Eight Years of Giant Applesnail (*Pomacea maculata*) Control in the Pascagoula River Estuary – Successes, Challenges and Lessons Learned

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ENHANCE ★ PROTECT ★ CONSERVE

Giant Applesnail Overview:

- Freshwater South American snail
- Formerly sold as pets
- AKA Golden Applesnail or Island Applesnail
- Large snail (grows to 6”)
- Has one lung and one gill
- Eats a broad range of vegetation
- Females typically larger than males
- Tolerant of salinity up to 7 ppt
- Survives in water 35 to 100 degrees F

Perfect Invaders

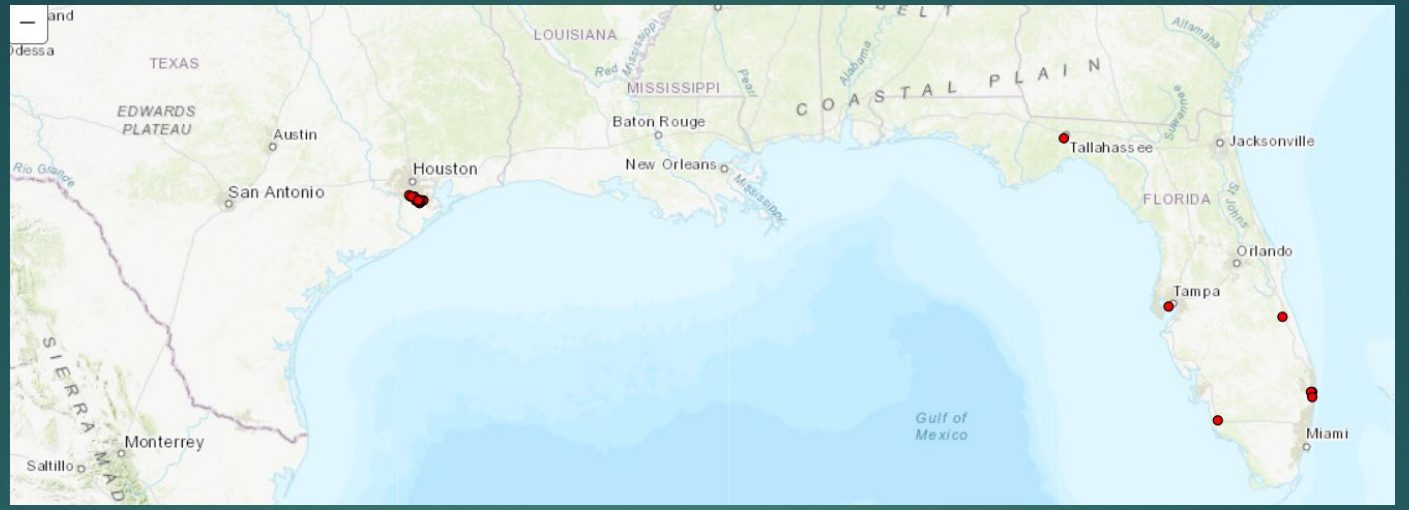
- Snails mature in 60 to 80 days
- 2,500 eggs/mass average
- Egg masses produced every two weeks
- Eggs hatch in 10 to 14 days
- Spreads naturally and transported by other species
- Burrows into sediment to escape winter temperatures

Environmental and Economic Damage:

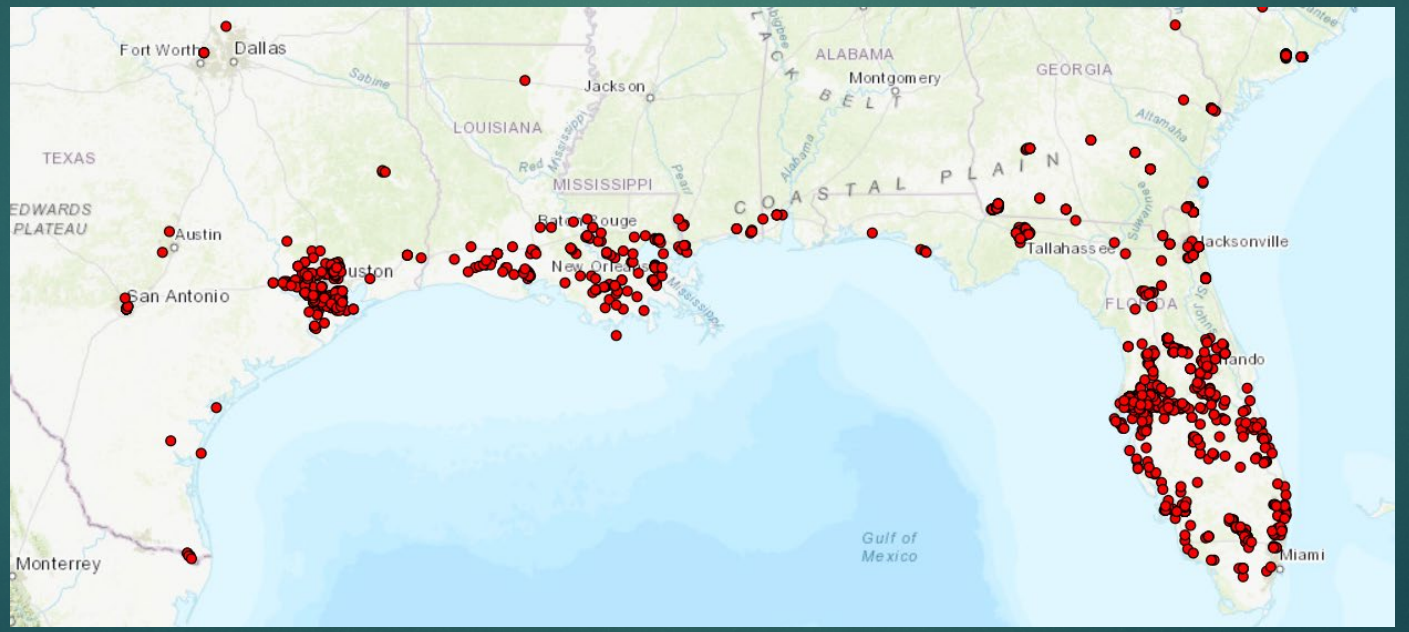
- Strips marshes of vegetation
- Changes plant community to algal-based
- Carrier of rat lungworm parasite
- Predator of amphibian eggs
- Louisiana farmers losing crawfish production
- Limited control options

Expansion of Giant Applesnail Sightings

2002



2022



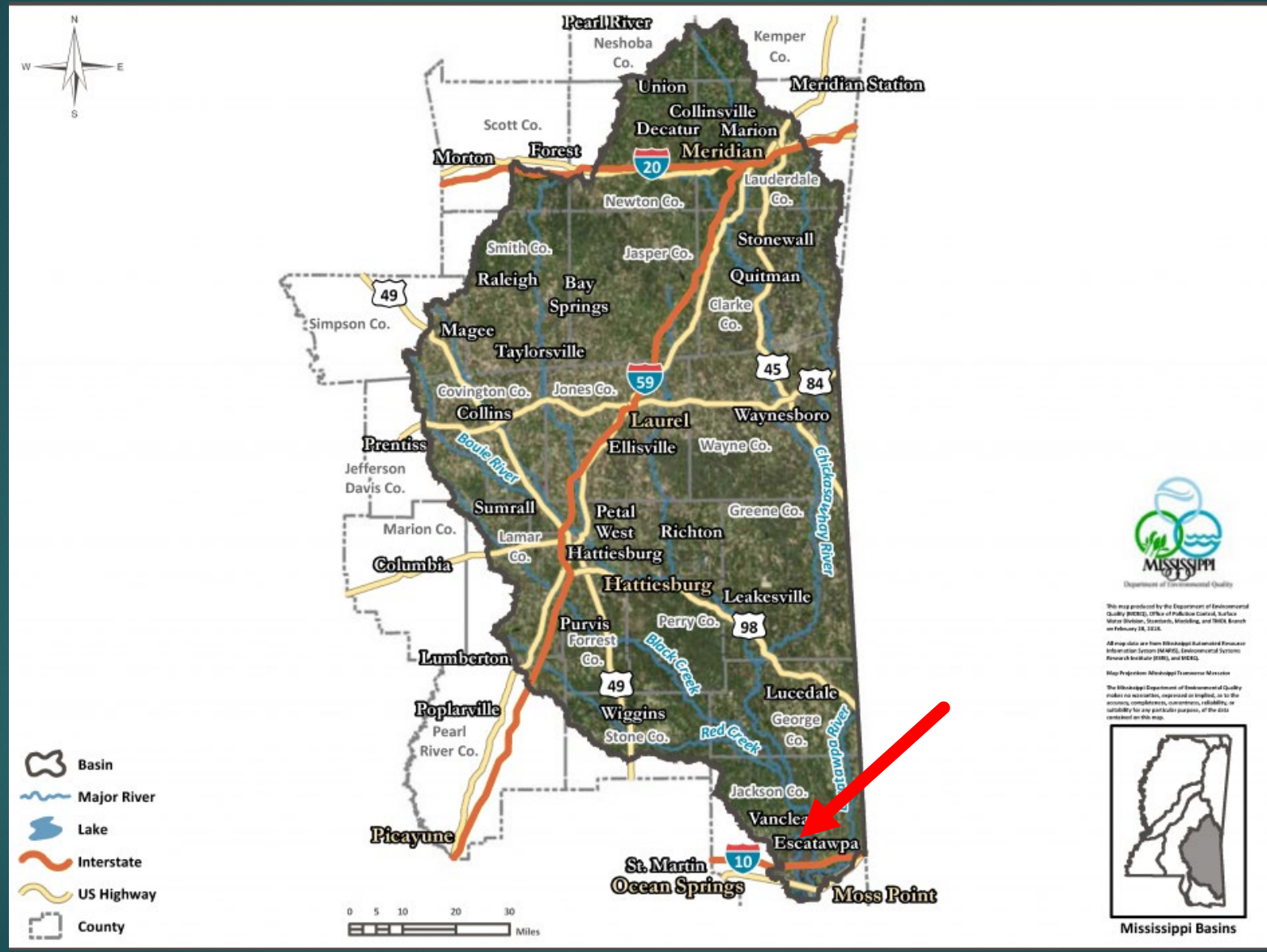
nas.er.usgs.gov

Former Future Threat - Giant Applesnail

- Egg masses first seen in 2014
- Probable pet release
- First recorded infestation on public waterway in state
- Prior Mississippi infestations on isolated bodies of water

MS Department of Agriculture and Commerce

Location of Giant Applesnail Infestation – Pascagoula River



Giant Applesnails are Here – Now What?

Factors to Consider:

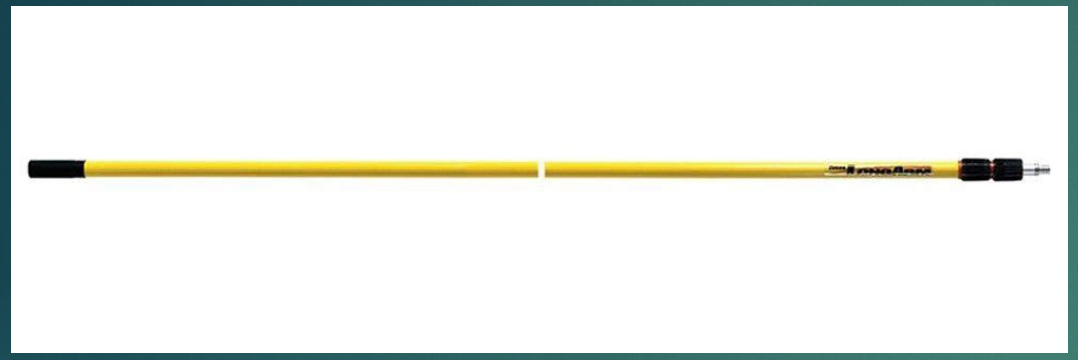
- Tidally influenced area
- Densely vegetated shoreline
- Egg masses can be difficult to reach
- Heavy boat traffic – marina, houseboats
- Periodic flooding
- No species specific molluscicide
- No project budget

Initial Response 2014-2018

- Monitor extent of infestation
- Find suitable way to destroy egg masses
- Remove as many snails as possible
- Destroy egg masses before they hatch
- Hand counters used to keep track of daily activity
- Try to keep population from spreading
- Hope for cold weather, predation or…

Will lay eggs on just about any vertical surface above the waterline.

Mechanical Destruction of Egg Masses



Paint Roller Extension Handle

+

Stainless Steel Grill Brush

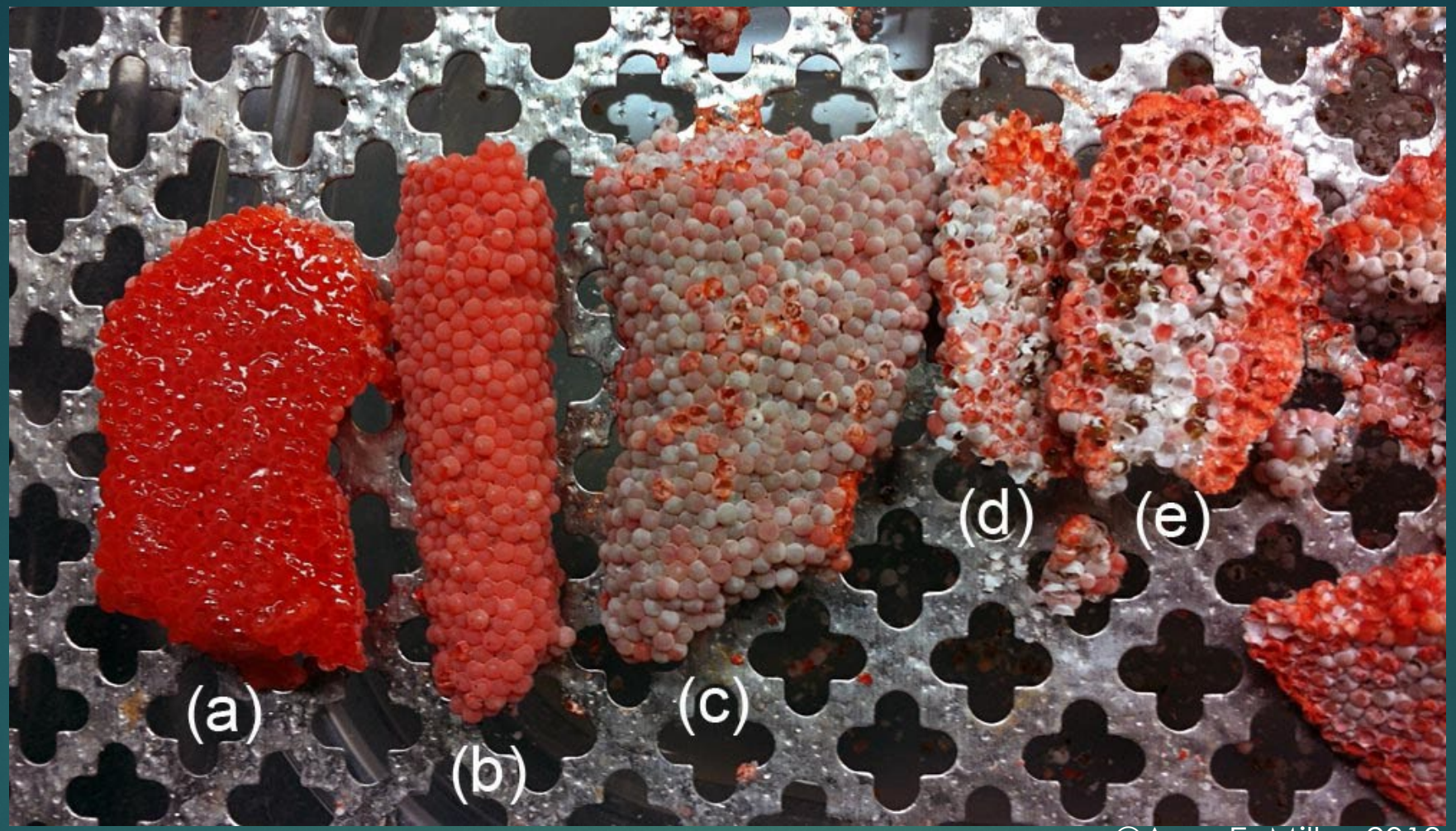
= The SNAILINATOR

Mechanical Control of Egg Masses

Step 1: Find

Step 2: Smash

Step 3: Scrape



Eggs start out bright pink then fade as the shell forms

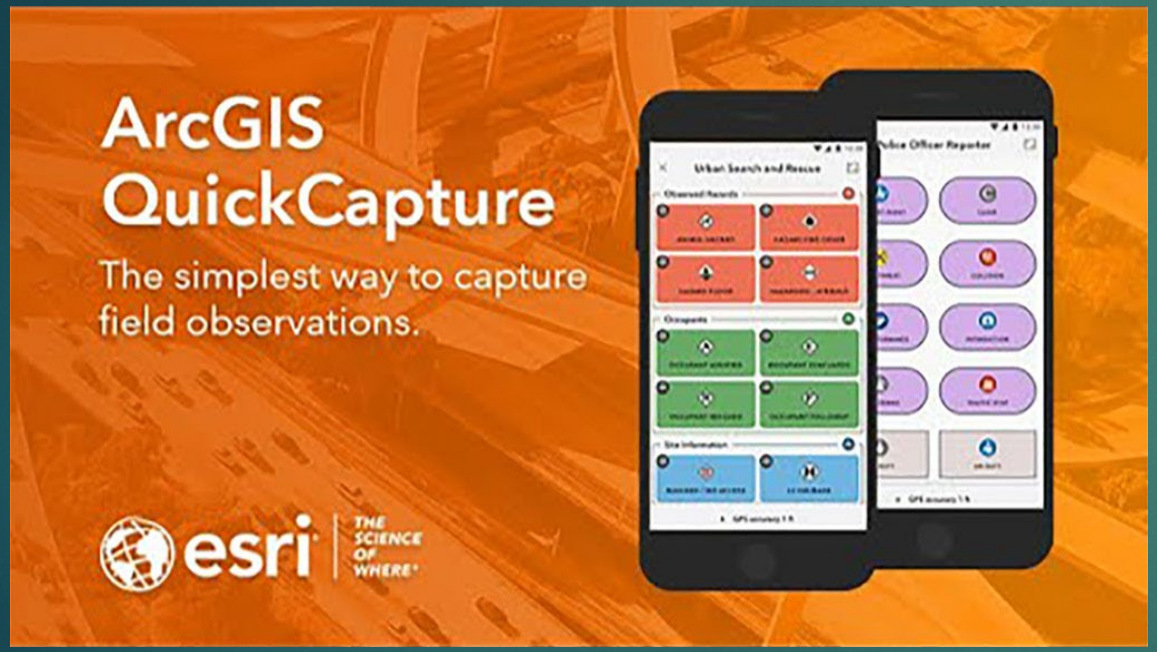
2018 –2022 Volunteer Help from Gulf Corps!

- Lightweight versions made from PVC pipe
- Attached floats prevent gear loss while kayaking
- Small dip net w/ float to capture snails
- Bucket for snail collection
- Great for volunteer crews

Kayak / Canoe Crews

2021 – 2022 Project Partners

2021 – 2022 Improved Field Data Collection:



- Free downloadable app for users
- Easily configurable for any type of project
- Near real-time monitoring of activity
- Remote uploading of data
- Data can be downloaded in a variety of formats
- Dashboard provides convenient overview of projects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ApplesnailProject
Start & Stop Track
Record Survey Track
Environmental
Water Temperature
Salinity
Add 1
Snail: Hand Captu
Snail: Trap Captur
Dead Snail
Egg Mass: Destro
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GPS accuracy 53 ft


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ApplesnailProject
Add Multiple
Snail: Hand Captu
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Egg Mass: D
Egg Mass: N
Notes & Photos
GPS accuracy 74 ft

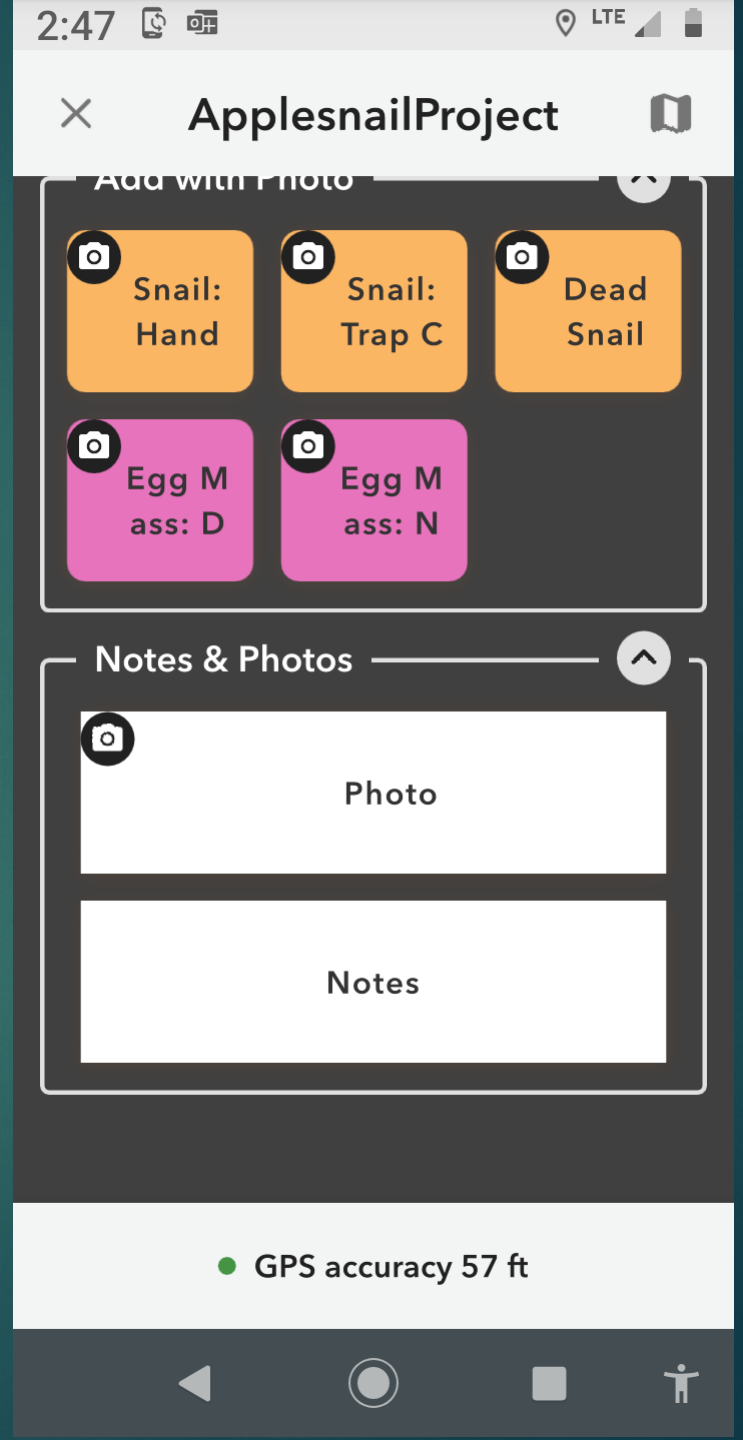
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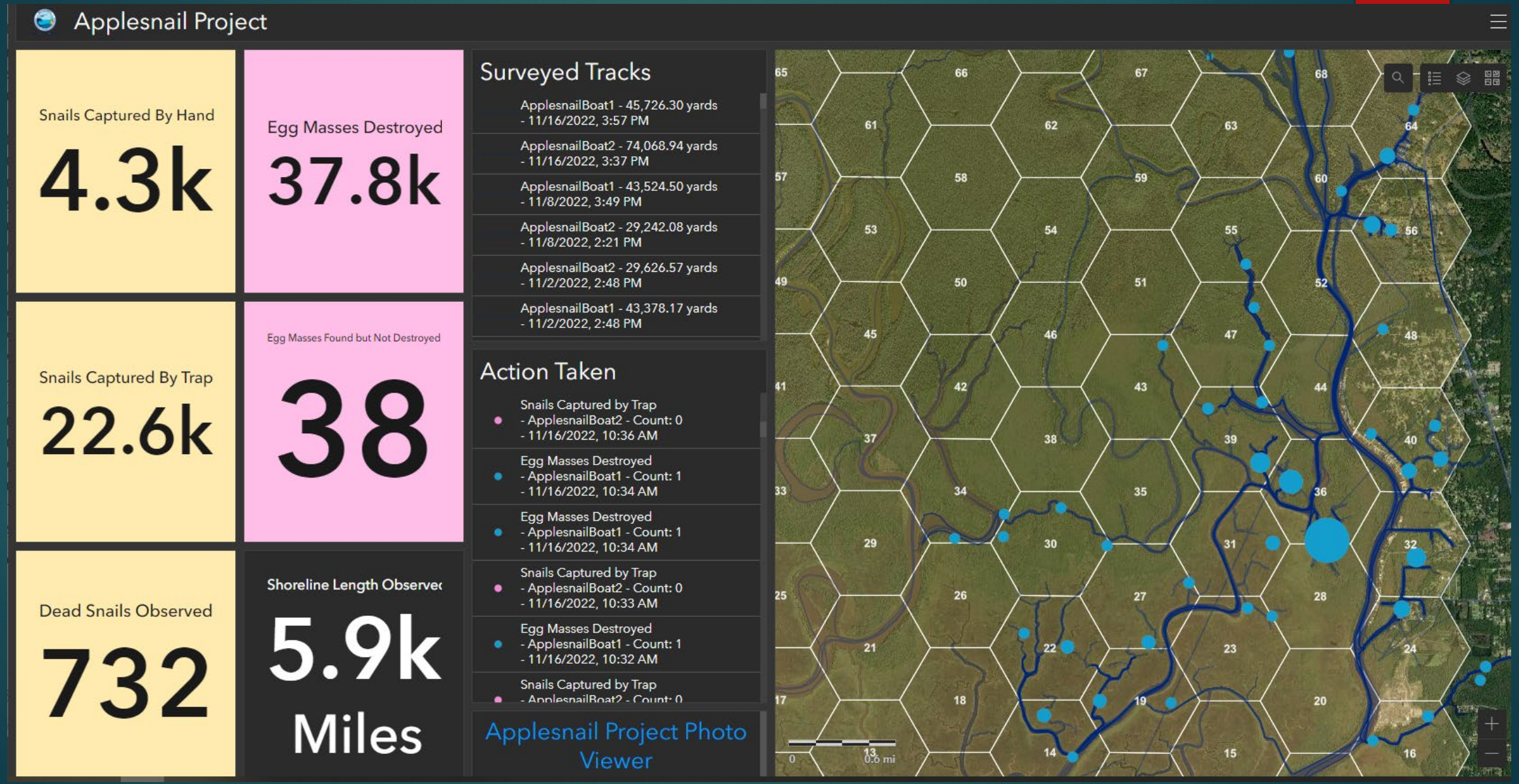
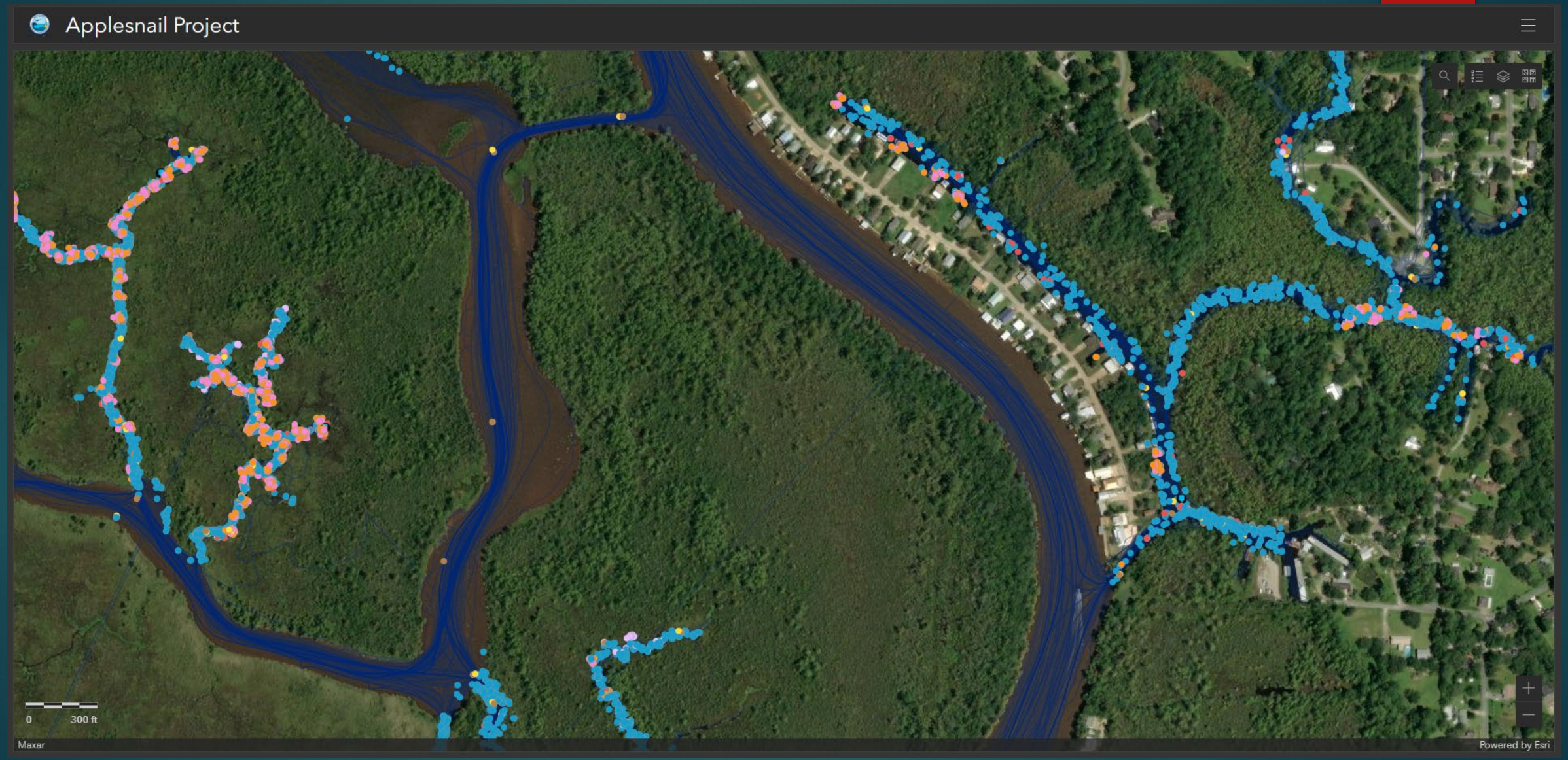
Photo
Notes
GPS accuracy 57 ft

Project Dashboard

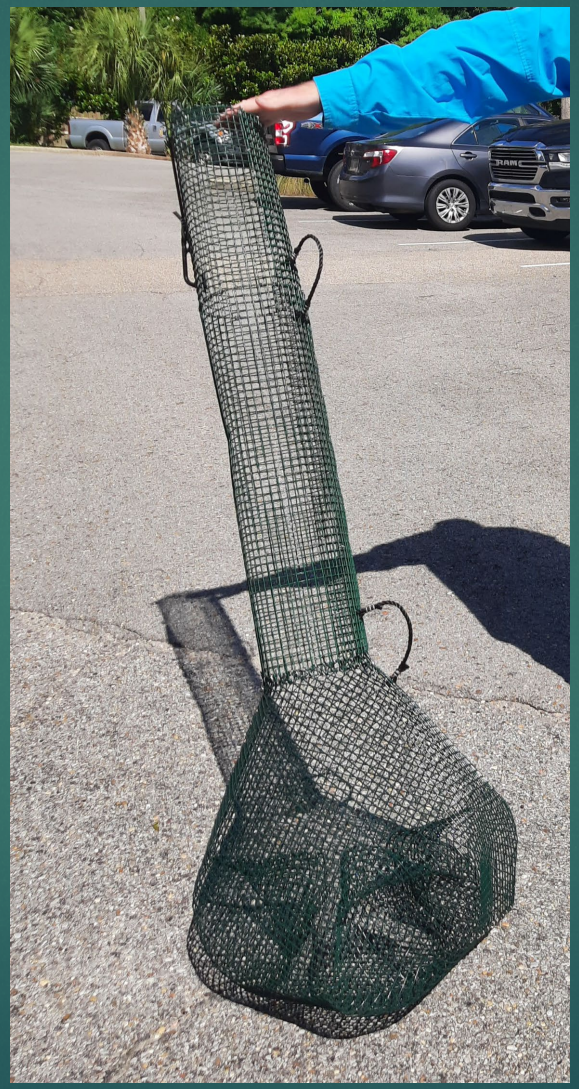


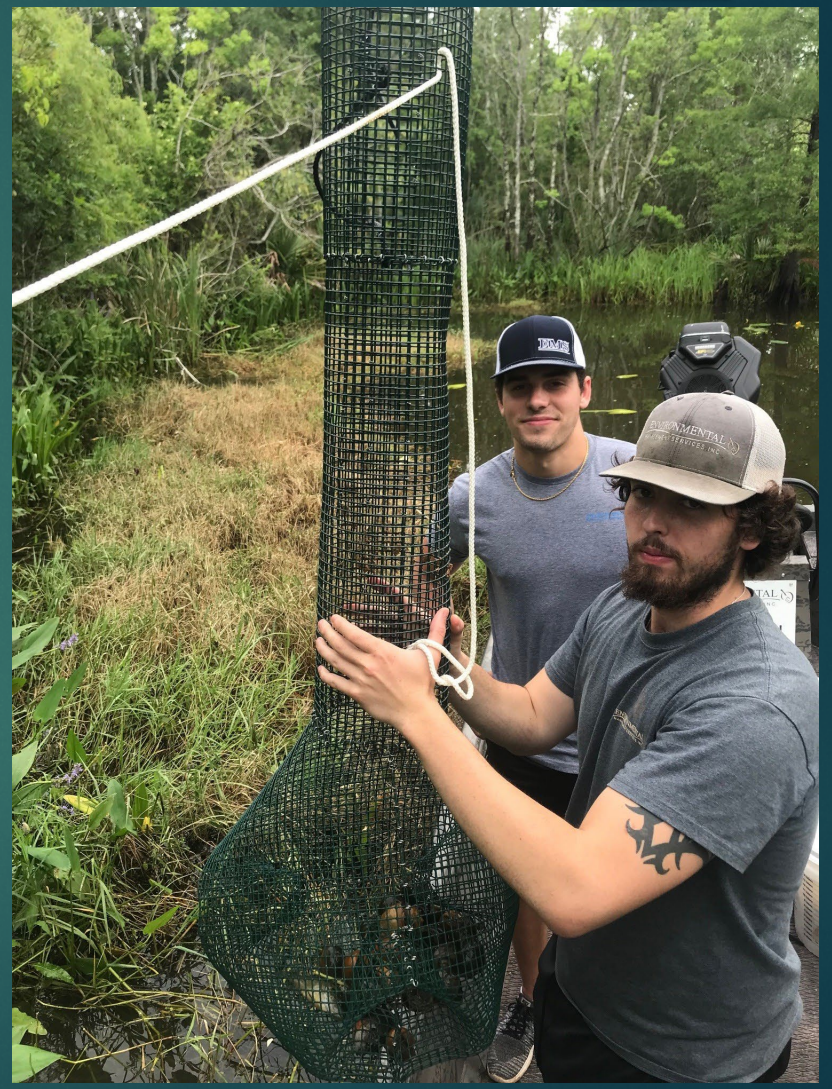
Snails Tend to Inhabit Areas With Low Water Flow



Snail Trapping Improvement

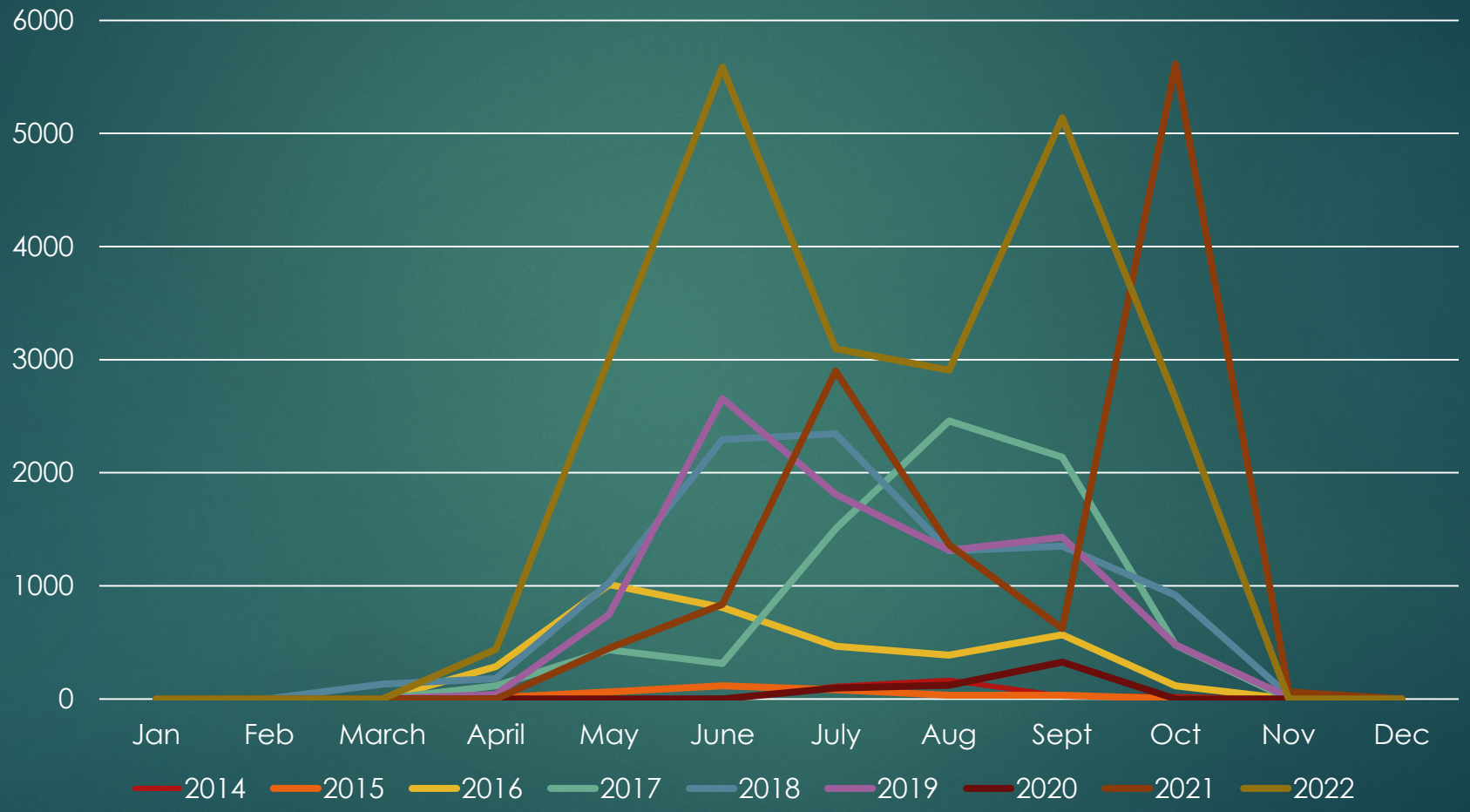
- Modified crawfish trap
- Openings enlarged
- Neck extended
- Commercial crawfish bait
- Up to 35 snails/trap



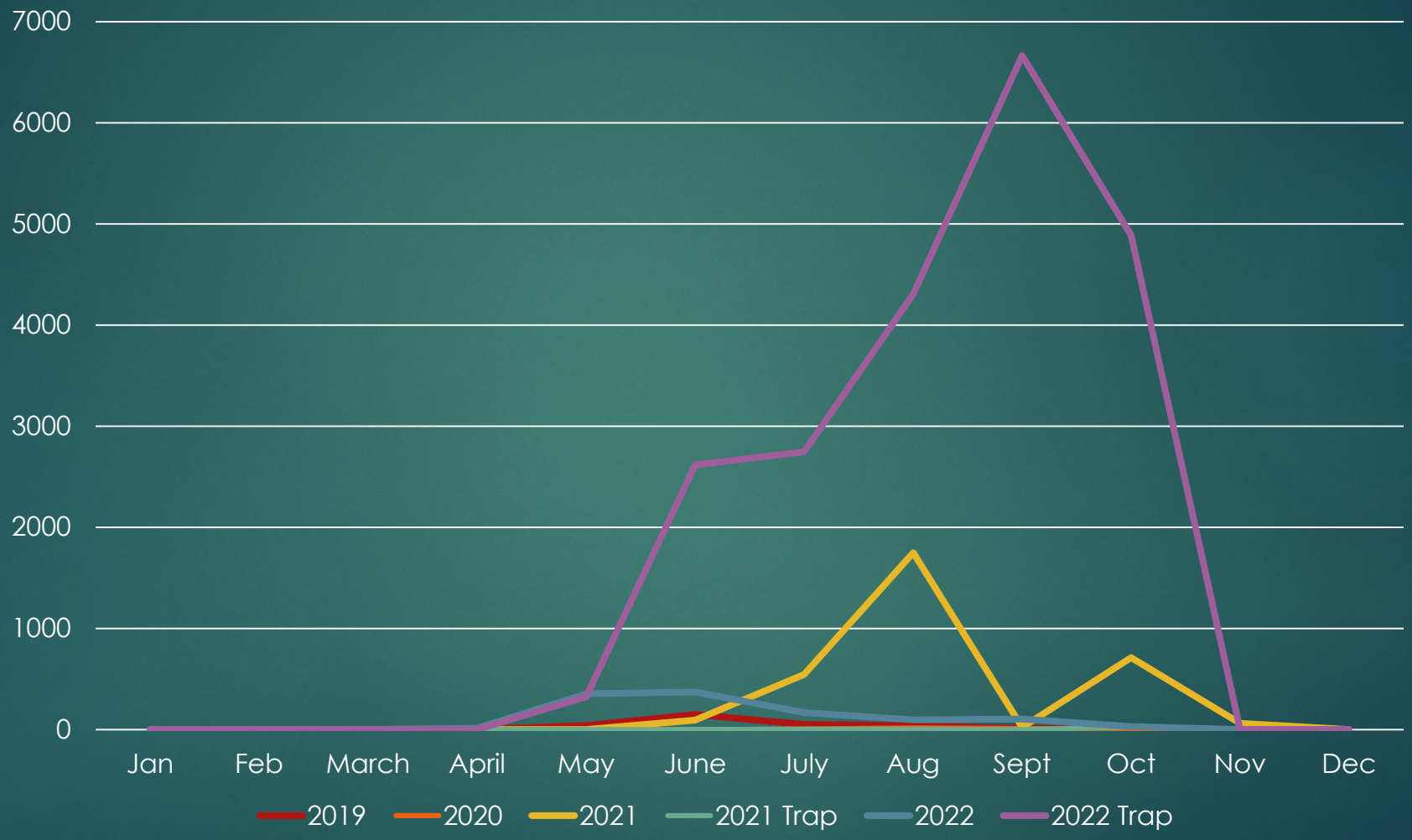


Snail Trap Placement

Number of Egg Masses Destroyed by Month and Year



Snail Capture by Month and Year



Limpkins Arrived in 2022

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Successes

- More than 65,000 egg masses destroyed
- Over 5,300 snails removed by hand
- Improved trapping methods developed
- 21,577 snails removed by trapping in 2022
- Quick field data collection with Quick Capture

486 lbs. of giant applesnails. Over 2,500 lbs. total removed in 2022

Challenges

- 2020 snail control missions mostly lost due to COVID-19
- Snails suddenly appearing well apart from original infestation
- Need a use for captured snails
- Need a better way to dispose of large numbers of snails
- Flooding seems to have caused snails to spread upriver
- Volunteer groups not available for entire season
- Range of canoe/kayak control is limited

Lessons Learned

- It takes time to learn how to spot snails in the water
- Giant applesnails prefer backwater areas to flowing
- Volunteers preferred canoes over kayaks for egg mass control
- Boats better for spotting/removing live snails. Higher observation point
- Dead snails decompose very quickly
- $30 traps tend to get stolen

Future Plans

- Continue project another year to see effects of increased trapping
- More volunteer snail hunters in more places
- Continue to improve trapping equipment and baits
- Broader monitoring for early detection of new infestations

Questions?

Photo Credit: CABI

Photo Credit: Michael Andres - USM