

Geophysical Mapping of Benthic Habitats in Falmouth Bay

Date: 24/06/2015

Location: Falmouth Bay

Vessel: Xplorer

Tide: High tide: 11:08, 4.2m, Low tide: 17:36, 1.7m

Sea State: Very flat initially, increase in wave site throughout experiment

Weather: Sunny in the morning, no clouds increasing cloud and wind throughout the day

Group 13:

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Aim: Gather data enabling the identification and mapping of benthic habitats in Falmouth estuary

In recent years the habitats in Falmouth Bay have evolved; there has been an increase in diversity. In particular the abundance and distribution of both maerl and seagrass colonies has increased, reaching various areas of the Bay. Each habitat can be identified and classified using species and bedforms.

Method:

- A Subsurface Dual Frequency Analogue Side Scan Sonar was utilised. This device remotely mapped out the benthos along 5 different linear transects; frequency of 100kHz (to reduce noise on the print out); maximum slant swath range of 150m.
- A video camera was dropped approximately 1/2m above the sea bed in order to observe biota and bed form composition in 3 different areas on the habitat map.

Habitat Map

Boundary 1

This boundary consisted of mainly rock. The height of the rock appears to increase from the boundary line to the middle of the sector. At the peak of the rock outcrop the rock appears to remain at a constant height forming a shelf. The intensity of backscatter decreases on the shelf due to an accumulation of sediments on the shelf.

Boundary 2

This boundary contains dense colonies of *Laminaria digitata*. A side scan sonar of the area shows a dense area of vegetation and videos of the area confirm the species. The density of the species varies across the area.



Figure 2: Video 2 habitat, showing dense *Laminaria digitata* colonies

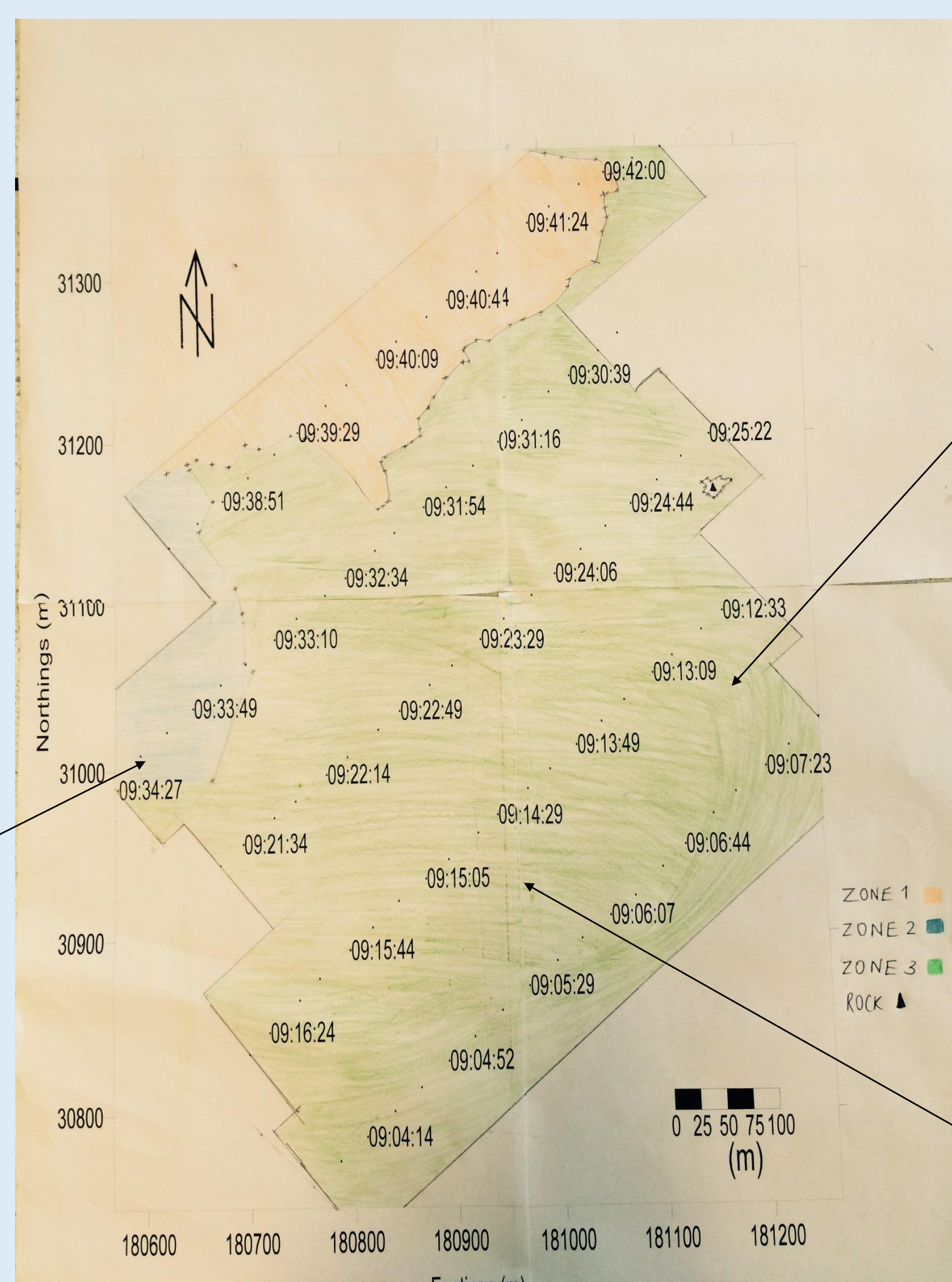


Figure 1: Video 1 habitat, showing dispersed seagrass

Boundary 3

This boundary is mainly made of medium sand sediments with little vegetation. There are large numbers of bedforms in this boundary with a mean bedform wavelength of 0.98m.



Figure 3: Video 3 habitat, large undulating bedforms with fauna established in troughs

Video	Location	Time	Biology	Bedforms	Comments
1	50°08.3N, 005°04.2W	11:04:30	<i>Marthasterias glacialis</i> , <i>Lipophrys pholis</i> , <i>Zostera marina</i> , <i>Falccenbergia rufolanosa</i> , <i>Spongomorpha aeruginosa</i> , <i>Sepia officinalis</i>	- Small bedforms 45° to the boat, fine sediment - Decrease in bedform size	Small fish, unidentifiable
2	50°08.4N, 005°04.0W - 50°08.5N, 005°04.0W	11:27:34 – 11:33:44	<i>Laminaria Digitata</i> , <i>Odonthalia dentate</i> , <i>Spongomorpha aeruginosa</i> , <i>Ectocarpus sp. Aggregate</i> , <i>Ulva Lactuca</i> , <i>Petalonia fascia</i>	Large bedforms, perpendicular to boat	- Encrusting algae unidentifiable, small fish and Bryozoa. - Dense Laminaria
3	50°08.3N, 005°03.7W - 50°08.4N, 005°03.7W	11:38:54 – 11:48:22	<i>Spongomorpha aeruginosa</i> , <i>Ulva Lactuca</i> , <i>Rhodomela confervoides</i> , <i>Phytomatolithon calcareum</i> , <i>Asterias rubens</i> , <i>Cancer pagurs</i> , <i>Martjasterias glacialis</i>	- Very large, fauna in troughs showing well established bedforms. Lots of biogenic material and maerl. - 30° to boat	

Conclusion:

There were 3 main habitat zones; an area of kelp (*Laminaria digitate*), a bedrock outcrop, and sandy sediment with little opportunities for organisms to survive. To improve this study it would have been beneficial to use video groundproofing for all of the transects to greater aid with identifying artefacts shown in the side scan sonar plot (e.g. the rock).