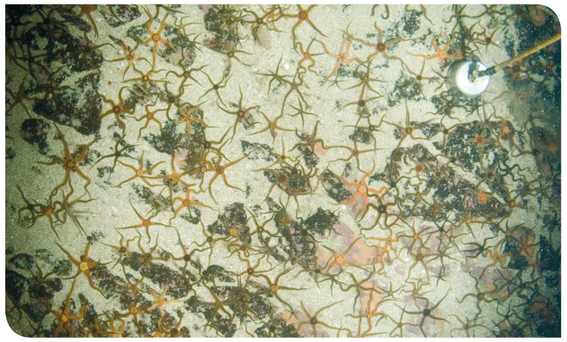
SOUTH RONALDSAY

Along the eastern coast of the island at 30m the videos revealed a seabed of coarse sand and scoured rocky outcrops. The sand was inhabited by echinoderms and crustaceans, while the rock was generally bare with sparse *Alcyonium digitatum* (Dead men's finger) and numerous Echinus esculentus. Dense brittlestar beds were found to the south. Further north at a depth of 50 m the seabed took the form of a mosaic of rippled sand, bedrock and boulders with occasional hydroids and bryozoans.

DUNCANSBY HEAD

The seabed recorded to the south of Duncansby Head is flat bedrock with patches of sand, cobbles and boulders. The rock surface is quite bare other than dense patches of red algae, clumps of hydroids and dense brittlestar beds.



Data availability

The biotope classifications and the underlying video and images are all available through Marine Scotland Interactive (MSI) (www.gov.scot/marinescotlandinteractive), the on-line resource for providing spatial data held by Marine Scotland. The video tow tracks can be viewed on Google Earth along with the photographs, video and a description of the biotopes. These data can also be viewed in combination with high resolution seabed bathymetry of the Pentland Firth, which was carried out during a multibeam survey in 2008.

References

Moore, C.G. (2009). Preliminary assessment of the conservation importance of benthic epifaunal species and habitats of the Pentland Firth and Orkney Islands in relation to the development of renewable energy schemes.

Moore, C.G. (2010). Preliminary assessment of the conservation importance of benthic species and habitats off the west coast of Orkney and in the Pentland Firth in relation to the development of renewable energy schemes. Scottish Natural Heritage Commissioned Report No. 352.

Moore, C. G. and Roberts, J. M. (2011). An assessment of the conservation importance of species and habitats identified during a series of recent research cruises around Scotland. Scottish Natural Heritage Commissioned Report No. 446.

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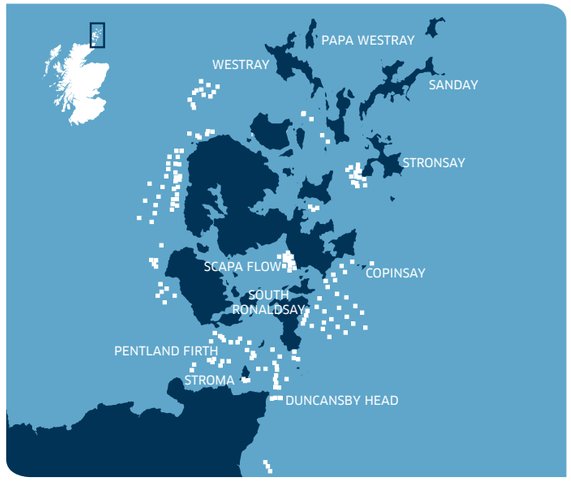
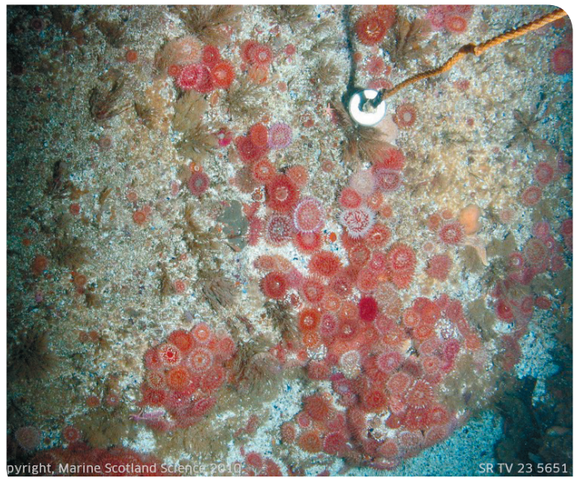
HABITATS AND SPECIES SURVEYS IN THE PENTLAND FIRTH AND ORKNEY WATERS



VIDEO AND PHOTOGRAPH SITES IN SOUTHERN PART OF SURVEYED AREA



ANEMONES (*URTICINA FELINA*) ON TIDE-SWEPT CIRCALITTORAL ROCK

Introduction

Marine Scotland Science has been collecting video and photographic stills from the Pentland Firth and Orkney Islands as part of a wider marine survey programme to inform marine renewable planning. These on-going surveys began in 2008 and since then data from over 233 stations have been collected. The conservation importance of the species and habitats present and their vulnerability to marine renewable development have been assessed in a series of reports by Scottish Natural Heritage.

Summary

- The Orkney waters display a rich variety of habitats and species, several of which have been listed as Priority Marine Features (PMF) in Scottish waters. Of particular conservation concern was an extensive bed of horse mussels off Copinsay, also found off Noss Head. An extensive coverage of loose-lying red alga was found in the east of Scapa Flow on muddy sand and sandeels were also found off west Hoy.
- The Pentland Firth probably represents the most extensive example in the UK of the Biodiversity Action Plan priority habitat 'tidal rapids'. However, most sites in the Pentland Firth displayed low diversity, tideswept rocky communities, dominated by non-mobile species that can tolerate strong currents and high levels of scour such as barnacles and dahlia anemones An area of coarse sediment with few associated animals was found in the southwest of the Firth. These habitats are likely to be tolerant of modest reductions in current speed or sediment disturbance arising from tidal turbine developments.

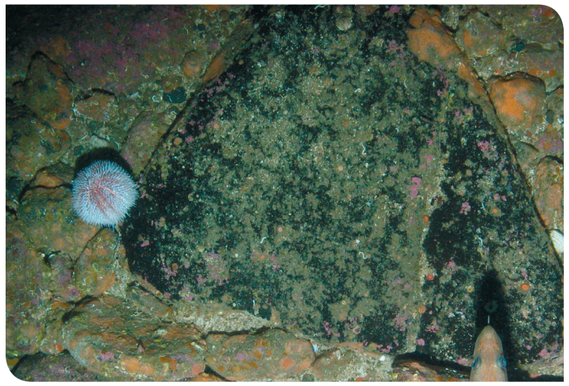
Site descriptions

PENTLAND FIRTH

The seabed of the Pentland Firth is mostly rocky, consisting of boulders or bedrock. However, the west of the Firth has an extensive area of highly mobile sediments with a sparce collection of species. The seabed is very rugged in some areas, with vertical rock faces and stepped platforms. The tops of the these stony or rocky reefs are subjected to extreme tidal currents attaining 12 knots locally, whilst the depressions will likely experience lower current speeds. The species distribution strongly reflects these differences. On the most current-swept rocky areas, the fauna is limited to dense barnacle crusts, small clumps of hydroids and dahlia anemones. Large numbers of small edible crabs were recorded at several sites, and were probably feeding on the barnacles. The implications of developments for a possibly important nursery ground for edible crabs may need to be considered. To the west of Stroma, a substrate of shelly sand has formed into waves with no evidence of infauna (organisms that live in sediment), while to the east of Stroma the seabed consists of sand-scoured bedrock on shelly gravel.

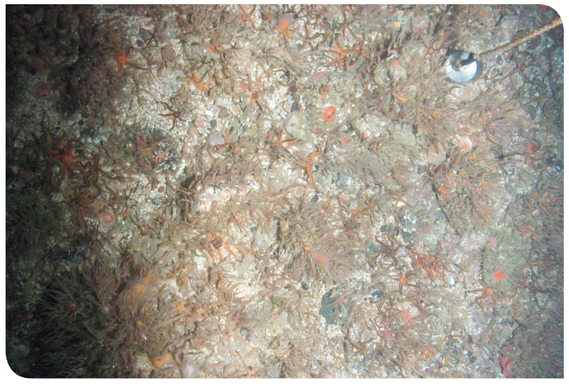
WEST OF MAINLAND ORKNEY

The seabed at sites south of Bor Wick is a mixture of stones on gravelly sand at depths of 40 to 53 m. The non-mobile community is dominated by crustose or calcareous species, including numerous Devonshire cup coral and the mobile community by sea urchins and starfish. Between Bor Wick and Outshore Point, wave-disturbed, rippled sands at depths of 30 - 40m host few animals. North to Marwick Head, the seabed takes the form of stepped rock platforms. The horizontal faces were mostly bare while a richer community of soft corals and bryozoans (moss animals) were present on the vertical rock surfaces.



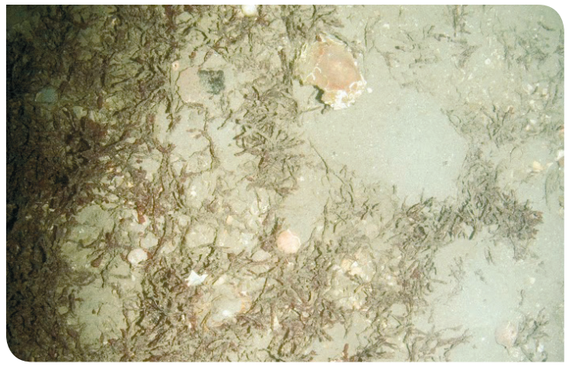
WEST OF HOY

The seabed at the southern sites to the west of Hoy were characterised by a mixture of stones on medium sand with bryozoans and hydroids. The central sites were composed of pebbles, cobbles and boulders on sand inhabited by bryozoans, cushion stars and Devonshire cup coral. The northern most sites were composed of small boulders and cobbles on sand. The stones were highly scoured with sparse epifauna (organisms that live on the bottom of the sea). South of Rora Head is a sandy seabed with small numbers of sandeels present.



SCAPA FLOW

The sites within Scapa Flow were located at depths of 20-30m on a seabed of muddy sands and scattered cobbles and boulders. East Scapa Flow was found to harbour an extensive coverage of a loose-lying thalli (twigs and shoots) of red alga and balls of *Trailliella*. The mud was inhabited by a sparse infauna together with occasional crabs such as, starfish and Queen scallops.

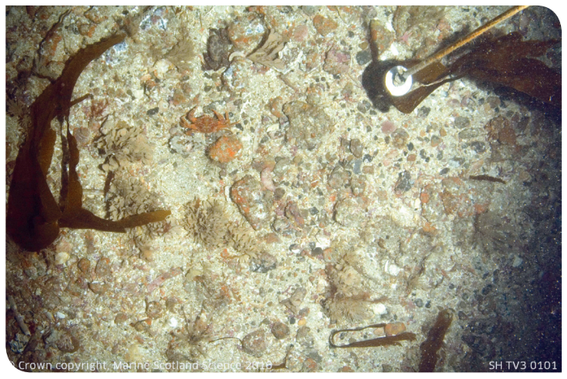


NORTH WESTRAY FIRTH

The seabed in the northwest entrance to Westray Firth was composed of a mixture of pebbles and boulders on a bed of gravel. This supported a low diversity community of the tube worm Pomatoceros, bryozoans and barnacles and a cushion fauna of sponges, soft corals and anemones.

SHAPINSAY SOUND

Shapinsay sites were characterised by sand and mixed stony layers. The sand supported a sparse fauna of portunid crabs, starfish and live maerl, while the stones were encrusted with barnacles, bryozoans and sponges.



COPINSAY

To the east of Copinsay, a continuous bed of horse mussels lay on a mixed layer of sand, gravel, pebbles and shells. The mussels supported a rich fauna of the brittlestar *Ophiothrix fragilis*, large starfish and the common sea urchin.