



Recent Introductions in the Gulf and South Atlantic

Wesley Daniel, PhD

U.S. Geological Survey

Wetland and Aquatic Research Center

USGS Nonindigenous Aquatic Species Database



OUR MISSION

Our mission at the U.S. Geological Survey's Nonindigenous Aquatic Species Database is to be the centralized source for aquatic invasive species needs for resource managers, researchers, decision makers, and the public.

OUR SERVICES

- Track every nonindigenous aquatic species in U.S. waters
- Contribute scientific reports
- Provide online/real-time queries of trusted data
- Create spatial data sets (biological and landscape)
- Develop actionable tools
- Serve distribution maps
- Lead horizon scans to identify risky species
- Offer general invasive species information



USGS Nonindigenous Aquatic Species Database



NUMBER OF SPECIES TRACKED

1,432*



TOTAL RECORDS

841,798*

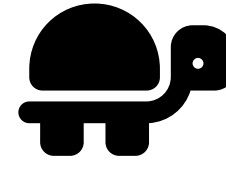
* As of 2025-04-01



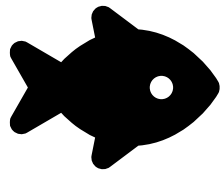
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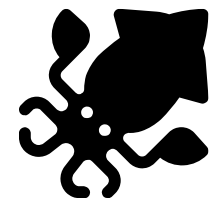
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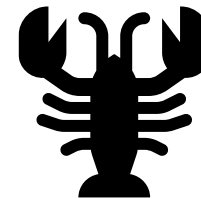
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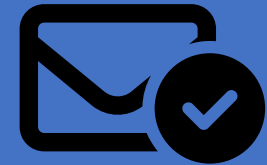
804 TAXA



83 TAXA



114 TAXA



NUMBER OF ALERT
SYSTEM USERS

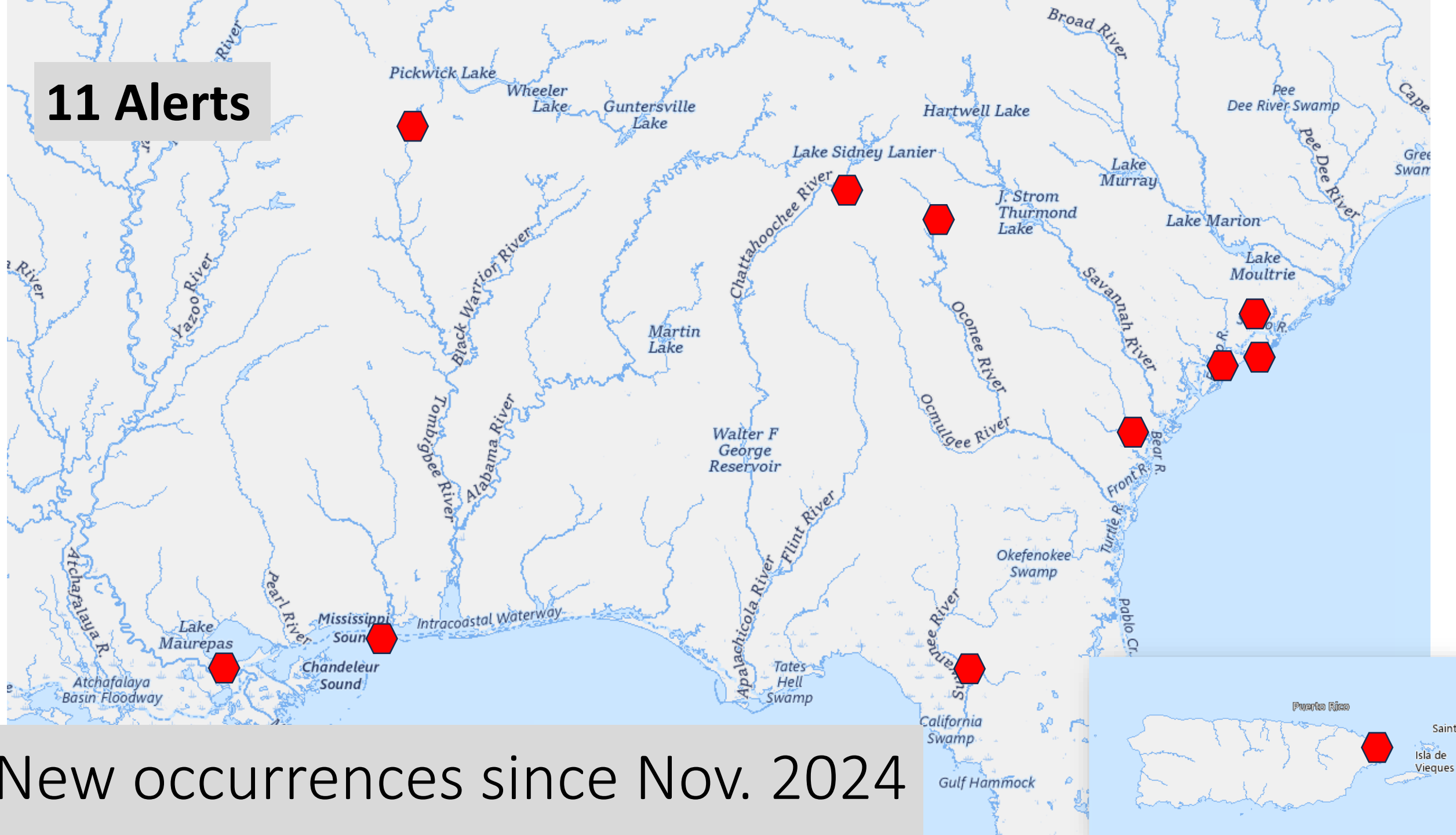
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<https://nas.er.usgs.gov>

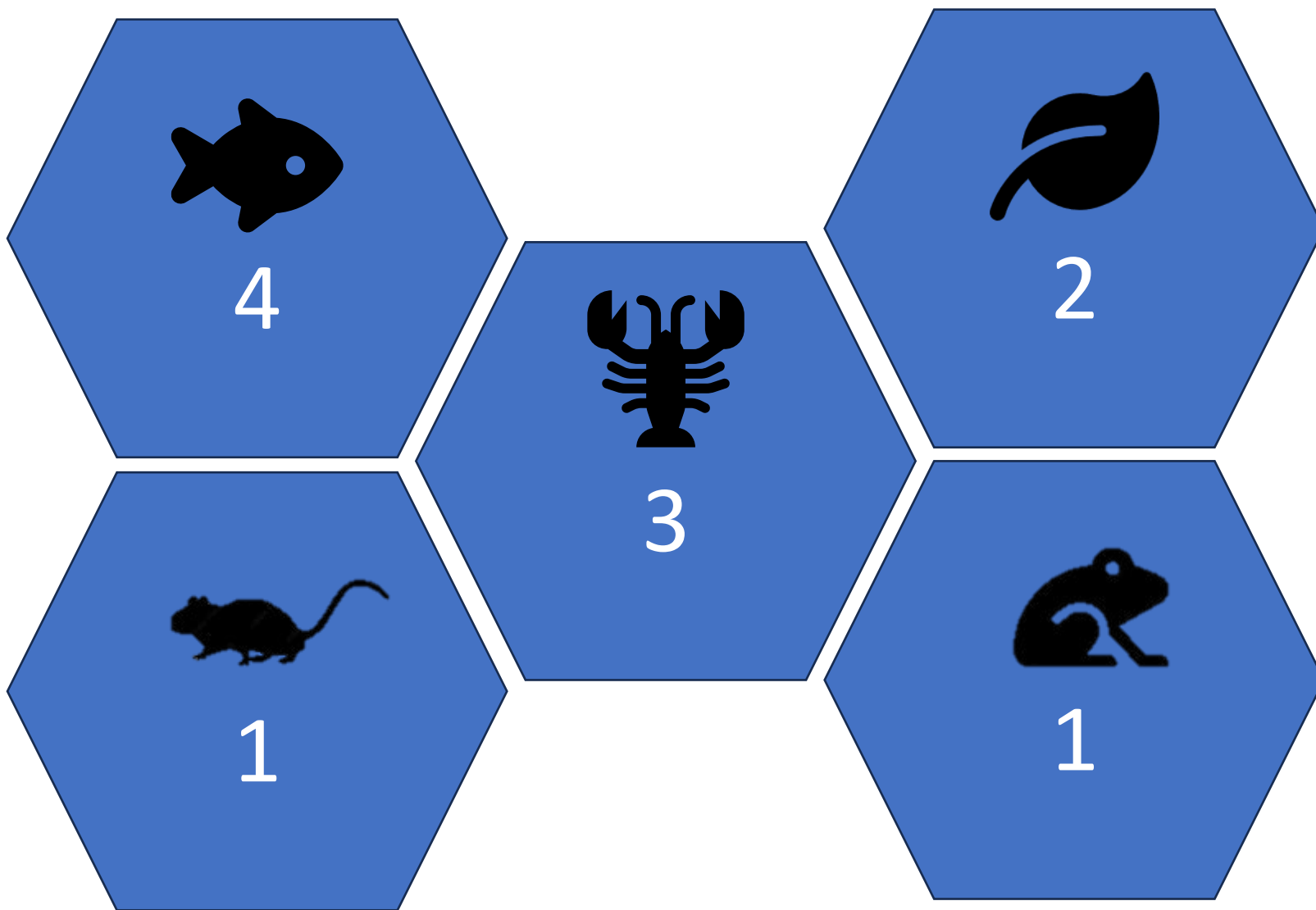


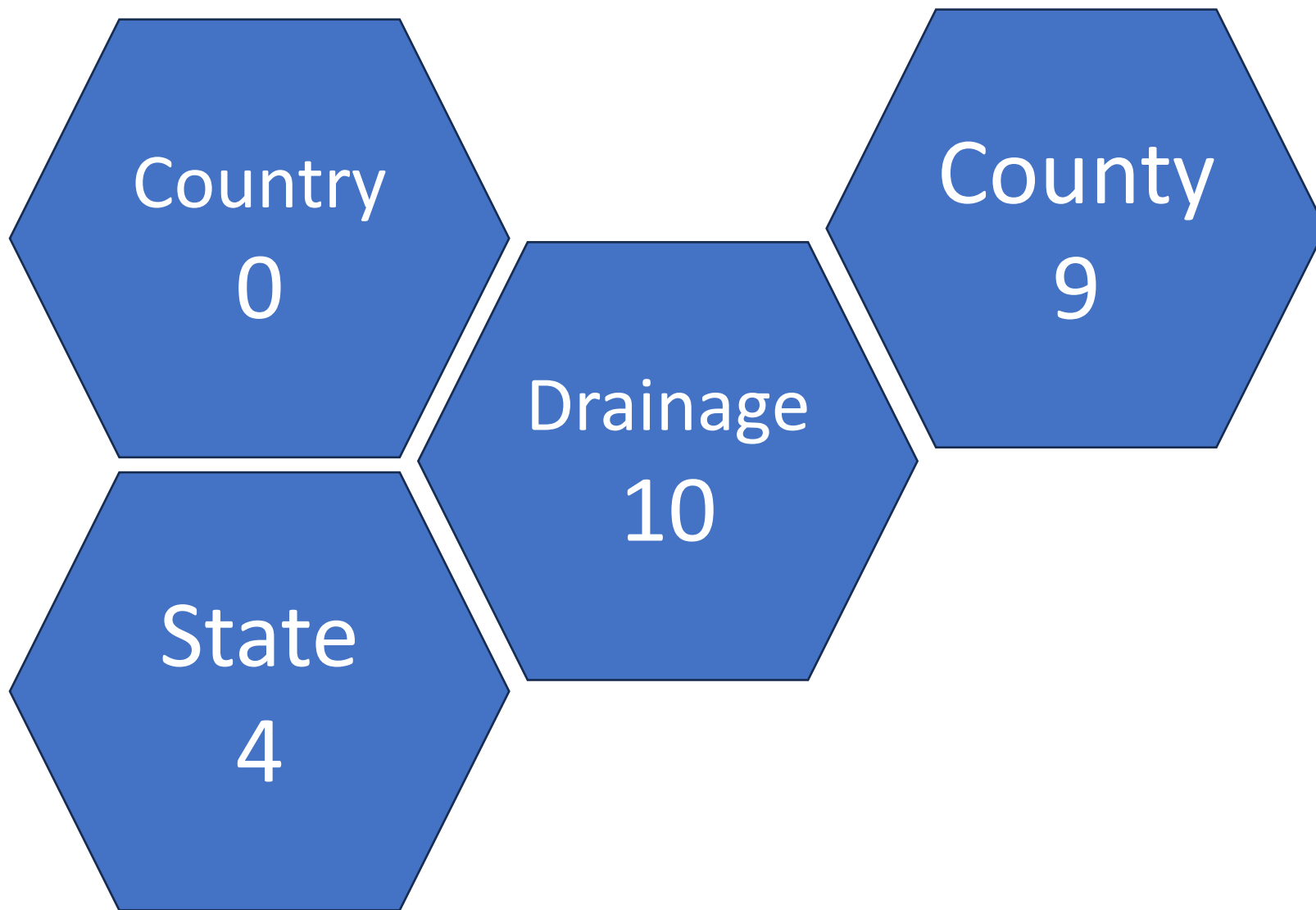
Preliminary Information-Subject to Revision. Not for Citation or Distribution.

11 Alerts



New occurrences since Nov. 2024





Specimen ID: 1863546

Species: *Vallisneria × pseudorosulata*

Common name: hybrid eelgrass

Alert Level: State: Mississippi;

County: Prentiss (MS);

Drainage: Upper Tombigbee (03160101)

Alert Date: 2025-03-27

State/Province: Mississippi

Locality: Tennessee-Tombigbee Waterway
Pool E, 12 km west-southwest of Belmont

Latitude (N): 34.4758

Longitude (W): -88.3346

Collection Date: 2024-06-24

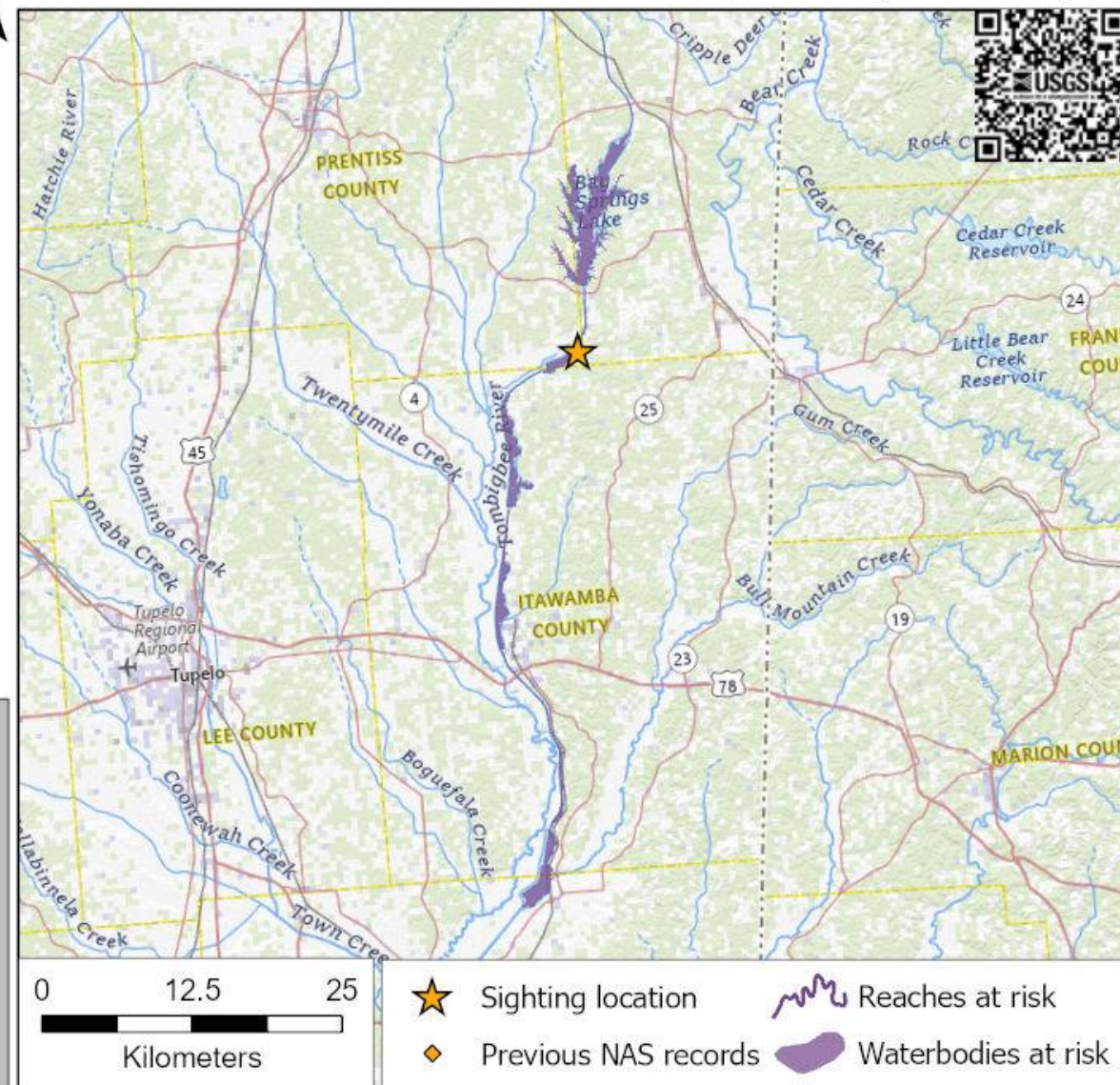
Comment:

Vallisneria × pseudorosulata
(shortstemmed eelgrass)



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NAS Alert Risk Mapper (ARM)



The map shows waterbodies at short-term risk of invasion from the species sighting. The at-risk areas are determined by species mobility and drainage barriers (dams).

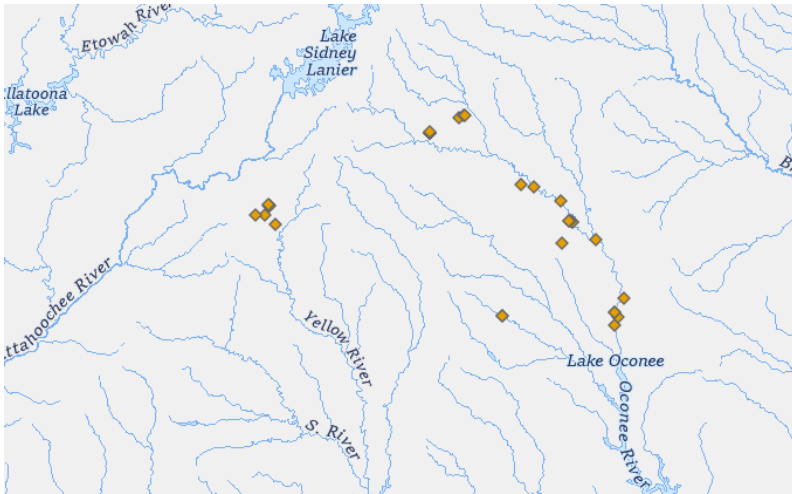
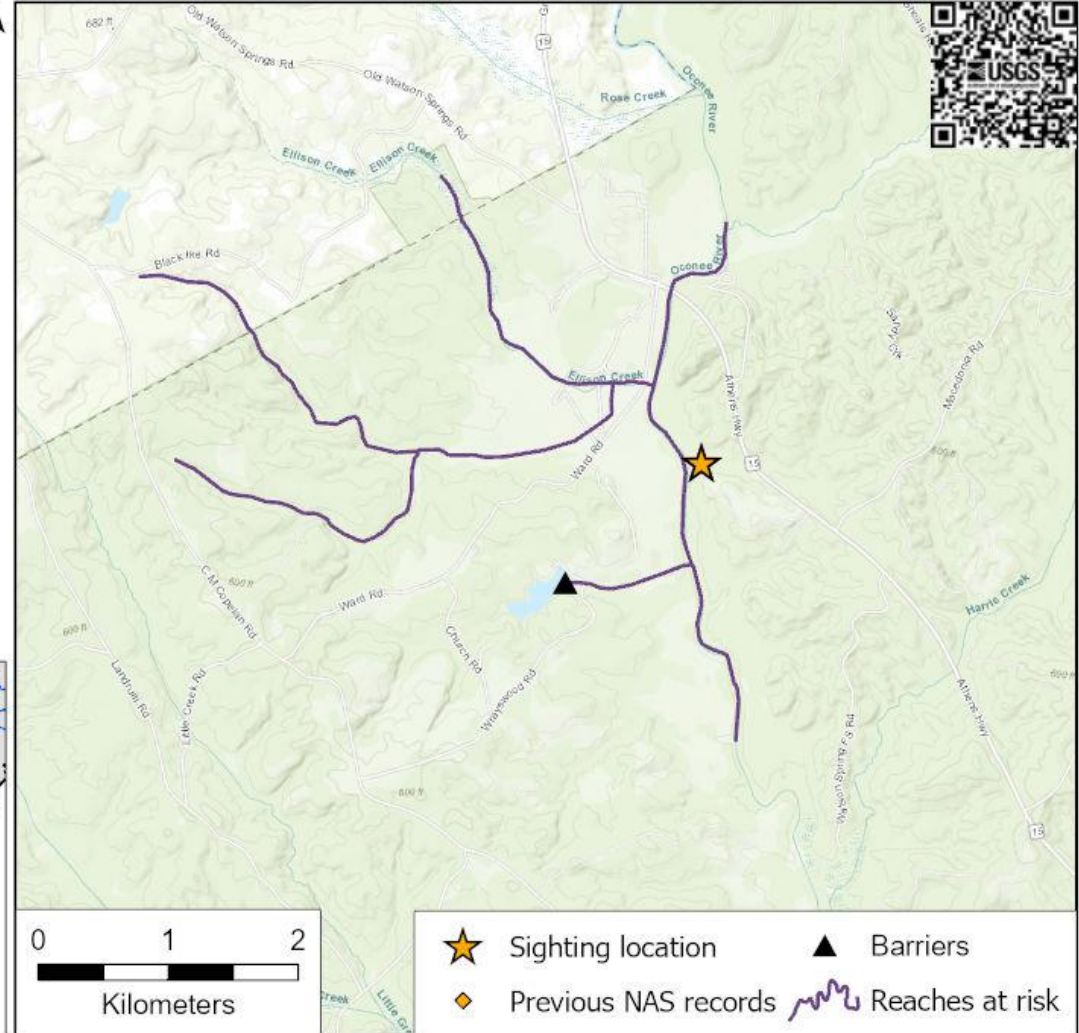


Misgurnus anguillicaudatus
(Pond Loach)



NAS Alert Risk Mapper (ARM)

Specimen ID: 1753371
Species: *Misgurnus anguillicaudatus*
Common name: Pond Loach
Alert Level: County: Greene (GA)
Alert Date: 2025-02-28
State/Province: Georgia
Locality: Watson Springs Tributary, Oconee River
Latitude (N): 33.7088
Longitude (W): -83.2951
Collection Date: 2024-06-25
Comment: Furthest downstream record in Oconee River drainage during 2024 sampling



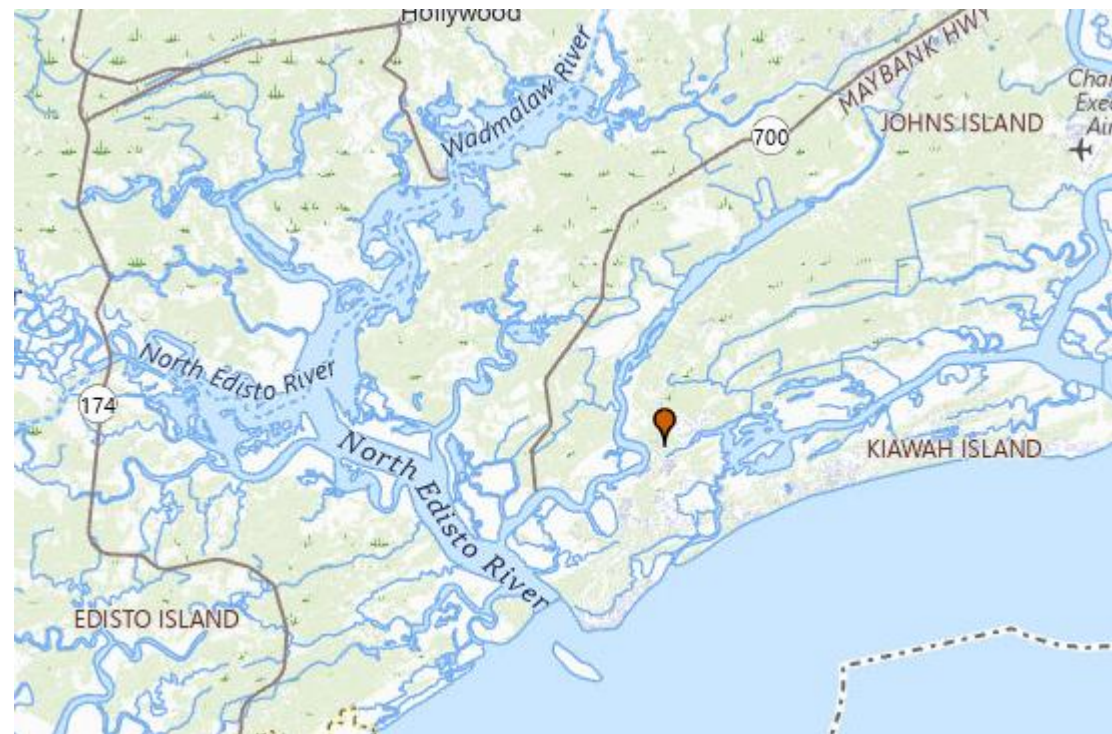
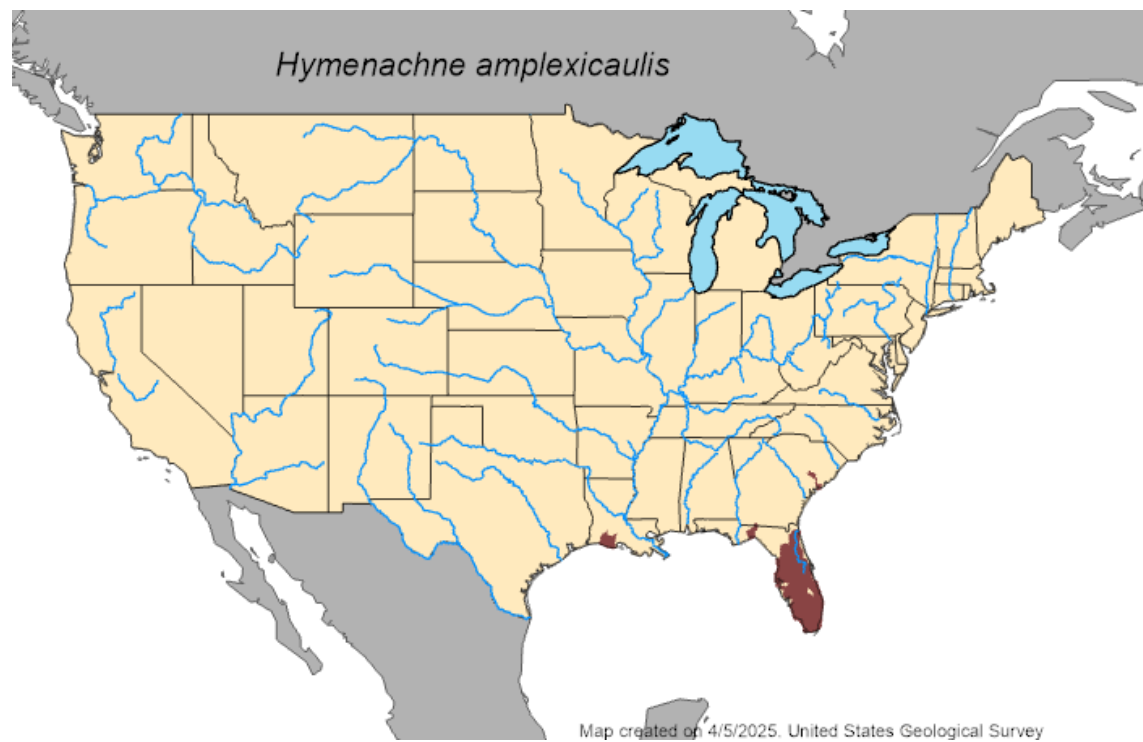
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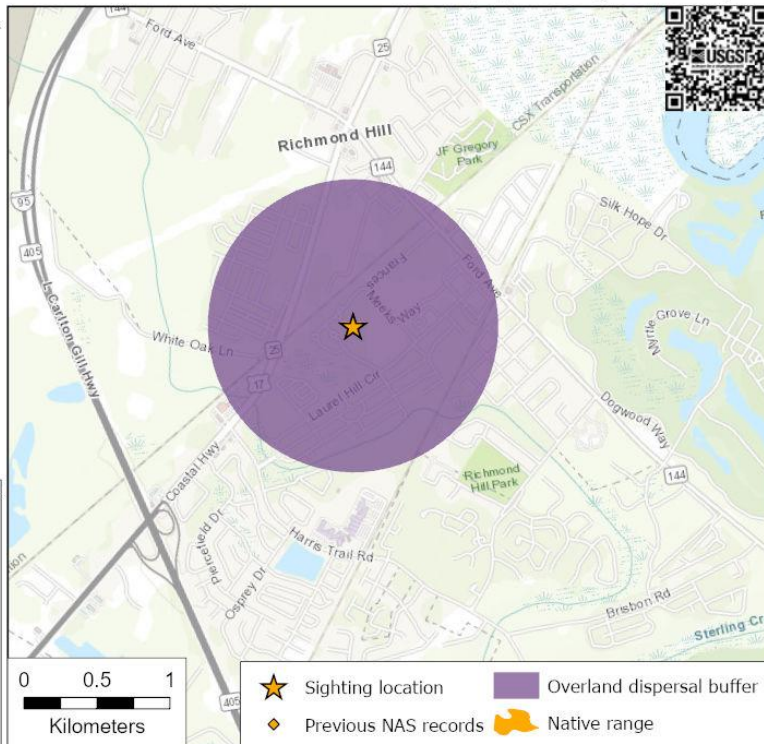
Preliminary Information-Subject to Revision. Not for Citation or Distribution.

Hymenachne amplexicaulis
(West Indian marsh grass)



Preliminary Information-Subject to Revision. Not for Citation or Distribution.

NAS Alert Risk Mapper (ARM)



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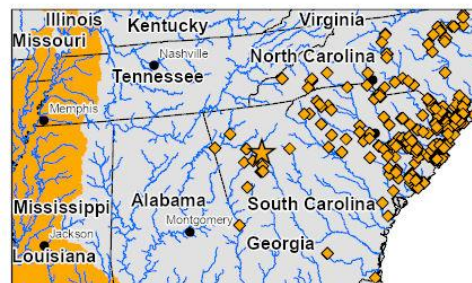
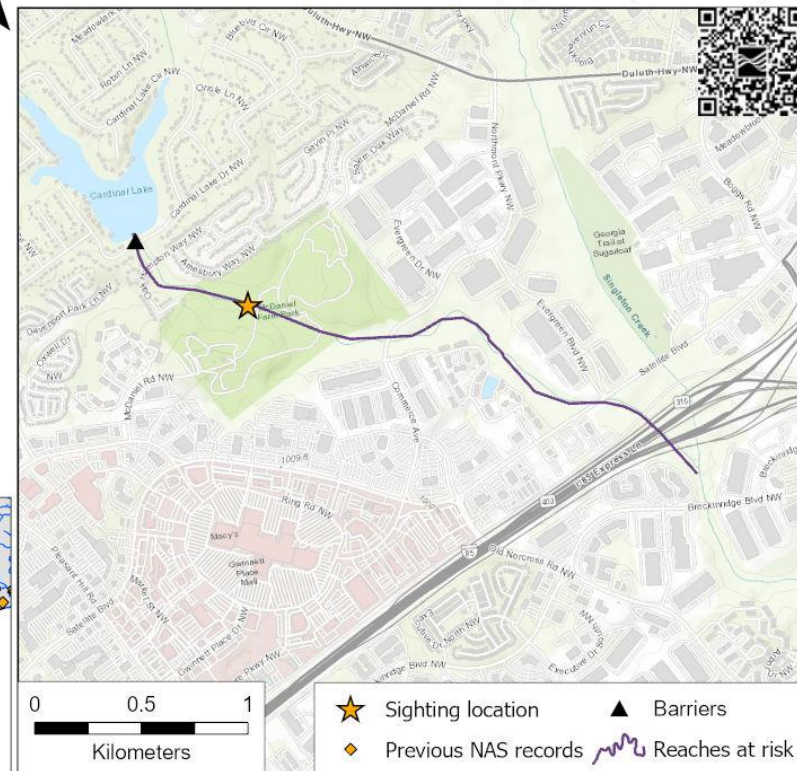


Procambarus clarkii (Red Swamp Crayfish)



NAS Alert Risk Mapper (ARM)

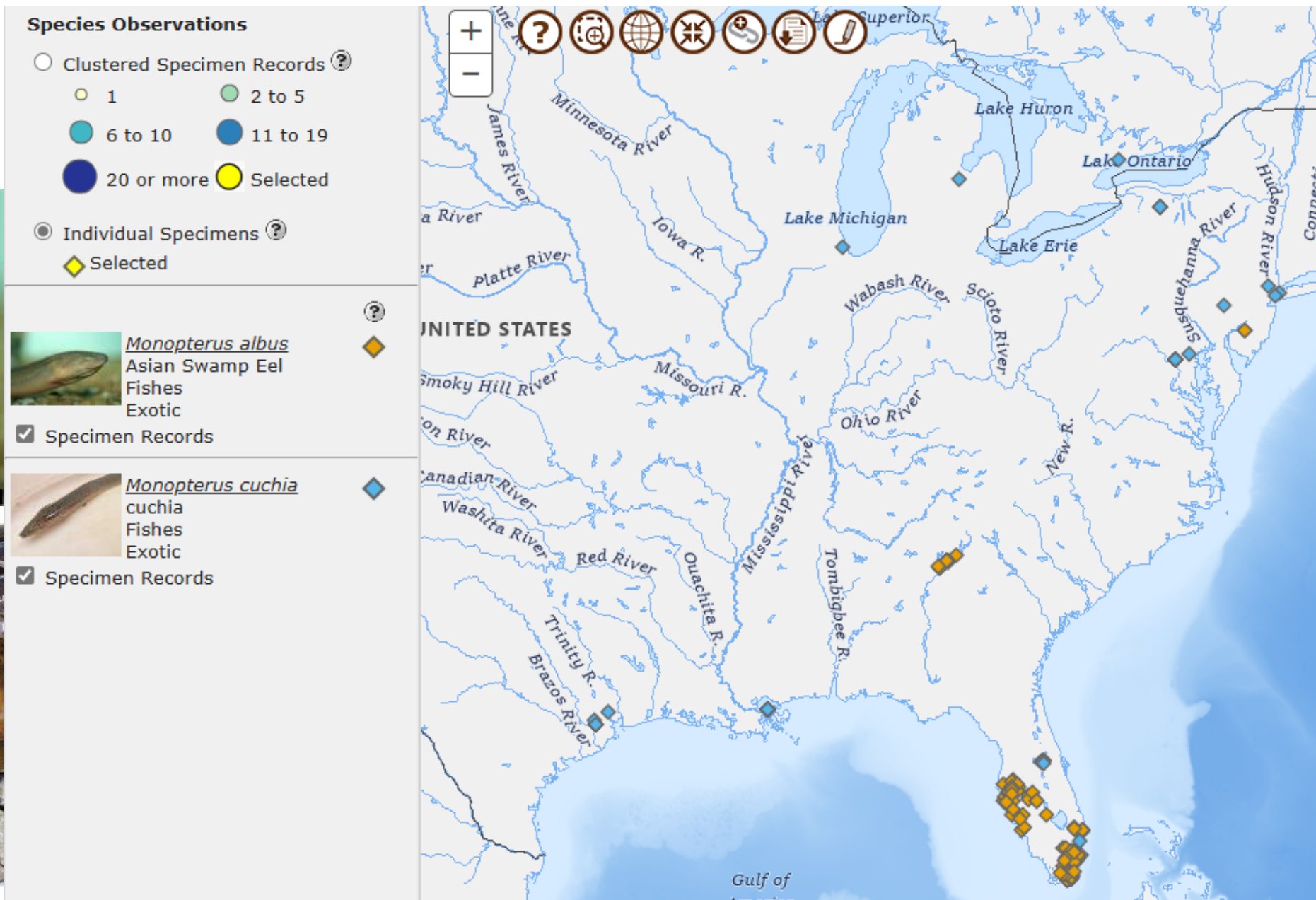
Specimen ID: 1740272
Species: *Procambarus clarkii*
Common name: Red Swamp Crayfish
Alert Level: County: Gwinnett (GA)
Alert Date: 2024-11-05
State/Province: Georgia
Locality: Sweetwater Creek at McDaniel Farm Park
Latitude (N): 33.9708
Longitude (W): -84.1251
Collection Date: 2024-10-04
Comment:



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Swamp eels
Monopterus albus
Monopterus cuchia



Public urged to report invasive Asian swamp eel species in Florida



The University of Florida, in partnership with the U.S. Geological Survey, U.S. Army Corps of Engineers, and other agencies, encourages the public to report sightings of the invasive Asian swamp eel, detected in Florida’s waterways over two decades ago.

Scientifically known as *Monopterus albus*, the Asian swamp eel is a unique, air-breathing fish native to Southeast Asia, thriving in muddy, stagnant waters. First detected in Florida in 1997, the species has established in numerous parts of the country, including Hawaii and Georgia. There is increased concern about their population growth throughout the southeast, particularly Florida.

People in Florida’s waterways are urged to report through the [USGS Nonindigenous Aquatic Species website](#), [EDDMapS website](#) or App or FWC’s 888-lve-Got-1 hotline.

Scientists are concerned about the potential for invasion in new waterways and the detrimental effects it could have on Florida’s biodiversity. Additionally, there are concerns about unknown impacts on freshwater systems, which support recreational and commercial fishing industries.



Asian Swamp eels Courtesy USGS

“Florida’s aquatic habitats are vital to our ecosystem and economy, and invasive species like the swamp eel can cause irreversible damage to our biodiversity,” said [Paul Evans](#), research coordinator for the [UF/IFAS Invasion Science Research Institute \(ISRI\)](#). “Like any invasive species their function as a novel predator is what is most harmful to our native species.”

Here is what scientists know about the Asian swamp eel:

- Known for its ability to thrive in a variety of aquatic environments, swamp eels are highly adaptable and capable of surviving in a variety of environments, from slow-moving streams to marshes and wetlands.
- They are opportunistic feeders, consuming a wide range of prey, including small fish, amphibians and invertebrates.
- The species has the potential to disrupt food webs and harm native biodiversity, leading to ecological shifts in affected areas.



A close up look at the Asian swamp eel, scientifically known as *Monopterus albus*. Photo courtesy USGS.

Author Profile
Lourdes Mederos



Lourdes Mederos is a relations manager at UF/IFAS Communicat She is blessed to work UF/IFAS while living in Florida with her family. Lourdes' past to bring awareness of innovative wor research breakthroughs, and science solutions to all of Florida. ...

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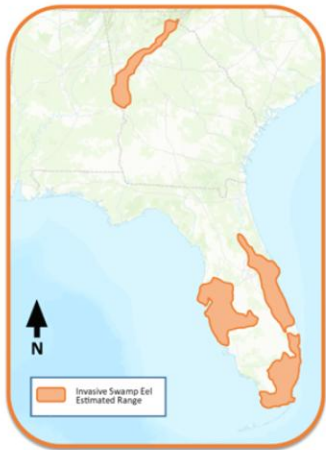
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US Army Corps of Engineers®



- Heavy mucous coating aids burrowing
- Generally sluggish and secretive



How can you help?

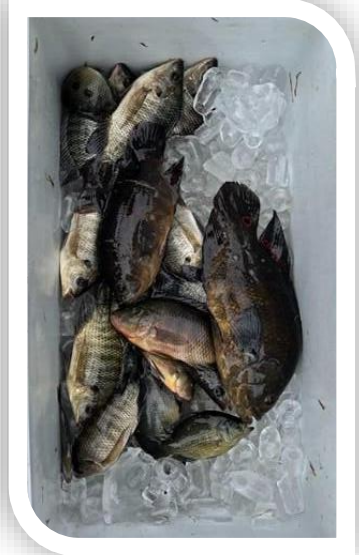
If you are enjoying the waterways around the southeastern United States please take time to report what you find.

U.S. Geological Survey (USGS) has partnered with the University of Florida and other federal and state agencies to encourage people who believe they have spotted the invasive swamp eels in Florida waters to report their sightings through the [USGS Nonindigenous Aquatic Species website](#)

REPORT HERE



Prelimin



Fish Slam



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Why are we adding an eDNA layer to the NAS Database?

- The combination of traditional specimen sightings and eDNA detections could provide more complete distribution records and significantly improve the response time to new invasions as part of a national Early Detection Rapid Response (EDRR) system.

Environmental DNA in the NAS Database

Environmental DNA (eDNA) comprises genetic material that has been sloughed, excreted, or otherwise released into the environment and can be detected in water, soil, and air. For aquatic organisms, this includes skin, excrement, mucus, saliva, blood, and gametes. Collection of environmental samples can be screened for the presence of eDNA, allowing for the detection of low-density organisms before detectability by traditional sampling methods.

NOTE: Environmental DNA detection data does not indicate the organism is present, only its genetic material, and is not a substitute for visually observing the organism's presence.

Looking towards the needs of our partners NAS scientists, in collaboration with environmental DNA (eDNA) interagency experts, have used a consensus method for community data standards for integrating eDNA data into the NAS Database. The combination of traditional specimen sightings and eDNA detections can provide more complete species distribution records and significantly improve the ability to respond quickly to new invasions as part of an early detection rapid response (EDRR) system.

The goals of integrating eDNA into the NAS database include:

- Establish, maintain, and update **community data standards** with the cutting edge of eDNA science;
- **Communicate** with managers, scientists, and stakeholders to inform management decisions and responses while minimizing unnecessary responses;
- Provide a **public interface** with vetted data to display eDNA detections in conjunction with observed and reported specimens.



We enlisted several researchers from USGS, the U.S. Fish and Wildlife Service, and the Bureau of Reclamation that focus on both eDNA and non-native species to serve as an advisory panel during the development of eDNA data sharing and submission standards. We worked with this advisory panel to identify the minimum required and desired optional data fields that would be necessary for effective communication of eDNA results. We hosted six virtual townhalls in 2020 to solicit input from our partners and prospective partners in state and federal natural resource management agencies on how NAS is integrating eDNA into the Database, what concerns they may have, and what interfaces and outputs would be most useful to them. This has included developing a communication plan to convey eDNA reports to affected managers, to allow them to decide how to proceed. Finally, we submitted our community standards through several rounds of review to include additional eDNA scientists at other federal, state, and academic institutions, culminating in a review by the Aquatic Nuisance Species Task Force members.

[View eDNA data within the NAS Database](#)

Submit eDNA data to the NAS Database

The NAS Database is currently accepting submissions of eDNA datasets. Information regarding the submission process and required information can be found at our [Guidance Document](#).

Ready to submit data? Please click [HERE](#) to start the process.

This page is intended to serve as an informational hub for the development and integration of eDNA into the NAS Database. For more information or questions, please contact Matthew Neilson (mneilson@usgs.gov)

NAS - Nonindigenous Aquatic Species

Total records: 1
1

Images	Group	Family	Scientific Name	Common Name	More info	Native Habitat	Species Origin
	Mollusks-Bivalves	Dreissenidae	Dreissena polymorpha	zebra mussel	Collection info Point Map Species Profile Animated Map Impacts	Freshwater	Exotic

1

Export species list to [CSV](#) or [XML](#)

Data are not available for download from the web site. Please contact [NAS staff](#) for a custom query.

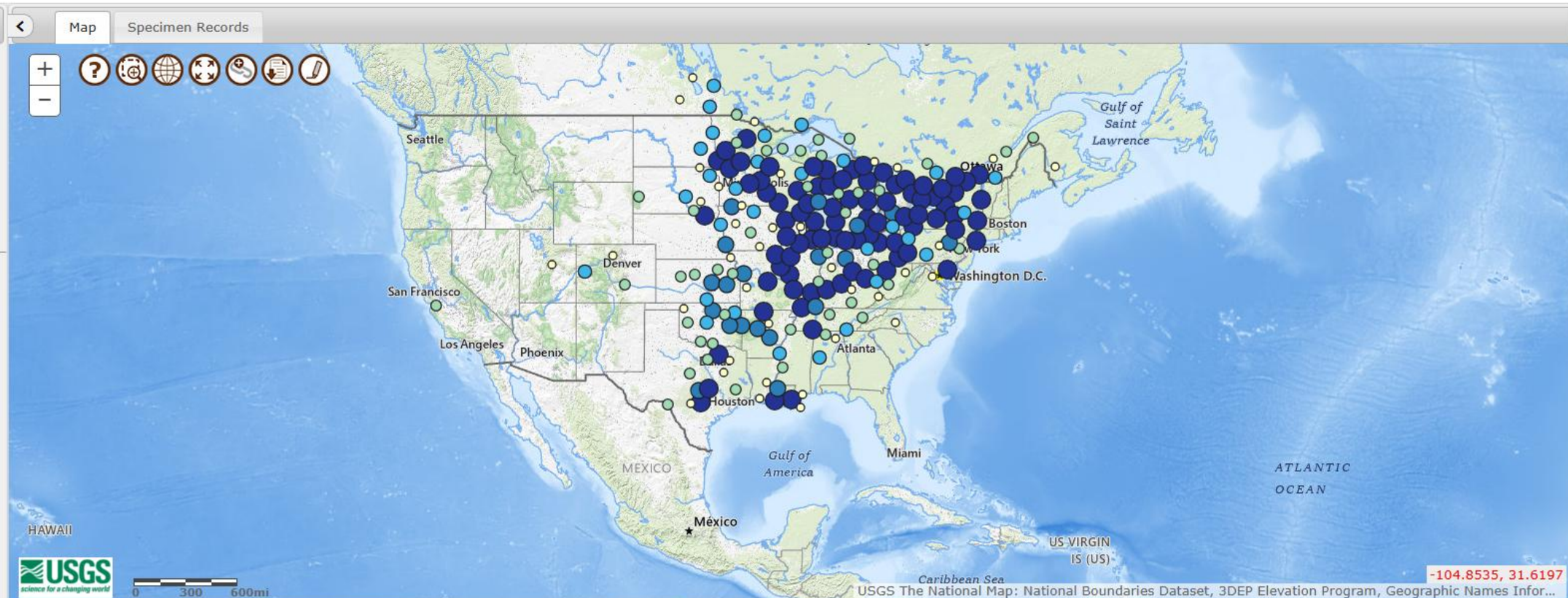
[Query](#)
[Species](#)
[Layers](#)

Species Observations

- ☒ Clustered Specimen Records ⓘ
☐ Individual Specimens ⓘ
☒ Selected
- 1 2 to 5 6 to 10 11 to 19 20 or more Selected


Dreissena polymorpha
 zebra mussel
 Mollusks-Bivalves
 Exotic

☒ Specimen Records
☐ HUC8 Level Records
☐ eDNA Records
 (■ = Detect, ■ = Nondetect)



Map updated Mon Apr 21 2025. Data Disclaimer: Number of records does not imply species abundance. These maps represent collection records only and may not reflect the actual distribution of established populations. Recommended browsers are Firefox, Chrome, IE9 & above. These data are preliminary or provisional and are subject to revision. They are being provided to meet the need for timely best science. The data have not received final approval by the U.S. Geological Survey (USGS) and are provided on the condition that neither the USGS nor the U.S. Government shall be held liable for any damages resulting from the authorized or unauthorized use of the data. Please contact [NAS staff](#) for a custom query.

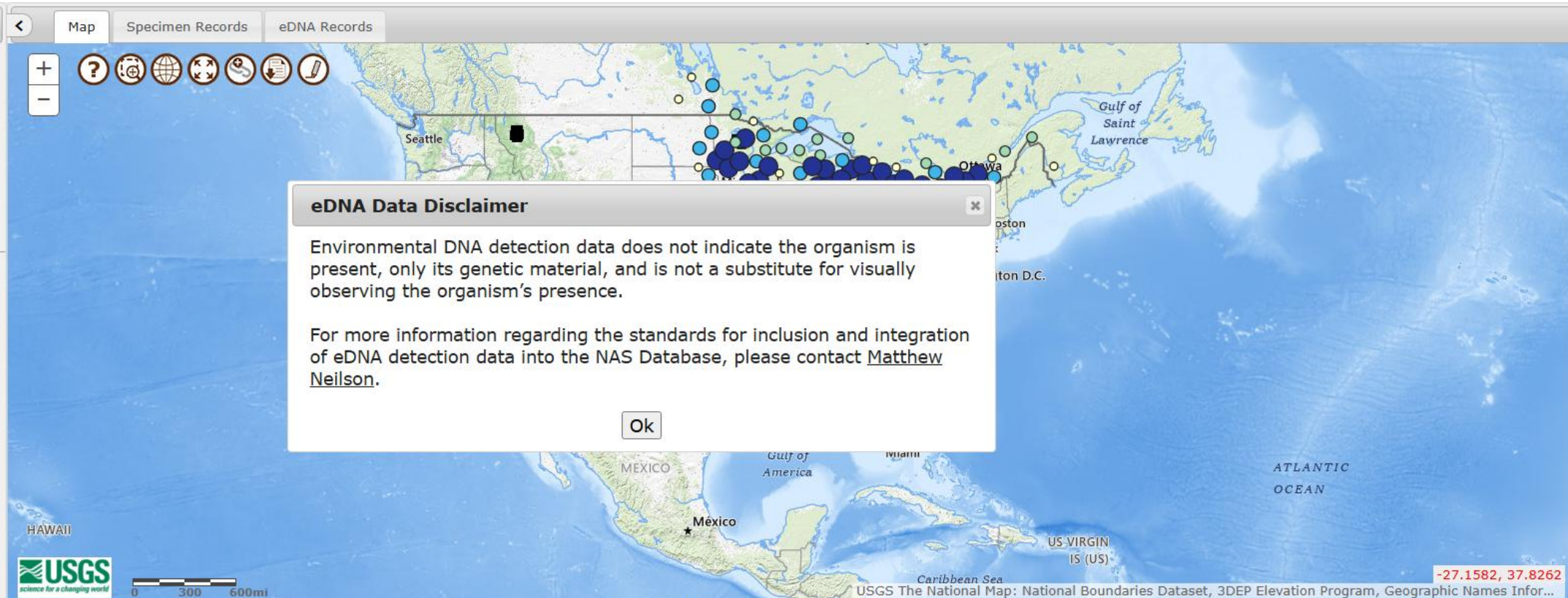
Query Species Layers

Species Observations

- ☒ Clustered Specimen Records ?
- ☐ 1 ☐ 2 to 5
 - ☐ 6 to 10 ☐ 11 to 19
 - ☐ 20 or more ☐ Selected
- ☐ Individual Specimens ?
- ☒ Selected

 *Dreissena polymorpha*
zebra mussel
Mollusks-Bivalves
Exotic

☒ Specimen Records
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Species Observations

☒ Clustered Specimen Records [?]
☐ Individual Specimens [?]

☒ Selected

☐ Specimen Records
☐ HUC8 Level Records
☒ eDNA Records
 (■ = Detect, ■ = Nondetect)



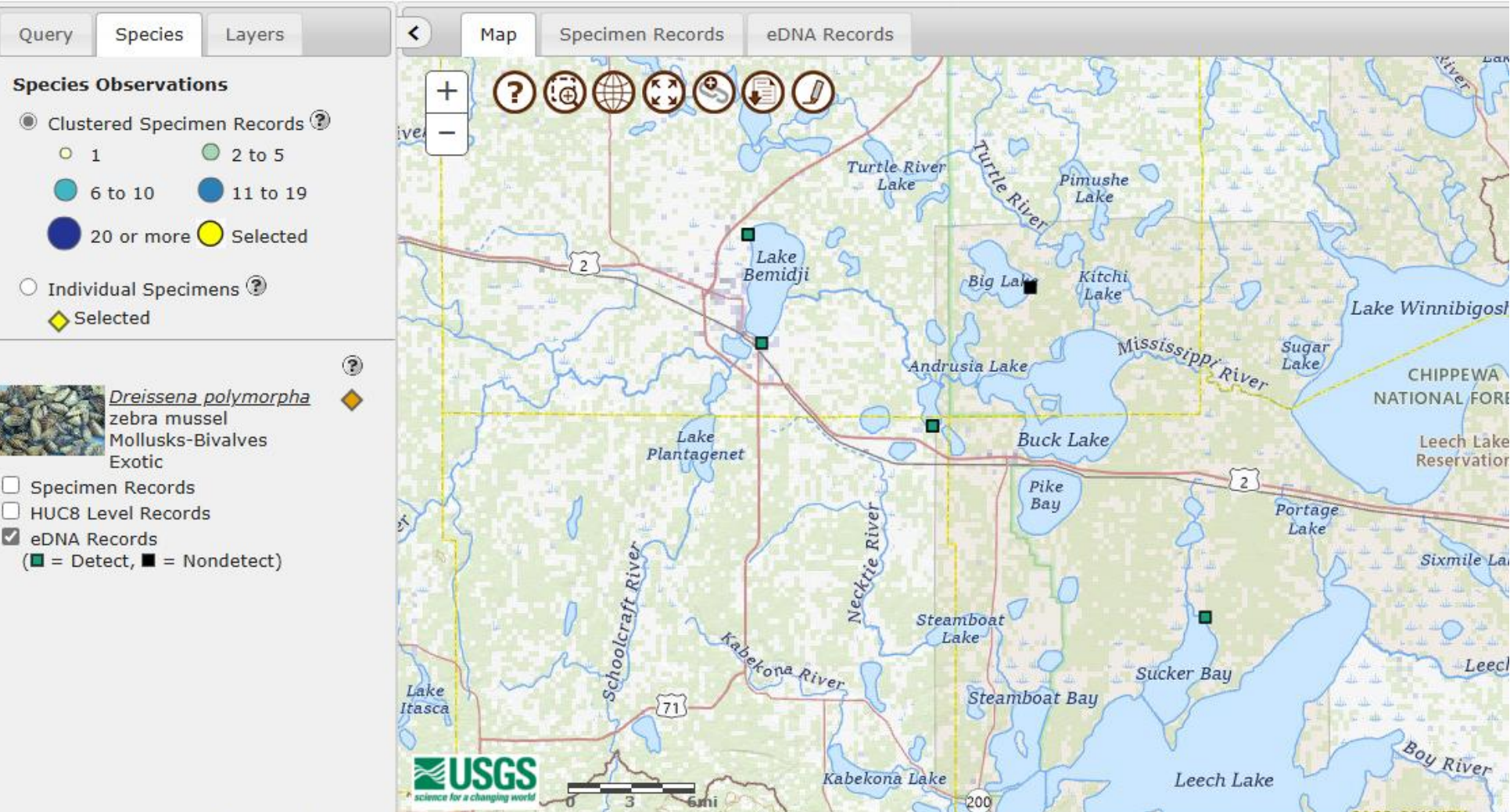
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NAS - Nonindigenous Aquatic Species

[Home](#)
[Alert System](#)
[Database & Queries](#)
[Taxa Information](#)
[Report a Sighting](#)
[Screening Tool \(SEINeD\)](#)


Status of NAS



- FY25 funding is unchanged
- NAS Database was identified as an essential program by USGS's Ecosystem Mission Area
- Continue to build out NAS 2.0

Onwards and upwards

Status of NAS



- Cayla Morningstar
- SE RISCC Coordinator
- cr.morningstar@ufl.edu

- Dr. EM Dean
- deanemi@gmail.com





Nonindigenous Aquatic Species Database Team



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**Nonindigenous
Aquatic Species
Database**

nas.er.usgs.gov



WARC Advanced Applications Team: Christina Hunnicutt & Joey Richard

Which invasive species are most important to your State?

- Want a definitive list of the current invasive species that each State is most concerned about.

