

Mercenaria mercenaria impacts
on estuarine shallow water
primary production

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2013 UNC-IMS REU
University of South Carolina

July 25th, 2013

Acknowledgements

Abigail Poray, Dr. Michael Piehler, Dr. Joel Fodrie

Piehler Lab

- Suzanne Thompson

Maintenance Team

- Claude Lewis
- Eamon Kromka

Fodrie Lab

- Laura Alexander
- Max Tice-Lewis

Funded by



REU Students

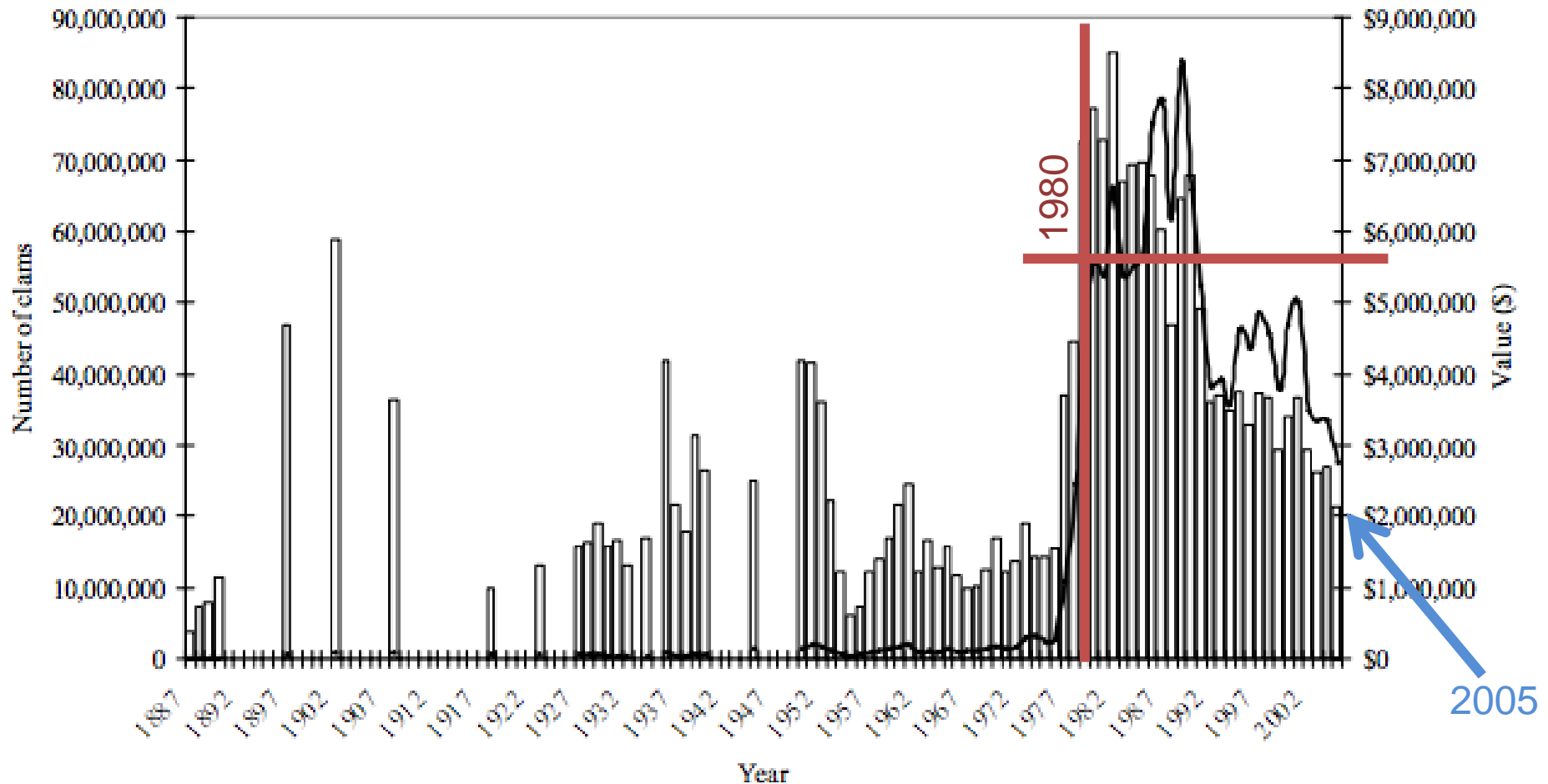
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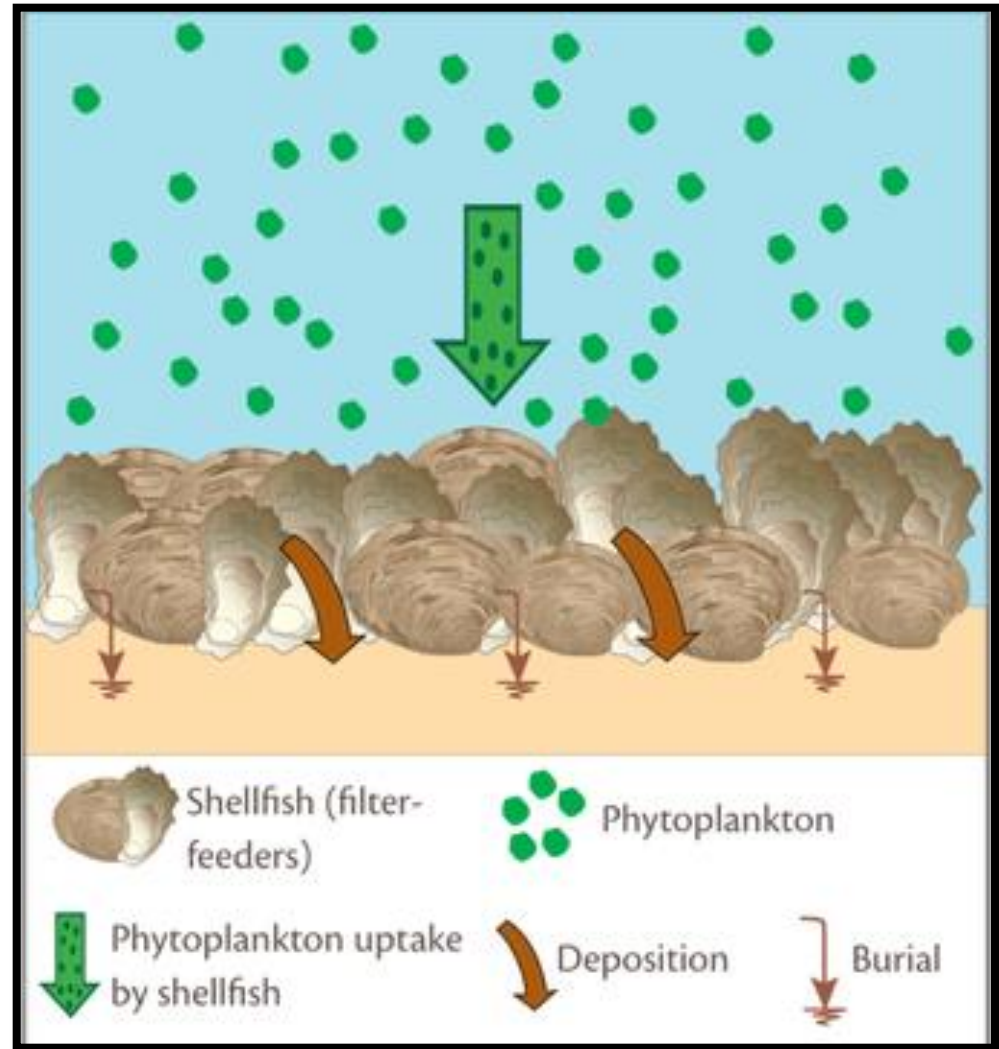
Hard Clam Decline



Source: North Carolina Hard Clam Fishery Management Plan, 2008

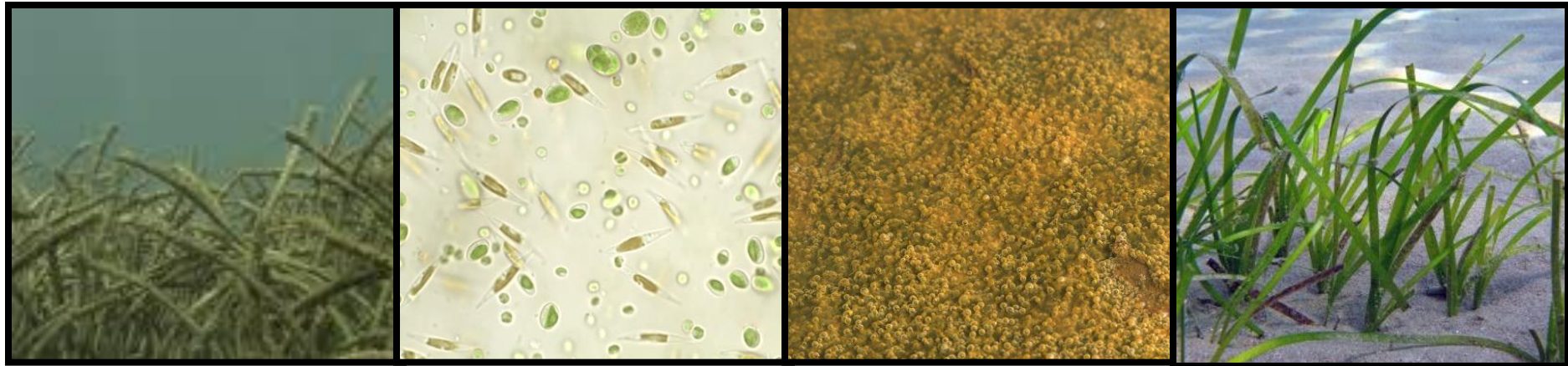
Other Hard Clam Services

- Benthic-pelagic coupling
- Bivalves alter the nutrient template through **excretion** and **biodeposition** (Atkinson 2013, Newell 2004)
- Filter phytoplankton from the water column
- Enhanced seagrass growth?



Objective

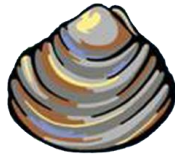
- Consider the effect of hard clams on seagrass (Heck 2001; Wall et al 2008, Peterson & Heck 2001)
- Separate the clam's effect on the water column from its effect on the sediments
- Investigate the response of other primary producers in the system



Materials & Methods: Plan



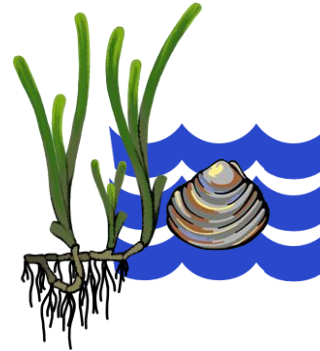
Sediment



35 15mm clams/tank
~400g biomass



10 shoots/tank
~65 shoots/m²



10 shoots/tank
~65 shoots/m²



10 shoots + 35 clams/tank
~65 shoots/m² + 400g biomass

T=0

T=8

T=15

T=22

T=29

Phytoplankton
Benthic Algae

Phytoplankton
Benthic Algae

Phytoplankton
Benthic Algae
Grass Growth
Epiphyte Load

Phytoplankton
Benthic Algae

Phytoplankton
Benthic Algae
Grass Growth
Epiphyte Load

Materials & Methods: Where?



Materials & Methods: Setup

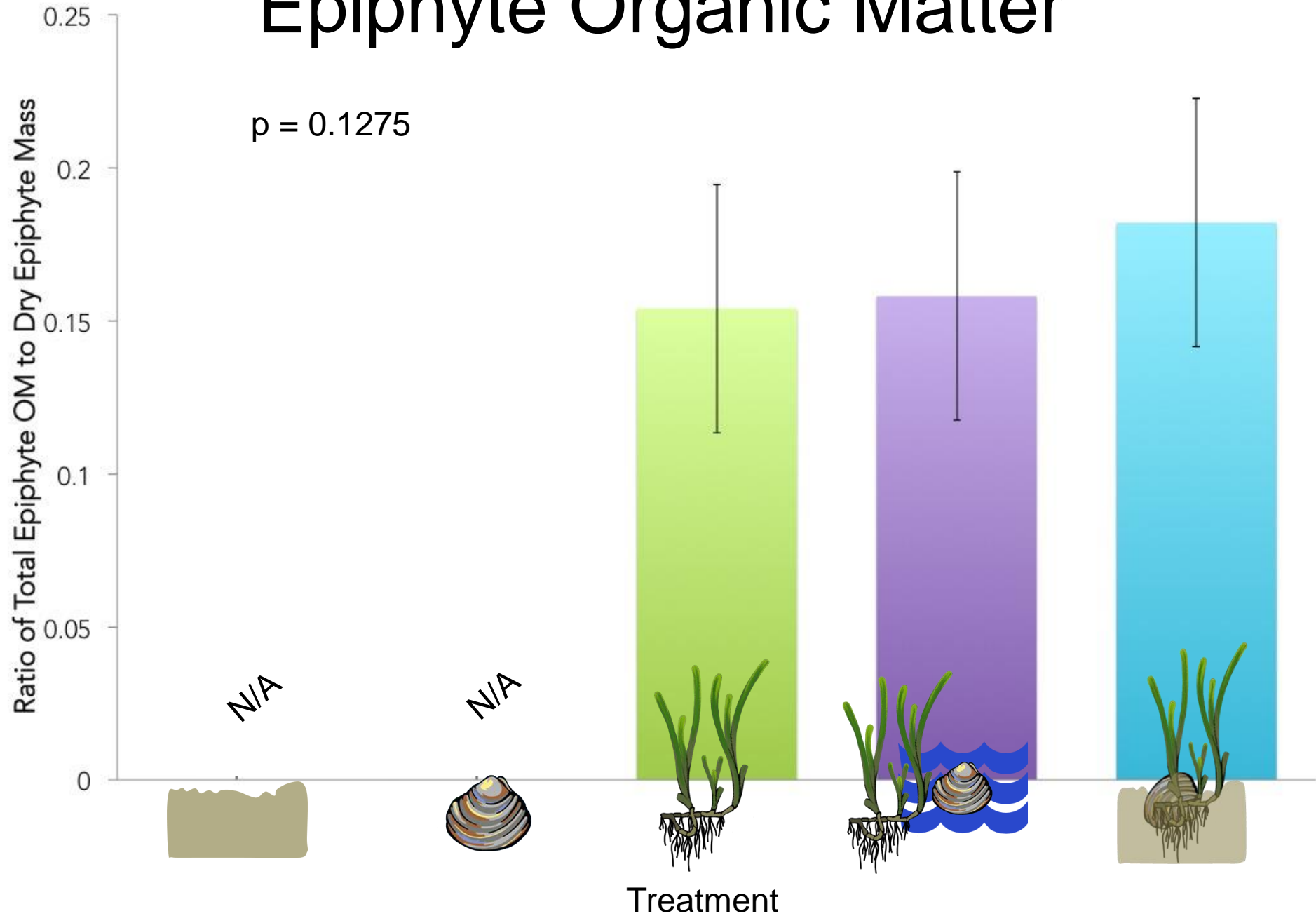


Epiphytes

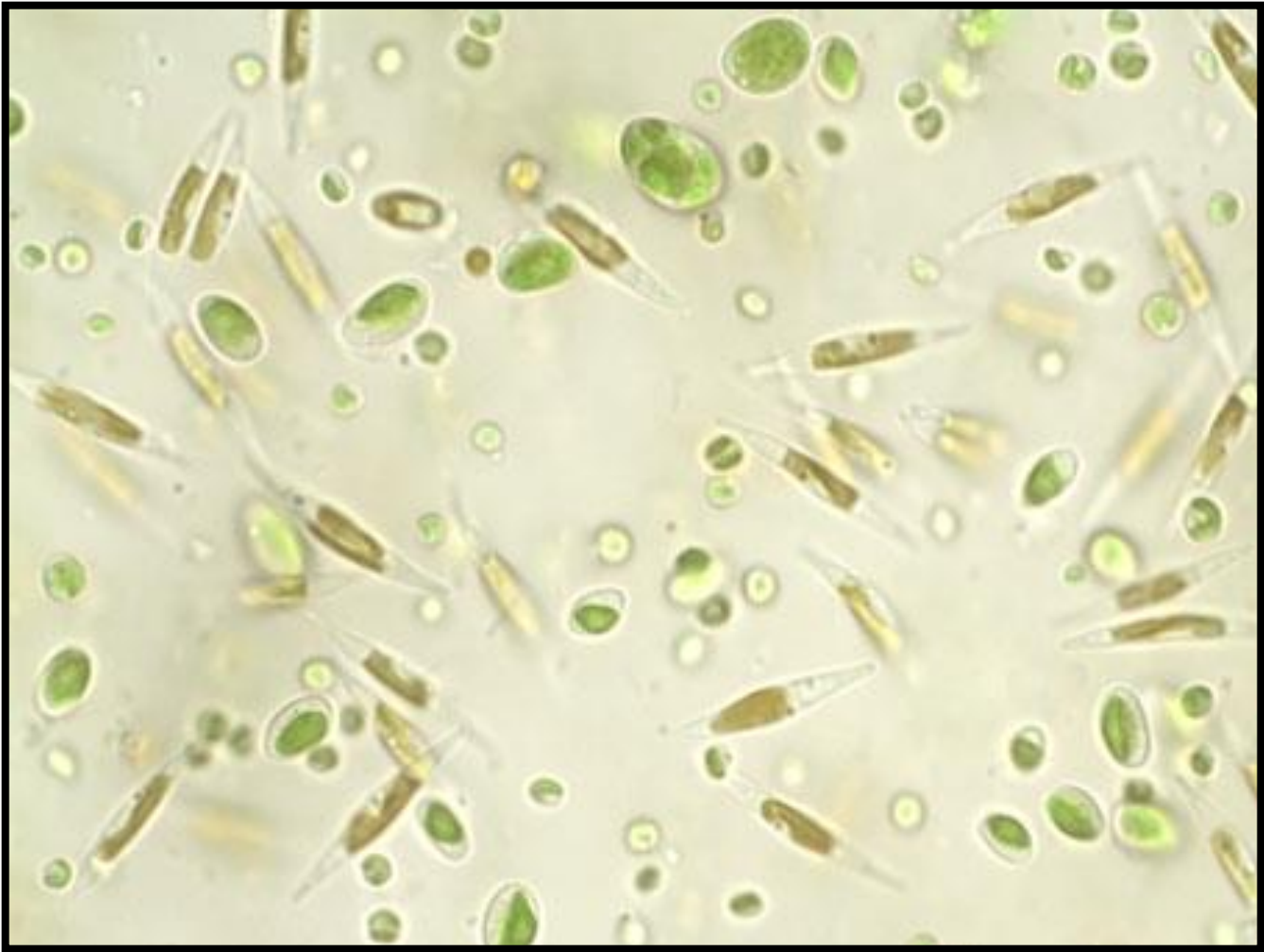


Source: Encyclopedia of Life

Epiphyte Organic Matter

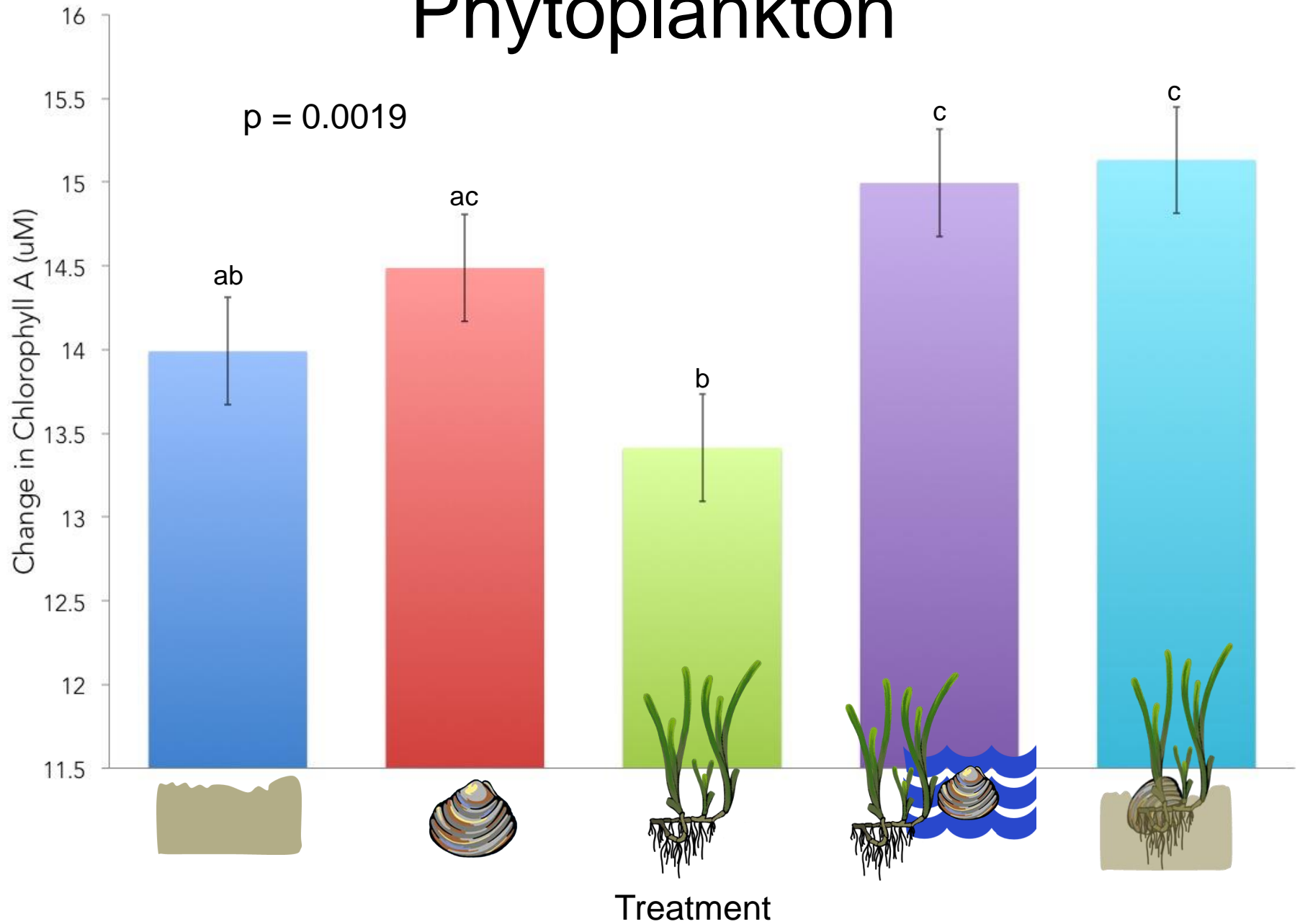


Phytoplankton



Source: www.dtplankton.com

Phytoplankton

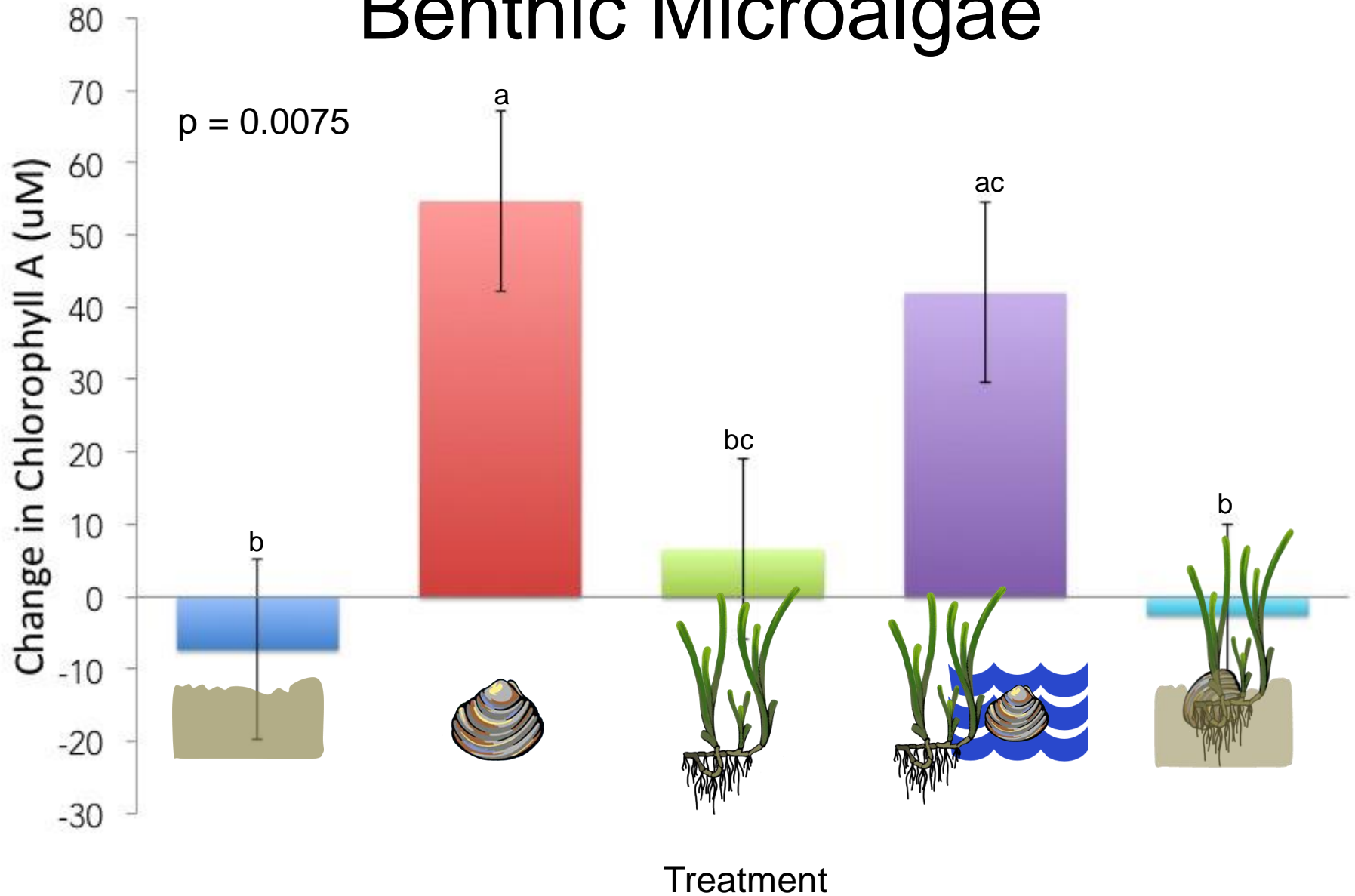


Benthic Microalgae



Source: U. Maryland Environmental Science

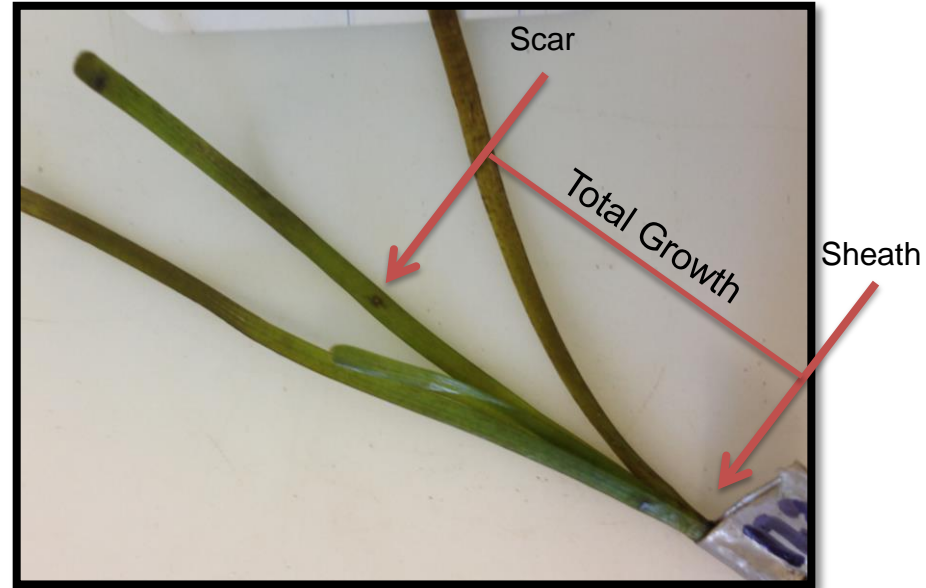
Benthic Microalgae



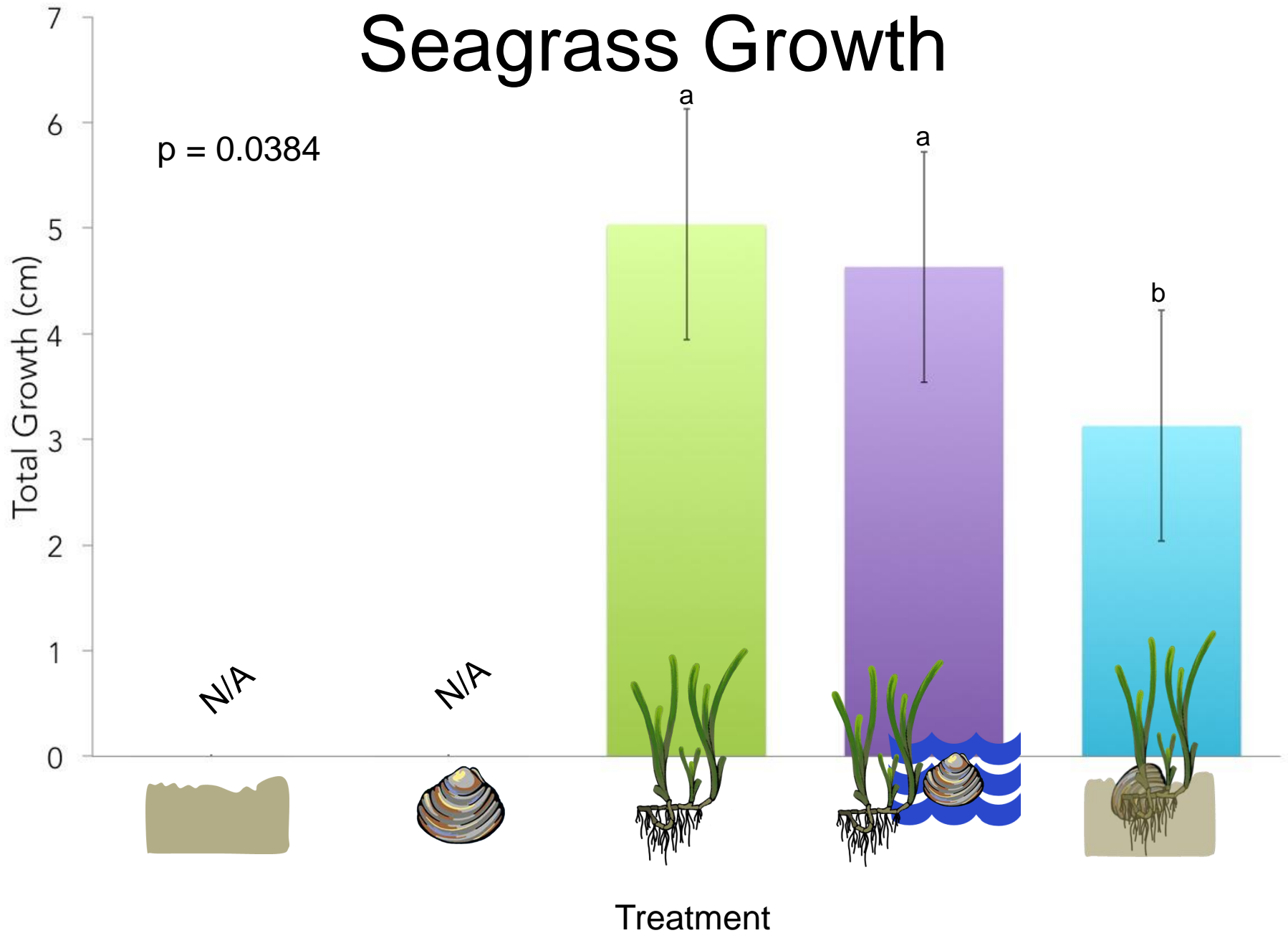
Seagrass (*Zostera marina*)



Source: IUCN



Seagrass Growth



Summary

Phytoplankton

