Aquatic Plant Restoration Post Invasive Species Control

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Beyond Control

- Prevention
- Early Detection
- Eradication
- Control

- **Restoration**

Native plant recovery following invasive control can be slow

- Systems may lack viable propagules as a result of years of suppression
  - Especially in small waterbodies
- Many plants do not produce a lot of long-lived propagules

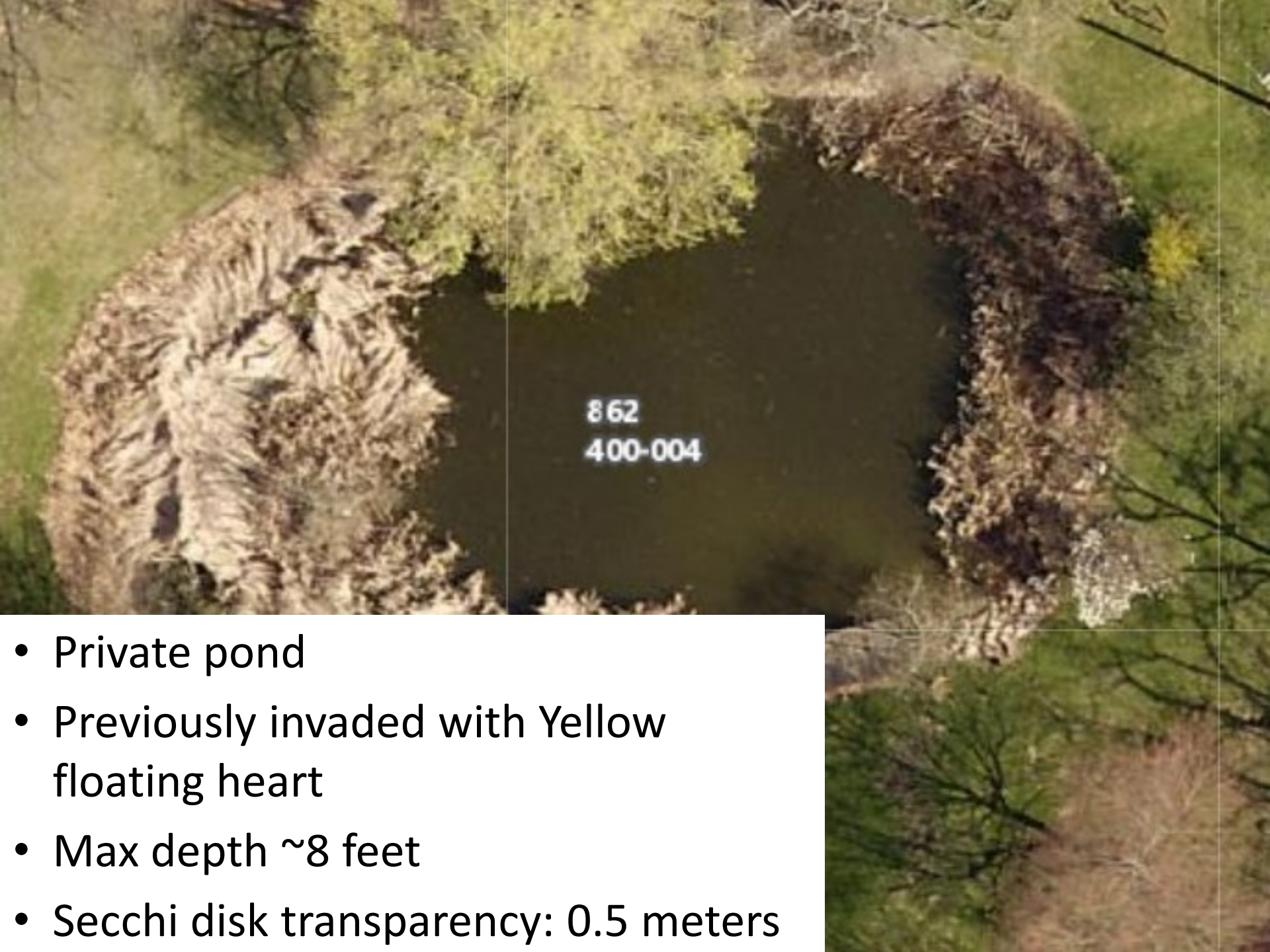
Active native plant restoration may be necessary to restore diversity

Problem:
Uncertainty in planting methods

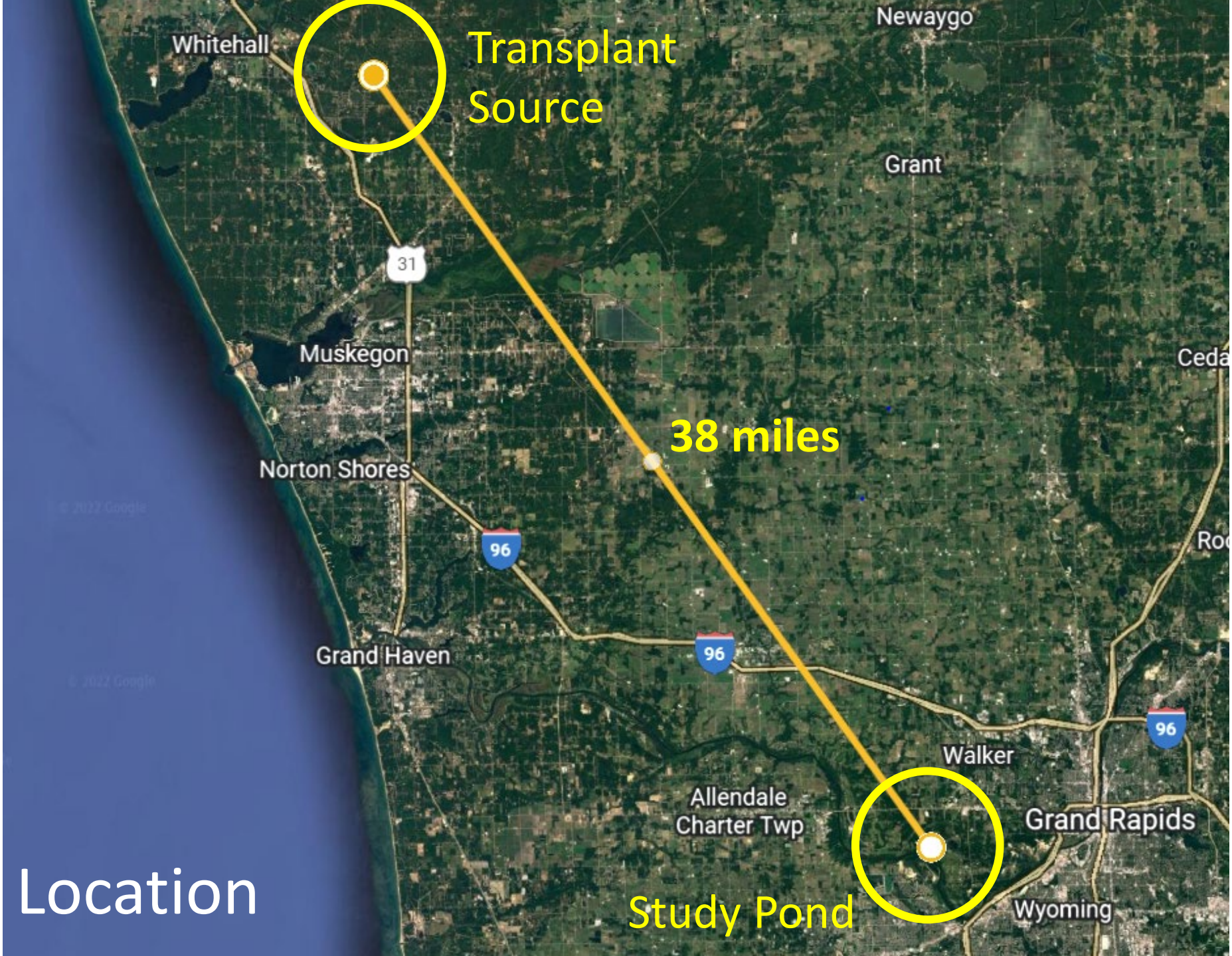
Goals:

1. Test aquatic plant planting methods using multiple species and develop guidance for future restoration post-AIS control

2. Restore macrophyte diversity in a recently controlled yellow-floating heart infestation



- Private pond
- Previously invaded with Yellow floating heart
- Max depth ~8 feet
- Secchi disk transparency: 0.5 meters


Transplant Source
Whitehall
Newaygo
Grant
31
Muskegon
38 miles
Norton Shores
96
Grand Haven
96
96
Walker
Allendale Charter Twp
Grand Rapids
Study Pond
Wyoming
Location

Transplant Method

- Zebra mussels not present
- Collected from 0.5 – 1.5 m depths via snorkeling and wading
- Extracted using our hands or a small hand spade
- Visually inspected and rinsed with water to remove sediment and placed in coolers
- Planted within 36 hours of collection

Method adopted from Knopik and Newman 2018

Species and Planting Methods

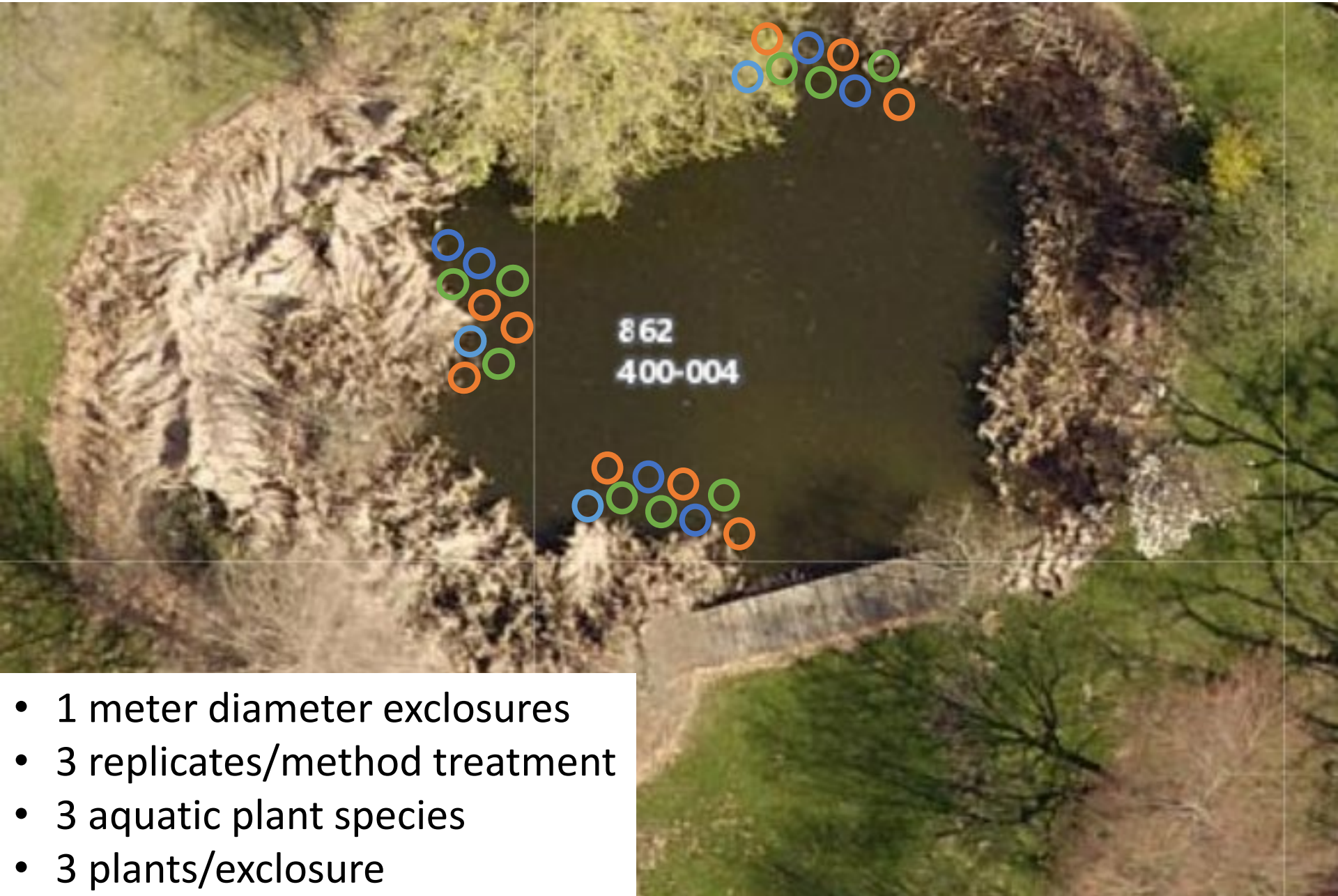
<u>Plant Species</u>

- Sago pondweed
- Illinois pondweed
- Chara

<u>Planting methods</u>

- Push-in
- Staple
- Weighted burrito

Experimental Setup



- 1 meter diameter exclosures
- 3 replicates/method treatment
- 3 aquatic plant species
- 3 plants/exclosure

Experiment Parameters and Analysis

- Ease of treatment method
- Plant survivorship
- Change in biomass

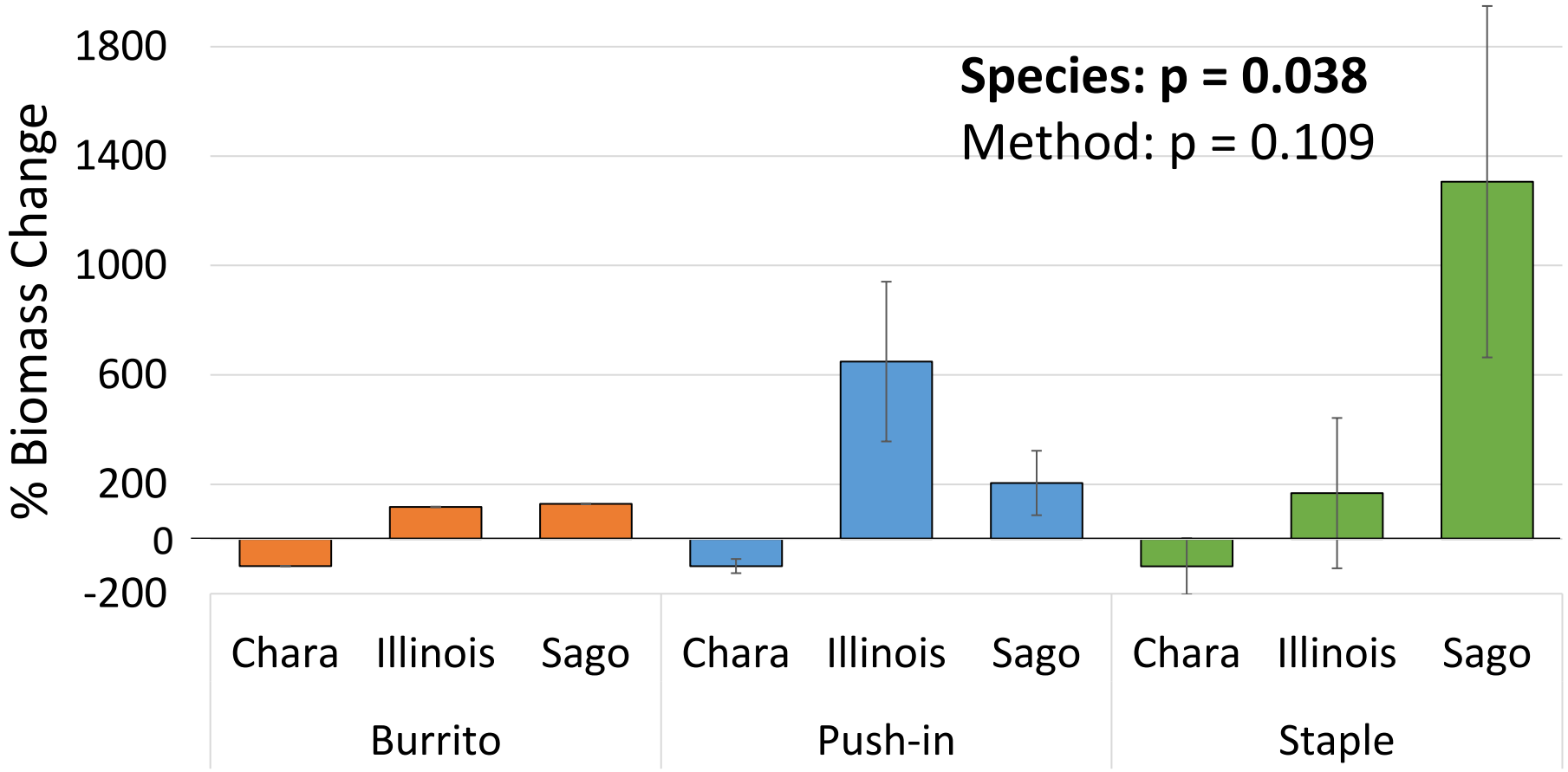
Measurements taken during planting (end of July) and one year later.

Results

Results: Ease of treatment

- Burrito method required above water prep, but was easiest to plant
- Wood staple was very easy, but staple needs to be modified to allow for more rapid planting
- Push-in was easy, but may not always work depending on substrate and energy

Results: The pondweeds grew over 100% for each method



Example Burrito method

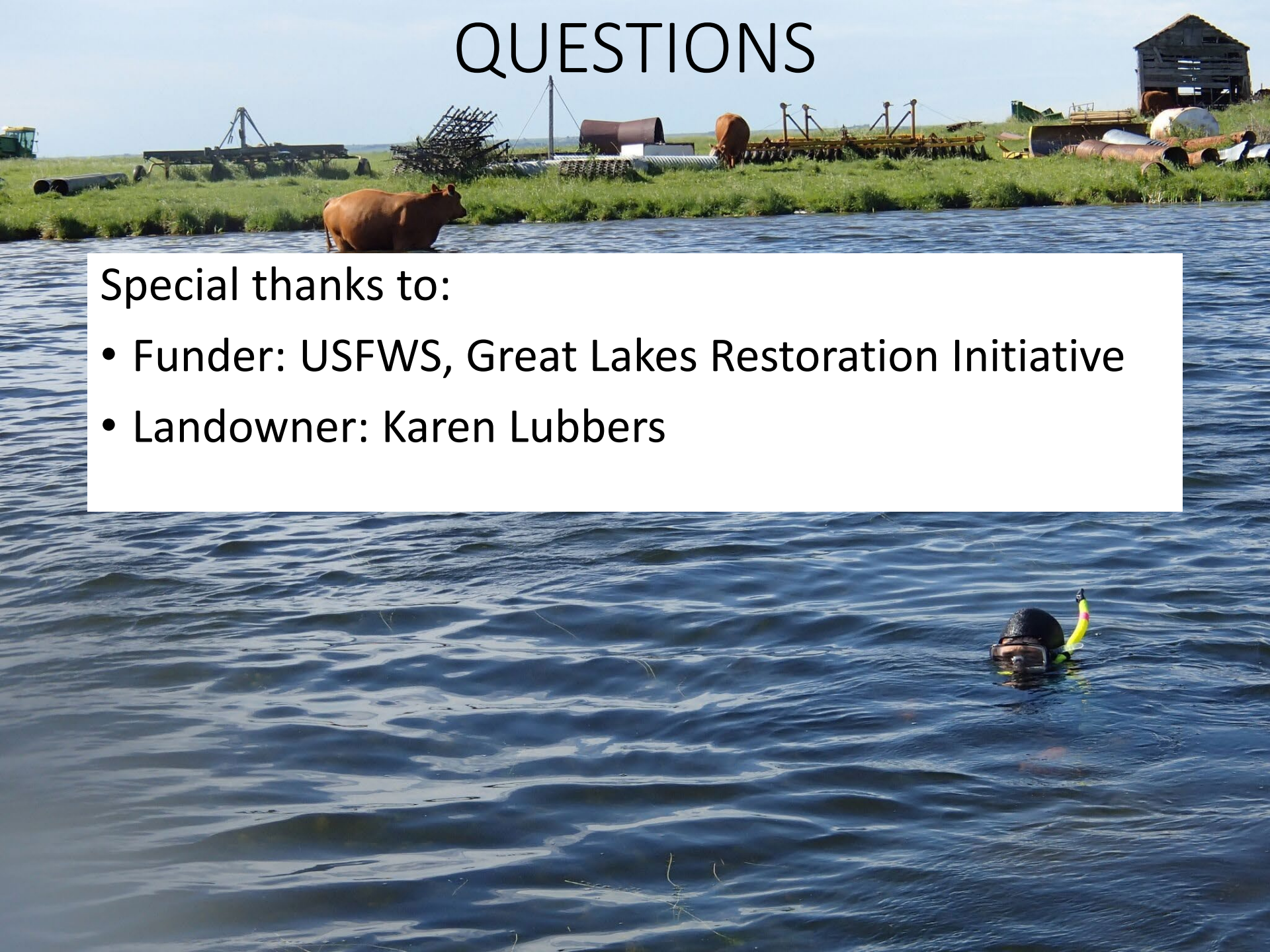
Project takeaways

- Ease of method – All easy
  - Staple needs to be modified for rapid planting
  - Burrito kept person from getting in the water
    - But did not perform as well as other methods

- Survivorship:
  - Chara grew first year, but did not survive into second summer
  - Sago and Illinois grew out of cages

- Cages were necessary to reduce bird and goldfish herbivory

QUESTIONS



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