Epifaunal diversity and assemblage patterns determined by spatial and temporal differences of Halifax's Bedford Basin

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References

Introduction

- Human impact in harbours include pollution, vessel disturbance, runoff, and wastewater.
- Benthic communities are sensitive to stress, sediment type, hydrodynamics, and ocean chemistry.
- Bedford Basin experiences oceanographic change that affects benthic diversity and assemblage patterns.

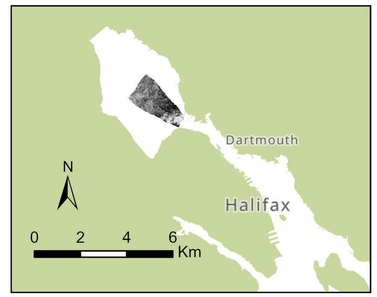

Figure 2 Still image from thin mud transect including anemones, tube worms, and bioturbation.

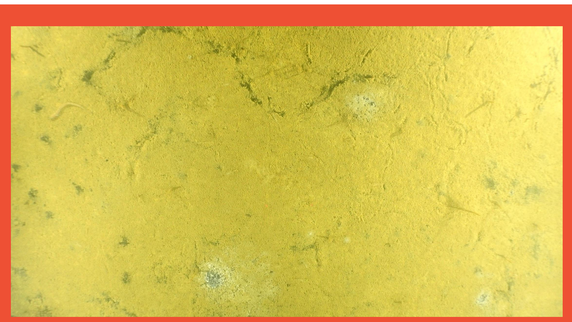

Figure 3 Still image from thick mud transect including anemones, tube worms, bioturbation, and bacterial mats.

Figure 1 Map of 16 video transects comprising 4 benthic substrates: thin mud (blue), thick mud (orange), cobble, boulder, and mud (purple), and gravel, cobble, and boulder (green). Data overlayed on a 100 kHz backscatter map of 2 km² study area in Bedford Basin. Retrieved from (Brown et al., 2019). Overview map of Halifax harbour in top right.

Results

- Minimal species diversity difference in thin and thick mud.
- Mud transects contain bioturbation, anemones, bacterial mats, and tube worms.
- Cobble, boulder, mud transects contain anemones, sponges, bivalves, and crustacea.
- Gravel, cobble, boulder transects contain sponges, anemones, bivalves, crustacea echinoderms, and other invertebrates.

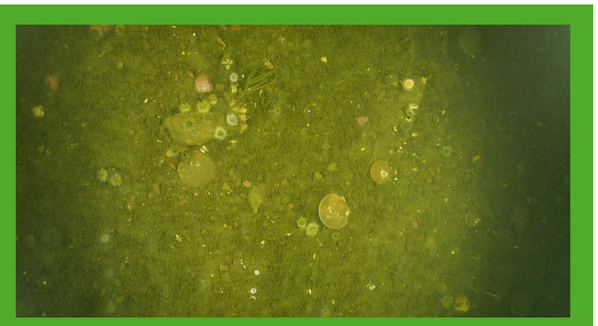

Figure 4 Still image from cobble, boulder, mud transect including anemones, bivalves, barnacles, and sponges.

Figure 5 Still image from gravel, cobble, boulder transect including barnacles, sponges, bivalves, anemones, and echinoderms.

Methods

- 2 km^2, 15-70 m deep study area of the Bedford Basin, mapped using multibeam backscatter.
- 50 m video transects in four sediment types, collecting still images every 2 meters.
- Analyzed using Shannon-Wiener evenness test, ANOVA Tukey test, PERMANOVA and A Non-Metric Multi-Dimensional.

Discussion

- Higher species diversity and assemblage in shallow, hard bottom transects.
- Similar findings in previous benthic substrate studies.
- Results add to understanding of relationship between benthic diversity and environmental conditions.