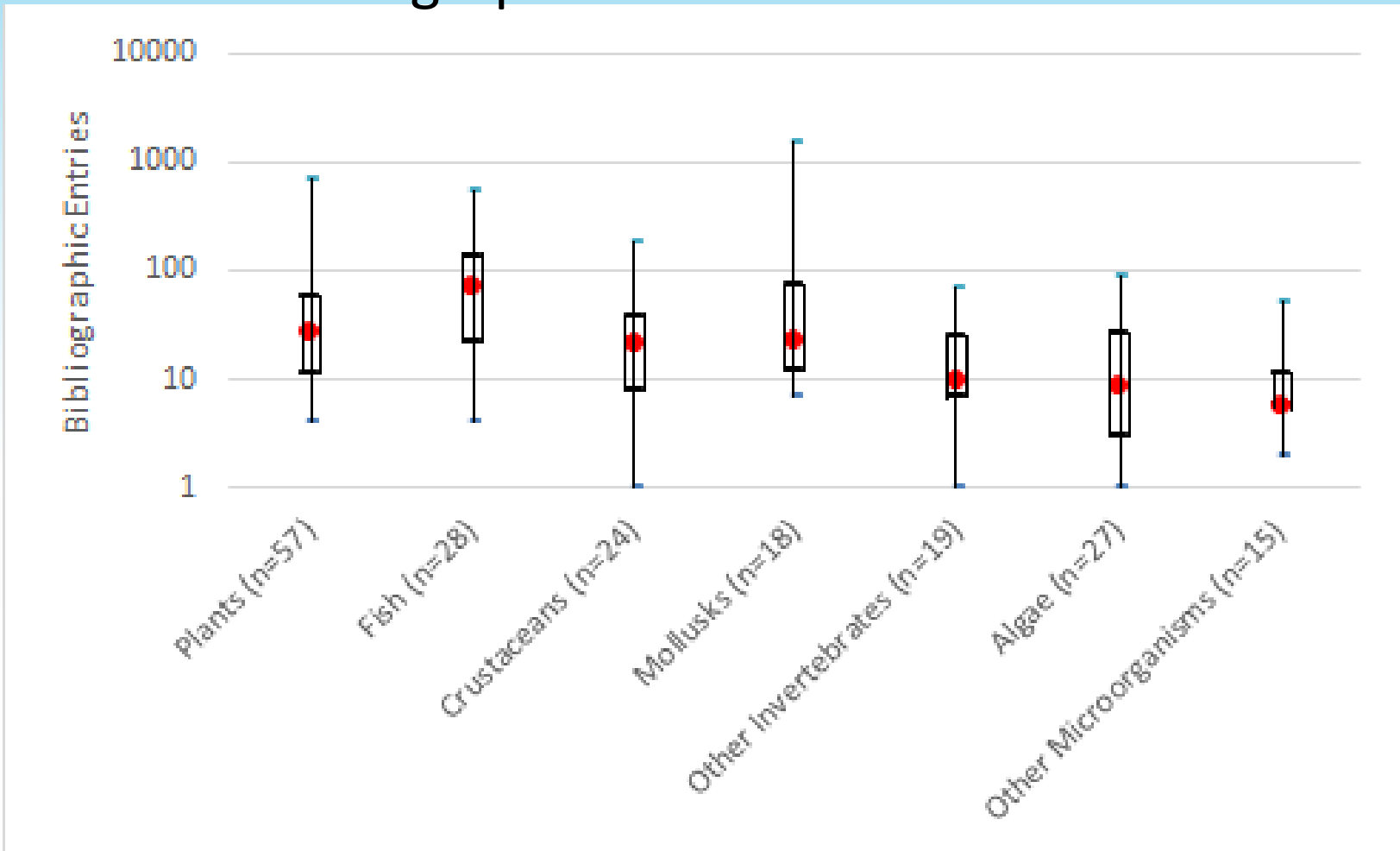
- Comprehensive technical profiles on 188 aquatic non-native species in the Great Lakes and 81 watchlist species
- Thorough literature review (>2500 publications)
- Detailed collection records of >97,000 of reports of non-native species



Gap Analysis:

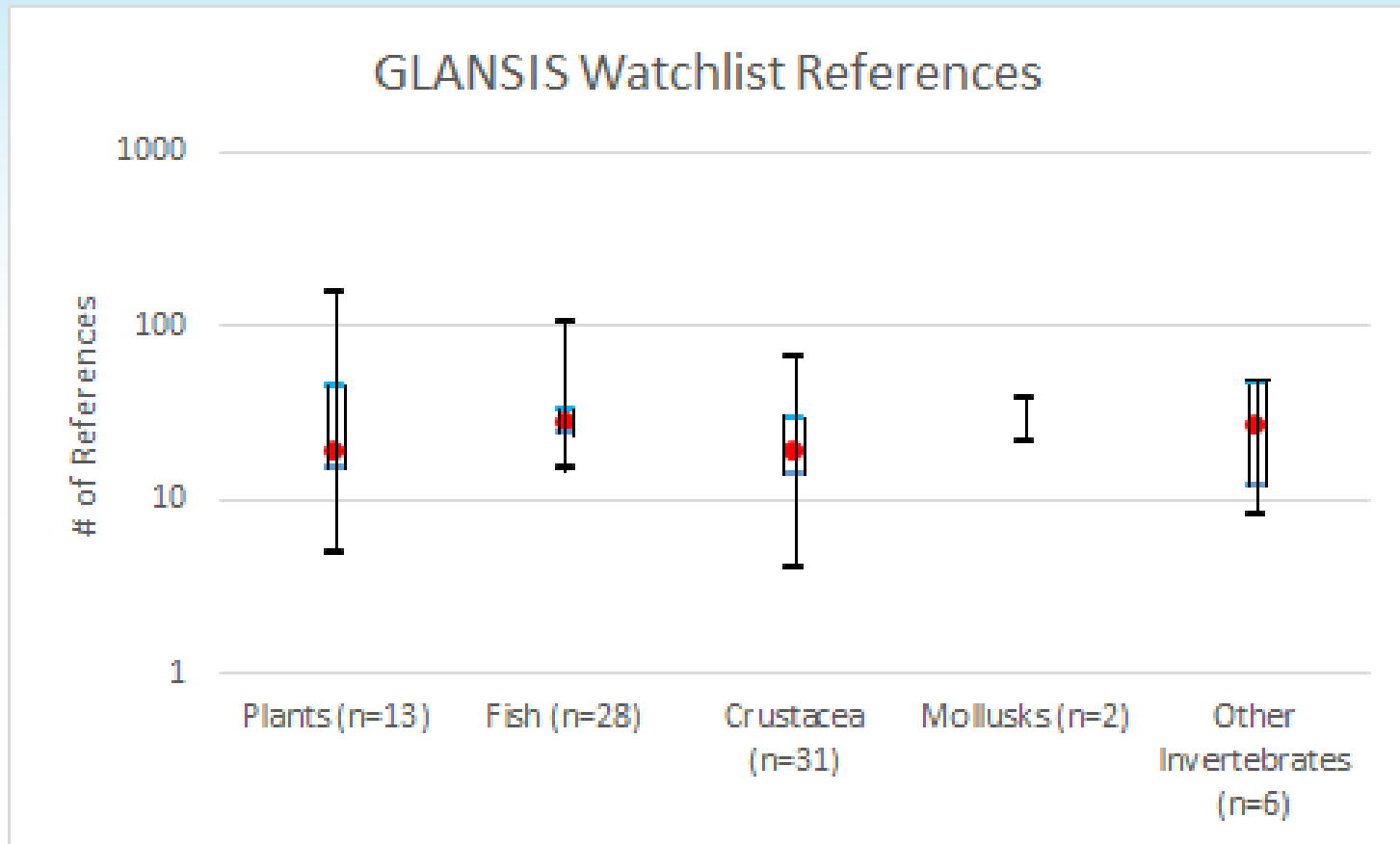
- What is it?
 - A gap analysis looks at the difference between current state of knowledge and desired state of knowledge as a way of determining information need.
- Our Objective
 - Identify types of information (taxa, geography, vector, and risk components) that are under-represented in GLANSIS holdings
 - Identify types of questions about impact that we cannot answer within current knowledge

Evaluating Gaps in Literature and Reporting Available Bibliographic Data

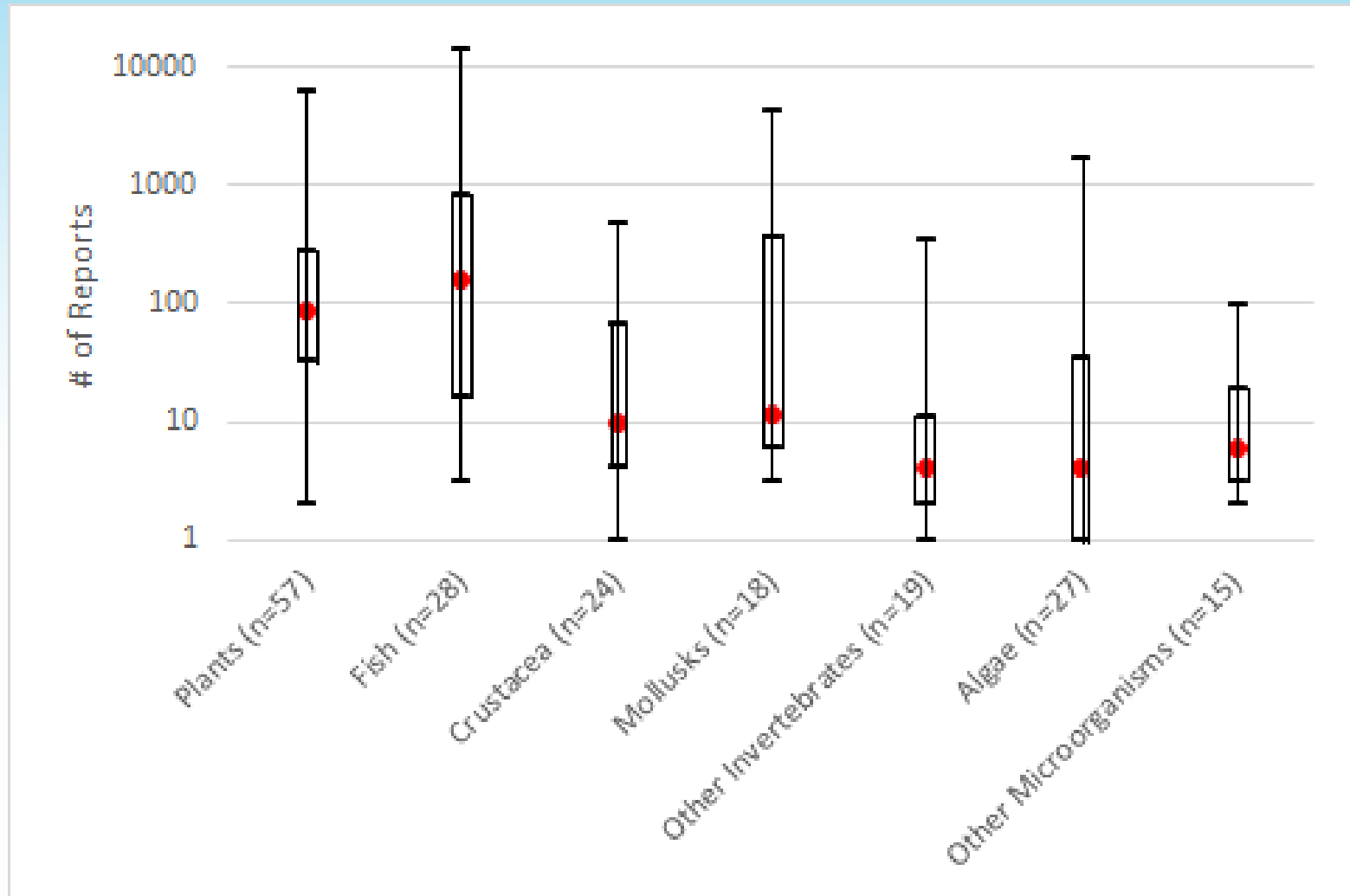


Evaluating Gaps in Literature and Reporting

Bibliographic data – Watchlist Species Taxa



Evaluating Gaps in Literature and Reporting Available Occurrence Data

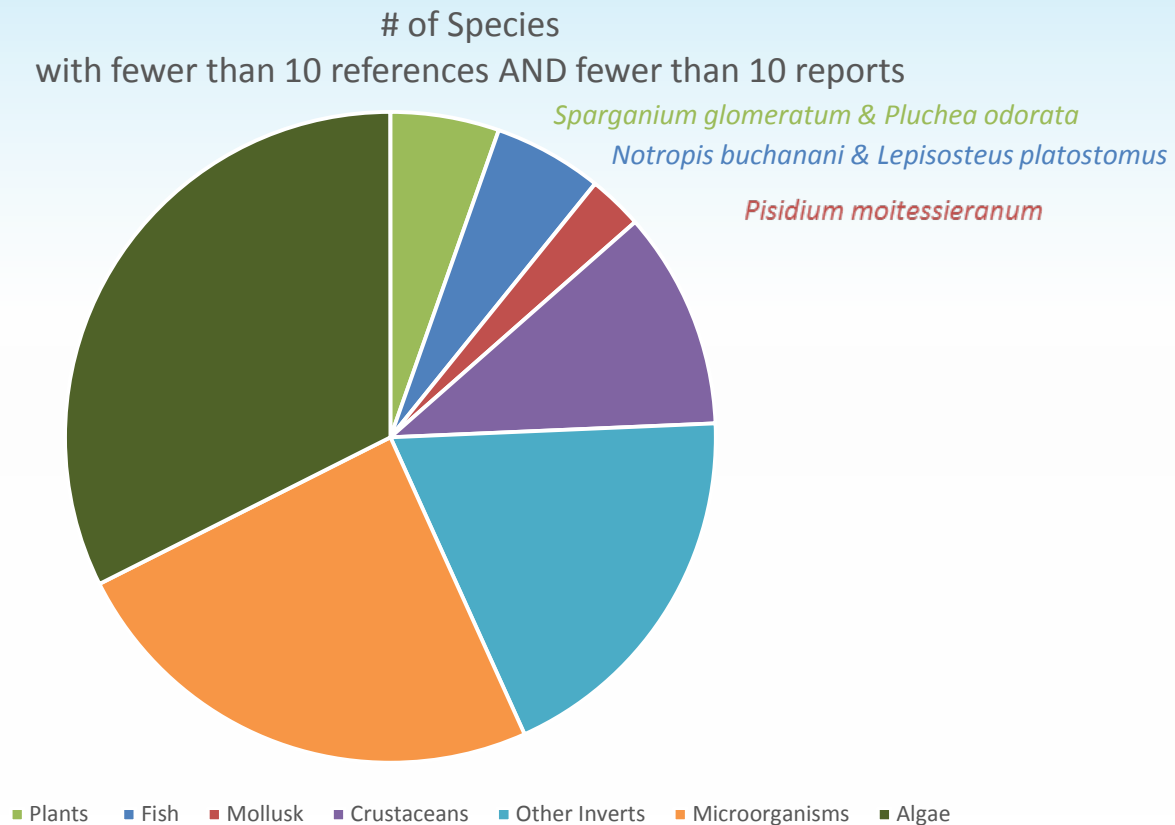


Evaluating Gaps in Literature and Reporting

48 Understudied Species (<10 tagged references)

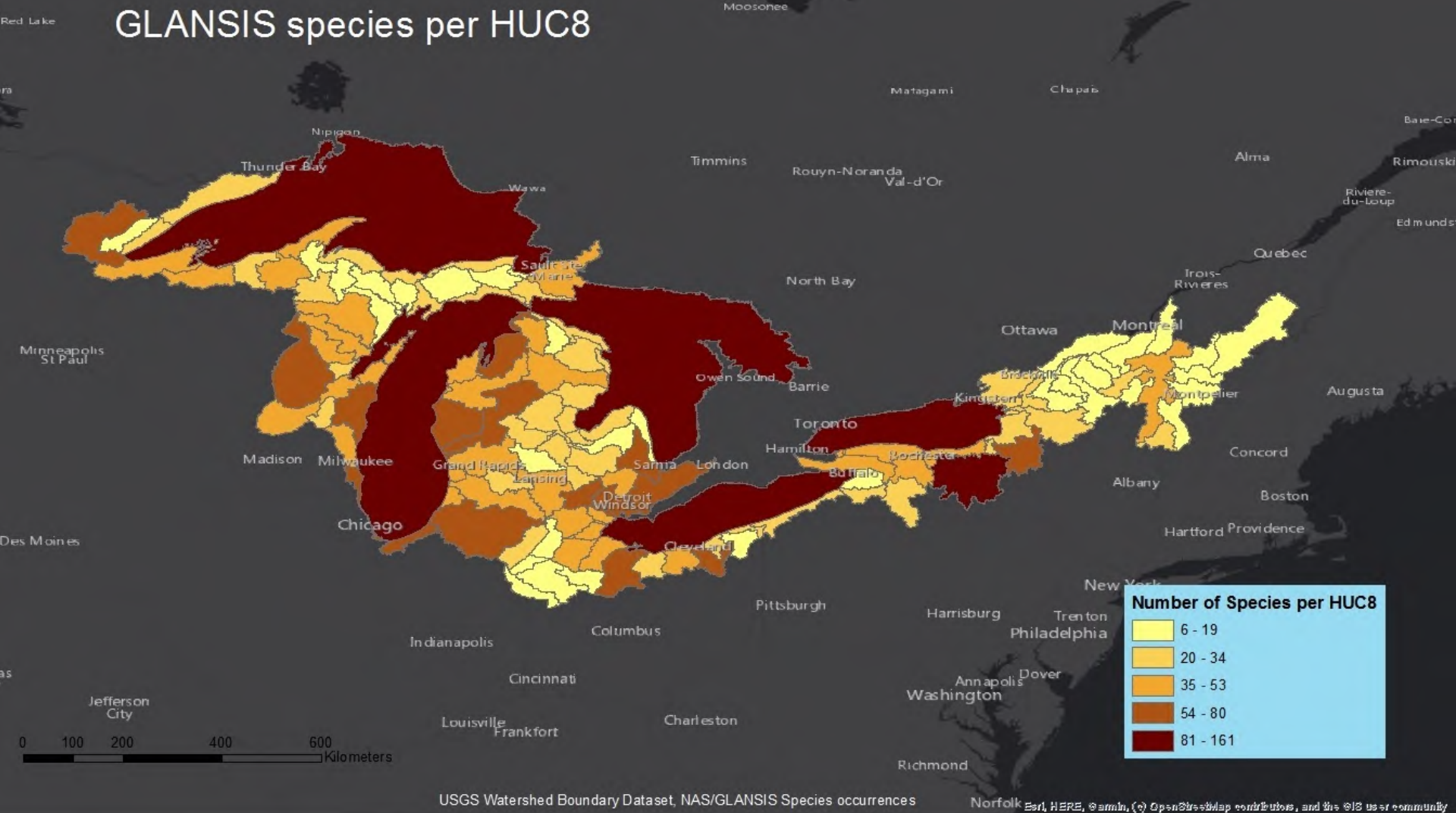
72 'Underreported' species (<10 reports)

∩ 37 species (<10 references & <10 reports)



Evaluating Gaps in Reporting by Geography

GLANSIS species per HUC8

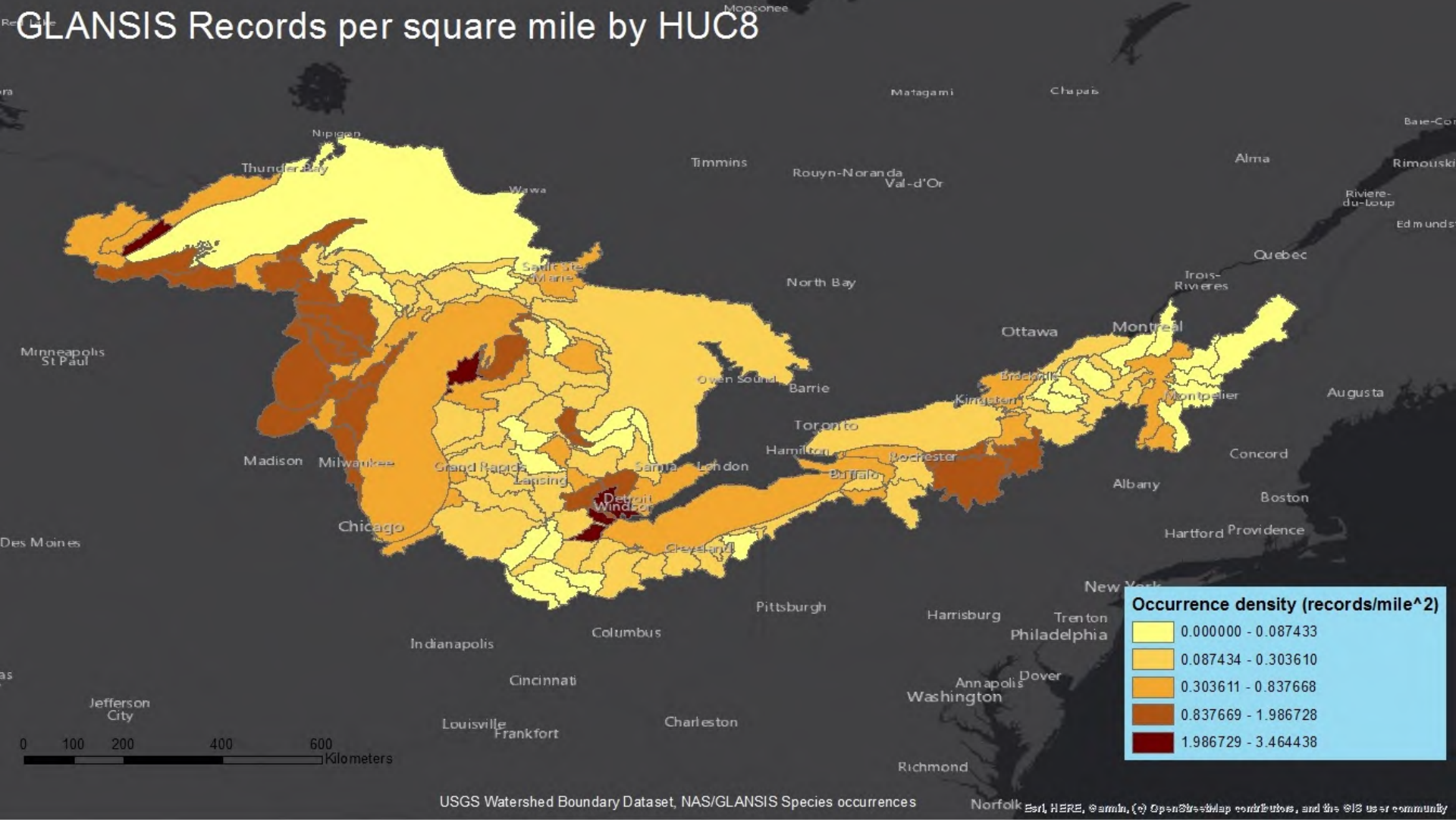


Nick Boucher, September 2019

“absence of evidence does not necessarily equal evidence of absence”

Evaluating Gaps in Literature and Reporting

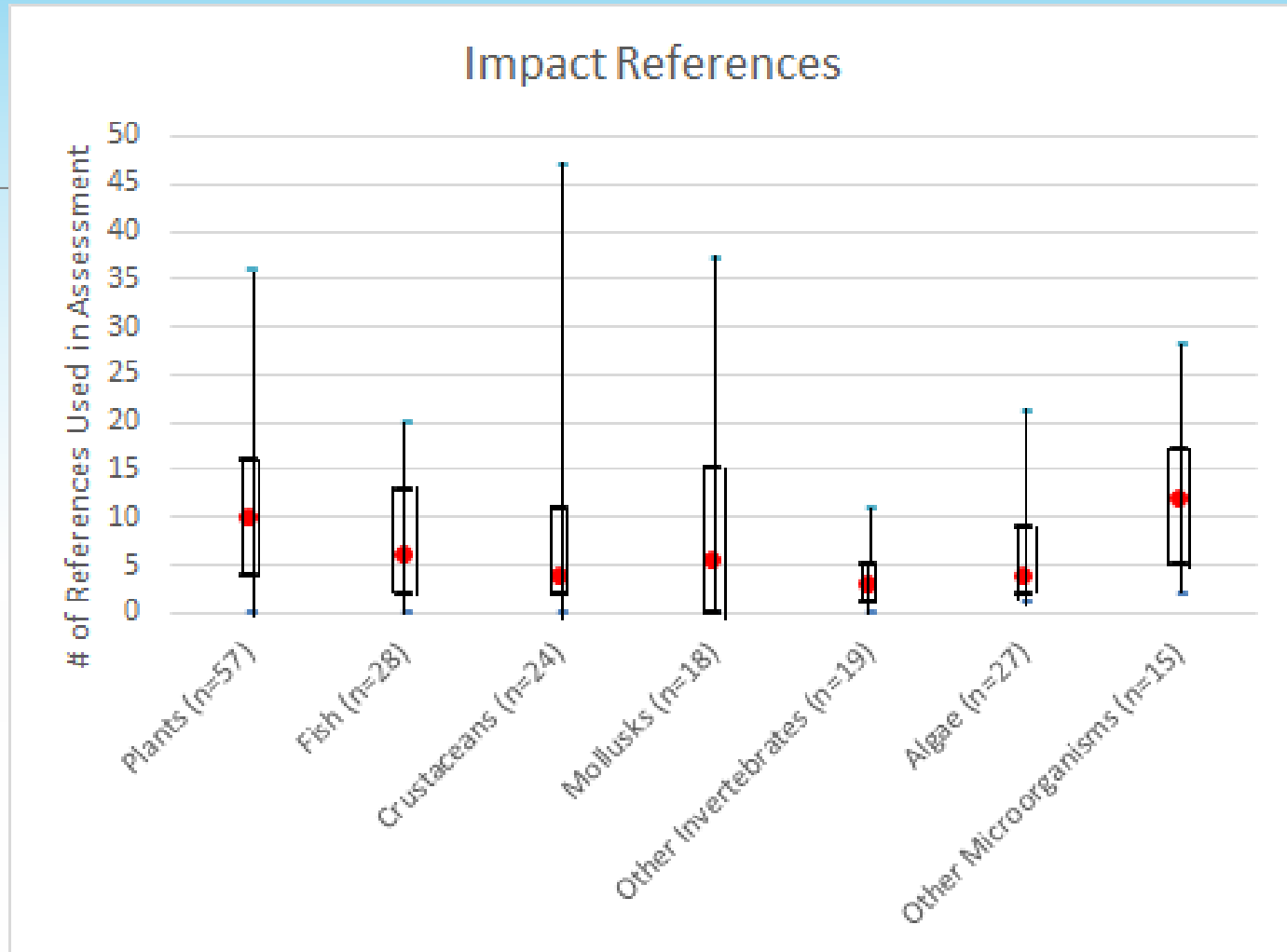
GLANSIS Records per square mile by HUC8



Norfolk Esri, HERE, Garmin, OpenStreetMap contributors, and the GIS user community

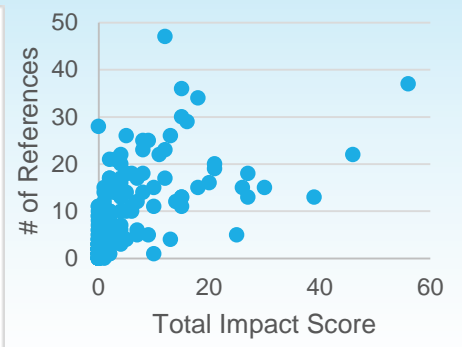
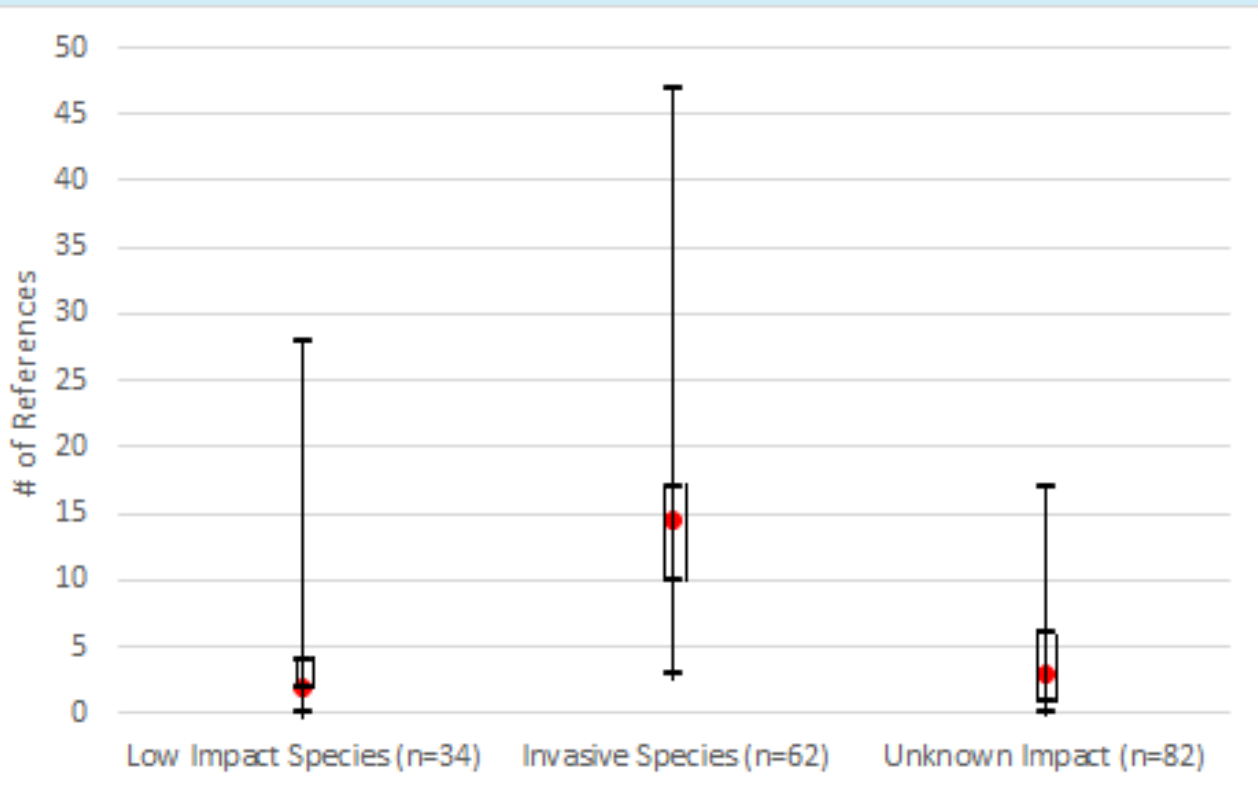
Nick Boucher, October 2019

Evaluating Gaps in Impact-Relevant Studies



Based on References used in Organism Impact Assessments, NOAA Tech Memo GLERL-TM-161 and TM-161b

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Evaluating Gaps in Impact-Relevant Studies

Which categories and species have the most unknowns?

	Health	Competition	Predator-Prey	Genetics	WaterQuality	Physical	HumanHealth	Infrastructure	Water Quality	Economic	Recreation	Aesthetic	Biocontrol	Commercial	Recreation	Medical	Remediation	Ecological
Unknowns - Overall	32	89	102	42	80	69	4	5	20	9	16	11	6	7	10	8	8	27
Unknowns - Plants (n=57)	13	22	35	25	24	14	1	0	3	1	0	1	2	2	0	0	4	6
Unknowns - Fish (n=28)	4	15	17	4	19	21	0	0	3	2	10	7	0	3	8	3	0	7
Unknowns - Crustaceans (n=24)	3	19	19	2	10	11	1	0	3	3	3	1	3	0	0	2	0	9
Unknowns - Mollusks (n=18)	6	14	15	5	13	13	2	3	1	1	1	1	0	2	0	0	2	0
Unknowns - Other Invertebrates (n=19)	6	11	11	6	10	10	0	1	9	2	2	1	1	0	2	1	2	5
Unknowns - Algae (n=27)	0	6	3	0	2	0	0	1	1	0	0	0	0	0	0	2	0	0
Unknowns - Other Microorganisms (n=15)	0	2	2	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0

Numbers indicate the number of species that scored unknown for a particular subcategory of impact

Red boxes indicate more than half the species score unknown

Orange boxes indicate that more than 25% of species scored unknown

Identified Needs

- Canadian data in a comparable searchable format.

- Work needed for understudied nonindigenous species in all taxonomic groups, (perhaps especially insects?)
- Reports of nonindigenous species – especially microorganisms, especially Lake Superior and other ‘understudied watersheds.
- More impact studies – surprisingly, especially on (a) impact to food-web dynamics and (b) the socio-economic impact of fish introductions

GLANSIS is available as a regional resource to help researchers and managers access available data and literature.

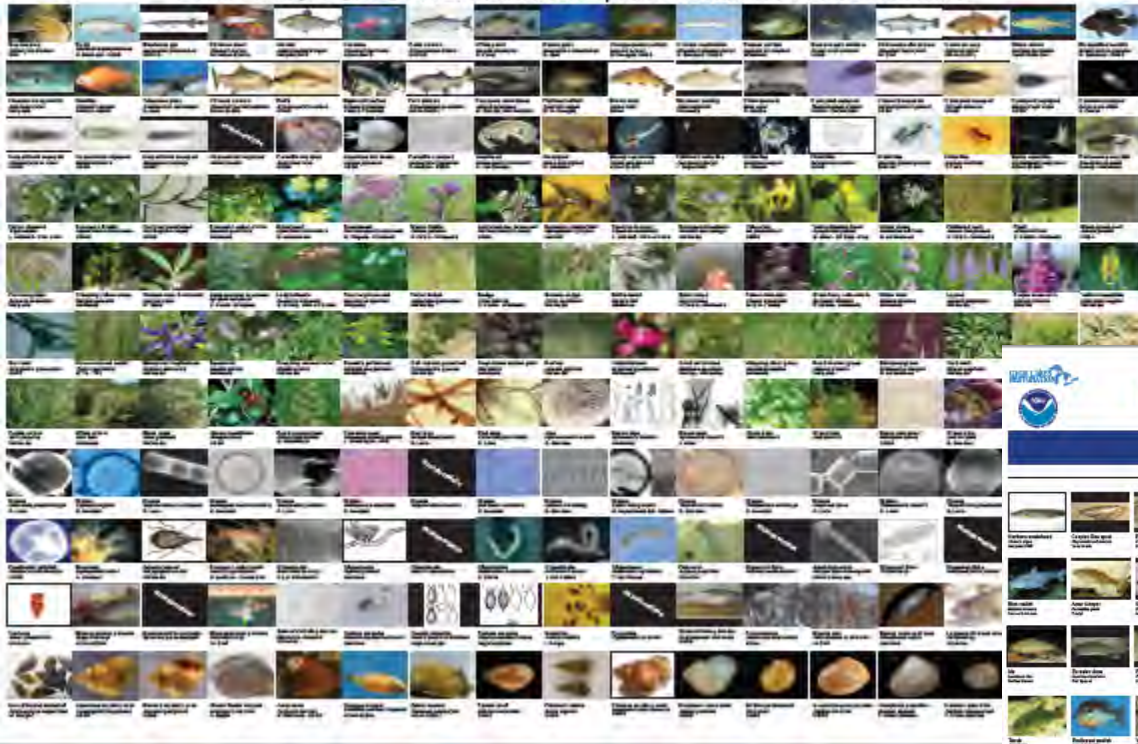
Also Needed: Photos and Reviews

Contribute



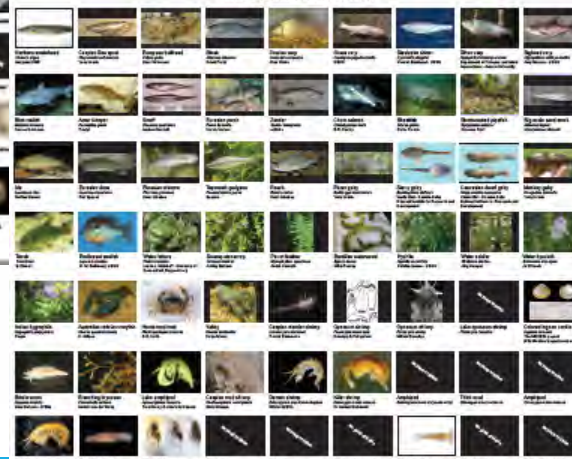
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Some of the 180 182 184 187 Non-Native Species Established in the Great Lakes



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The GLANSIS Watchlist



GLANSIS The Watchlist: Future Invaders of the Great Lakes

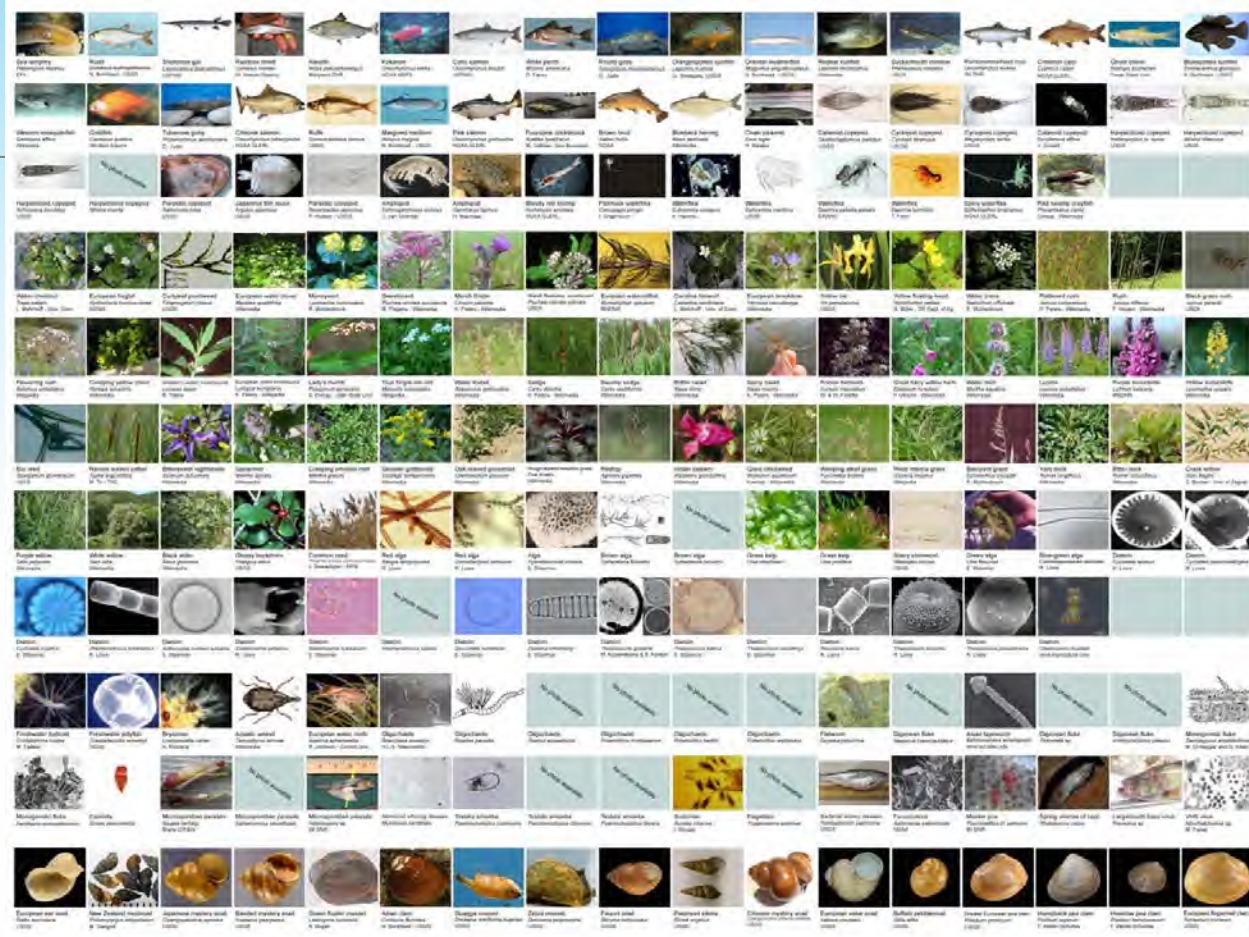
- The Watchlist provides information and the assessment necessary to:
- Guide early detection and rapid response efforts
 - Develop comprehensive policies that address multiple species and pathways
 - Prioritize monitoring efforts based on the relative threat of organisms to certain pathways
- The Risk Assessment Clearinghouse allows users to:
- Improve and compare risk assessment results for species of interest
 - Compare risk assessment methodologies
 - Access additional risk assessment literature and bibliographies
 - Download risk assessment data

GLANSIS NEEDS YOUR VERIFIED REPORTS!
 Send reports to:
ris@glansis.gov or glansis@glansis.gov

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Questions?



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