

Macroalgae as a Bioindicator for Water Quality on Artificial Reefs in the Florida Panhandle

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Introduction

It is key to understand the role of macroalgae on shallow artificial reefs as the amount of primary productivity is substantially significant from high light levels and possible increased nutrient inputs as these artificial reefs are closer inshore.

Study Focus

- The ambient water quality surrounding artificial reefs.
- Identify species of free-floating or attached macroalgae on the reef.
- The chlorophyll-a,b,& c concentrations of the algae.

Results

Date: 3/19/21	Macroalgal Chl-a Content				
Genus spp.	Chl-a ug/g	Chl-b ug/g	Chl-c ug/g	Ratio b/a	Ratio c/a
<i>Enteromorpha</i>	13.638	3.456	2.437	0.25	0.18
<i>Digenia</i>	155.487	1.495	15.409	0.01	0.10
<i>Gracilaria</i>	65.673	0.00	3.838	-0.04	0.06
<i>Lomentaria</i>	13.620	0.00	1.511	0.00	0.11
<i>Sargassum</i>	234.091	0.00	46.269	-0.02	0.20
<i>Daya</i>	40.316	0.00	7.906	-0.02	0.20

Methods



In the field: The macroalgae was collected via Ziploc bags and placed on ice. YSI readings were recorded on shore.

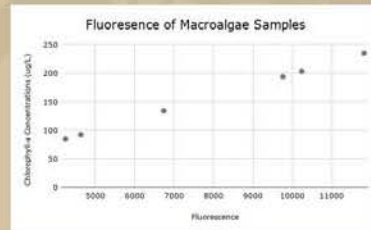


Daya spp.



Digenia spp.

In the lab: The macroalgae was identified to genus. Some specimens were press & preserved while others were analyzed for nutrients using standard methods for Fluorometer and Spectrophotometer.



There is no significant relationship between the chlorophyll, fluorescence, and water quality.

YSI Water Quality Readings

Date	3/05/21	3/19/21
DO (%)	105.6	101.5
Salinity	23.99	18.5
Temperature (C)	17.4	7.69

Discussion

Although no significant correlation between the species of macroalgae and water quality could be drawn from the data, this research explores avenues for future studies. The increasing nutrient loading from inland anthropogenic influences the sediment chemistry of aquatic ecosystems leading to blooms of macroalgae, primarily *Ulva* and *Gracilaria* (Barr et al., 2019). With this in mind, it is crucial to recognize the role macroalgae has on understanding the direct physiological effects of ambient water quality.