The health of our islands is intricately bound with the quality of the water that surrounds us, but to most the sea is a mysterious veil through which we cannot see. British sports divers are our eyes under the sea, reporting on its wonderful marine life treasures and taking video and photographs. They can also tell of damage done by destructive fishing methods, dumping at sea and pollution, even guessing at possible effects of global warming. Seasearch is a project first started in the mid-1980's where hundreds of volunteer divers have recorded and reported their findings from around the British Isles on standardised forms. These findings, particularly concerning marine life that lives attached to the seabed, have added greatly to our knowledge and provided useful information, which can help in the conservation of our seas. This is one of a series of short reports which summarises the findings of Seasearch.

The Stackpole Quay Seasearch project was designed to build on the work of others such as the Field Studies Council who recognised the importance of the marine life in the Stackpole area. All together 33 sites were studied between West Moor Cliff and Broadhaven in south Pembrokeshire involving 25 divers between 1993 and 1998.

THE STACKPOLE QUAY COAST
This coast is protected by a plethora of conservation designations. The whole sea area is within the boundaries of the Pembrokeshire Marine candidate Special Area of Conservation (a European designation aimed at protecting our most precious habitats). The coastline itself is part of the Pembrokeshire Coast National Park and the National Trust owns much of the coastal strip. Cliff top walks provide access along the coast, which is composed of dramatic rock architecture with steep cliffs up to 30m high, punctuated by sandy embayments. The rocks are of two very different types; to the east of Stackpole Quay is the rich dark red coloured Devonian Old Red Sandstone and to the west cold grey fossil rich Carboniferous Limestone. On a summer's day, the rock colours show distinctly, contrasting perfectly between a blue sea and the flower studded grassy cliff tops. Stackpole Quay itself is a small harbour quarried out of the fossil rich limestone rock by the old Stackpole Estate. The National Trust who generously allowed it to be used as the launch site for this survey now owns it.

Away from the cliffs, the inshore seabed is shallow, sloping gently offshore to depths of about 20m. Shallow underwater rocky reefs fringe the coastline, but the majority of the seabed, 100m or so away from the coast, is composed of sand or gravel. The varied coastline provides the backdrop for a range of underwater habitats, which change along the coast in relation to both rock type and exposure to currents and waves.
Carboniferous Limestone
350 million-year-old Carboniferous Limestone rocks form the coastline to the west of Stackpole Quay. A community of animals burrows into this rock, dissolving it by producing powerful chemicals. These species include the red-nose piddock (Hiattella arctica), the limestone fan worm (Pseudopotamilla reniformis), the boring sponge (Cliona celata) and the white horseshoe worm (Phoronis hippocrepia). The holes and crevices created by these species in turn provide homes for others.

Greenala Point
Strong currents accelerate around the headland creating ideal conditions for filter feeders. Spectacular growths of the orange ross coral (Pentapora foliacea) live on rocky reefs, while the white burrowing sea cucumber (Neopentadactyla mixta) inhabits the sandy gravel between. To the east of Greenala Point is a rare sight; the rocky seabed is covered by the dwarf brown sea cucumber (Oenocatus planci).

Stackpole Quay to Barafundle Bay
Sheltered silty limestone reefs slope down to fine sand and the marine life is exceptionally rich and diverse. Here, rarities like the trumpet anemone (Aiptasia mutabilis) are common and the seaweeds recorded include the rare smelly siphon weed (Polysiphonia foetidissima), a species not found in Britain since 1855. Burrowing anemones live in the sediments including the rare night anemone (Halcampoides elongatus).

Inshore South of Stackpole Head
The shallow limestone forms a series of ridges up to four metres high that are variously sculpted forming vertical and overhanging rock faces and small caves and tunnels, between which are sediment filled gullies. Forests of the northern kelp (Laminaria hyperborea) are carpeted by growths of small edible mussels (Mytilus edulis) and dense aggregations of the spiny spider crab (Maia squinado) gather in summer. Upward facing rock is the habitat for the rare penny weed (Zanardinia prototypus).

Stackpole Head to Broadhaven
Along this coast the bedrock forms shallow low lying ridges are inundated by sand. This forms the ideal habitat for seaweed species such as brown bottlebrush weed (Cladophora sp.), black wire weed (Ahnfeltia plicata) and spirulina weed (Rhodomela confervoides). There are several shallow surge gullies along the coast penetrating the limestone.
Devonian Old Red Sandstone
This rock is formed from sandy sediments, which were consolidated 390 million years ago, and although readily eroded by the forces of nature, it provides a stable surface onto which marine life can attach and grow.

West Moor Cliff
Sheltered from strong currents, the variety of marine life is impressive, with seaweeds, sea squirts, sponges and nudibranch sea slugs all present in prolific numbers.

Trewent Point
Much of the shallow low-lying current swept rock and gravel is covered by the edible mussel (*Mytilus edulis*). In deeper water writhing beds of brittle starfish carpet the seabed. There are two species; the brightly coloured common brittle star (*Ophiothrix fragilis*) and the distinctive black brittle star (*Ophiocomina nigra*). One interesting species recorded in the shallows was the uncommon brain sponge (*Axinella damicornis*).

Barafundle Bay to Stackpole Head
Shallow underwater caves penetrate the cliffs here and strong currents tear along the coastline forming overfalls. These currents scour the rocky seabed with mobile sand and gravel and colonial animals such as horn wrack (*Flustra foliacea*), which looks like grey seaweed, thrive here together with sea squirts and current loving sea firs.

Offshore South of Stackpole Head
The extensive current swept expanse of flat underwater limestone bears carpets of mussels with attached sea firs including the short white weed (*Sertularella argentea*), the oaten-pipes hydroid (*Tubularia indivisa*) and the feather star (*Antedon bifida*). Where small cliffs and overhangs are found, these are colonised by different species such as the blue-mouthed red sea squirt (*Polycarpa scuba*) and the white horseshoe worm (*Phoronis hippocrepia*).
SPECIAL FINDINGS

Several species known to be nationally rare or scarce were recorded during this Seasearch project and these are included in the table below.

<table>
<thead>
<tr>
<th>Species</th>
<th>Designation / Conservation interest</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brain sponge</td>
<td>Nationally Scarce</td>
<td>One record from southeast of Trewent Point.</td>
</tr>
<tr>
<td>(Axinella damicornis)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trumpet anemone</td>
<td>Nationally Scarce</td>
<td>A conspicuous component of the fauna on steeply sloping or vertical sides of limestone gullies in shallow water between Stackpole Quay and Barafundle Bay. (Although also found elsewhere).</td>
</tr>
<tr>
<td>(Aiptasia mutabilis)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Night anemone</td>
<td>Nationally Rare</td>
<td>Found close to the rocks on silted sediment at Stackpole Quay Head.</td>
</tr>
<tr>
<td>(Halicampoides elongatus)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Penny weed</td>
<td>Nationally Scarce</td>
<td>Recorded from two sites south of Stackpole Head in 1998.</td>
</tr>
<tr>
<td>(Zanardinia prototypus)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Smelly siphon weed</td>
<td>Not yet designated - unknown in Britain since 1855</td>
<td>Recorded just outside Stackpole Quay.</td>
</tr>
<tr>
<td>(Polysiphonia foetidissima)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dwarf brown sea cucumber</td>
<td>Found at one site east of Greenala Point</td>
<td>Dense aggregations recorded as a rare biotope in Britain.</td>
</tr>
<tr>
<td>(Ocnus planci)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ross coral</td>
<td>A delicate species easily damaged by fishing, anchoring and divers</td>
<td>Occurring around Greenala Point and Trewent Point.</td>
</tr>
<tr>
<td>(Pentapora foliacea)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spiny spider crab</td>
<td>A commercially fished species</td>
<td>Occurring in especially dense aggregations over the study area in summer.</td>
</tr>
<tr>
<td>(Maia squinado)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

FURTHER READING

The information in this summary report comes from the following document:

ACKNOWLEDGEMENTS

This report was written and compiled by Francis Bunker who wishes to thank the following:

• All the volunteer divers who gave up their time and skill to participate in this project and produce the data included in this report:
  

• James Perrins for use of his photographs of *Ocnus planci* and *Pentapora foliacea* (© James Perrins). Also, thank you to Sid Howells for use of his aerial photograph (© Sid Howells). All other photographs are by Francis Bunker (© Francis Bunker).

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Further details about Seasearch in Wales can be obtained from:
Kate Lock, Skomer MNR, Fisherman’s Cottage, Martins Haven, Marloes, Nr Haverfordwest, Pembrokeshire SA62 3BJ

Further copies of this Summary Report and copies of the Full Stackpole Quay Seasearch Report can be obtained from: Marine Conservation Society, 9 Gloucester Road, Ross-on-Wye, Herefordshire, HR9 5BU

Seasearch is a national volunteer project to increase knowledge of the UK marine environment and contribute to its conservation. It involves volunteer recreational divers in recording and mapping the seabed.

If you are interested in what you see underwater and want to learn more about marine life, or if you want to organise or take part in a conservation project and dive with other people with similar interests, Seasearch is for you.

For details about Seasearch throughout the UK and survey dates see:
www.seasearch.org

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