

INTERSTATE EARLY DETECTION AND RAPID RESPONSE



Lindsay Chadderton
The Nature Conservancy
 Ichadderton@tnc.org

Ceci Weibert
Great Lakes Commission
 cweibert@glc.org

BACKGROUND



**Interstate EDRR grant (s)
(Phase I Oct 2014)**



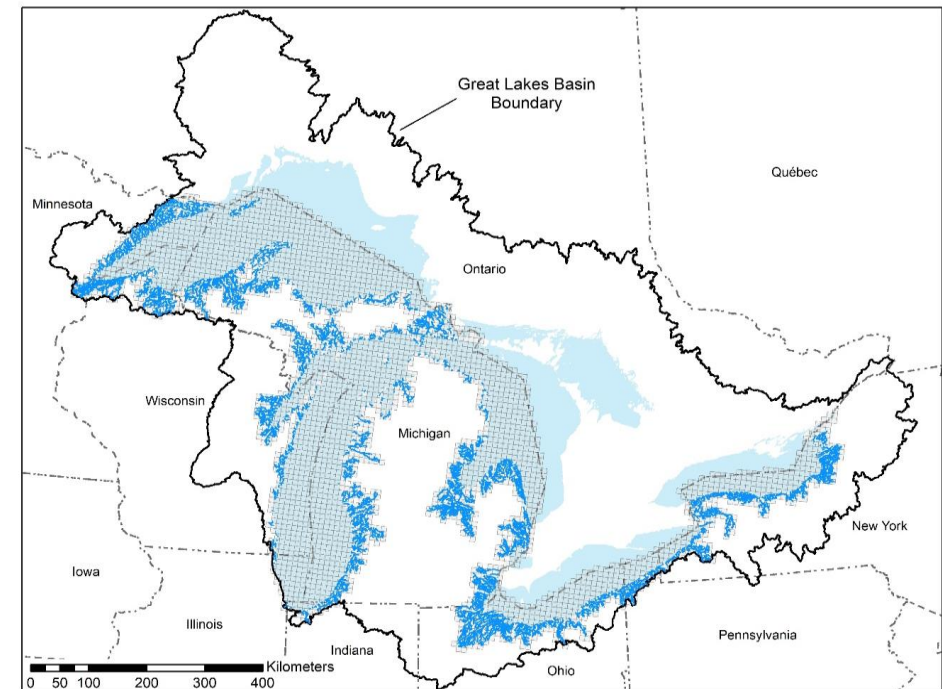
Purpose

Develop tools and documents to support regional surveillance and response

Address GLRI Action Plan goal:

A comprehensive program for detection and tracking newly identified invasive species in the Great Lakes is developed and provides up to date critical information needed by decision makers for evaluating potential rapid response actions

Scope



PARTNERS – “CORE TEAM”

- Sarah LeSage (Michigan Department of Environment, Great Lakes, and Energy) [Grant Program Manager]
- Seth Herbst and Lucas Nathan (Michigan Department of Natural Resources)
- Eric Fischer (Indiana Department of Natural Resources)
- Kelly Pennington (Minnesota Department of Natural Resources)
- Catherine McGlynn, Jennifer Dean (New York State Department of Environmental Conservation)
- John Navarro (Ohio Department of Natural Resources)
- James Grazio (Pennsylvania Department of Environmental Protection)
- (*Bob Wakeman*), Carroll Schaal and Maureen Ferry (Wisconsin Department of Natural Resources)
- Kevin Irons and Vic Santucci (Illinois Department of Natural Resources)
- (*Mike Hoff*), Amy McGovern, Kate Wyman-Grothem, and Rob Simmonds, Sandra Kepner (US Fish and Wildlife Service)
- Francine MacDonald and Jeff Brinsmead (Ontario Ministry of Northern Development, Mines, Natural Resources and Forestry)
- Olivier Morissette (Ministère des Forêts, de la Faune et des Parcs)

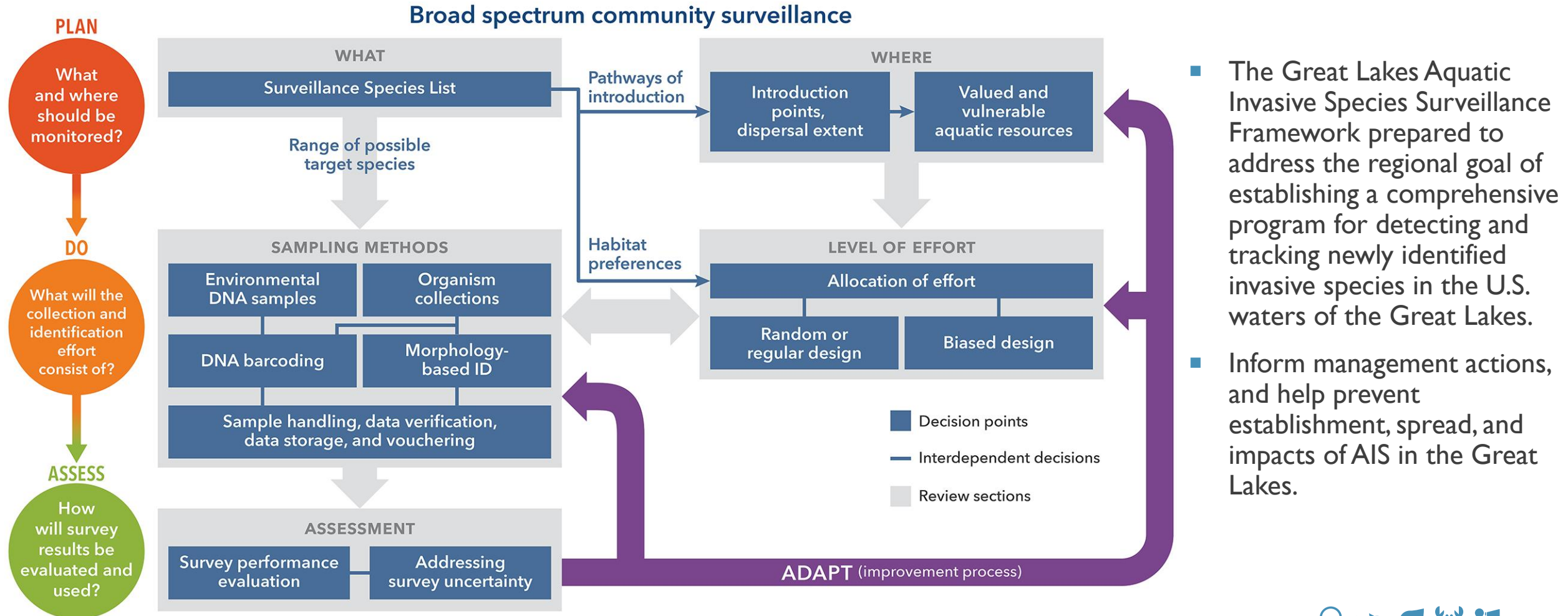


TECHNICAL ADVISORS AND PARTNERS

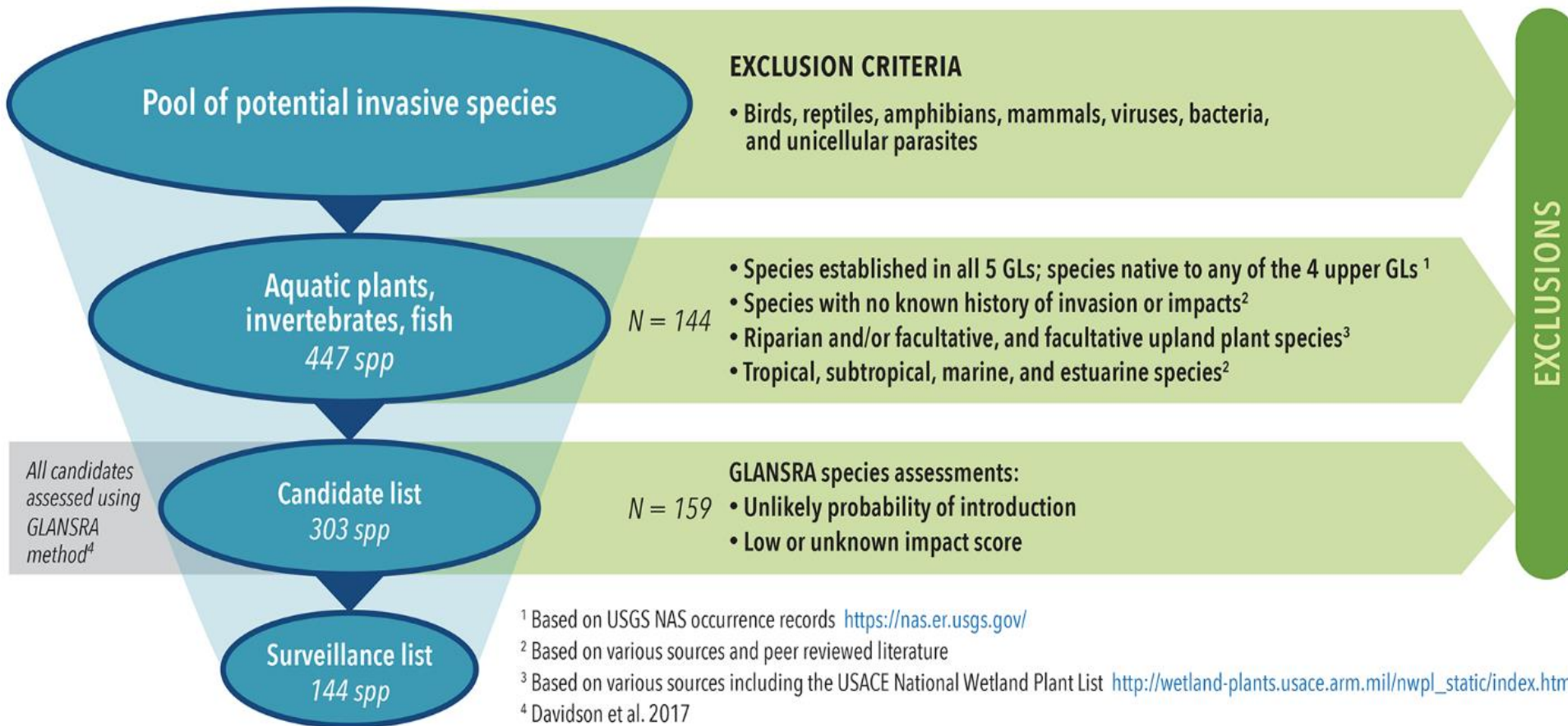
- Joel Hoffman, Anett Trebitz (EPA Duluth)
- Alisha Davidson and Donna Kashian (Wayne State)
- Jon Bossenbroek (University of Toledo)
- Anjie Bowen, Greg Wright, Cari-Ann Hayer, Ted (US Fish and Wildlife Service)
- Stevie Hensler, Tim Strakosh,

- Nick Phelps, Amy Kinsley, (UMN)
- Paul Venturelli (Ball State)

SURVEILLANCE COORDINATION FRAMEWORK



SURVEILLANCE SPECIES WATCH LIST



- Knowledge of the potential surveillance species targets informs sampling methods, sampling design, and habitat effort allocation to maximise detection probabilities for groups of taxa.

SURVEILLANCE SITE PRIORITIZATION



propagate variable

m value



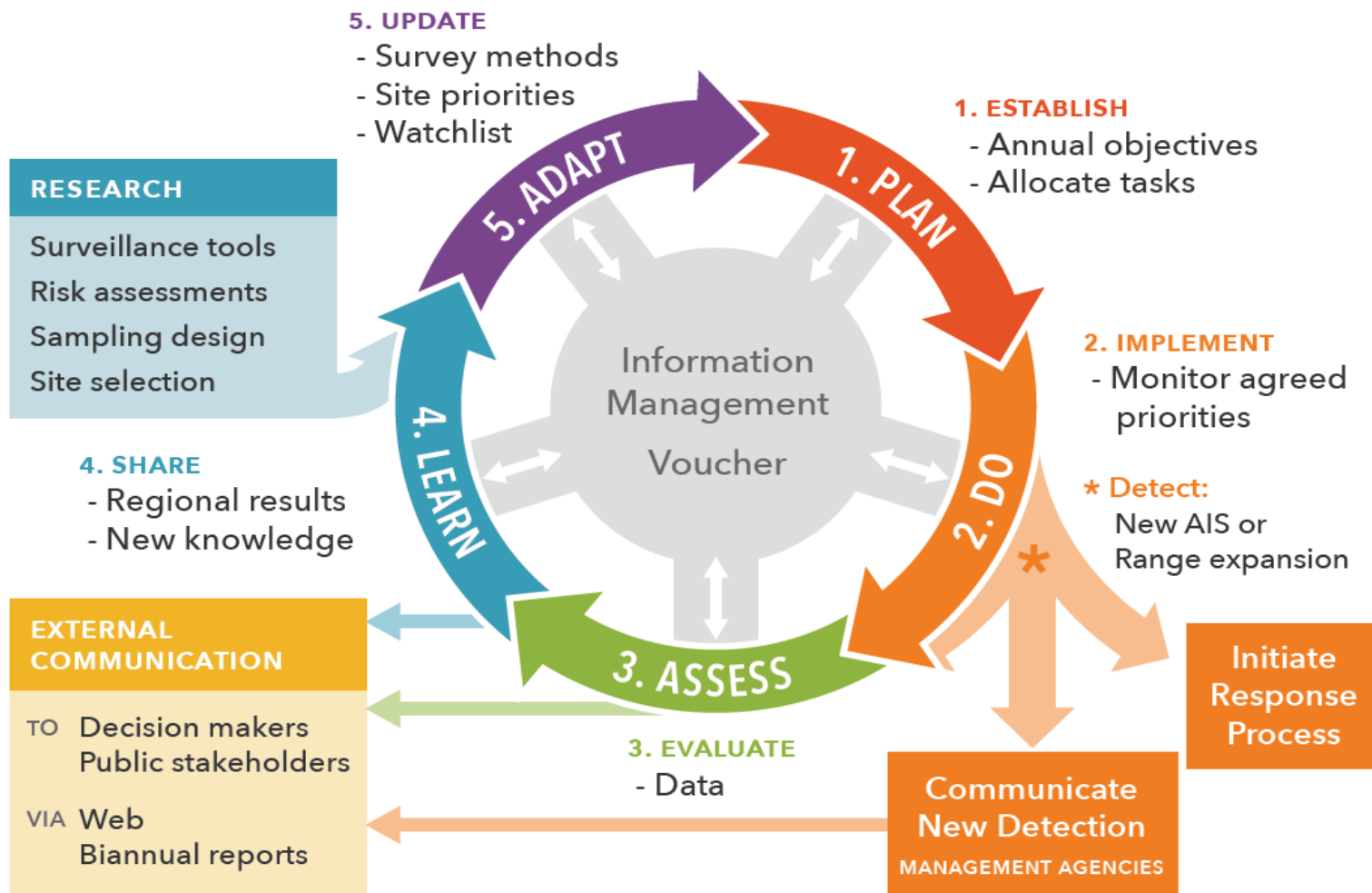
propagating factors"
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- The Great Lakes AIS surveillance site prioritization system is based on an additive model that combines surrogates for propagule pressure of the major pathways of invasion to predict the likelihood of AIS introduction at coastal sites spanning the U.S. waters of the Great Lakes

Tucker AJ, et al (2020. Management of Biological Invasions 11:607-632

SURVEILLANCE COORDINATION FRAMEWORK



- Framework provide operational guidance including adaptive management process to facilitate information sharing so that managers have up-to-date information needed to inform and refine a regionally coordinated surveillance program to help prevent establishment, spread, and impacts of AIS in the Great Lakes.

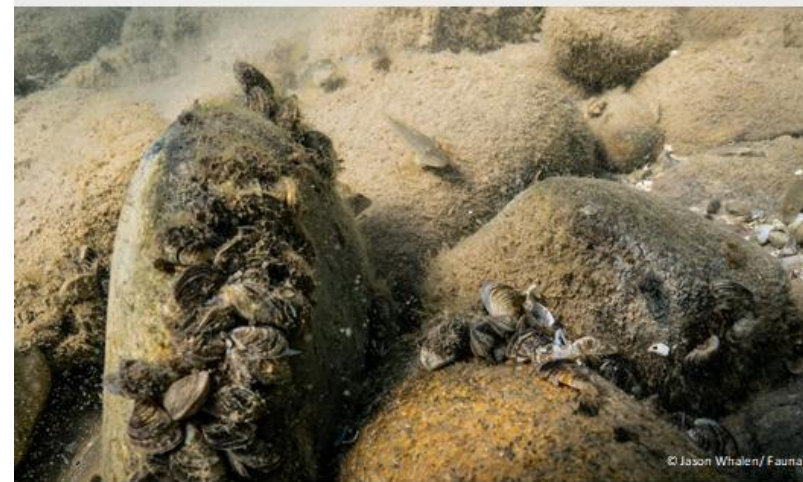


ANNUAL SURVEILLANCE COORDINATION MEETINGS

- Annual workshop convened to coordinate and communicate state, provincial, federal (binational), and Tribal partners surveillance programs within the basin

Participants share

- Annual surveillance results (previous season, effort, sites, species detections)
- Horizon scan (new detections, threats, or imminent invaders identified)
- Advances in surveillance methods
- Next seasons surveillance priorities Convene a workshop to review 2016 AIS monitoring results; recommend priorities for future monitoring efforts; assess benefits, concerns, and obstacles; and discuss capacity and needs for future monitoring

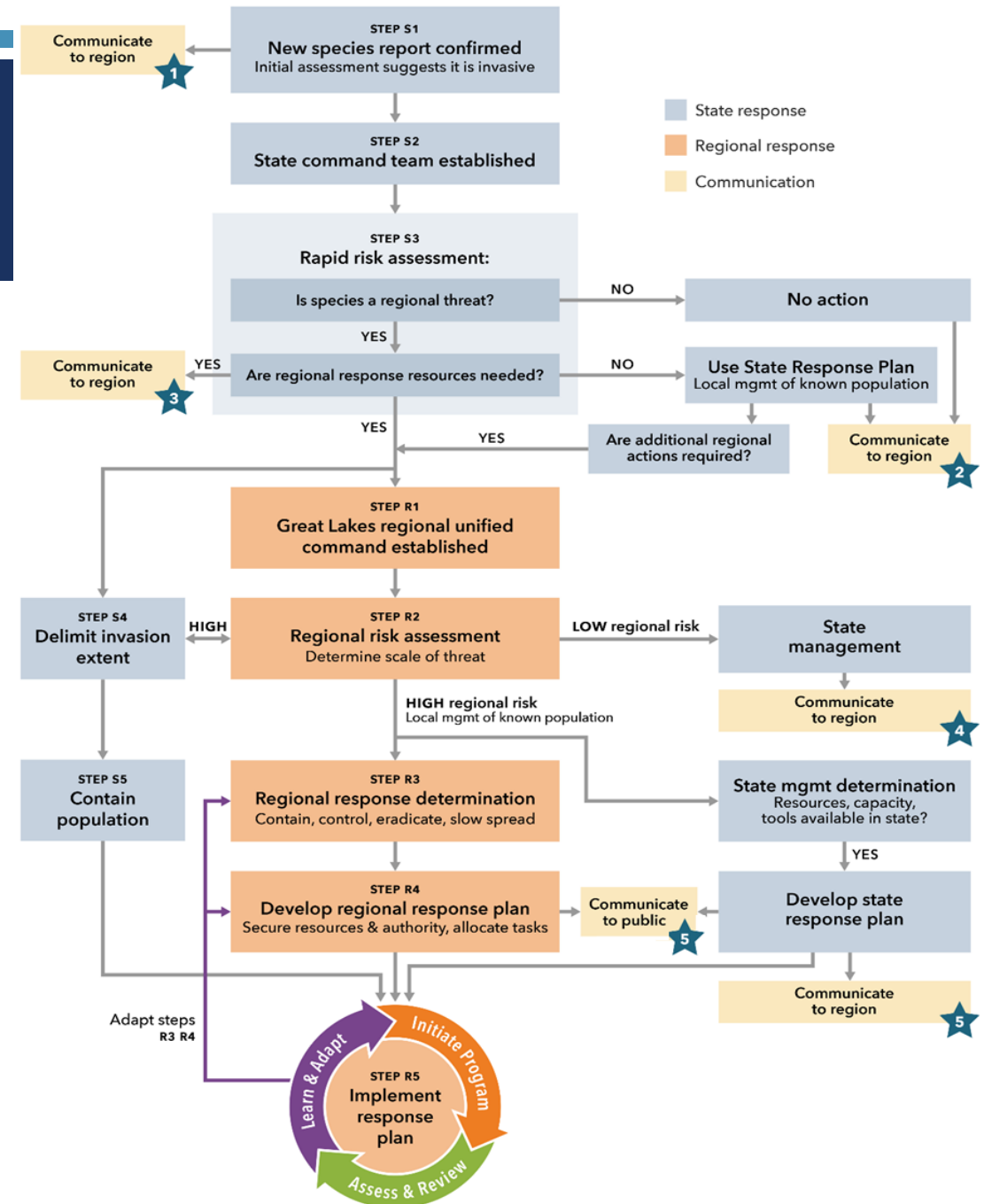


Great Lakes Basin Interstate
AIS Surveillance Planning

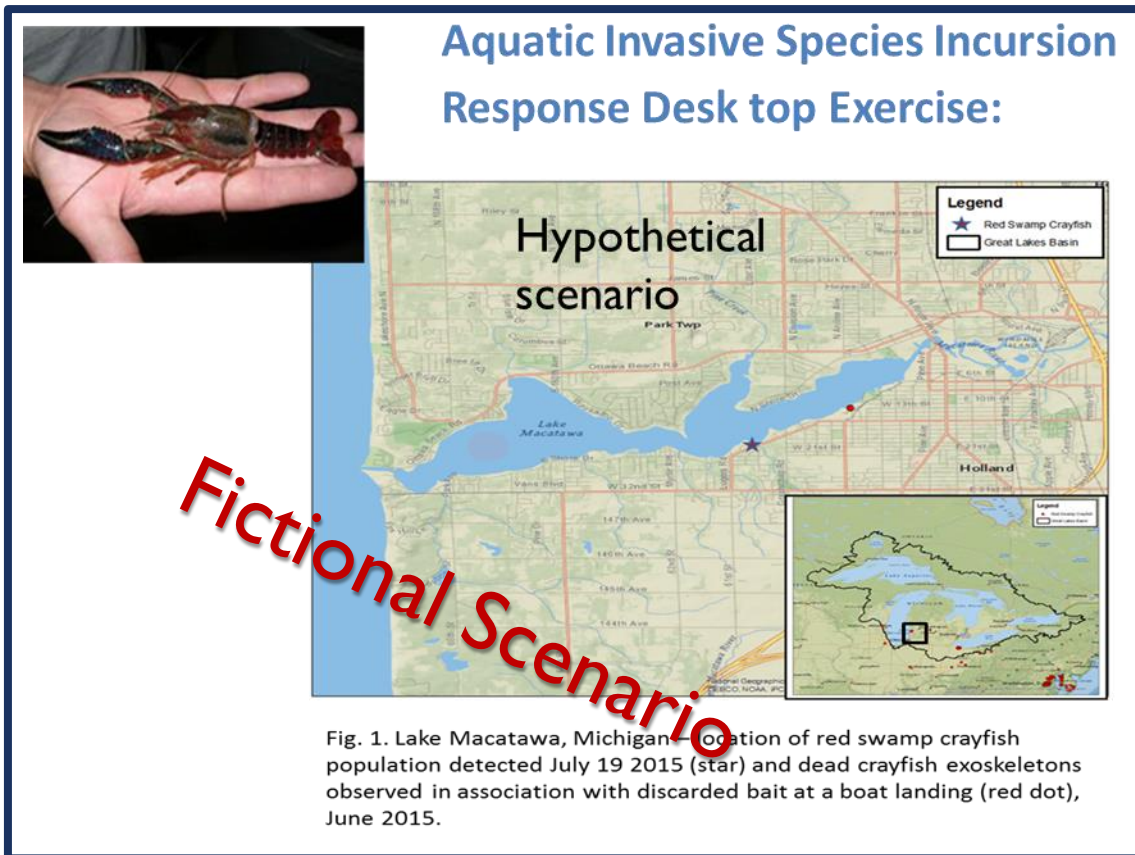
2017 & 2018

REGIONAL RESPONSE PLAN

- Based on the 2010 Mississippi River Basin Panel model rapid response plan, Provide guidance to the management agencies. Specifically, it includes criteria to help:
 - Determine if new incursion or range expansion reaches the threshold for a regional response.
 - Assess the potential threat to the region's environment, economy and human health.
 - Determine of potentially effective management response options.
 - Guidance on communication (inverts and plants)



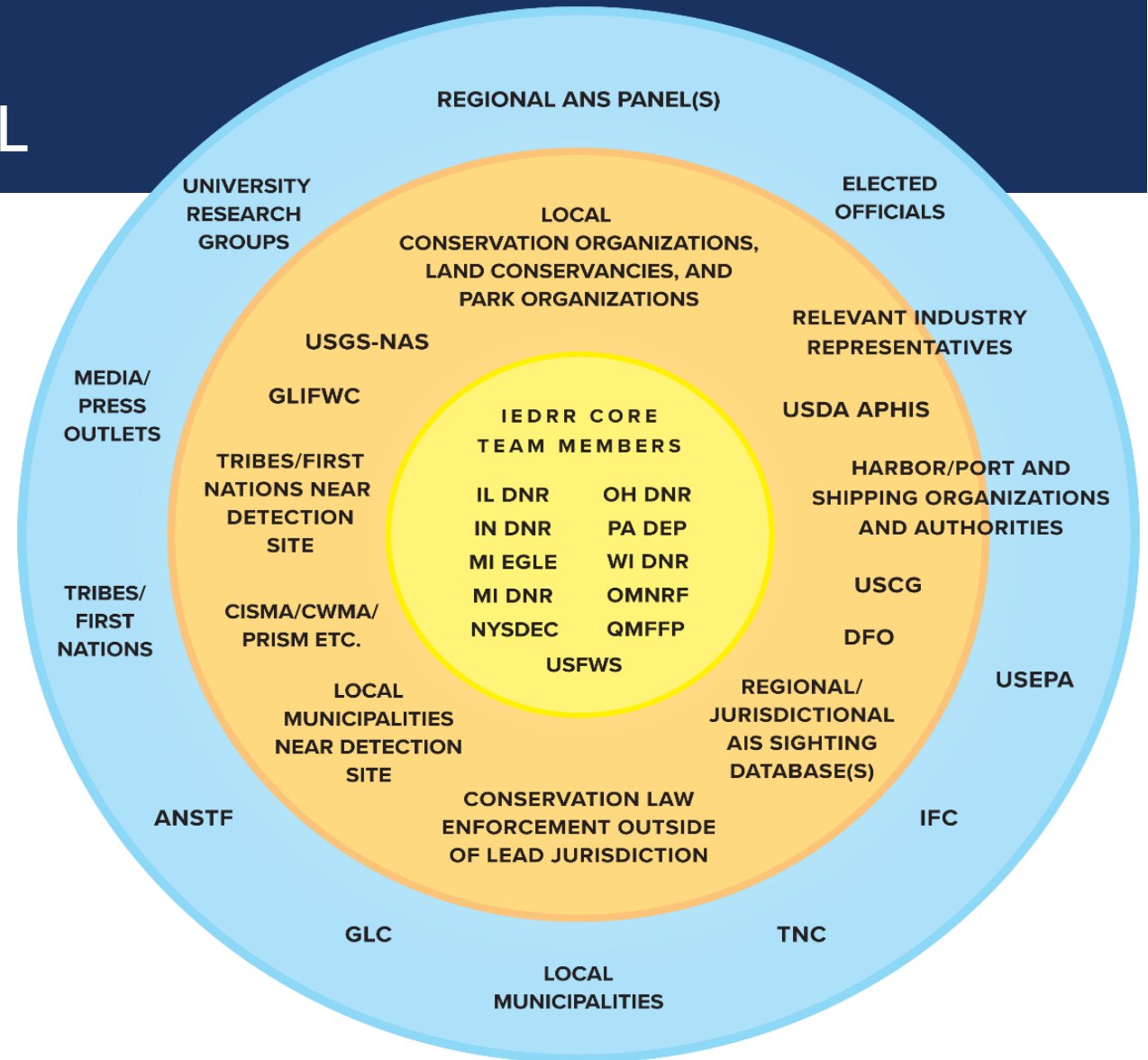
REGIONAL RESPONSE EXERCISES



- Facilitated Regional Response Exercises
- Build response capacity
- Test and refine regional response framework, communication plan
- Help inform existing response efforts
- Species included:
 - Starry stonewort,
 - Red Swamp Crayfish
 - Crucian carp
 - Australian Marron
 - Hydrilla
 - Tench

COMMUNICATIONS PROTOCOL

- Review existing communication plans and protocols related to AIS surveillance and response
- Lessons from previous response exercises
- Plan for communication of surveillance data and response actions.
- Integrated into surveillance framework and regional response plan
- Coordinate with key partners (e.g., federal agencies, fisheries managers) in the development of the plan

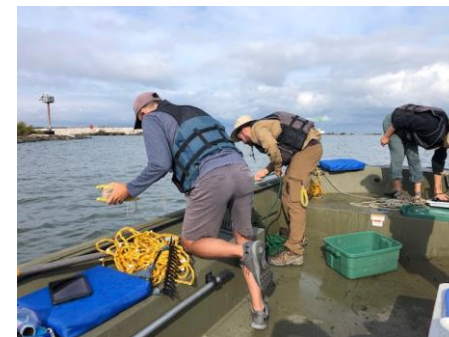
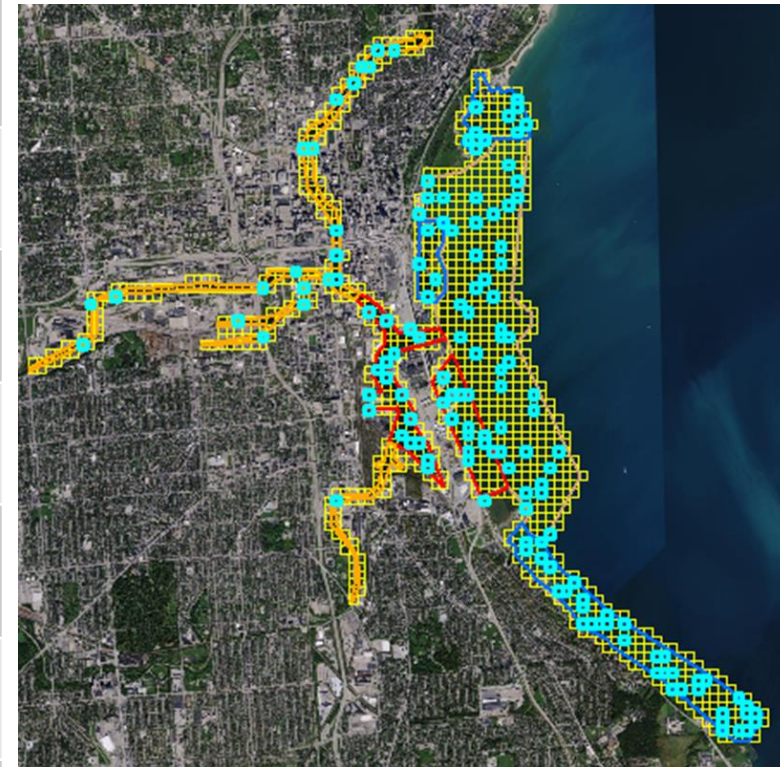


AQUATIC PLANT SAMPLING

- Develop invasive macrophyte surveillance methods for Great Lakes waters

	Date	Design
Detroit River (MI)	Sept 2018	Generalized random; equal allocation east/west
	Aug 2019	Stratified random on richness surface
Cleveland (OH)	Sept 2017	Generalized random; equal allocation 3 zones
	Sept 2019	Stratified random on richness surface
Milwaukee (WI)	Sept 2017	Generalized random; equal allocation 4 zones
	Aug 2018	Stratified random on depth surface
	Sept 2019	Stratified random on richness surface

Also surveyed:
St Joseph River
Saginaw River



Tucker et al. *accepted*. *Mgmt of Biol Inv.*



AQUATIC PLANT PATHWAY RISK ASSESSMENT

- Explore pathways by which invasive aquatic plants can enter the Great Lakes basin,
 - Classify associated risk levels,
 - Identify gaps in prevention efforts including review of approaches used in each GL state for
 - education
 - management,
 - compliance and law enforcement

Interstate Aquatic Invasive Species Prevention, Early Detection, and Response:
Aquatic Plant Pathway Risk Assessment Report

March 2019

Ceci Weibert¹, Erika Jensen¹, Lindsay Chadderton², Andrew Tucker²

¹Great Lakes Commission, 1300 Victors Way, Suite 1350, Ann Arbor, Michigan 48108

²The Nature Conservancy, 434 Flanner Hall, University of Notre Dame, Notre Dame, Indiana 46556

Output aims to help states and regional partners quantify pathway activity for invasive aquatic plants; determine whether this activity is associated with high-risk plant species and identify gaps in management, compliance and law enforcement, and education for each pathway.



PHASE IV: 2021-2022

1. Facilitate interjurisdictional surveillance planning and coordination
2. Improve and refine the Great Lakes surveillance site prioritization system
3. Expand the site prioritization system to inland waters of Great Lakes States and Tribal territories
4. Develop best practice guidance for aquatic plant surveillance methods for inland waters

OBJECTIVE 2: REFINE GREAT LAKES SITE PRIORITY MODELS

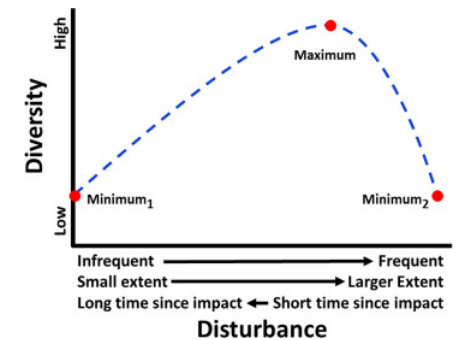
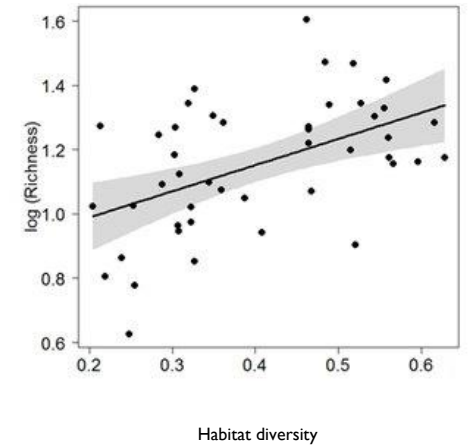
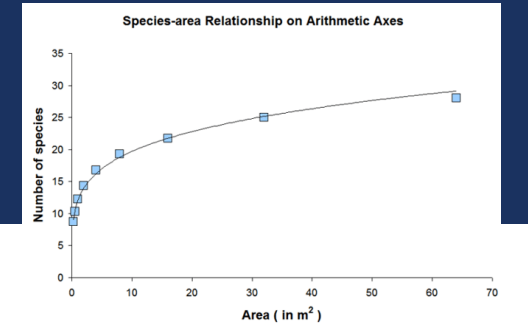
Incorporate

- connectivity layer
 - Shipping (build off Bossenbroek network model data)
 - Natural connectivity
- Environmental suitability (at grid square level)

Assumptions:

Biodiversity correlated with habitat diversity and human disturbance

- Habitat suitability: hope to use a subset of the GLAPH layers, need to solve nearshore gaps and tributaries
- Human disturbance (condition) – GLEAM data layers



OBJECTIVE 3: INLAND LAKES SITE PRIORITY FRAMEWORK

Workshop

- Bring existing state prioritization efforts together (MN, WI and NY) & USGS national effort?
- Identify commonalities, data sources and issues with upscaling to regional model

Clarify priorities

- introduction hot spots (pathways),
- environmental suitability (SDM vs first principles (general habitat and condition measures)
- vulnerability vs slow spread across landscape?
- community (AIS) vs individual AIS priorities
- Lakes (minimum size) vs ponds vs rivers (future steps)
- Links to recreational boater outreach and education project

OBJECTIVE 4: IAP SURVEILLANCE METHODS FOR INLAND LAKES

- **Outputs:**
- A technical workshop and associated documentation on IAP early detection monitoring methods
- An annotated bibliography of relevant IAP early detection monitoring methods protocols and documents
- A best practices guidance document that summarizes recommendations for early detection of IAP in inland lakes



NEW FOR 2022: PROGRAMMATIC WEBSITE

- Regional Surveillance Outputs
 - Internal and external facing
- GIS projects
 - Site priorities (Great Lakes and inland waters)
- Surveillance species lists
- Surveillance Framework
- Response Framework
- Communications Plan
- Surveillance meeting proceedings

