

An underwater photograph of a vibrant benthic habitat. The scene is filled with a variety of marine life, including large, bright yellow sponges, delicate red and purple branching corals, and other colorful invertebrates. The background is a deep, clear blue, suggesting a healthy, deep-sea environment. The overall composition is rich and detailed, showcasing the complexity of the seabed ecosystem.

Benthic Habitats: Video Interpretation

Simon Grove, Andy Bickers, Karen
Holmes, Gary Kendrick

Coarse-level classification

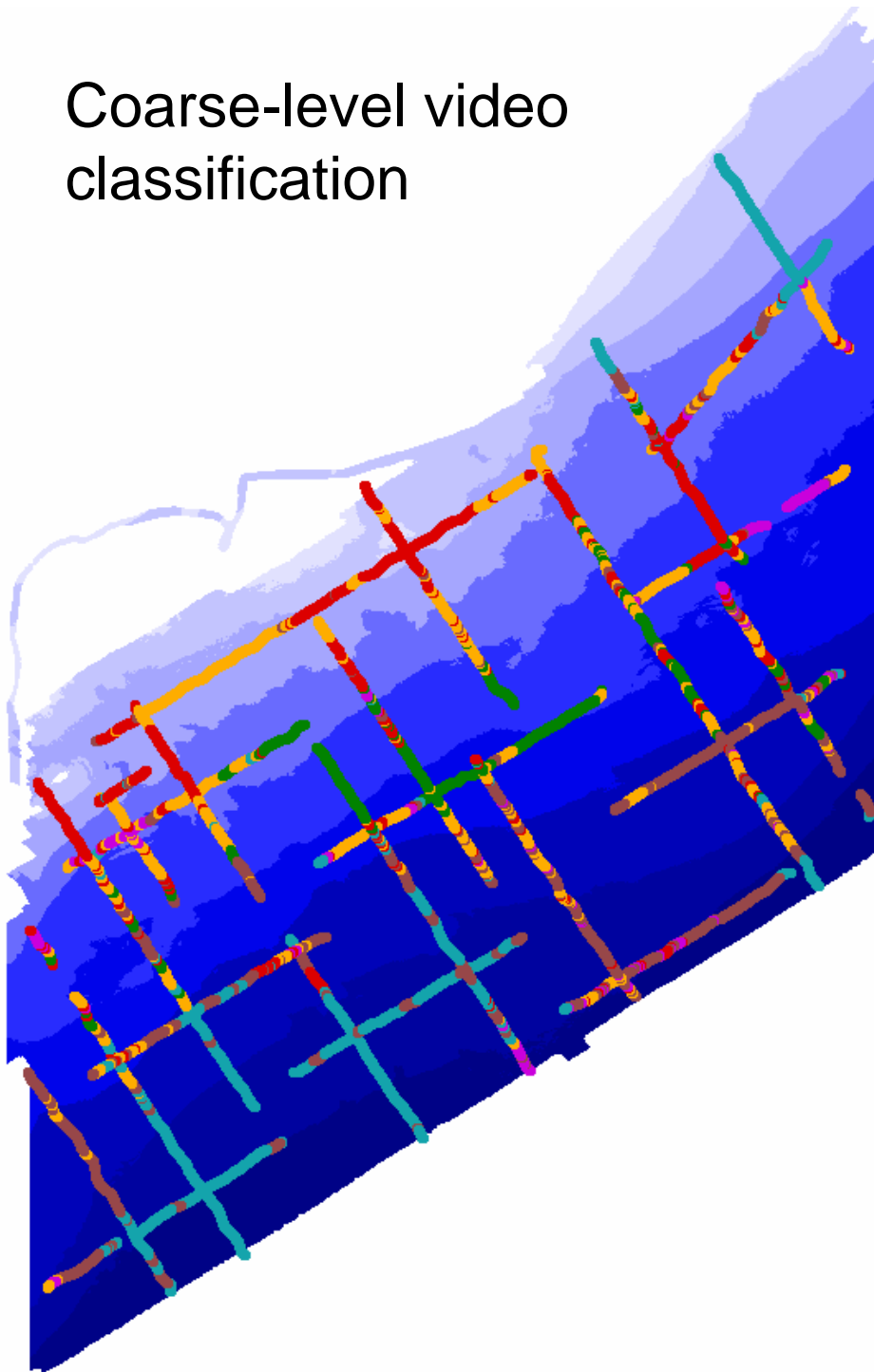
- Habitat transitions were assessed.
- Categories were identified, and start and stop GPS time noted.
- Of the approximately 23 hours of video collected, 913 transitions were logged (Simon Grove).
- These categories are compatible with the Victoria state habitat classes being applied in shallow water areas, but have been modified to reflect features identifiable from hydroacoustics and video information, and deeper water habitats.

The screenshot shows the 'Video data entry' software interface. It includes fields for 'Video interpreter' (Simon Grove, Gary Kendrick), 'Project' (Point Addis), 'Date of data collection' (18 May 2005), 'Transect number' (12), and 'GPS time/date' (18/05/2005 05:42:13.000). The 'Substrate Description' section has radio buttons for 'Hard (Reef/Rock)' and 'Soft (Sediment)', with 'Soft (Sediment)' selected. Below this are two columns of radio buttons for 'Structure' and 'Texture' with various options like 'Can't discern', 'Solid', 'Broken / Fragmented', 'Flat', 'Gently sloping (5 - 35)', 'Steeply sloping (35 - 70)', 'Vertical walls, overhangs, caves (> 70)', 'Sand inundated?', 'Ripples (Fine)', 'Ripples (Coarse)', 'Biogenic structures', and 'Veneer over reef?'. The 'Biological Description' section has radio buttons for 'None (Bare substrate)', 'Populated', and 'Can't Discern', with 'Populated' selected. It also includes checkboxes for 'Vegetation' and 'Sessile Invertebrates'. Below this are two columns of radio buttons for 'Algae' and 'Invertebrates' with various options like 'Undifferentiated', 'Kelp (undifferentiated)', 'Mixed brown algae', 'Mixed red algae', 'Mixed green algae', 'turf algae', 'Seagrass', 'Rhodoliths', 'Sponges', 'Ascidians', 'Bryozoa', 'Soft corals, gorgonians', 'Hydroids', and 'Hard corals'. The 'Video quality and sampling' section has radio buttons for 'Poor visibility / light', 'Camera too high', 'Camera crashed', and 'Sample density inadequate'. There is also a text area for 'Additional comments:' and buttons for 'Cancel form', 'Save and Exit', and 'Next frame'.

Video data

- ~ 58 km of footage, ~ 1 gps point / m
- Coarse-level classification completed
- Detailed classification (individual frame evaluation) underway
- Two classifications developed:
 - Substrate (biophysical)
 - Biota

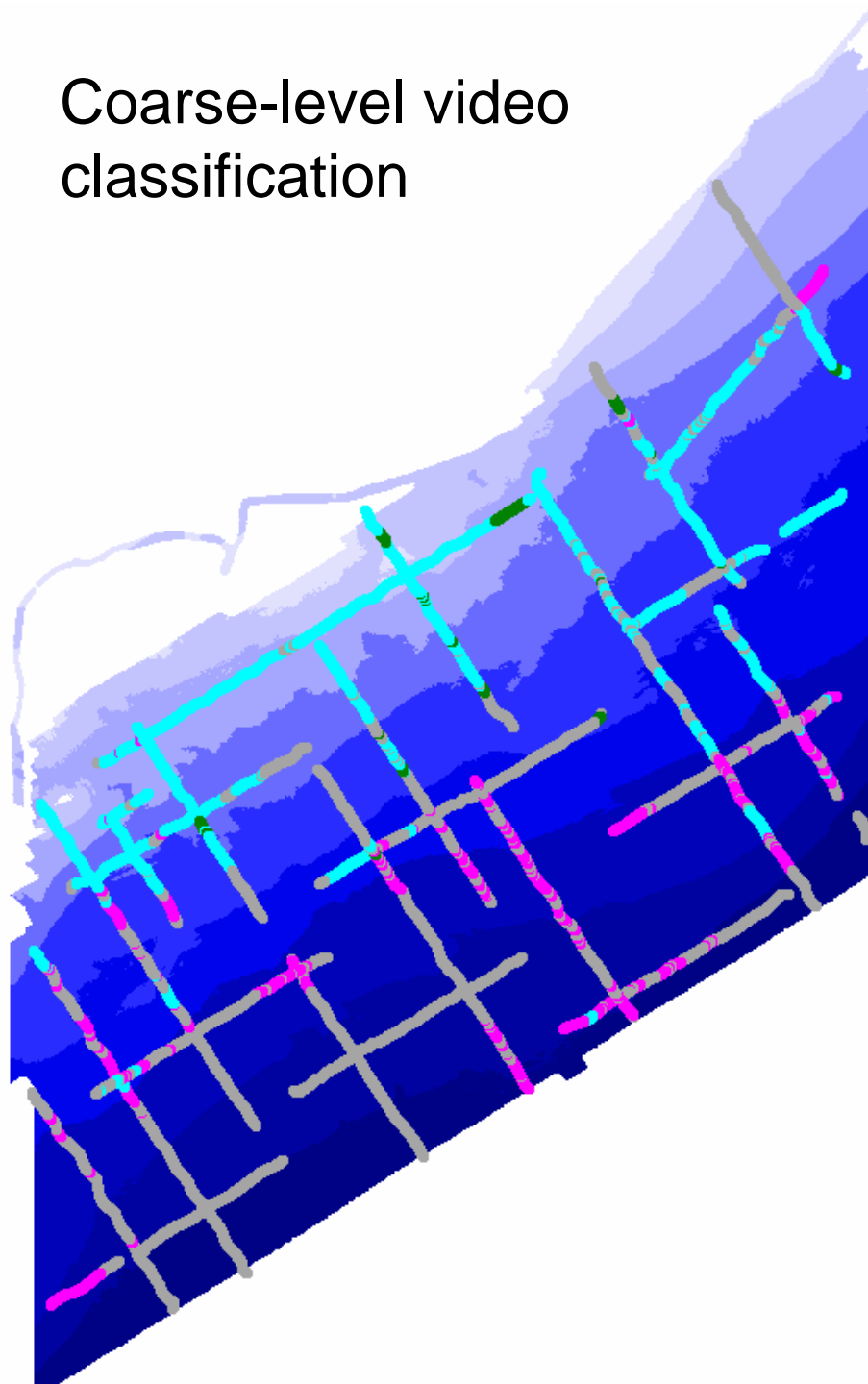
Coarse-level video classification



Substrate characterisation

- Reef
- Fine sediments
- Coarse sediments
- Sand/Reef
- Rhodoliths (Cobble)
- Mixed substrate

Coarse-level video classification



Biota characterisation

- None
- Sessile Invertebrates
- Vegetation
- Vegetation + Invertebrates

Habitat classes

Coarse-level habitat classes:

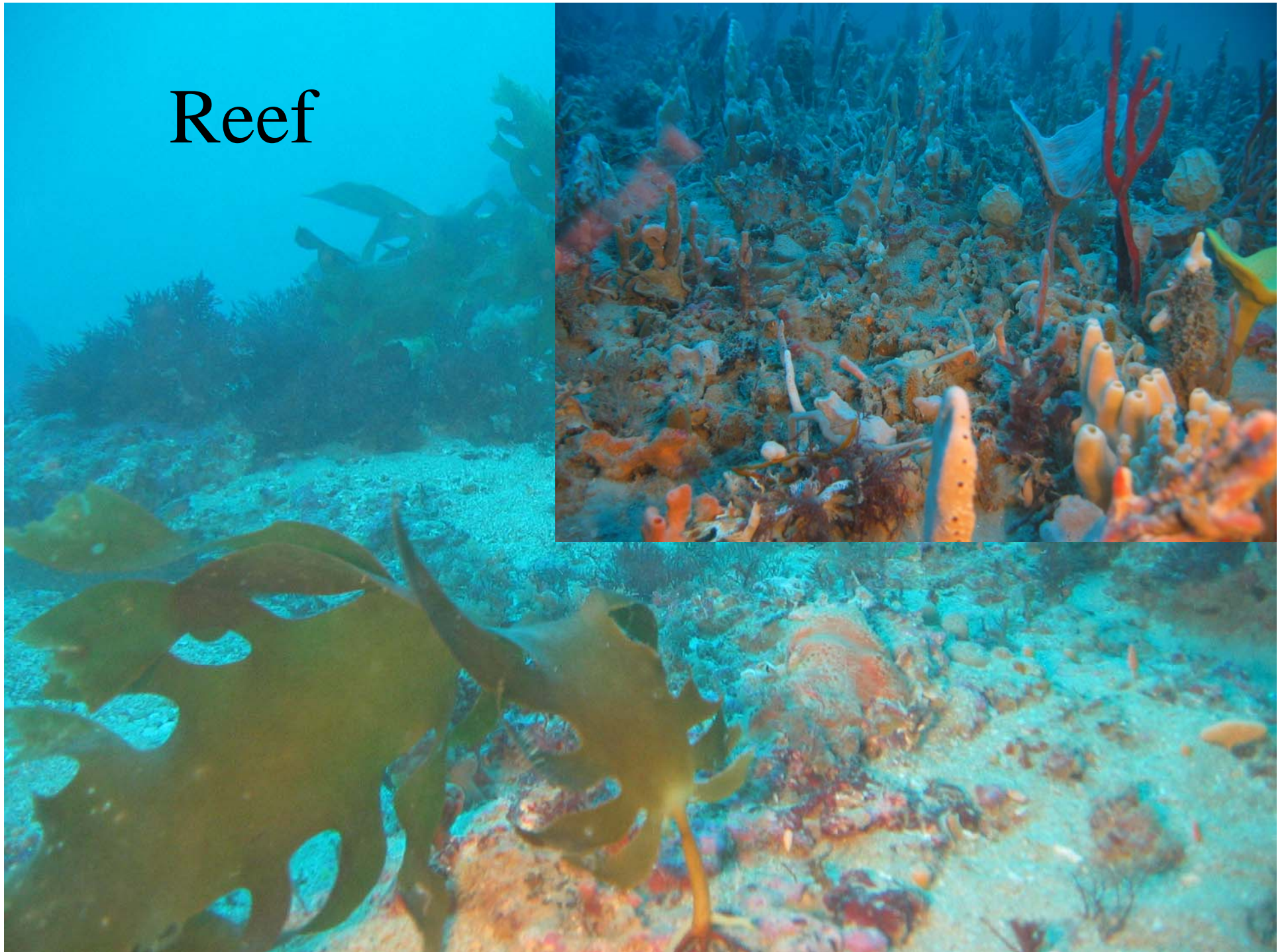
- | | |
|-----------------------------------|-----------------------|
| • <u>Substrate</u> | <u>Biota</u> |
| • Reef | Sessile invertebrates |
| • Sand | Macro-algae |
| • Coarse rippled sand | <i>Ecklonia</i> |
| • Sand inundated low profile reef | |
| • Rhodoliths (on sand) | |

plus all possible combinations of the above categories

Reef

- All hard substrate visible from the video footage.
 - high relief, including overhangs, and vertical surfaces to flat pavement.
- Reef in the deeper areas are dominated by sessile invertebrates (particularly sponges).
- Macro-algae become more important as get shallower.
 - Shallower reefs are dominated by common kelp (*Ecklonia*)
- Reefs can be extensive and continuous, or interspersed with sand and/or rhodolith patches

Reef



Sand Inundated low profile reef

- Low profile reefs have varying degrees of sand inundation, often to the point where no hard substrate is visible and the presence of reef must be inferred from the occurrence of sessile invertebrates or macro-algae that require hard substrates for attachment.

Sand Inundated low profile reef



Sand and Coarse-Rippled Sand

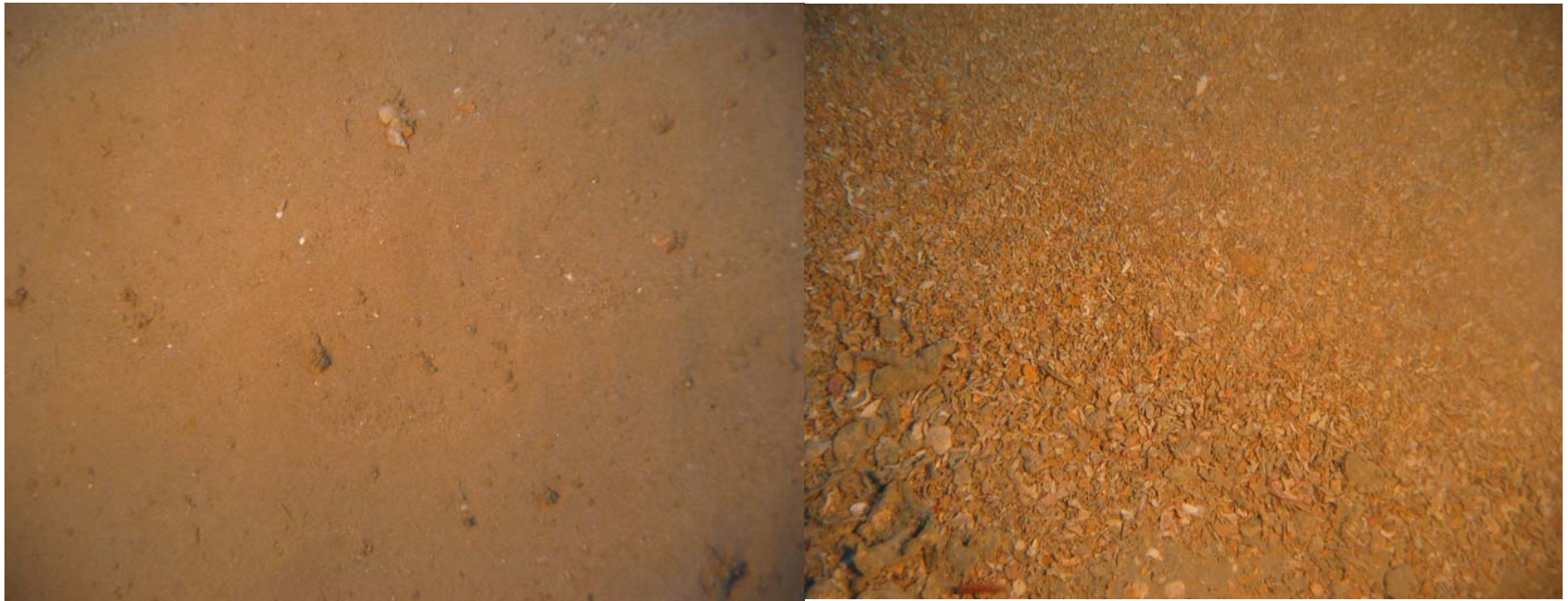
Soft substrates within the park show two striking appearances, with strikingly different acoustic footprints.

- Areas where the sand is relatively flat, perhaps with small, ‘confused’ or aligned ripples were classed as “sand”.
- Areas where the sand formed quite large, well-aligned ripples were classed as “coarse-rippled sand”.
- The transitions between these formations are quite abrupt

Coarse Rippled Sand



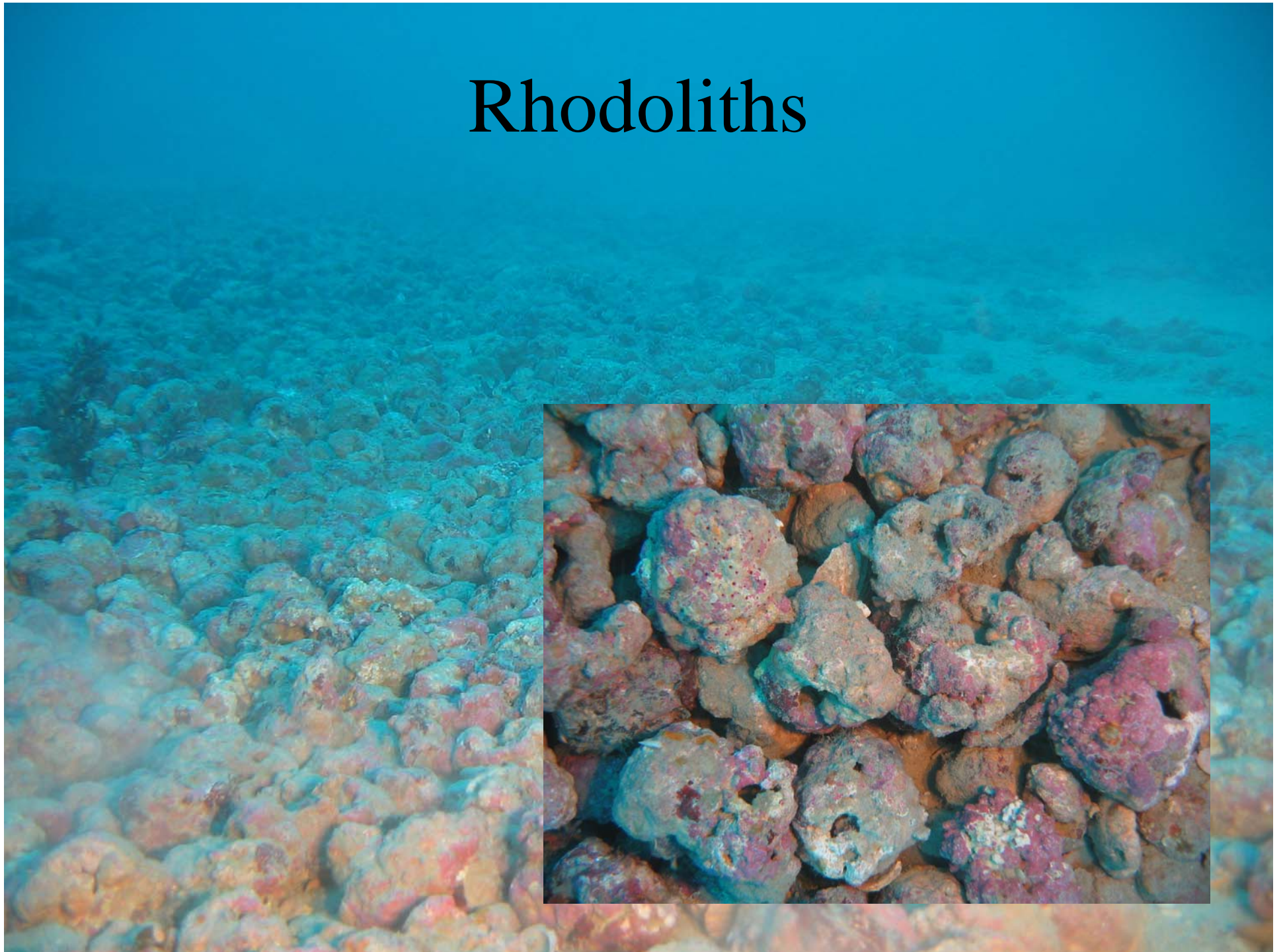
Sediment Grain Size



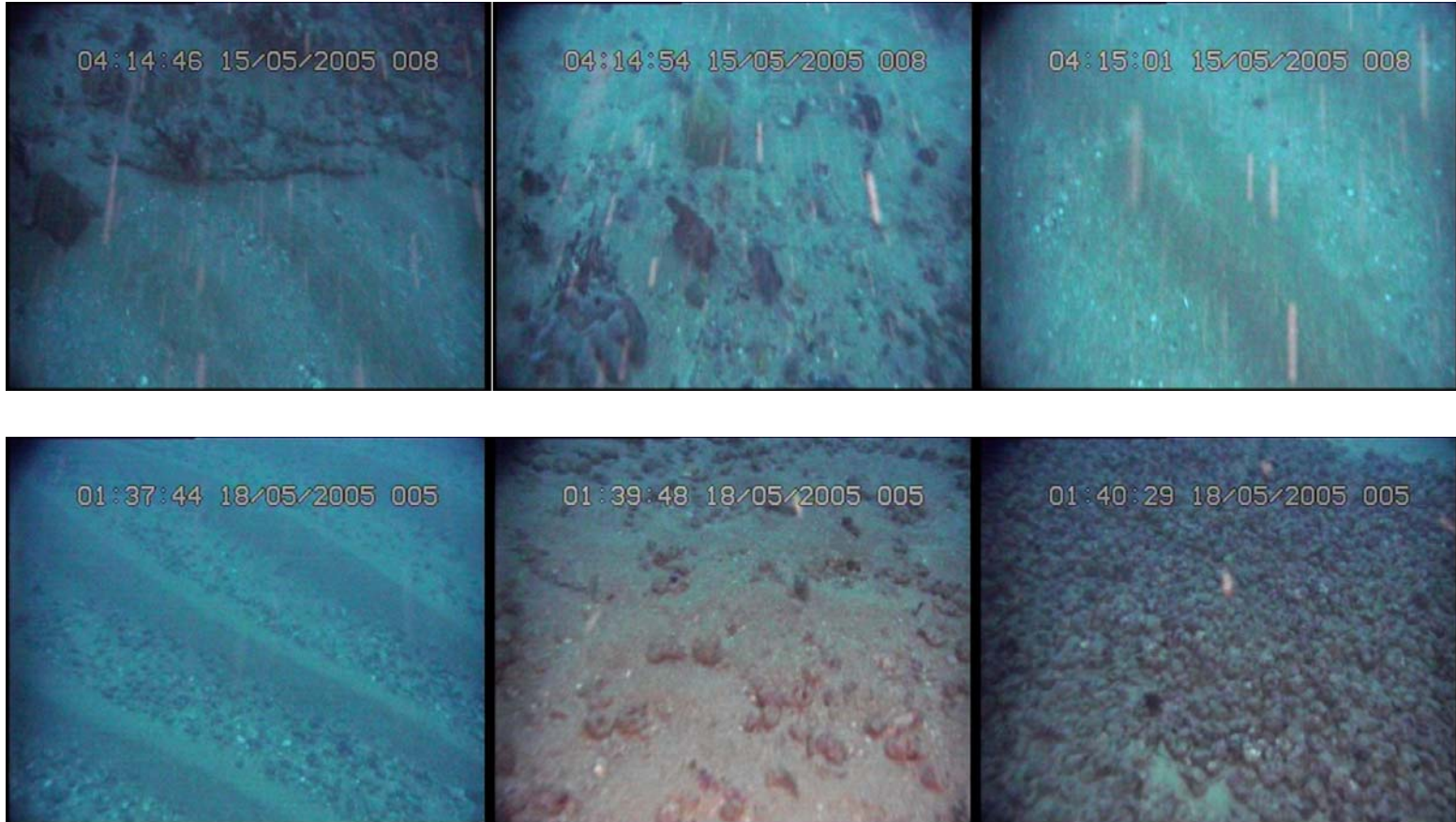
Rhodoliths

- Rhodoliths are hard, ball-like structures formed from coralline algae. They are free standing structures, and can form on soft substrates such as sand. They can form dense beds.
- Rhodoliths were observed in depths ranging from 45m to 25m, both as extensive beds, and in patches between reef areas (see above) and in the troughs of coarse-rippled sand. The most extensive beds were found between 39 and 26m.

Rhodoliths



Transitions



Life on the sand flats.

Clockwise from top left:
Sponge (55m); Sponges
encrusting unknown
branching structure
(42m); Large mollusc
(57m); seapen (57m)
Gurnard (43m); Banded
stingaree (50m).



Fine-level video classification

- Now the distribution and spatial scale of bottom-types have been identified detailed analysis of video within the bottom-types is underway
- Benthos is being identified from grab samples.
- Completion of these components by end of July 2005.