

Falmouth Geophysics Survey

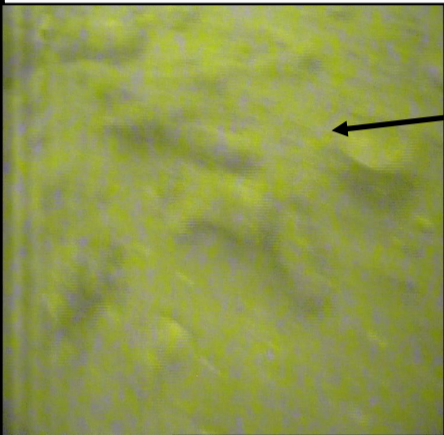
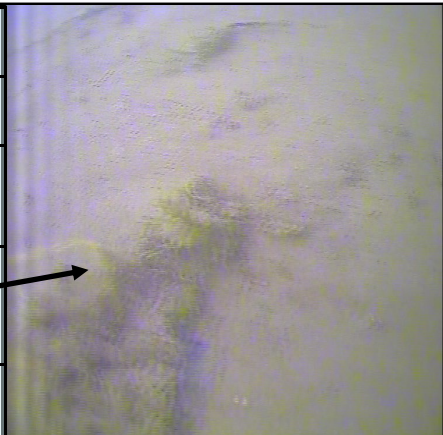
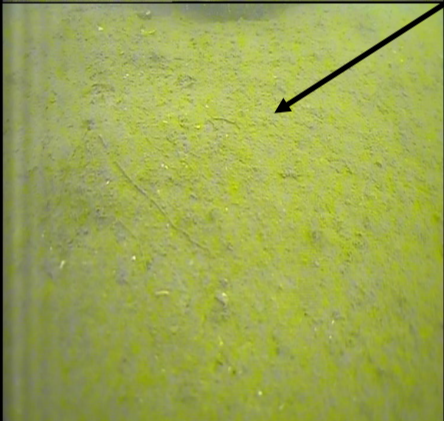
Date: 01/07/2015 Time: 08:23 to 10:20 AST Low tide: 10:53 UTC (0.80 m) High tide: 16:38 UTC (5.00 m) Cloud cover: 7/8 Sea state: calm and flat Vessel: MTS Xplorer

Introduction

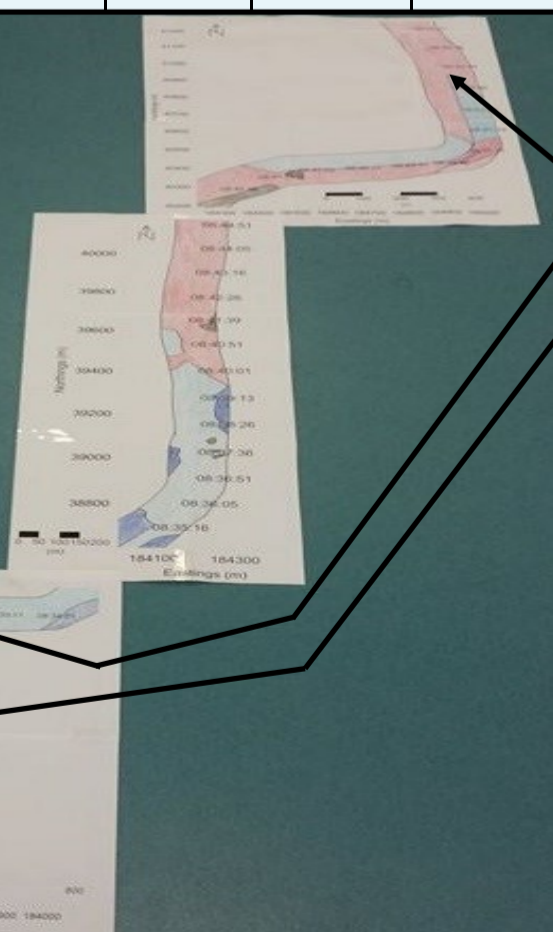
Habitat mapping is important in understanding how the marine ecosystem interacts, supporting the identification of protected areas, assessing the extent of habitats and helping the management of anthropogenic activities¹. A geophysical survey was conducted in the upper Fal estuary using a sidescan sonar in order to create a habitat map. Video footage was combined with the side scan for ground truthing. Alongside this, a grab can be used to help confirm findings, however, the Fal and Helford is a Special Area of Conservation (SAC)², so grabbing is prohibited due to its capacity of disturbing the habitat.

Method

The sidescan sonar was towed behind the boat along a pre-plotted course up the Fal estuary. The route was determined in the previous evening's planning session. It started from the mouth of the river and continued until the skipper could no longer navigate any further due to the decreasing depth of the channel. This route created a single long transect broken only by slight turns to follow the river path. The side scan data was printed inside the boat and the turn data was kept in the final habitat map. During the transect, points of interest were noted to allow truthing of the data on the return journey. This involved lowering a camera to the sea bed to confirm the sonar images corresponded with the expected sediment or object. The results can be seen in the observations table.

	POI	Latitude	Longitude	Observations	
	4	50°13.2N	005°01.5W	Muddy, silt ground. Lots of sediment	
	3	50°12.9N	005°01.5W	Too deep, too dark. Lots of turbidity, many suspended particles	
	3 T2	50°12.9N	005°01.5W	Muddy, silt, dead shell, debris, turbidity still high	
	Pon-toon	50°12.9N	005°01.6W	Muddy, silt. Slightly coarser particles. Clearer water. Close to mussel farm	
	2	50°12.7N	005°00.7W	Bottom not reached, too dark. (loss of light to depth and turbidity)	
	1	50°15.5N	005°01.8W	Larger rocks. Much more species diversity. Sandy environment between rocks and bivalves. Water much more clear, less turbidity.	
	0	50°	005°	Larger particles, sandy/rocky environment. Clearer water, lower turbidity. Species richness/diversity increasing	

Key	
Rocky Outcrop	
Fine Sand	
Coarse Sand	
Mud	
Broken Shells	
River Outflow Material	
Sand	
Hard substrate	



Habitat Map

The river shows a clear progression from the primarily muddy sediments at the top of the river, through fine sand with patches of coarse sand to small rocks with patches of sand at the seaward end of the river.

At the very end of the trace hard substrate begins to emerge along with macro algae, detected whilst ground truthing with the camera. Further up the river there is very little macro algae.

The mud at the riverine end of the transect is a result of the heavily forested river banks. The majority of the trees are deciduous resulting in autumn leaf fall into the water which settles and decomposes in the water column. This leads to the turbidity gradient observed in the river, decreasing towards the seaward end. This has an effect on the plant life, as in the river the light reaching the benthos is too low to support a large diversity of plant life.

Species

Flora remains relatively consistent throughout the transect with *Monostoma grevillei* found at every point of interest. Fauna on the other hand appears to be more abundant towards the seaward end of the estuary however camera truthing only gave us a small represented example of benthic diversity along the length of the transect.

References

- MESH Project. 2008. MESH Guide to Habitat Mapping. Joint Nature Conservation Committee, Peterborough, UK.
- Langston, W.J. et al. (2003). Characterisation of the South West European Marine Sites: Summary Report. Marine Biological Association of the UK, Occasional Publication No. 14. Pp 112.