Aquatic Plants: Extending our restoration into the nearshore

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MICHIGAN STATE UNIVERSITY | Extension

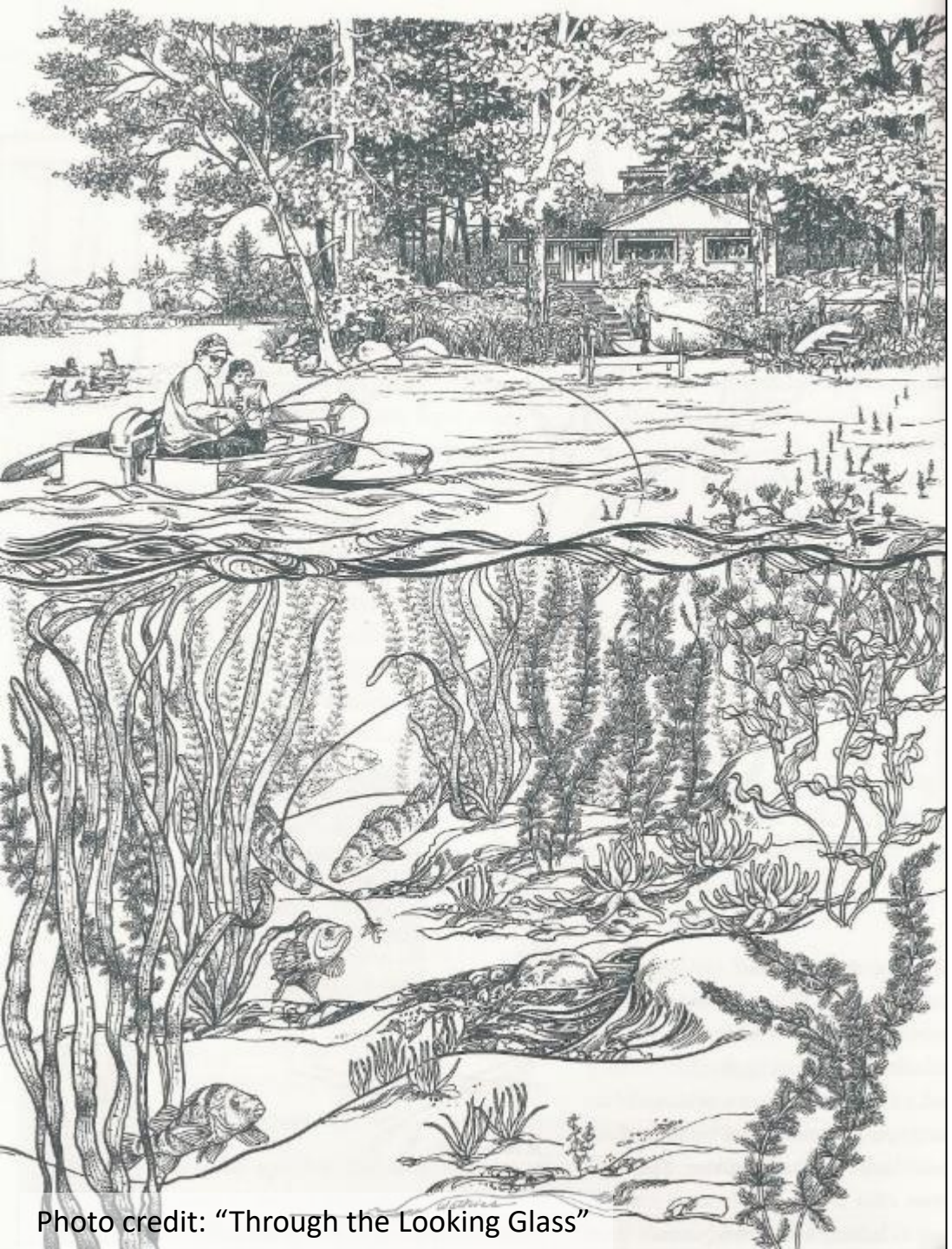
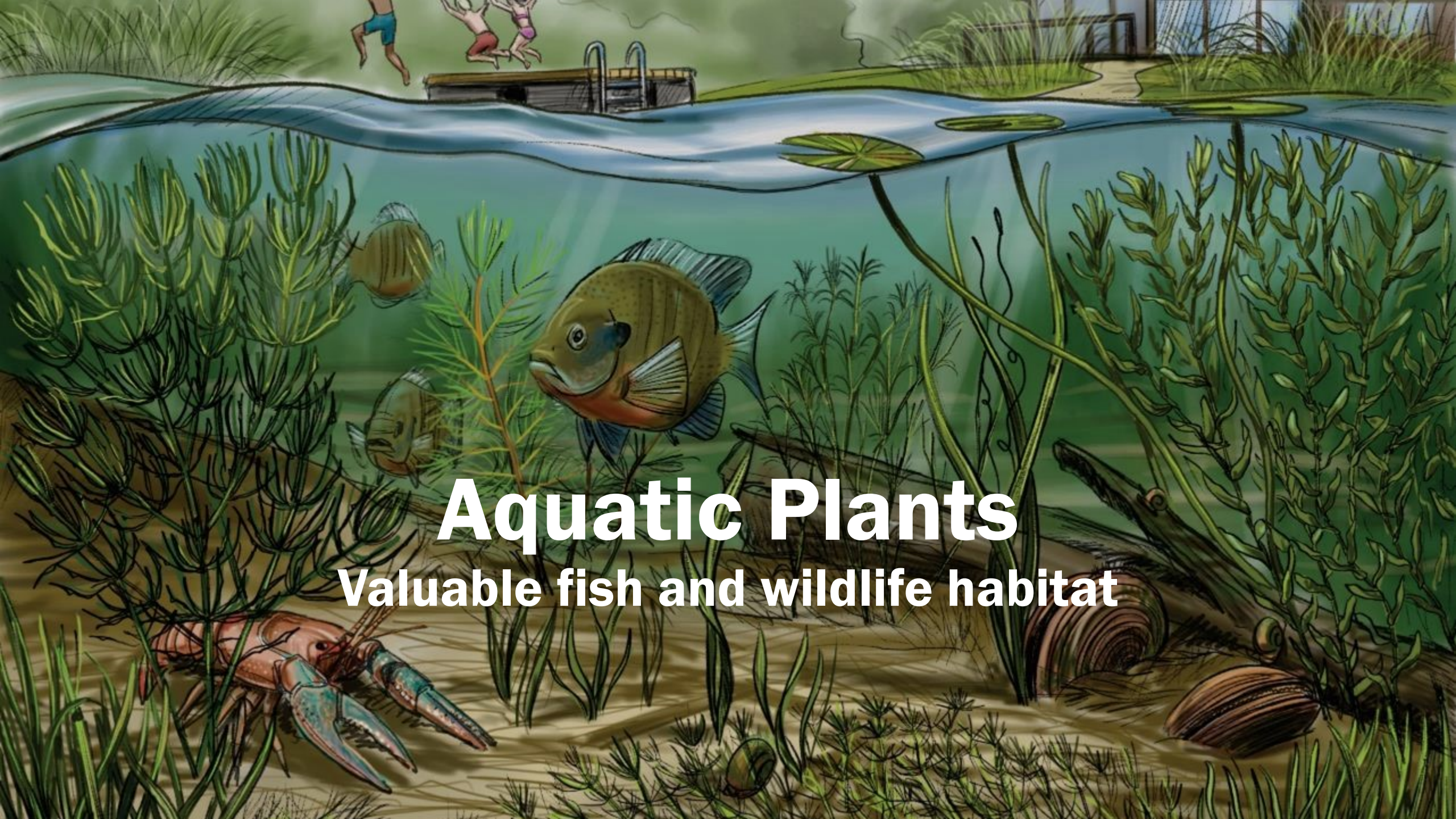


Photo credit: “Through the Looking Glass”

An Underwater Forest

Michigan trivia

- 28 pondweed species
- 10 submersed carnivorous species
- 8 milfoil species


Aquatic Plants
Valuable fish and wildlife habitat

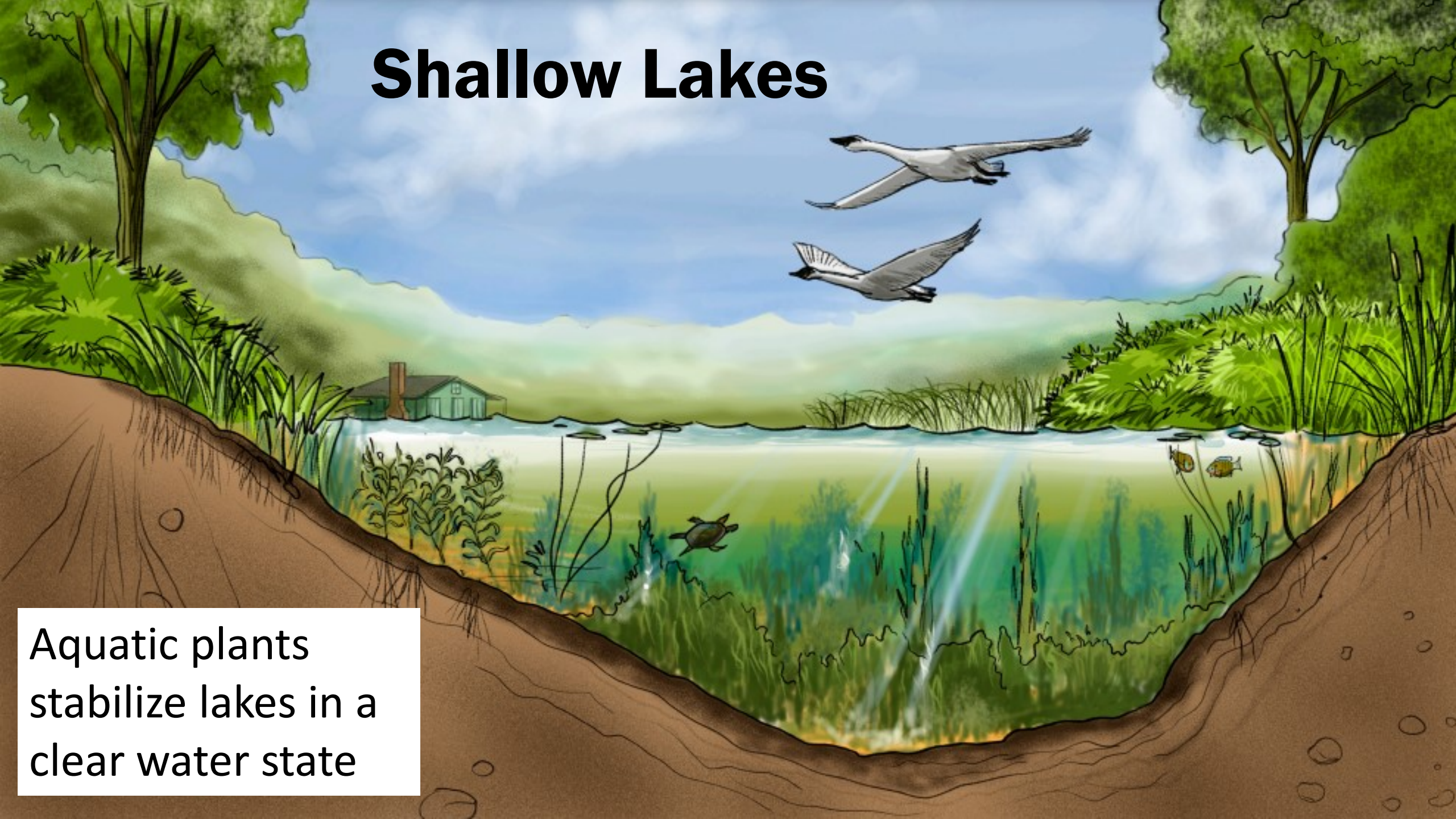
Aquatic Plants

Water clarity and quality

- Reduce sediment resuspension
- Trap sediment
- Reduce shoreline erosion
- Nutrient sink

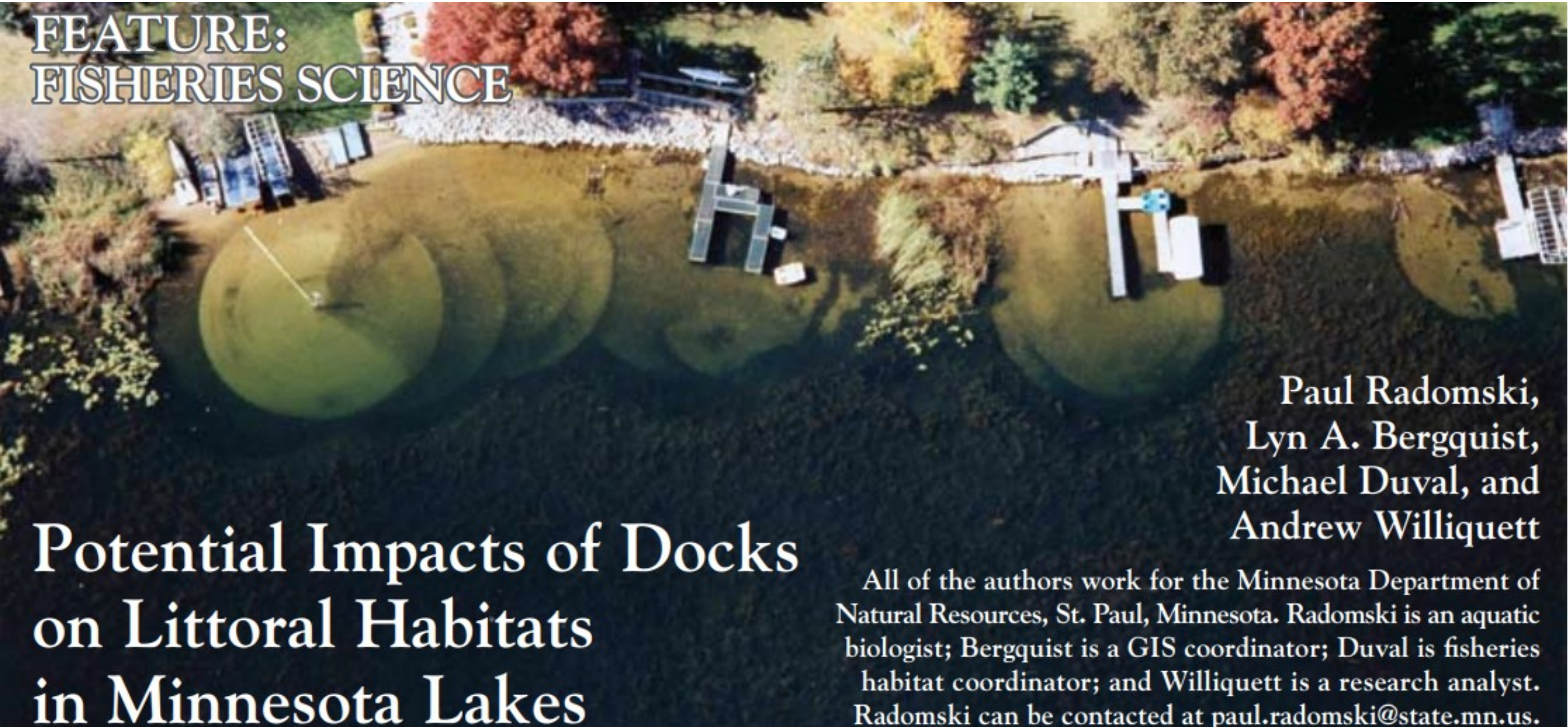
Scheffer 1993, Jeppesen 1998, Smart 1995, James and Barko 1990 and 1995, etc…

Shallow Lakes



Aquatic plants stabilize lakes in a clear water state

Loss of aquatic plants



Potential Impacts of Docks on Littoral Habitats in Minnesota Lakes

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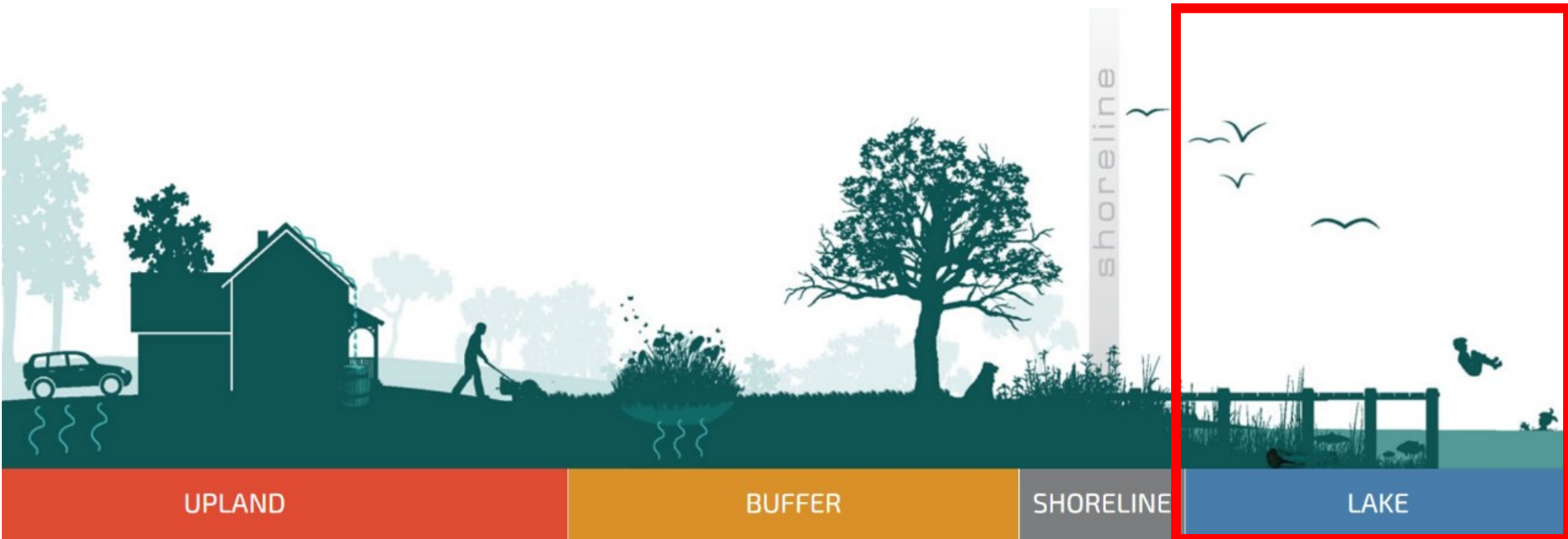
Extending our restoration into the nearshore



Aquatic plant recovery

- Facilitate establishment from existing propagules
- Active planting
  - Some systems may lack viable propagules


Use emergent species to facilitate
submersed plant recovery

Using wood

Brian Majka

Preliminary case study

Eric Calabro

Preliminary case study

Eric Calabro

Aquatic plant recovery

- Facilitate establishment from existing propagules

- Active planting
  - Some systems may lack viable propagules or have low diversity

Uncertainty in planting methods

Study goals:

- Test aquatic plant planting methods using multiple species

Species and Planting Methods

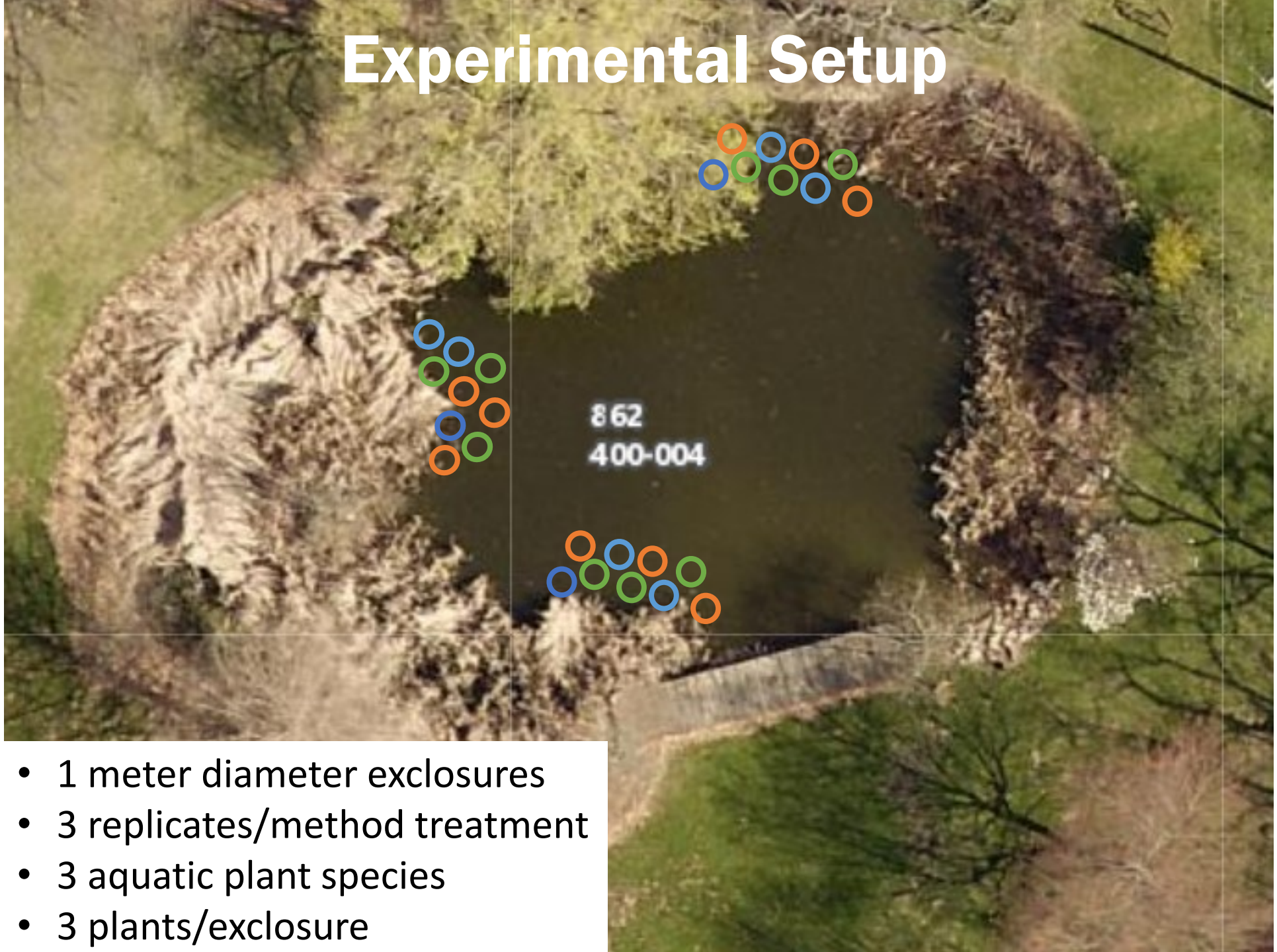
<u>Plant Species</u>

- 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

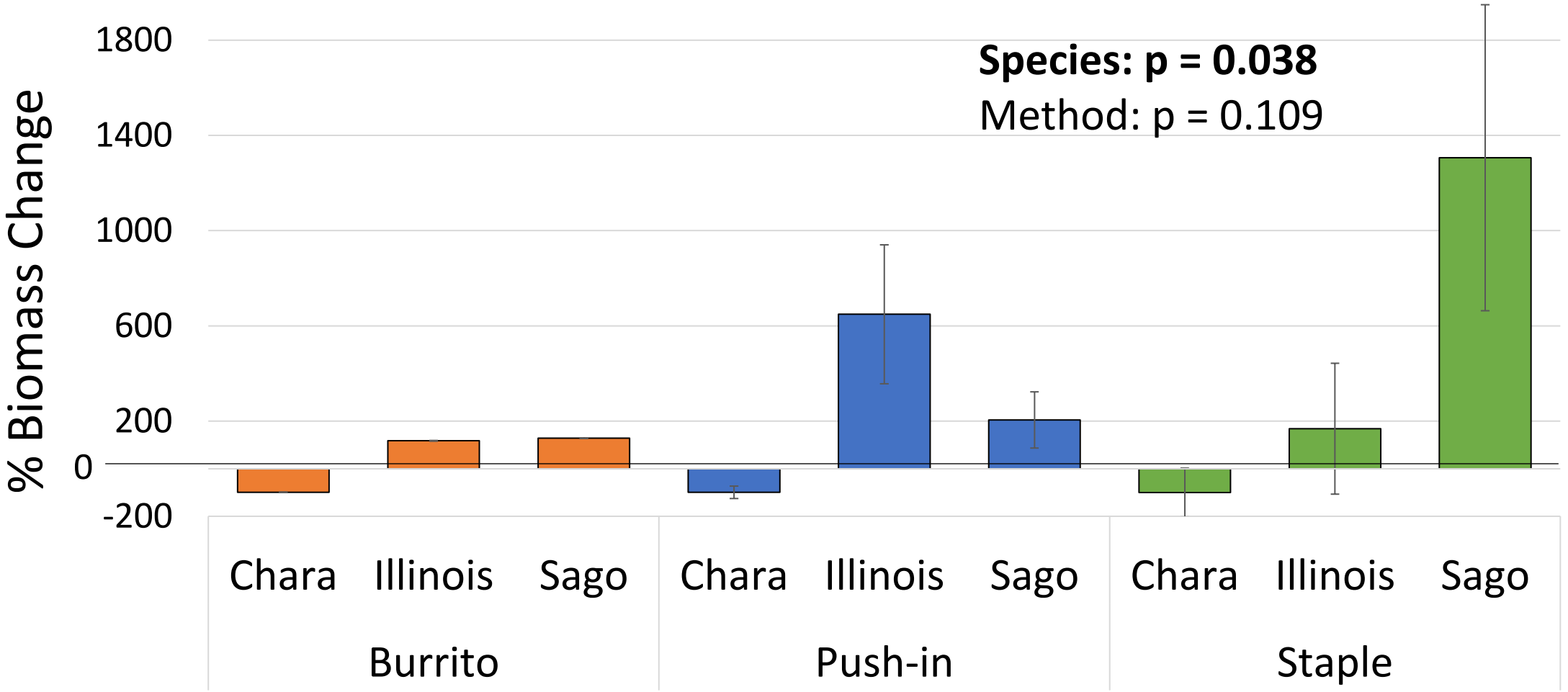
Measurements taken during planting (end of July) and one year later.

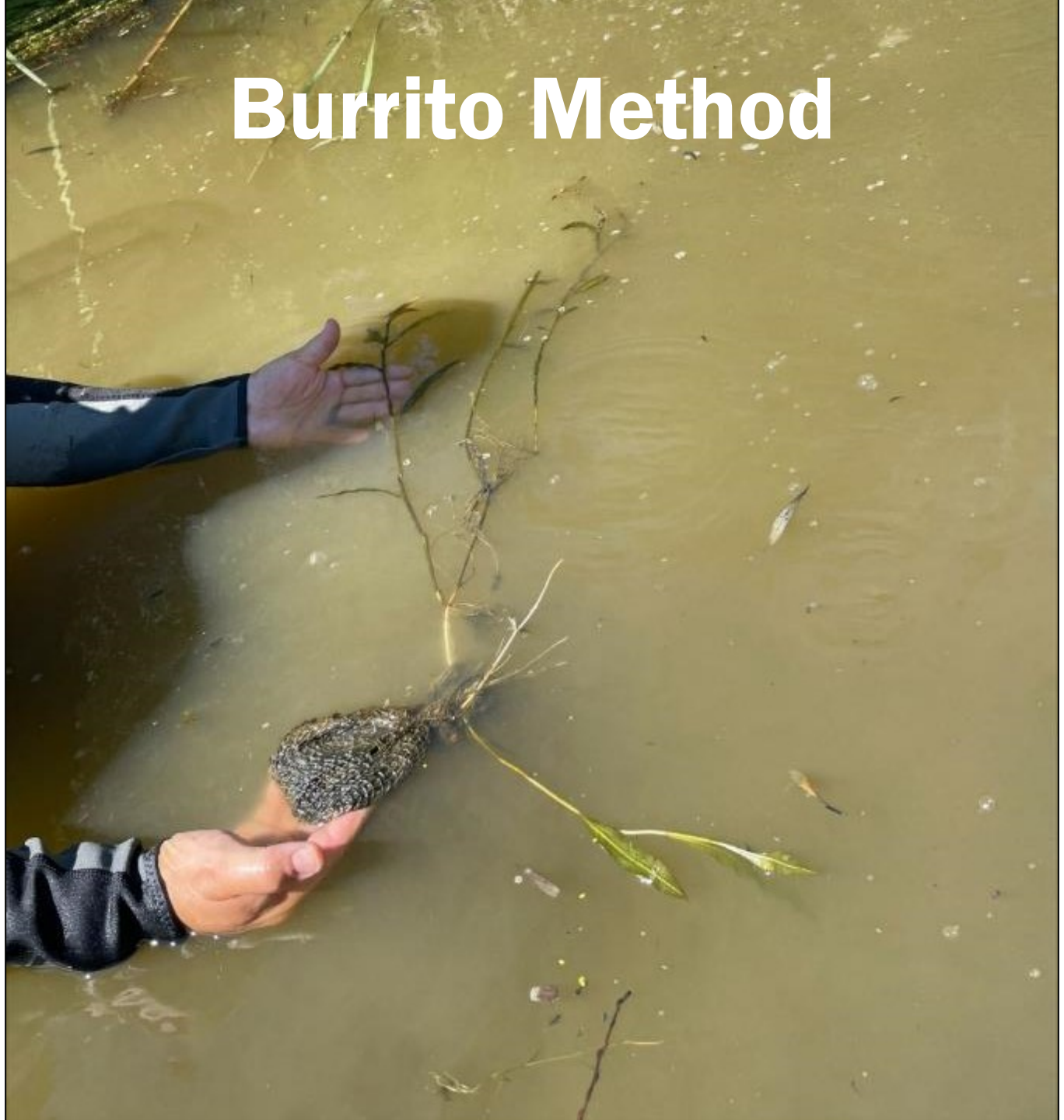
Results

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 increased by more than 100% for each method



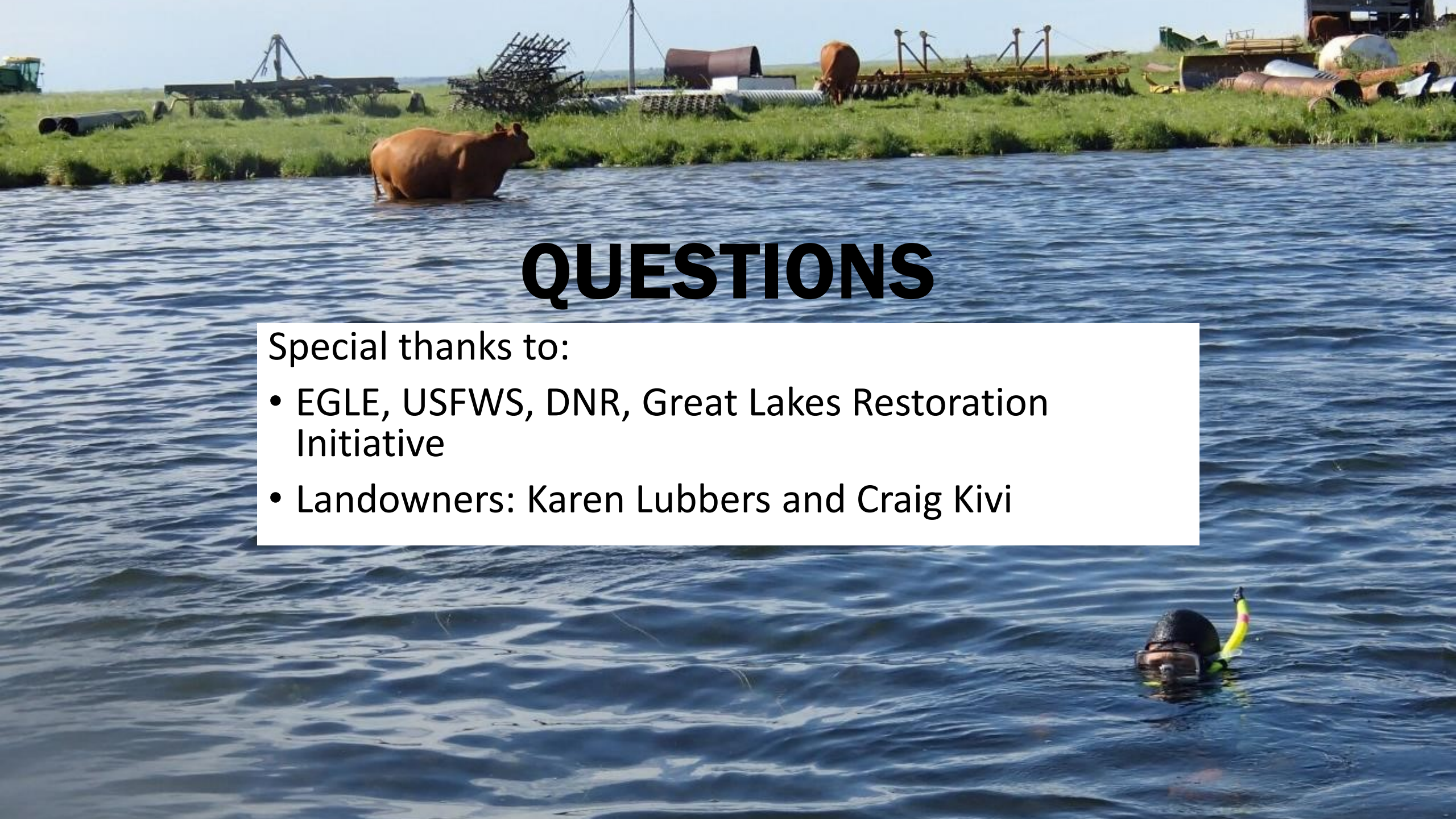

Burrito Method

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

Special thanks to:

- EGLE, USFWS, DNR, Great Lakes Restoration Initiative
- Landowners: Karen Lubbers and Craig Kivi