NOAA GREAT LAKES

*Improving NOAA's service to the Nation through collaboration*

# NOAA and the GLRI:
## Summary Presentations of all current NOAA projects

January 22, 2020

For additional information contact:

Rebecca Held Knoche (rebecca.held@noaa.gov)

Great Lakes RESTORATION

# Focus Area 2: Invasive Species

- 3 Objectives:
  - Prevention (NOAA)
  - Control
  - Developing control technologies and refining management techniques

# Objective 2.1 – Prevent introductions of new invasive species

**Objective**

2.1. Prevent introductions of new invasive species.

**Commitments**

- Work with Great Lakes states and tribes to conduct rapid response actions or exercises.
- Manage pathways through which invasive species can be introduced to the Great Lakes ecosystem.
- Conduct early detection and surveillance activities.

**Measures of Progress**

- 2.1.1.* Rapid responses or exercises conducted.
- 2.1.2. Projects that manage pathways through which invasive species can be introduced to the Great Lakes ecosystem.
- 2.1.3. Early detection and surveillance activities conducted.

# Invasive Species Projects

| Project | Presenter |
|---|---|
| Great Lakes Nonindigenous Species Information System (GLANSIS) | Rochelle Sturtevant, MI Sea Grant |
| Food Web Modeling to Support Risk Assessment of Asian Carp in the Great Lakes | Ed Rutherford, OAR GLERL |

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# GLANSIS

Rochelle Sturtevant

NOAA GLRI Webinar

January 22, 2020

Great Lakes RESTORATION

# GLANSIS Introduction

- Felix Martinez NOAA/NCCOS, Ashley Elgin NOAA/GLERL, Rochelle Sturtevant MI Sea Grant
- FY16=$74,714; FY17 = $250,000; FY18 = 250,000; FY19= $300,945, FY20= $300,000
- Focus Area 2: AIS,
  - Objectives: Prevent new introductions of invasive species and Control established invasive species
- Partners and Collaborators: Michigan Sea Grant, USGS NAS, UM-GLAHF, Great Lakes Commission

# Project Description

GLANSIS is:

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

GLANSIS provides:

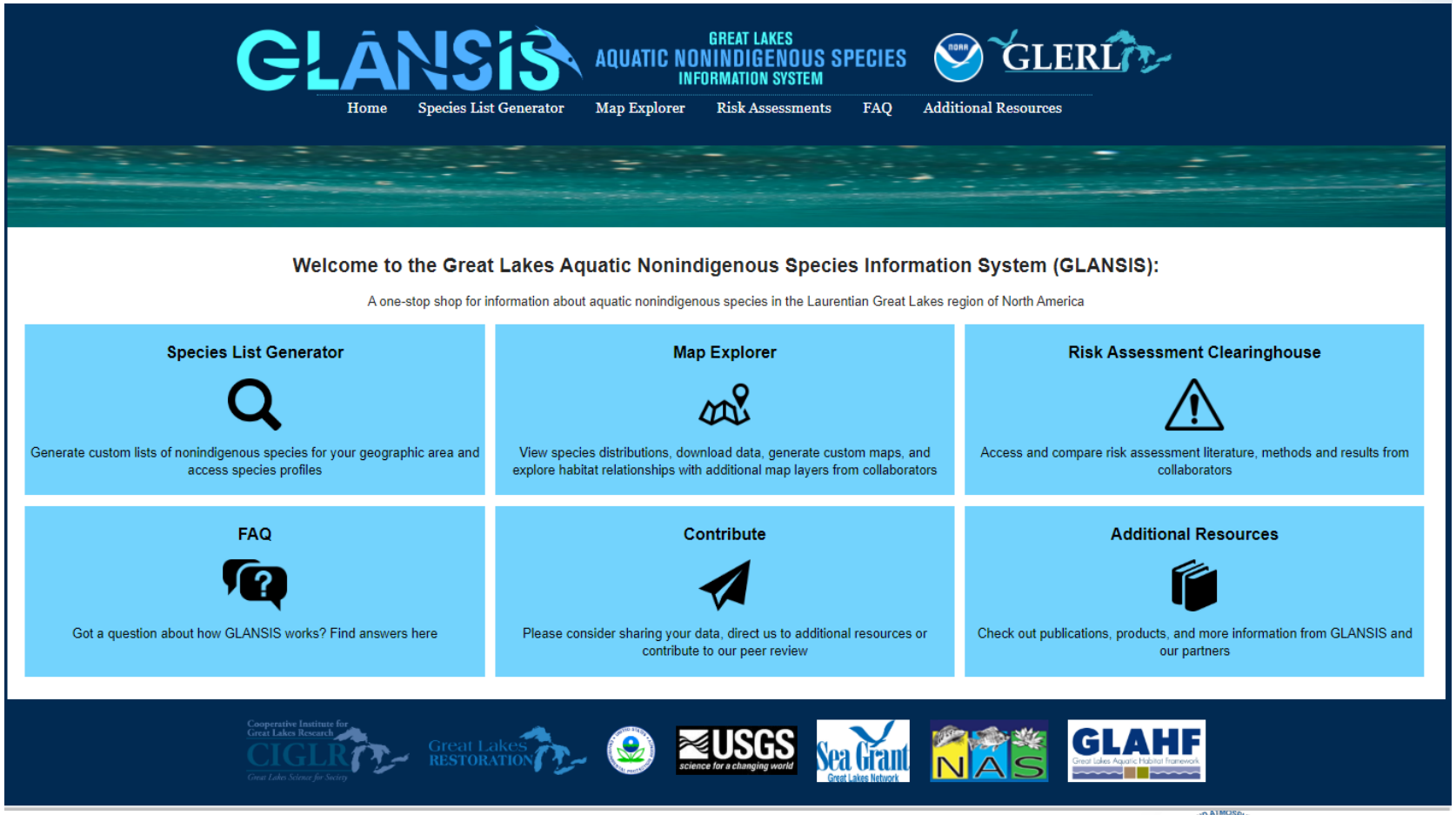
- Simple interface to access GLs specific content
- Advanced tools for finding and analyzing AIS information

GLANSIS contains:

- Comprehensive technical profiles on non-native species – both established and high risk
- Detailed collection records of 1000s of reports of non-native species
- Risk Assessment Summaries

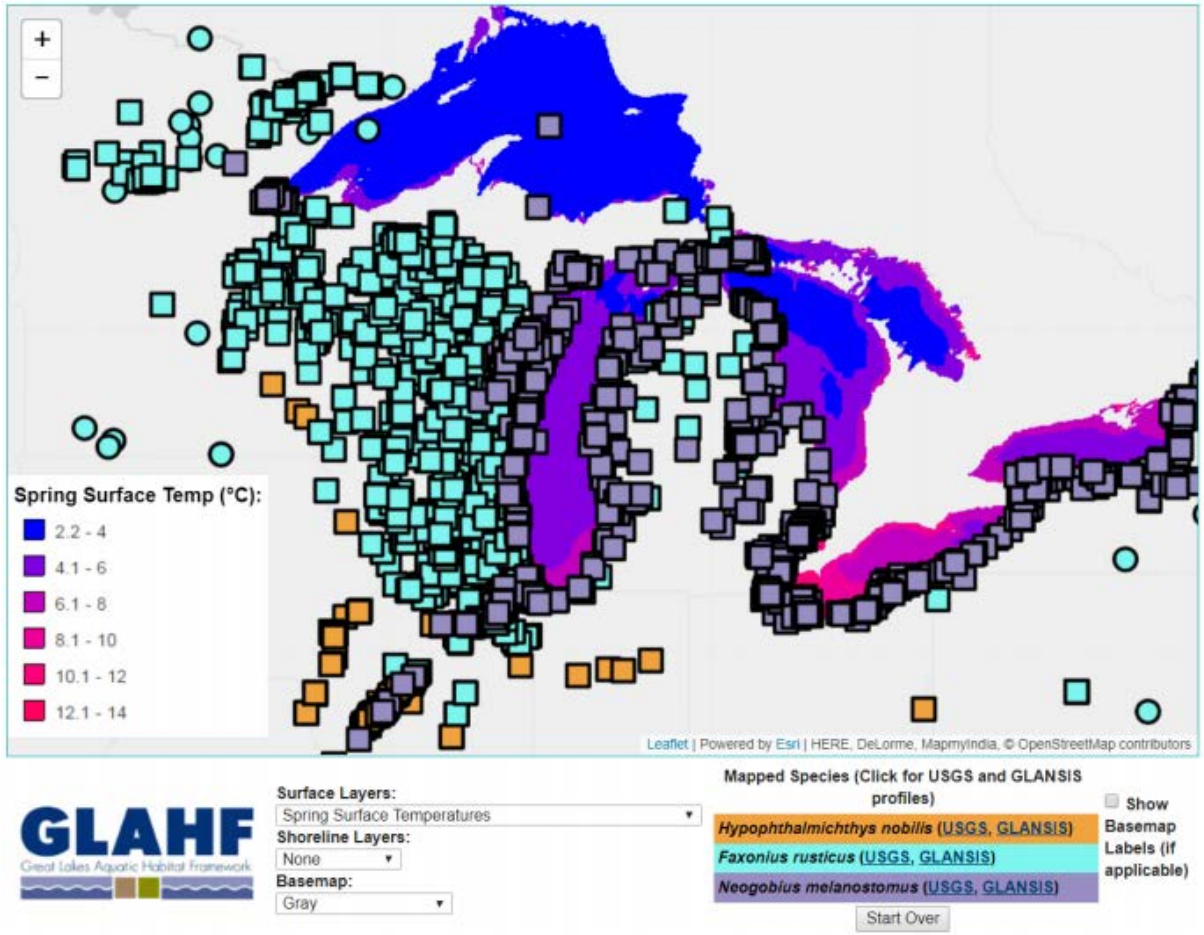
# Project Description - Deliverables

- Improved Navigation



# Project Description - Deliverables

- Improved
  - Mapping
  - Interface



# Project Description - Deliverables

- Improved Risk Info

| Species | Cherax destructor | Cherax destructor |
|---|---|---|
| Common Names | Yabby | Yabby |
| Date | 2017/08 | NA |
| Organization | NA | NA |
| Method | New York Invasive Species Information (NYIS.INFO) | NOAA GLANSIS Watchlist |
| Citation | Schwartzberg, Ezra. Prepared for David J. Adams, New York State Dept. of Environmental Conservation. Invasivity Assessments for Non-native Animal Species. Adirondack Research, LLC. P.O Document No. 0018450. 09/30/2017. | https://www.glerl.noaa.gov//pubs/tech_reports/glerl-169/tm-169.pdf |
| Geographic scope of assessment | NY | Great Lakes |
| Status | NA | Not established in North America |
| Introduction | NA | Low probability of introduction via unauthorized intentional release (Confidence high) |
| Survival | Ecological Amplitude and Distribution Score = 9 out of 30 possible | NA |
| Establishment | Biological Characteristic and Dispersal Ability Score = 27 out of 30 possible | Moderate probability of Establishment (Confidence High) |
| Spread | Biological Characteristic and Dispersal Ability Score = 27 out of 30 possible | NA |

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# Food Web Modeling to Support Asian Carp Risk Assessment in the Great Lakes

Ed Rutherford

NOAA GLRI Webinar

January 22, 2020

# Project Introduction

- Ed Rutherford (Project lead) and Doran Mason (co-PI): NOAA GLERL
- GLRI Funding:

  FY11-12 ($700,994); FY16 ($152,128 ), FY17 ($159,590 ), FY18 ($203,100 ), FY19 ($105,000), FY20 ($105,000)

- GLRI Action Plan Focus Area 2 – Invasive Species;

  Objective 2.1 – prevent new introductions of Invasive Species;

  Objective 2.2 – Control Invasive Species

  Measures of Progress – number of food web models developed; number of Asian carp food web impact risk assessments completed.

# Project Introduction (Cont.)

- Partners/Collaborators

  Hongyan Zhang[1]; Yu-Chun Kao[2]; Lori Ivan[2]; Shaye Sable[3], Aaron Adamack[4]; Beth Fulton[5]; Kenneth Rose[6]

  Managers and Scientists from Army Corps of Engineers, USGS-GLSC, and State, Federal and Provincial Natural Resource Agencies

- 4 Graduate Students, 9 Undergraduate Students

[1] University of Michigan/Eureka Aquatic Assoc.

[2] Michigan State University

[3] Dynamic Solutions LLC

[4] Depart. Fisheries and Oceans Canada

[5] Commonwealth Scien. & Industrial Res. Org. (CSIRO)

[6] University of Maryland CEES

# Project Description

- ## Project Summary

  Model the potential risk of Asian carps to Great Lakes food webs using 3 different models:

  - Ecopath with Ecosim – EwE
  - Individual based bioenergetics model – IBM
  - Atlantis Ecosystem model

- ## Current Activities

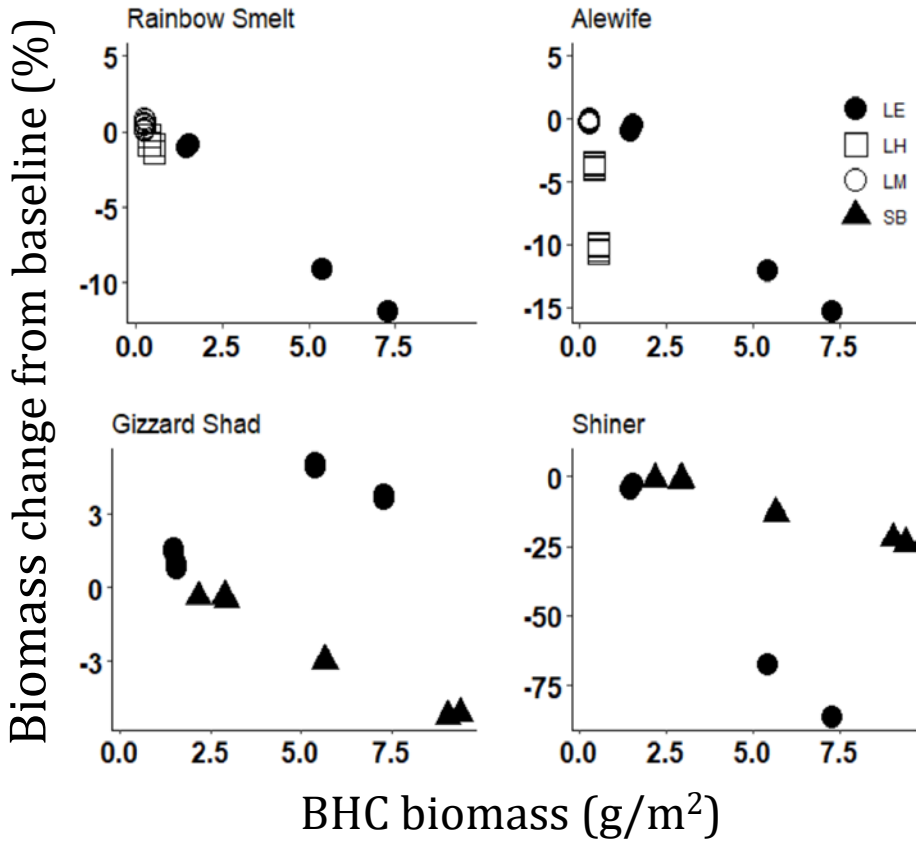
  - Use IBM and EwE models to simulate Bighead and Silver Carp population growth and food web response in the Illinois River;
  - Analyze long-term monitoring data on food web response and effects of controlled harvest of Asian carps;
  - Compare observed vs modeled response to gain confidence in our model predictions for the Great Lakes.

- ## Outcomes / Deliverables

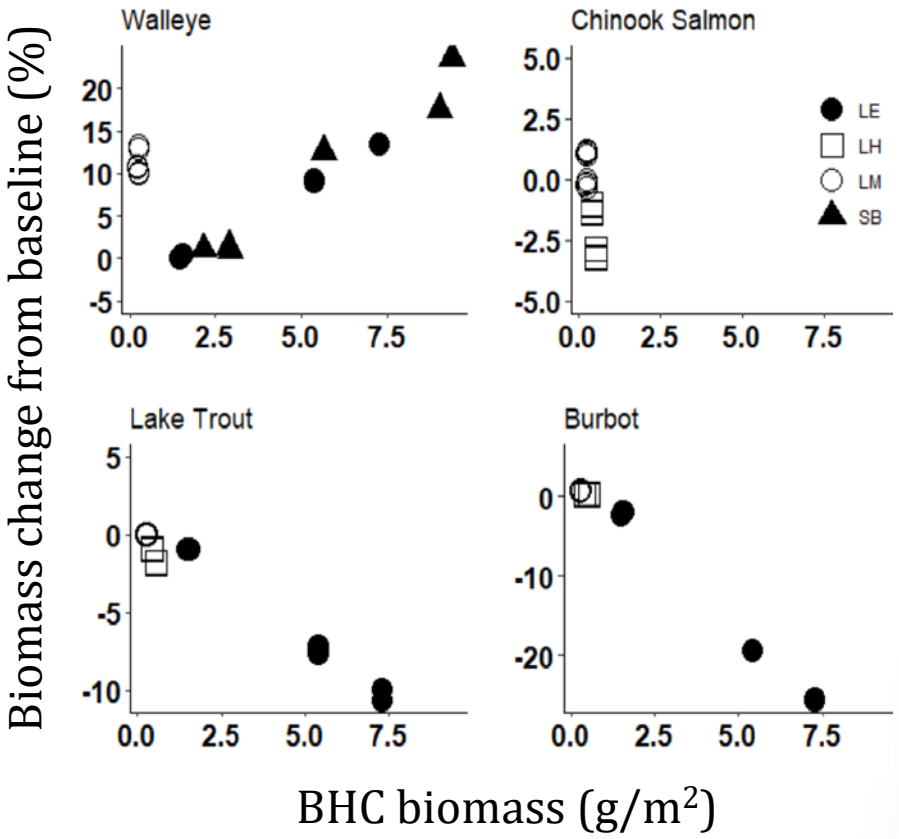
  - Developed food web models for 5 Great lakes habitats.
  - Published 2 journal articles, 1 journal article in review, 1 ready for review;
  - Two masters theses.

# Example of Food Web Model Output:

## Prey Fish




## Predator Fish



# Invasive Species Q&A

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