

Testing the efficacy of low-cost control methods on giant applesnails (*Pomacea maculata*) egg masses

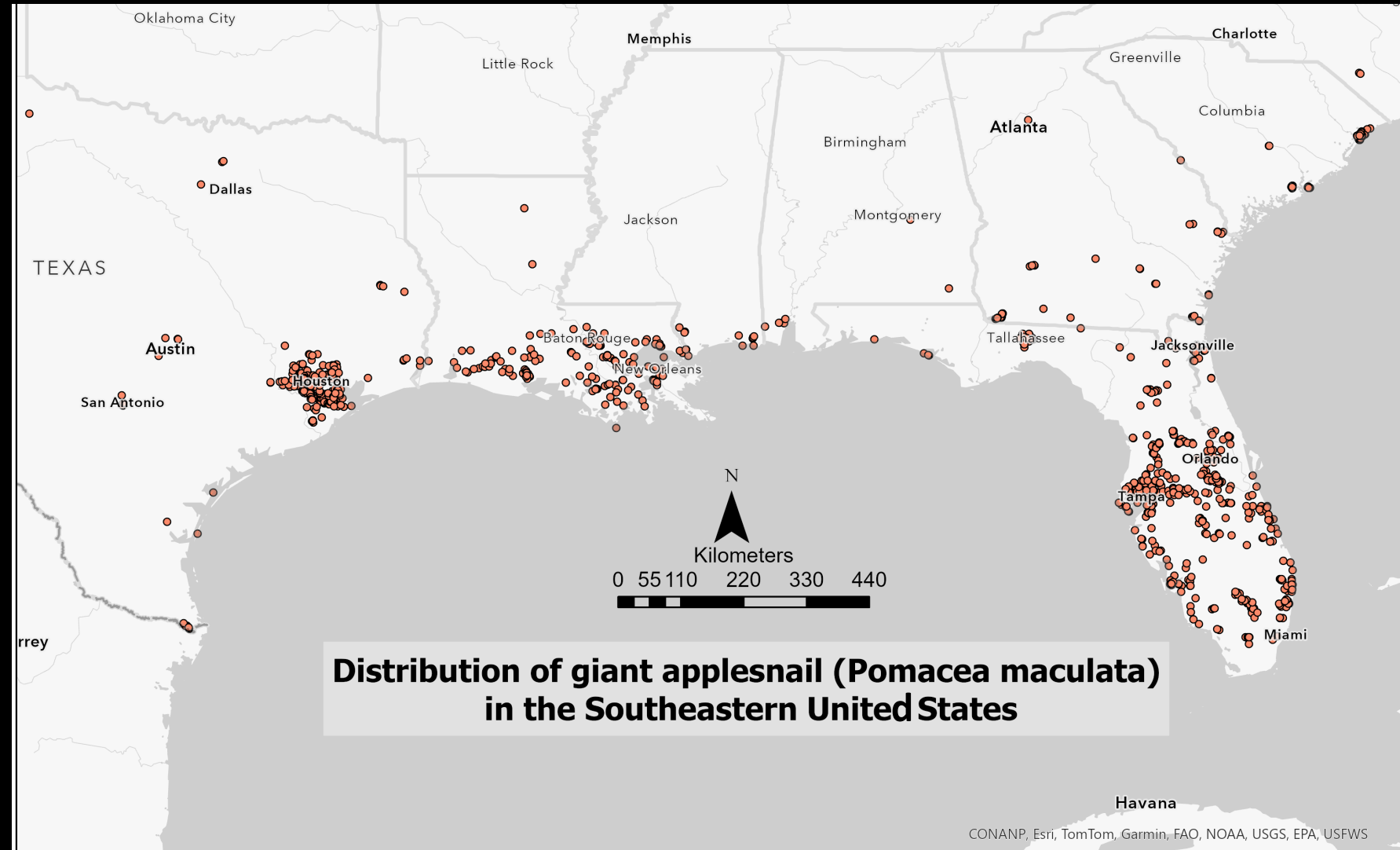
Cayla R. Morningstar, Audrey Jordon, Logan D. Stratton, and Wesley M. Daniel

U.S. Geological Survey, Wetland and Aquatic Research Center, Gainesville, Florida



Pomacea maculata | Life History & Invasion History

- South American origin
- Split from *P. canaliculata*, previously lumped into *P. insularum* “island applesnail”
- Florida 1989, in Louisiana 2006
- Now in nine states and Puerto Rico
- Found in North Carolina in the last year



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 Not for Citation or Distribution.

Pomacea maculata | Impacts

- Crop pest
- Macrophyte ingestion
- Prey item for birds
- Potential competition with native Florida applesnail
- Intermediate host for rat lungworm
 - Rat lungworm now found in Georgia (2022) and more widespread in Louisiana





Taking over crawfish ponds in Louisiana

- High bycatch in crawfish traps
- Not only impacting crawfish yield, but huge biological waste
- Feed on seedling rice
- Changing farming practices, culture



AGFC discovers invasive apple snails in live crawfish shipments

BY Randy Zellers ON 04-09-2024



Contaminant in crawfish traps *Recently shipped to Arkansas*

- April 2024, Arkansas Game and Fish received a live crawfish shipment with *Pomacea* applesnail adults
- Identified by NAS, press release sent out
- No *Pomacea* exist in Arkansas at this time

Pomacea maculata

Control

- Manual removal
 - Adults are large, but hatchlings numerous and tiny
- Copper sulfate and other chemicals
- Knocking eggs into the water?



CR Morningstar, USGS

Pomacea maculata

Egg treatment experiment

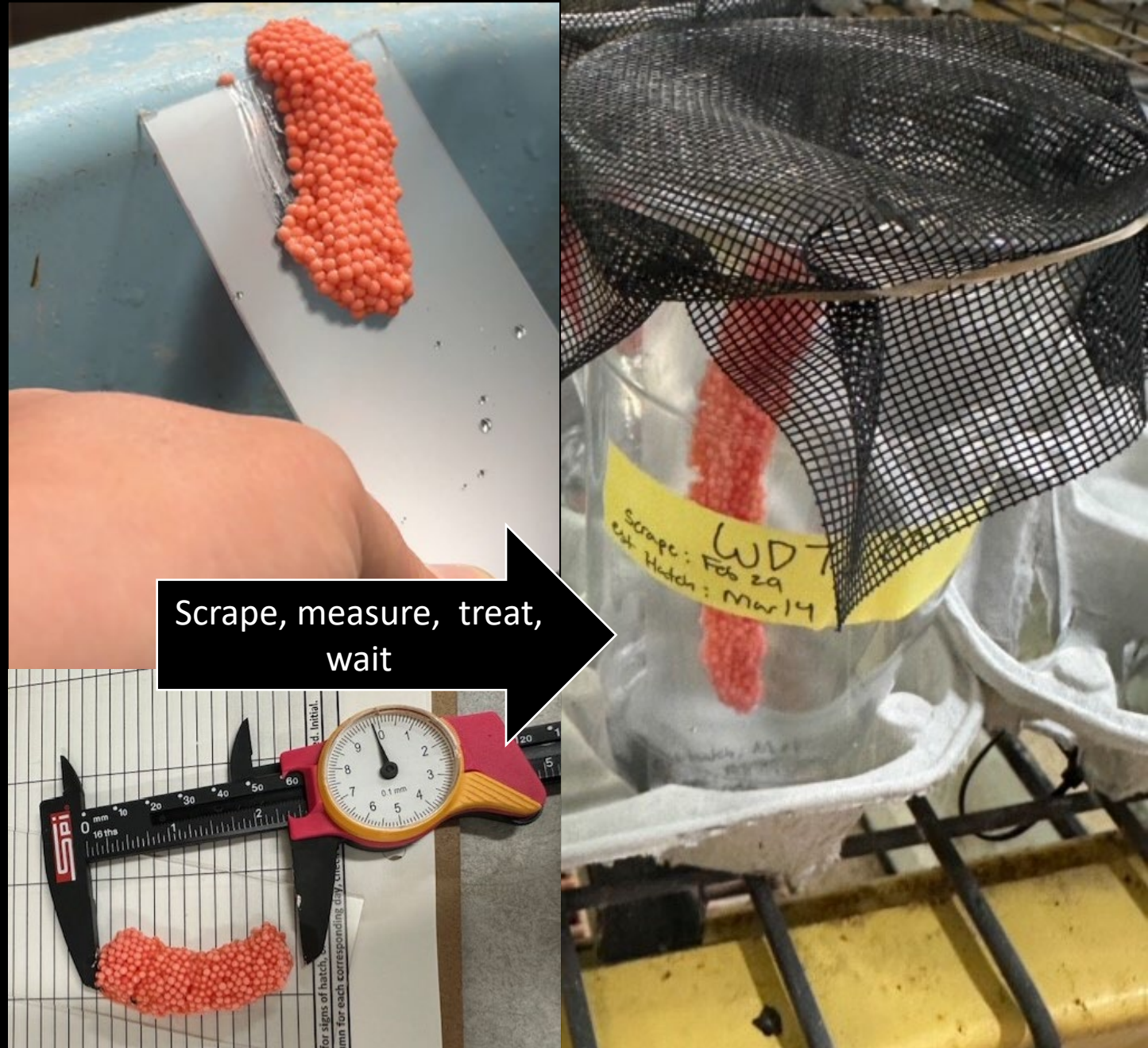
- Breeding colony of ~60 snails



Pomacea maculata

Egg treatment experiment

- Water submersion
 - Egg clutches ≤ 24 hr old
 - Egg clutches 7 days old
- Vegetable oil treatment
 - Egg clutches ≤ 24 hr old
 - Egg clutches 7 days old
- Control (no treatment)





...and wait



Pomacea maculata

Egg treatment experiment

~24 days

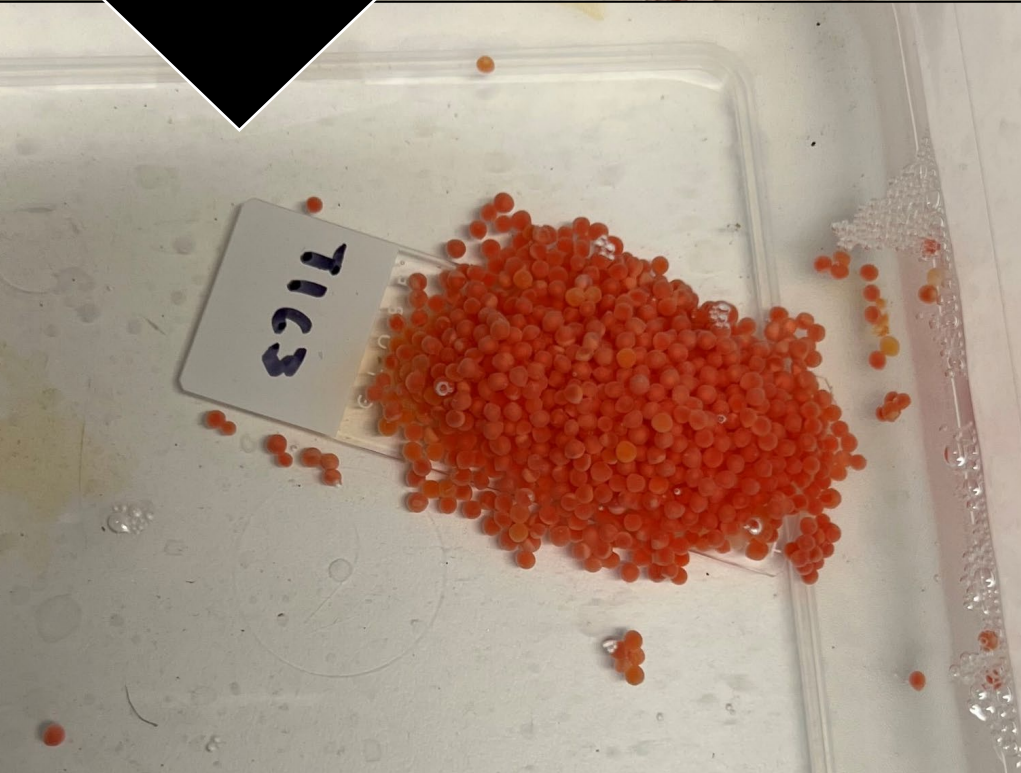
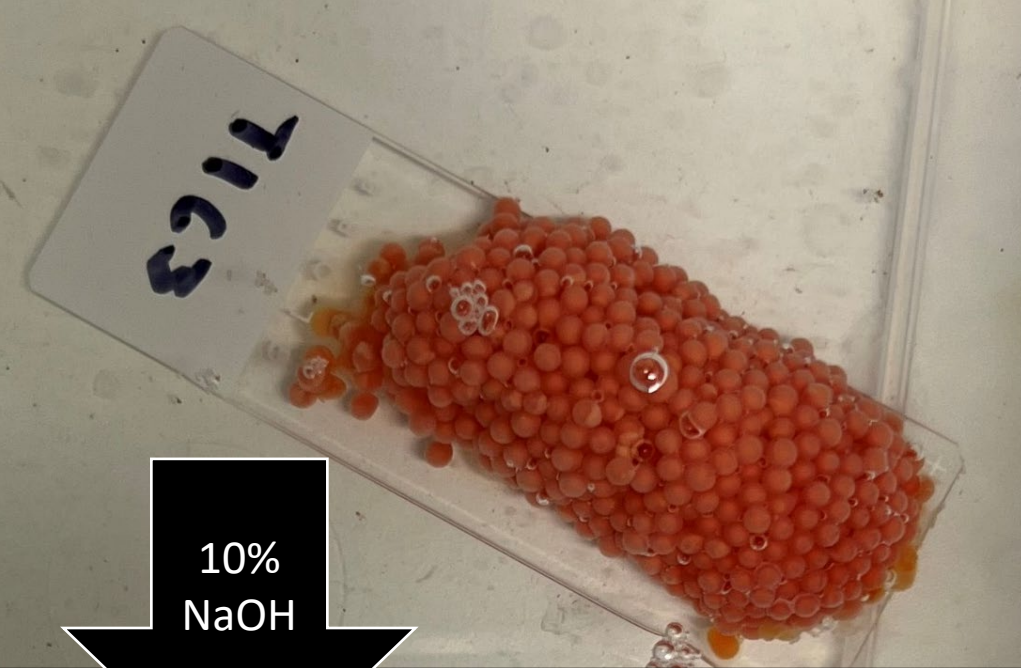
- 14 days of incubation
- 10 days to complete hatching



Final Step

- Dissolve any leftover egg matrix to separate eggs and hatchlings
- Count hatchlings





Counting eggs

Calculating effectiveness of treatment

To estimate the number of eggs per clutch (EPC), we followed the protocol of Kyle et al. (2013)*

- Fifty additional clutches were measured (L,W,H)
- Clutches dissolved in 10% NaOH, separating individual eggs for count
- Using a Generalized Linear Model, we can predict the EPC for each treatment clutch based on clutch measurements to estimate hatch out rate

*predicted that clutch length and depth were the most important components of calculating EPC

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Results

Estimated timeline

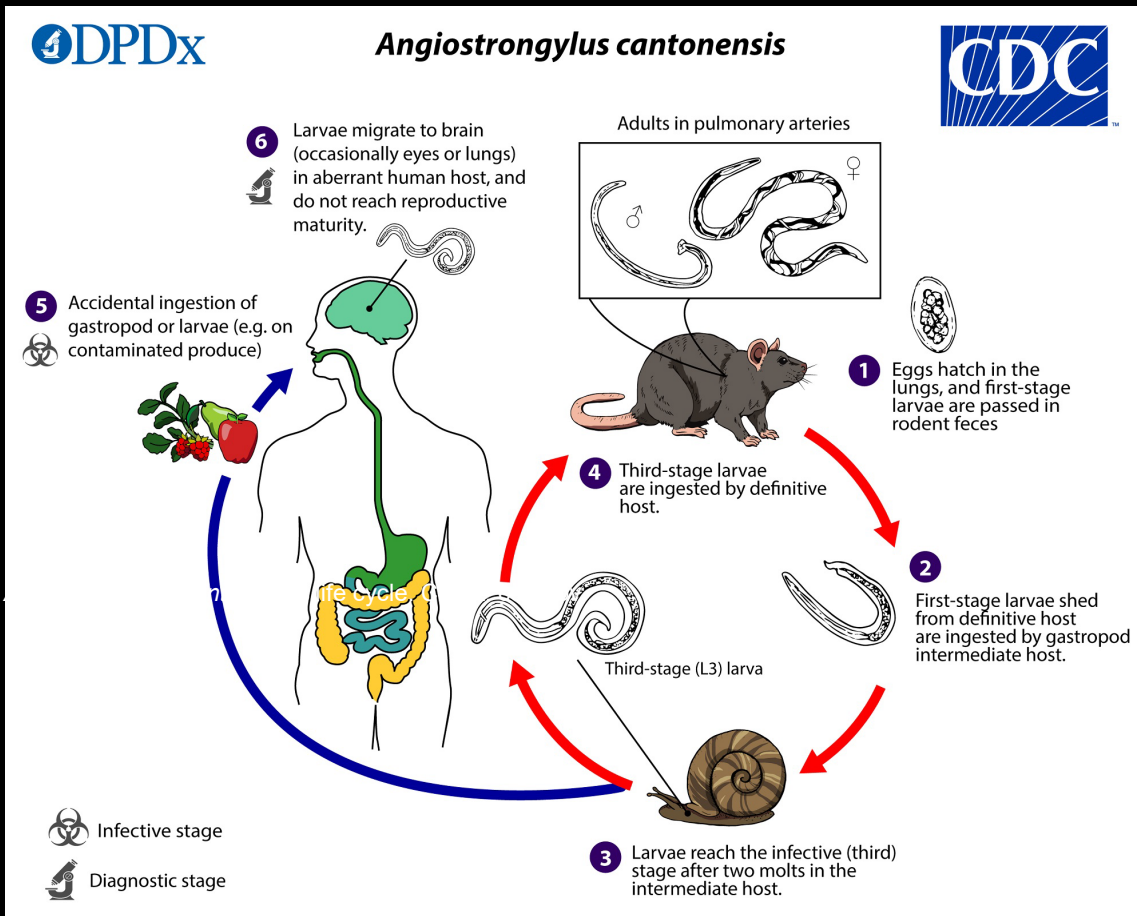
- Results are coming in, but still need more replicates to analyze the hatch data
- On track to have enough replicates to have results in July, 2024



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Testing for rat lungworm in the Southeast

Send your snails for testing



- Genetic testing for rat lungworm
- Will pay for shipping and provide you results
- Will require a large sample size over time
 - Can send in batches from same location

Contact:

Jonah Nguyen, PhD student, Mississippi State

jan342@msstate.edu

Traveling Trunk

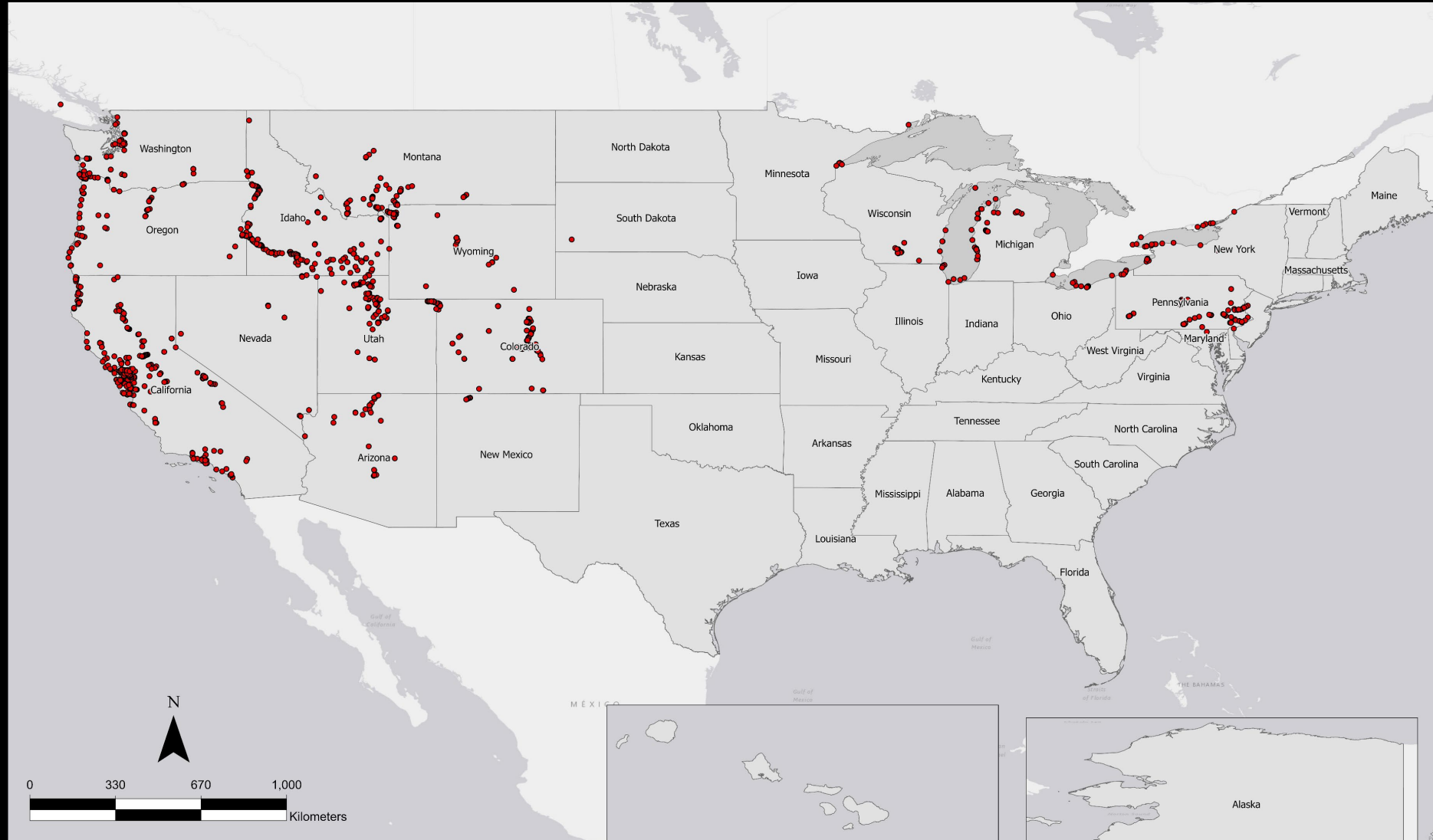
St. Pete Science Fest

- February 2024
- 5th grade day
- Science fest day, families typically
- Runs with “Marine Fest” in downtown St. Petersburg Florida



New Zealand Mudsnail Management Plan

- Submitted to ANS Task Force Yesterday
- Keep an eye out if this species is one you worry about moving south to your area





Questions?

Thank you to my team at USGS

Lab personnel **Audrey Jordon**
& **Logan Stratton**
Program Leader **Dr. Wesley Daniel**
Emeritus USGS **Dr. Jacoby Carter**

**Southeast Regional Invasive Species
& Climate Change (SE RISCC)
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Funded by the USDA

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