




Drivers of Benthic Algal Metacommunities: Periphyton's Functional Resilience to Simulated Seawater Intrusion

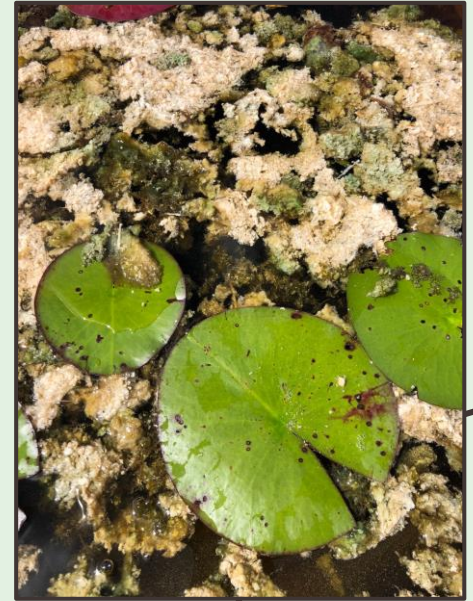
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Periphyton: What They Are and Why They Matter

Periphyton are:

- Made up of numerous microorganisms.
- Play key ecological roles in their environment.
- Major first indicator of ecosystem change.



The State of the Everglades

- According to USGS, 50% of the Everglades has been developed and or destroyed.
- This has led to changes in hydrology, water quality, habitat loss and an introduction of invasive species.
- The Everglades thrives with low phosphorous content.



<https://www.evergladesrestoration.gov/>

First, a few terms to keep in mind...

Dissimilarity

The measure of how far apart or how different two communities are from one another.

Functional

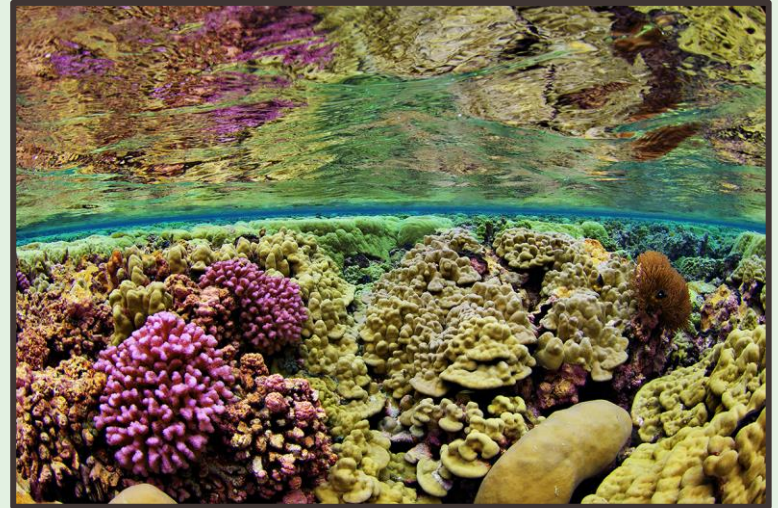
Resilience

A combination of a community's resistance and recovery following a disturbance with regard to its functional attributes.

Functional

Redundancy

The amount of overlap of shared characteristics among different species/communities.



<https://brianskerry.com/portfolio/healthy-reefs/>

The Big Question:

Can periphyton maintain resilience to seawater intrusion through dispersal of resistant functionally redundant species?

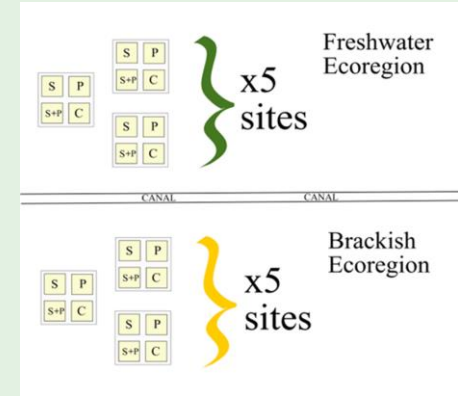
Methods



The Southern Glades,
Everglades, FL.



Nutrient-Diffusing
Substrate (NDS).



Periphyton Treatment Groups

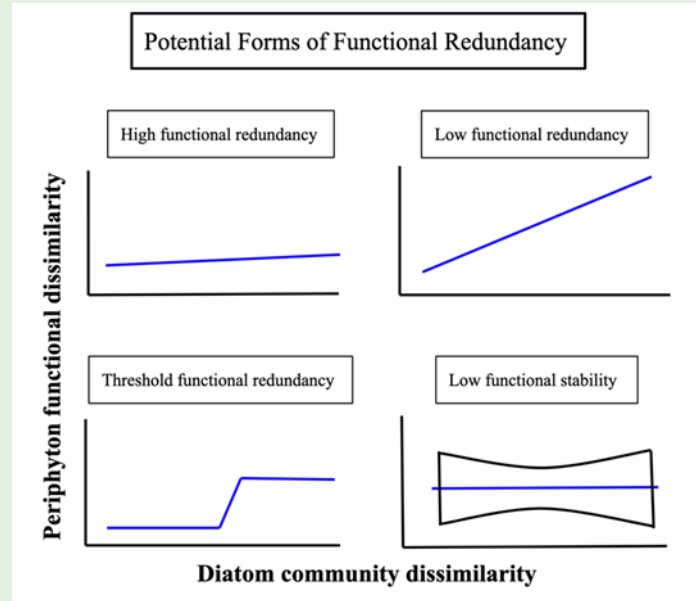
Salt (S)

Phosphorous
(P)

Control (C)

Salt and
Phosphorous
(S+P)

Methods (cont.)



Expected Results

Brackish periphyton communities are exposed to seawater.



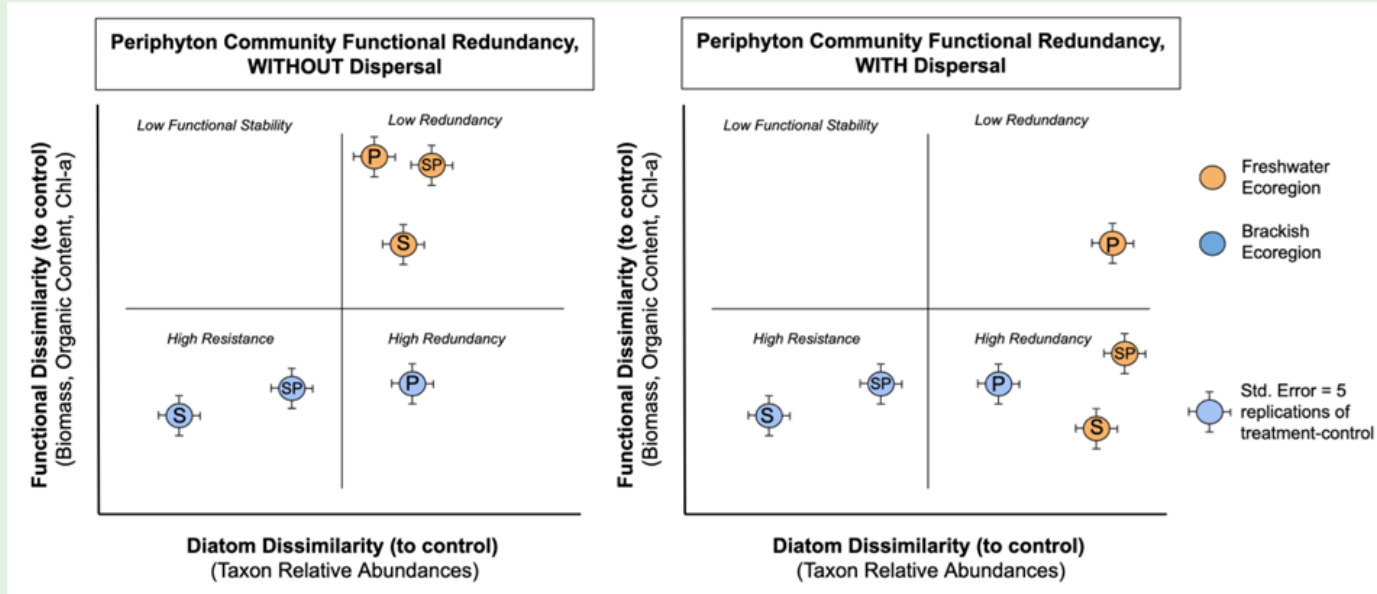
They will have higher functional resistance to seawater.

Once a species cannot fulfil its functional role in its changing environment, a new, more capable and adaptive species takes over.



Greater functional redundancy of a more capable species will lead to greater resilience to the changing environment.
Ex. Seawater intrusion.

Expected Results (cont.)



What's Next?

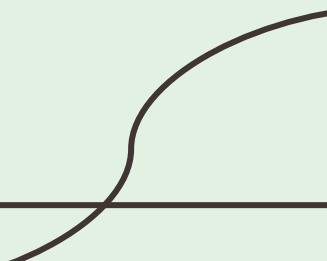


Acknowledgements

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References:

1. Browder, J. A., P.J. Gleason, and D.R. Swift. Periphyton in the Everglades: Spatial variation, environmental correlates, and ecological implications. Everglades: The Ecosystem and its Restoration. West Palm Beach, FL: CRC Press. 1994.
 2. Shannon, T. (2021). Drivers of Benthic Algal Metacommunities and their Functional Resilience (dissertation).
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Thanks

Any questions?

