USGS Nonindigenous Aquatic Species (NAS) Fall Update: New Species Occurrences in the Gulf States

Cayla Morningstar

USGS, Wetland and Aquatic Research Center

GSARP Nov/Dec 2022

USGS Nonindigenous Aquatic Species Database

Number of species tracked

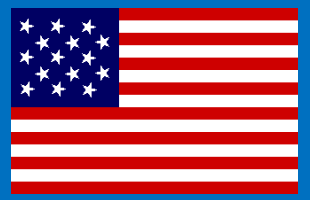
1390

Total Records

683,010*

Oldest Record

1700



257 taxa

69 taxa

82 taxa

789 taxa

6 taxa

187 taxa

*Sept 2022

USGS Nonindigenous Aquatic Species Database

Data from:

museum collections

researchers

state and federal agencies

other databases

scientific literature

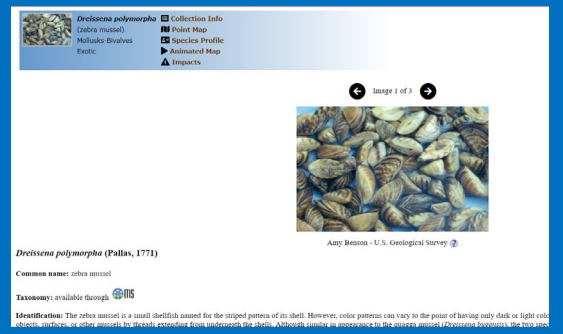
public sightings reports

eDNA (soon)

NAS email subscribers

1120

Most popular page: Zebra mussel



Data windows: GLANSIS

Great Lakes Aquatic Nonindigenous Species Information System (GLANSIS)

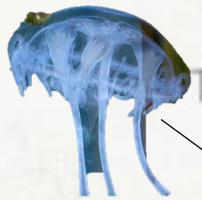
Lake Champlain (coming soon)

NAS Alert System
Nonindigenous Aquatic Species Program
USGS

NAS Alert System

New species in the US | State | Country | Drainage

Gulf & S. Atlantic New Species Alerts: June 23-Nov 28, 2022









9 NAS alerts
9 species

2 Country
1 State
6 County

	0
	3
	1
	5

Oklahoma
Memphis
Tennessee
Charlotte
North Carolina
Arkansas
Georgia
South Carolina
Birmingham
Dallas
Alabama
Texas
Louisiana
Jacksonville
San Antonio
Houston
New Orleans
Orlando
Tampa
Miami
Gulf of Mexico

0 150 300mi

USGS science for a changing world

NAS Flood and Storm Tracker (FaST) Map: Hurricane Ian

Query

Hurricane Ian - Initial map

Click on a drainage in the map or select a species from below. Highlighted species in the list are considered likely to disperse via floods and cause environmental or economic impacts.

Select a species:

(Select species)

Map updated 10/06/2022

Present in watershed

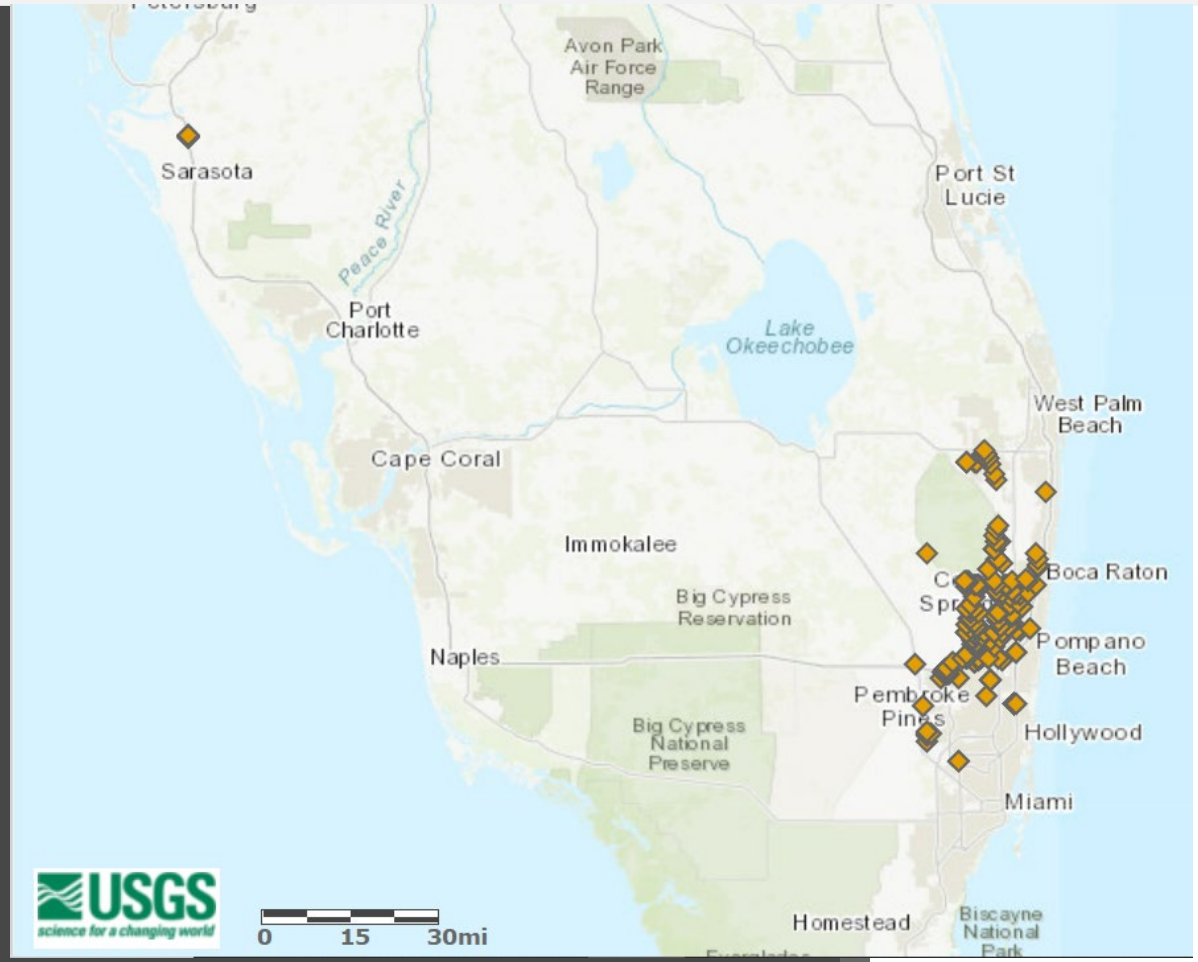
Potential spread due to flooding

Pre-storm Observations

Suggested Citation:

More than **50 species** predicted to potentially move between drainages with flood water

New publication out for a (hopefully) eradicated population of snakehead on the Gulf Coast of Florida



INVASIVESNET

Aquatic Invasions (2022) Volume 17 **Article in press**

CORRECTED PROOF

Research Article

Occurrence of a reproducing wild population of *Channa aurolineata* (Pisces: Channidae) in the Manatee River drainage, Florida

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Abstract

We report on the discovery of a wild, reproducing population of *Channa aurolineata* (Pisces: Channidae) in west-central Florida (USA), and first documented occurrence of snakeheads in the Gulf Coast region. *Channa aurolineata* is a large, predatory fish of the bullseye snakehead "Marulius group" species complex from Asia. Adult and juvenile specimens were captured in June 2020 in a 1.8-hectare pond that connects during high water to a small stream within the Manatee River-Tampa Bay Basin. The pond site is 250-km from the only other wild *C. aurolineata* population in the USA (present in southeast Florida since ca. 2000) and is considered a separate introduction and not the result of natural dispersal. Morphological and molecular comparisons revealed high overlap between the two Florida populations, evidence humans may have transported fish between sites. To verify identification, we compared Florida samples to *C. aurolineata* from Thailand and found mtDNA-COI barcode sequences to be identical or to differ by only a single base pair. Life body coloration of Florida samples matched their Asian counterparts, but Florida specimens averaged fewer dorsal fin rays (53.6 vs. 56.0), anal fin rays (34.2 vs 36.1), lateral line scales (65.3 vs. 67.4), and vertebrae (62.1 vs. 64.3), differences implying possible founder effect or sampling bias. Existence of this invasive predator is a concern because of the risk of spread and negative ecological effects, including an observation of terrestrial hunting behavior. In 2020–2021, several hundred *C. aurolineata* were removed from the pond by nets and electrofishing, and surveys suggested the population had not spread to nearby waters. In May 2021 the pond was treated with rotenone and 48 more specimens were recovered. No additional snakeheads have been sighted since the piscicide operation, although verification of eradication will require monitoring of the watershed.

Key words: goldline snakehead, invasive fish, taxonomy, rotenone, eradication, terrestrial feeding, cytochrome c oxidase subunit I (COI), USFWS-LEMIS database

Introduction

The Channidae (snakeheads) is a family of predatory freshwater fishes naturally distributed in parts of Asia and Africa. In North America, at least five different snakehead species of Asian origin have been reported from

Next Fish Slam/Fish Chat Bioblitz

Dec 2022: Miami (Dade County), Florida

- uncover new species; discover population spread
- foster collaboration
- spread awareness– the press often shows, citizen scientists
- ensure important specimens enter museums: Florida Museum, Michigan (UMMZ)

Not just electroshocking fish….

-Often include "Fish Chat", a small, **conference-like forum** to share research, management efforts, ask questions, foster collaboration

-Record **other nonnative species**, such as plants and invertebrates

-**Helps managers sampl**e areas they might not have time or manpower to sample

Next Fish Slam/Fish Chat

TBD: Potentially more North in Florida

Schofield, P.J., 2020. Expert bioblitzes facilitate non-native fish tracking and interagency partnerships. *Management of Biological Invasions*, *11*(1), p.139.

Invertebrate & Plant Horizon Scan for the U.S.

List Building

LEMIS list
CABI
USFWS- risk summary
Journal Articles

Scoring

Arrival potential/
Climate match
Impactfulness
Spread potential

Ranking

High scoring species will be put on a watchlist, given to managers, ports of entry

Scoring → **Ranking**

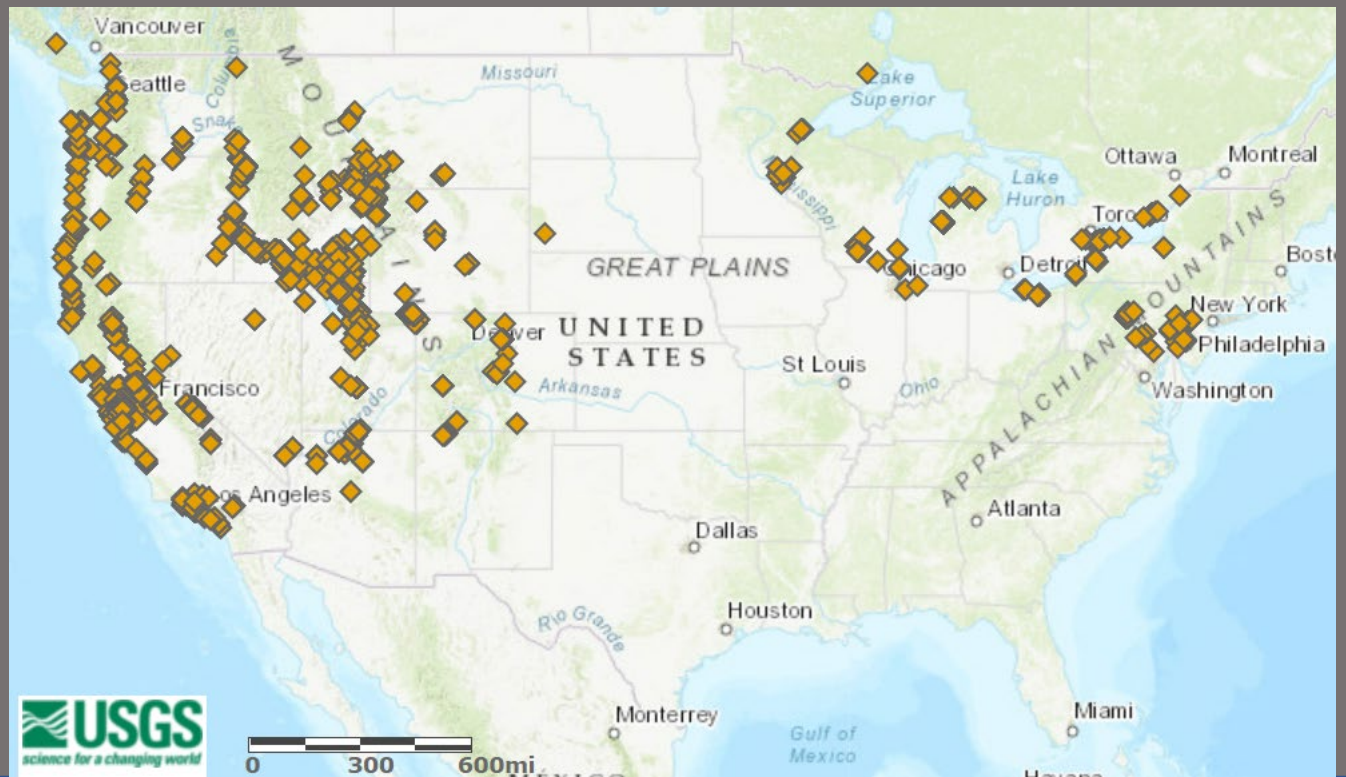
We will need collaborators with invasive invertebrate & plant expertise

★ **Terrestrial and Aquatic**

New Zealand Mudsnail Management Plan Update

Updating the National Management and Control Plan for the New Zealand Mudsnail (*Potamopyrgus antipodarum*) published in 2007 by USFWS

- NAS will be repository for the current distribution and future reports
- Will be important for states like the SE where they are not yet present
- Awareness for how to prevent them from coming to your state



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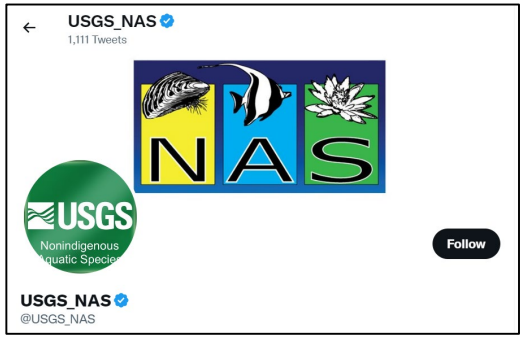

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