

Integrating Restoration Strategies Science and STA Management: Part III Field Scale Trial of Soil Consolidation and SAV Recovery

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RSSP Lessons Learned: Drawdowns

➤ STA Drawdowns

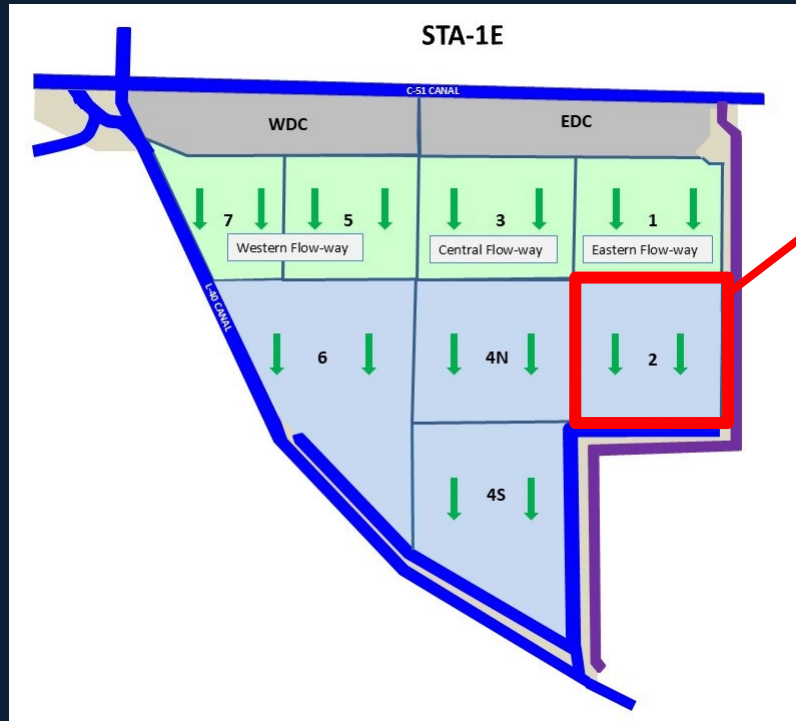
- Soil volume reduction
 - 25-35% reduction in 45 days
- Temporary physical stability
 - Resistance to resuspension
 - 12-week period
- *Chara* spp. recruitment
 - Fast germination and biomass development



Chara spp. germination in wet (left) and dried (right) soils 5 weeks post reflooding (DBE 2023)

Trial Study Location: STA-1E Cell 2

- ~12-week drawdown period
 - Earthwork repairs
 - 01/08/2024 – 03/27/2024



03/01/2024

Trial Area

Flow
Direction ↓

Northern
Transects

4
3

Southern
Transects

2
1

Legend

● STA-1E Points

Transect 4

Transect 3

Transect 2

Transect 1

5 x 5m Plots

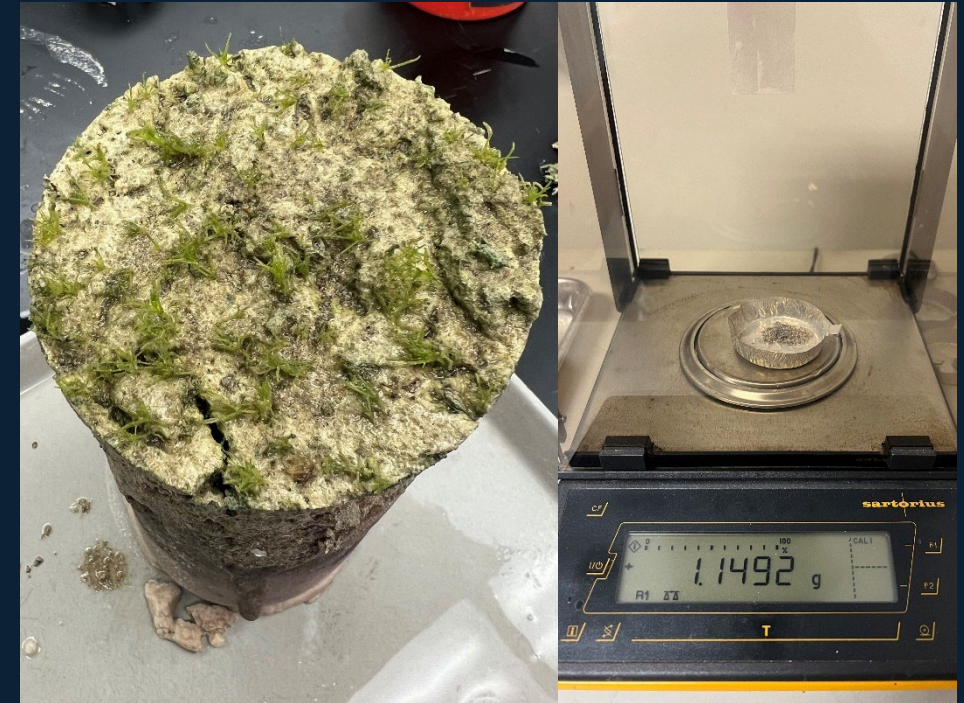


Data Collected



Weekly:

Water quality, staff gauge, vegetation metrics, and water depth

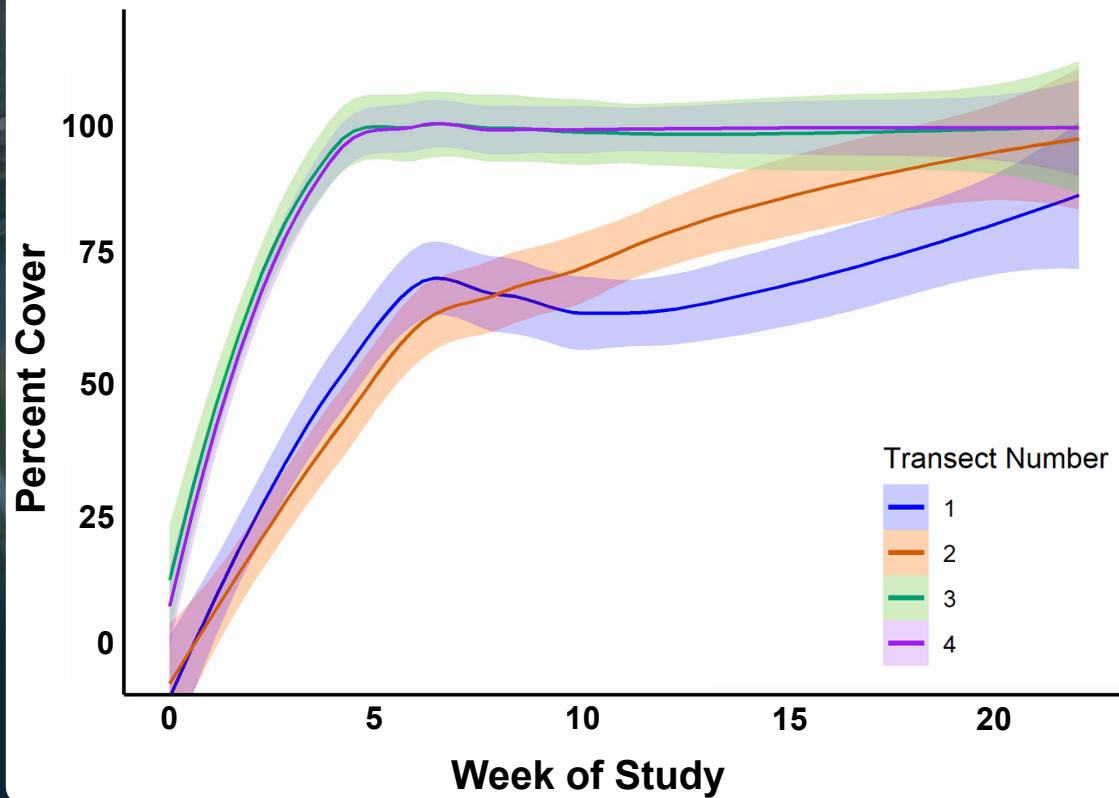


6 Weeks:

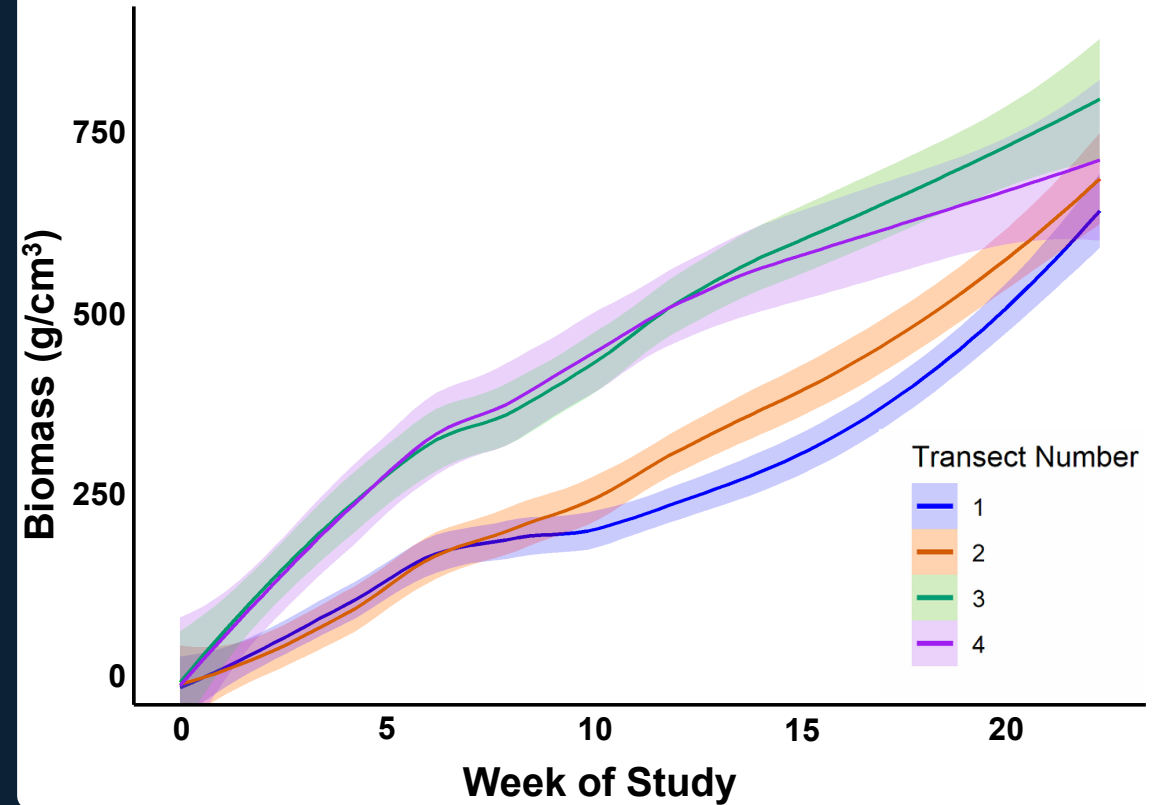
Collect soil and vegetation samples for lab processing

SAV Regrowth

Percent Cover of SAV by Transect



Estimated SAV Biomass by Transect



SAV % cover and biomass differ by transect, time, and time x transect

SAV Regrowth

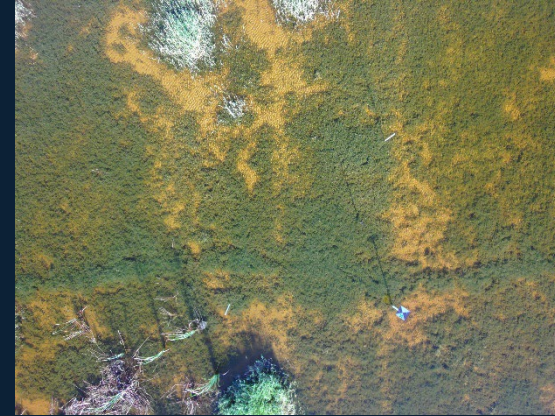
Week 0

Week 6

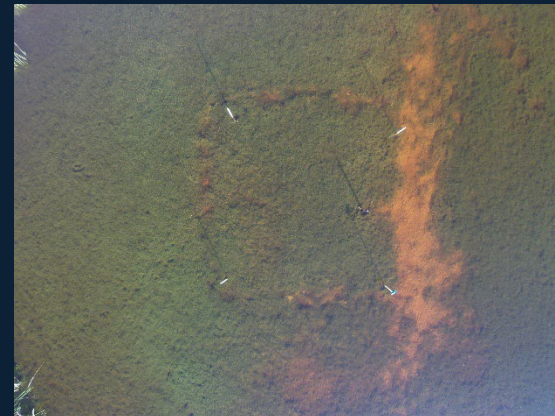
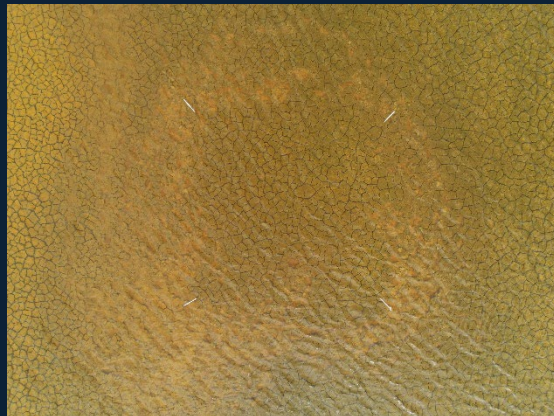
Week 12

Week 18

South
Transect
Plot 1_4



North
Transect
Plot 3_2



SAV Regrowth

South Transects



Week 0

Plot 1_1



Tracks from earthwork

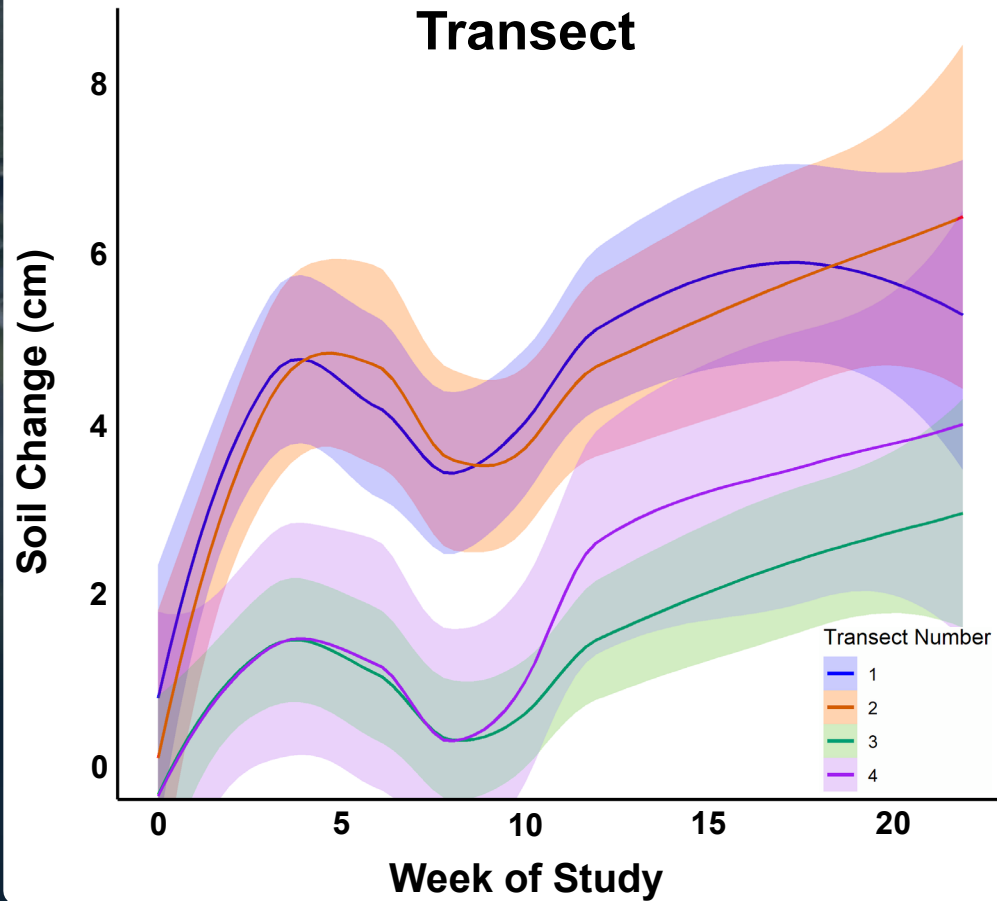
South Transects



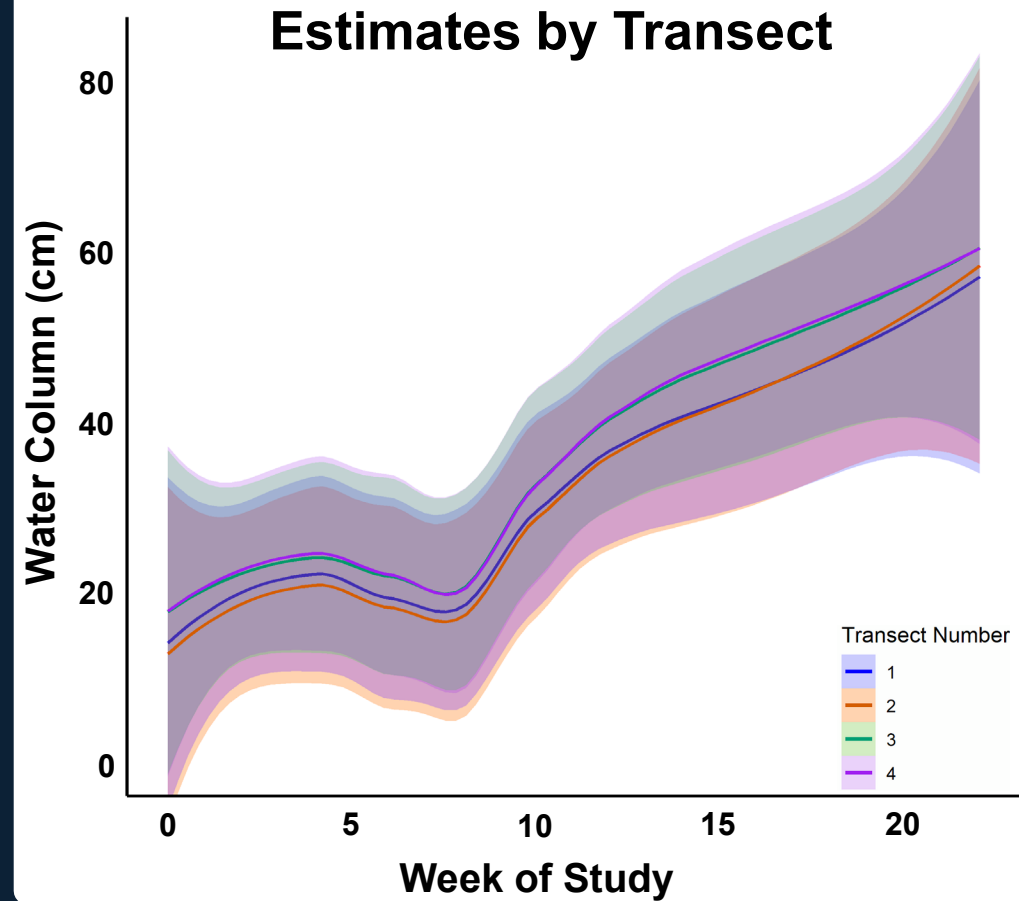
Week 18

Soil Consolidation

Staff Gauge Soil Estimates by Transect



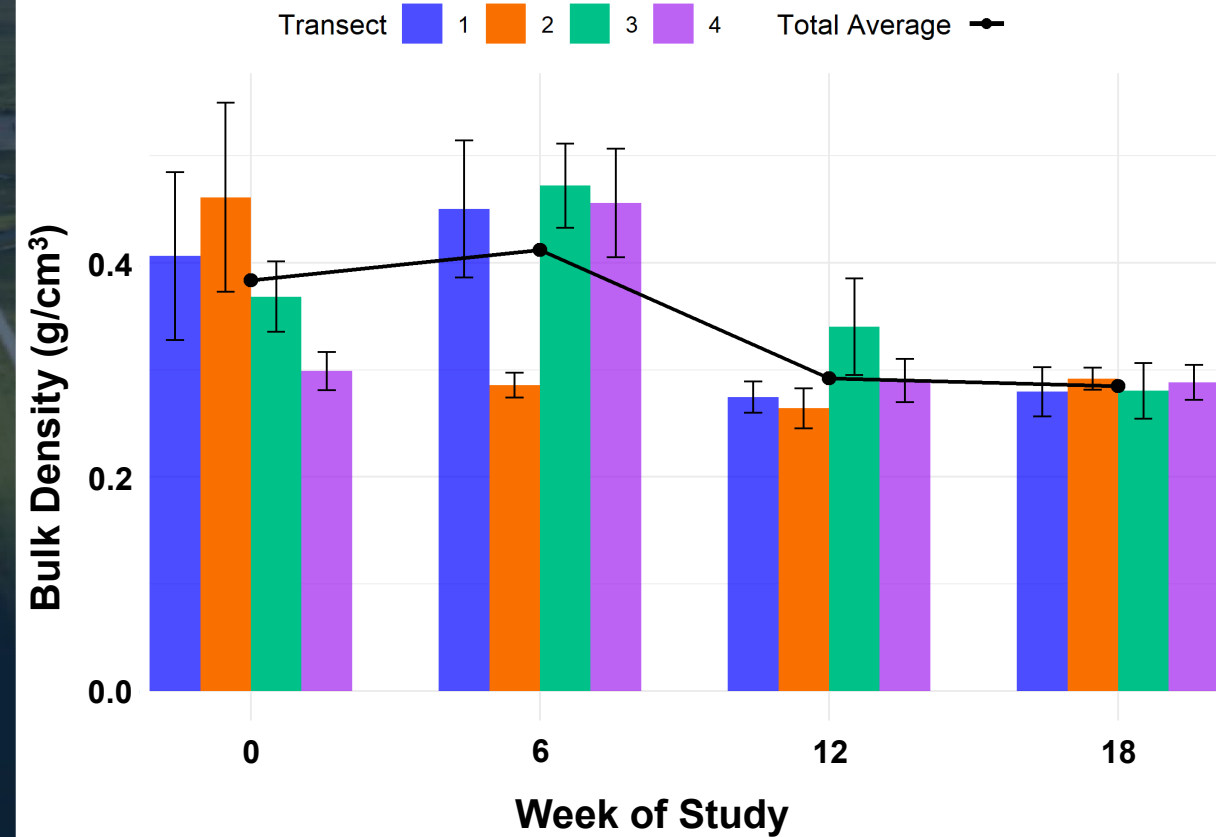
Staff Gauge Water Column Estimates by Transect



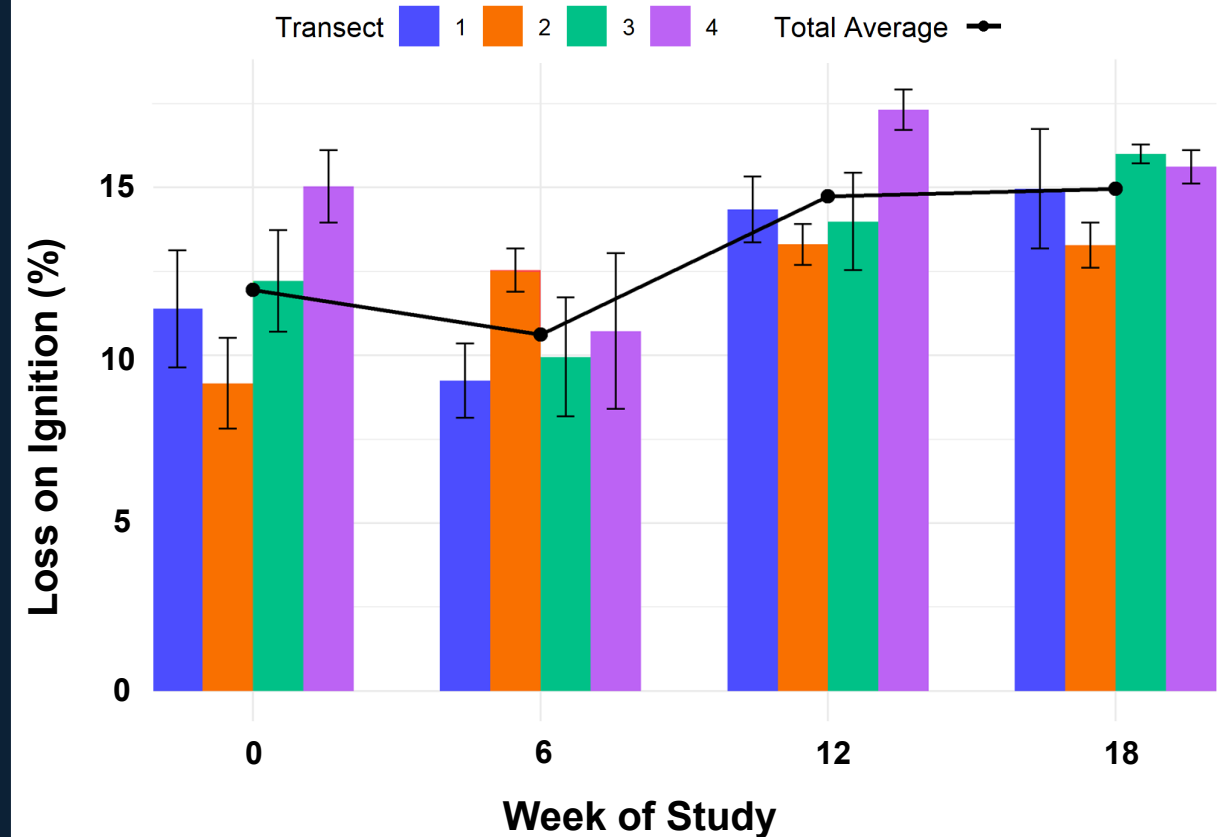
Observed soil expansion has moderate (+) relationship
with water column level

Soil Consolidation

Average Bulk Density by Transect

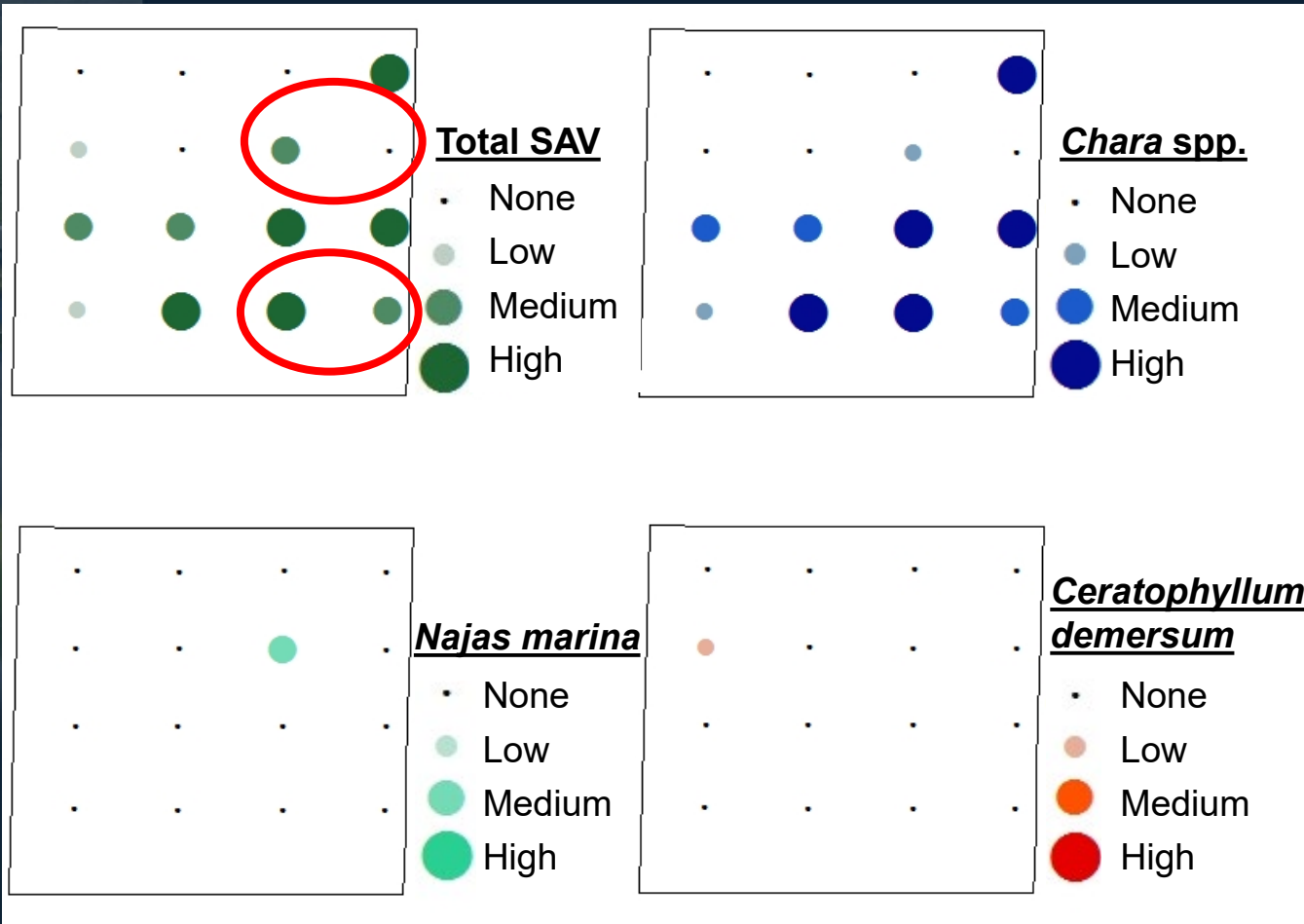


Average Organic Matter % by Transect



Observed soil bulk density has moderate (-) relationship
with soil % organic matter

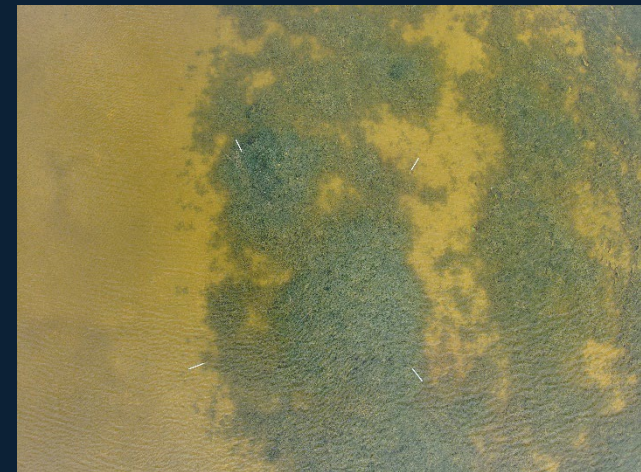
Soil Consolidation



Results from STA-1E SAV Survey 11/03/2023



Average SAV Survey Floc Depth: 6cm



Average Field Trial Floc Depth: 8cm

Drawdown Considerations

➤ SAV Regrowth

- Immediate germination
- Delayed growth at disturbed transects

➤ Soil Consolidation

- Slow soil expansion over time
- Expansion correlated to water levels

➤ Recommendations

- Gradual water releases
- Limit heavy machinery



Future Applications

- Drawdown in STA-2 Cell 3 underway
 - Substantial marl profile
- STA-1E Central Flow Way
 - Complete drawdown + soil flipping and leveling
- Alternate SAV Species
 - Deeper root structure



STA-2 Cell 3
~20cm Floc



STA-1E CFW
Drawdown

Thank You



STA-1E Cell 2 Soil Sampling Week 1

Collaborators

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