Quantifying Species Richness and Variability Among Nova Scotia Eelgrass Meadows

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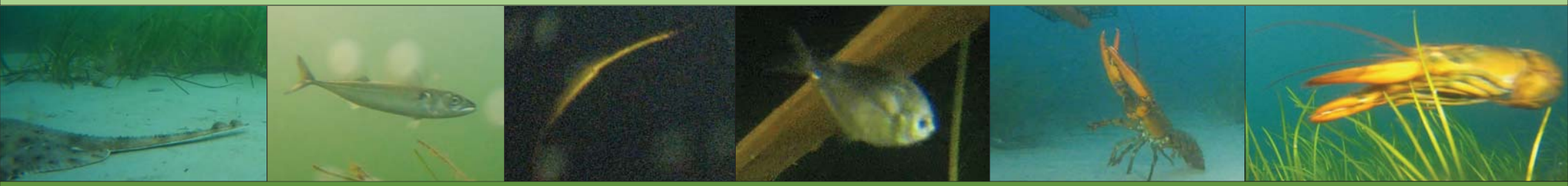
Community Eelgrass Restoration Initiative
FUTURE OF MARINE ECOSYSTEMS



Introduction

- Eelgrass (Zostera marina) meadows enhance local biodiversity and contribute many ecosystem services[1]
- Quantifying regional differences among meadows can improve current monitoring and contribute to more targeted conservation and restoration efforts

Site Selection

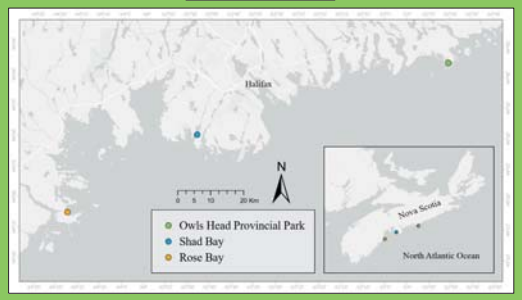


Figure 1 ArcGIS Pro map of the three eelgrass meadow sites Owls Head Provincial Park, Shad Bay, Rose Bay in Nova Scotia, Canada. Projection: NAD1983 CSRS UTM Zone 20N and base map provided by Esri (2024)

Table 1 Summary of the eelgrass site (Owls Head Provincial Park, Shad Bay, and Rose Bay) characteristics derived from qualitative observations

Site	Exposure	Sediment type	Patchiness	Depth
Owls Head Provincial Park	Medium	Sand	Low	Shallow
Shad Bay	High	Sand	High	Moderate
Rose Bay	Low	Mud	Low	Shallow

Baited Remote Underwater Video

Figure 2 Snorkeling to setup BRUV system in Rose Bay's eelgrass meadow

- Two Baited Remote Underwater Video (BRUV) systems deployed per site
- Recorded 30 seconds of footage every five minutes for 24 hours
- Organisms identified to the finest taxonomic level (excluding small benthic organisms)
- Abundance estimated with MaxN: maximum number of individuals of a particular species observed in a single frame[2]

Species Abundances by Site

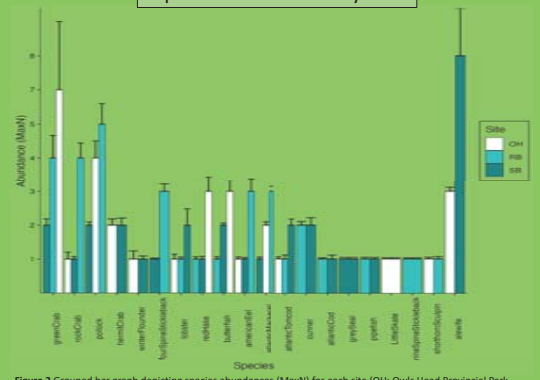


Figure 3 Grouped bar graph depicting species abundances (MaxN) for each site (OH: Owls Head Provincial Park, RB: Rose Bay, and SB: Shad Bay).

Species Richness by Site

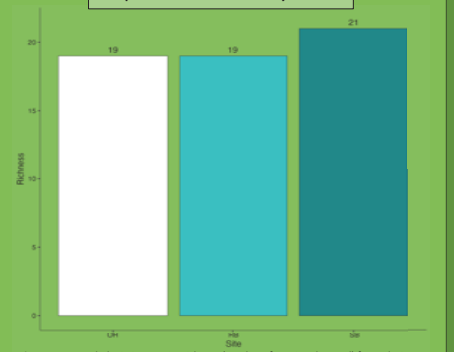


Figure 4 Bar graph depicting species richness (number of species observed) for each site (OH: Owls Head Provincial Park, RB: Rose Bay, and SB: Shad Bay).

Species Composition by Site

Figure 5 Venn diagram depicting similarities in species composition across sites (OH: Owls Head Provincial Park, RB: Rose Bay, and SB: Shad Bay).

Discussion

- Regional variation was observed in species abundances and composition, but species richness was similar across sites
- Most species were shared between all sites, but their abundances varied
- This variation in community compositions and abundances may be linked to the regional differences in eelgrass meadow structure across sites[3]
- Understanding how eelgrass meadow structure impacts community structure can lead to more effective local conservation and restoration efforts

Acknowledgements

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References

1. Namba M, Lotze H, Schmidt A. 2017. Large-scale differences in community structure and ecosystem services of eelgrass (Zostera marina) beds across three regions in Eastern Canada. ESCO. (2018)41:177-192. https://doi.org/10.1007/s12237-017-0271-9.
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