



Mitigating risk of invasive crayfish introductions  
and spread in the Great Lakes

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# The problem

- Invasive crayfishes represent a basin wide threat to Great Lakes ecosystems and human infrastructure
- The live trade represents a likely vector for future crayfish introductions (Smith et al. 2019, Larson and Olden 2008, DiStefano et al. 2009)
- Currently no compiled, basin-wide data on prevalence of crayfish in trade
  - Needed to prioritize early detection, monitoring, or response efforts
- Response efforts are costly
  - MI effort for Red Swamp Crayfish: ~\$400k per year.



## Specimen #1 Diagnosis

Jar Label:

MN DNR Retail Assessment 2021
Site #30
Date of Purchase: 7/15/21
Collector: FCI
Store Label: "Red Brick Yabby"

Condition of Specimen: Specimen intact. Slight tint of isopropyl alcohol, indicating some leeching of exoskeletal pigment. Clouding of eyes. Exoskeleton darkened.

Examination Observations: Specimen is consistent with Parastacidae crayfish on basis of chelae morphology, rostrum structure, and telson structure. Blue banding present on dorsal and ventral margins of abdominal segments. Areola open and broad. Rostrum with three pairs of marginal rostral spines, terminating with a pointed acumen. Two apical spines terminating anteriorly of basal rostral carina. Gonopores on base of third pair of periopods, none present on 5<sup>th</sup> pair, indicating specimen is a female. Lateral margin of propodus darkened, along with tip of dactylus. Base of dactylus and mesial margin of chelae palms brown/brownish red. Three cervical spines on the cephalon/thoracic margin. Four distinct, raised carina along dorsal cephalon (two at mid-eye level, two at base of rostrum). Lateral carina poorly developed, terminating with spine. Telson lacking suture ridge traversing width.



# Project objectives

1. Identification of introduction pathways and data gaps
2. Quantification of the prevalence of invasive crayfishes in the retail aquarium trade
  - Especially in poorly or non-surveyed localities
3. Develop stakeholder relationships for educational outreach
  - Agencies, retail trade

## Partners are Basin-wide

- Invasive Crayfish Collaborative
- Michigan DNR
- Wisconsin DNR
- Minnesota DNR
- Ohio DNR
- Gun Lake Tribe of Pottawatomi Indians
- University of Illinois Urbana-Champaign
- Illinois/Indiana Sea Grant
- Loyola University-Chicago
- Buffalo State University



## Objective 1: Identify introduction pathways and data gaps

- Purpose: determine priority locations for early detection and monitoring
- Great Lakes wide
  - Identify pathways specific to each state and those shared among states
- Outputs: Updated compilation of literature and datasets of invasions and invasion pathways in the Great Lakes

## Objective 2: Prevalence of invasive crayfishes in the retail aquarium trade

- Purposes: Develop basin-wide database of prevalence, identify priority locations for future monitoring and outreach activities
- New surveys of retail outlets in eastern Basin (NY and PA) & Michigan and neighboring localities
- Leverage partnerships and ongoing studies to develop database
- Outputs: Region-wide database of invasive crayfish prevalence in trade



## Objective 3: Develop relationships for educational outreach

- Purpose: Identify needs for training and educational outreach on invasive crayfishes
- Leverage ICC network to enhance opportunities for outreach to regional, state, federal, and tribal partners.
- Begin development of training materials for focal audiences (including retail trade)
- Outputs: Trade-specific draft literature for outreach with trade industry

# Project represents first phase of three-phase project

- Phase 2
  - Design and test outreach to specific stakeholders
  - Design and test standardized early detection methodologies
- Phase 3
  - Implement and evaluate sampling methodologies for early detection across basin
  - Implement and evaluate outreach efforts across basin

