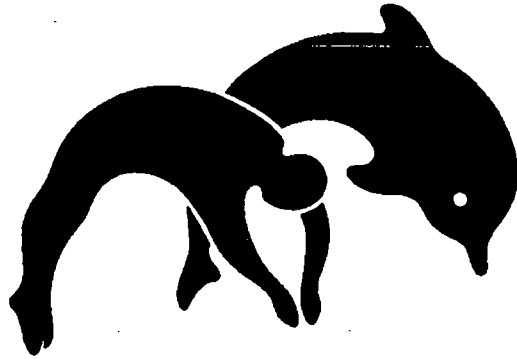


SEASEARCH
Stackpole Quay
1993 to 1998

Full Report





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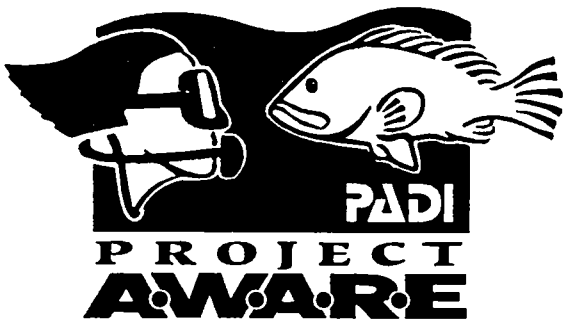
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Reference: Marine Conservation Society (2002). Stackpole Quay Seasearch; 1993 to 1998. A report by Francis Bunker, MarineSeen, Estuary Cottage, Bentlass, Hundleton, Pembrokeshire, Wales, SA71 5RN.

Further copies of this Full Report and the Summary Report for Stackpole Quay are available from the Marine Conservation Society.

This report forms part of a project funded by PADI Project AWARE (UK) and the Countryside Council for Wales.



Cyngor Cefn Gwlad Cymru
Countryside Council for Wales

Synopsis

- This Full Report and its accompanying Summary Report have been produced as part of a project undertaken by the Marine Conservation Society to provide feedback on the results of Seasearch dives carried out on the South Wales coast.
- This is a non-technical report, which compiles the findings of 33 Seasearch dives between West Moor Cliff and Broadhaven in south Pembrokeshire, Wales between 1993 and 1998. Location maps showing the dive sites are presented together with summary descriptions and detailed species lists for each site. Observations or features of interest encountered during the dives are noted. Diagrams showing the distribution of habitats and communities encountered during dives are given in several instances.
- A summary description of the area covered by the survey has been written on the basis of the information from the dives. Key areas include the current sheltered sandstone habitat encountered at West Moor Cliff, the wave and current exposed habitats of Trewent Point and Greenala Point, the sheltered limestone habitats between Stackpole Quay and Barafundle, the current exposed habitats and caves on the east side of Stackpole Head, the extensive flat limestone plateau extending offshore to the south of Stackpole Head, the inshore limestone habitats south of Stackpole Head and the sand influenced rock between Stackpole Head and Broadhaven.
- Several species and features of biological importance were noted during the Seasearch dives. These include the presence of species listed as rare or nationally scarce; the brain sponge (*Axinella damicornis*), the trumpet anemone (*Aiptasia mutabilis*), the night anemone (*Halcampoides elongatus*), the penny weed (*Zanardinia prototypus*) and the dwarf brown sea cucumber (*Ocnus planci*).
- One species encountered, the smelly siphon weed (*Polysiphonia foetidissima*), has not been recorded in Britain since 1855.
- The Seasearch methodology is discussed briefly in relation to the findings reported in this document.
- Recommendations of further work are given in the light of the findings of this study.

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1 Introduction

Seasearch is a project where volunteer divers record information about the seabed and marine life. Seasearch is intended to provide a baseline description which can be used to map shallow coastal habitats.

Originally, the Seasearch project was devised in the mid-1980's by the Marine Conservation Society (MCS) and the Nature Conservancy Council (now English Nature (EN), Countryside Council for Wales (CCW), Scottish Natural Heritage (SNH) and their Joint Nature Conservation Committee, JNCC). Seasearch dives have been organised by MCS members, the conservation agencies (EN, CCW, SNH and JNCC), county Wildlife Trusts and others. Seasearch projects have been undertaken off many coasts including those of Sussex, Dorset, north and south Devon, Jersey, Isles of Scilly, North Cornwall, Lundy, South, West and North Wales, Morecambe Bay, and many Scottish islands and sea lochs (see Appendix 1).

In December 1999, a Seasearch National Steering Group was established. Its aim is both to develop and enhance the Seasearch project nation-wide. Members of the Group include organisations (EN, CCW, SNH, JNCC, Environment Agency (EA), Professional Association of Diving Instructors (PADI), British Sub Aqua Club (BSAC), Sub Aqua Association (SAA), Marine Biological Association (MBA, MarLIN) Nautical Archaeology Society (NAS), and The Wildlife Trusts (TWT), as well as individual experts (including Robert Irving, Paul Kay, and Chris Wood).

The aim of this group is to provide direction to and oversee the development of a national Seasearch programme, which aims to increase our knowledge of the UK marine environment and contribute towards its conservation through the participation of SCUBA divers.

The objectives for the national Seasearch programme are to:

- gather information on UK seabed habitats and associated wildlife through participation of SCUBA divers;
- provide standardised recording methods and training to enable SCUBA divers to participate in Seasearch;
- ensure the quality of data gathered;
- make the data collected through Seasearch widely available, and
- raise awareness of the diversity of UK marine life and its environment through participation of SCUBA divers and dissemination of information.

One of the tasks identified by the Group was the standardisation of the reporting of Seasearch survey data. This report forms part of a project that aims to provide a guide for the production of future Seasearch reports. In addition to this Full Report, a short Summary Report has also been produced for wider dissemination to participants and non-divers interested in the marine life along the South Wales coast. The project was part funded with grant-in-aid from the Countryside Council for Wales and a PADI Project AWARE (UK) grant.

This report summarises the findings of Seasearch survey dives carried out from Stackpole Quay in Pembrokeshire, Wales. These dives ranged from Westmore Cliff in the east, to east of St Govan's Head in the west (Figure 1).

1.1 The Coastline by Stackpole Quay

The coastline either side of Stackpole Quay has long been recognised for its natural beauty and is protected by a plethora of designations designed to safeguard its natural (and man made) treasures. The whole sea area is within the boundaries of the Pembrokeshire Marine candidate Special Area Of Conservation. 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 whole coastal stretch with most of it being bounded by steep cliffs up to 30m high. These are formed from two rock types; Devonian Old Red Sandstone to the east of Stackpole Quay and Carboniferous Limestone rocks to the west. Stackpole Quay itself is a small harbour quarried out of limestone rock.

A Special Site of Scientific Interest (SSSI) has been designated to cover the coast between Stackpole Quay and Trewent Point in the east. This designation gives formal recognition and protection to the rock formations and plants and animals of the coast. The rock formations around Stackpole Quay are fossil rich and of international renown and the Iron Age Fort above Greenala Point is one of the best examples of a coastal hill fort in Britain.

The coast and hinterland between Stackpole Quay and Broadhaven are owned by the National Trust and form part of the Stackpole SSSI. The Countryside Council for Wales manages this area as a National Nature Reserve. The cliff tops themselves have a rich and interesting plant life including several rare flowering plants and lichens. As well as this the geological features of the limestone coast are recognised for their importance and include numerous caves, arches and blowholes. In summer, seabirds including razorbills, guillemots, kittiwakes and a few puffins breed around Stackpole Head.

To the west of Broadhaven, the coast is part of the Castlemartin Cliffs and Dunes SSSI. Again, the natural features of the rock architecture are outstanding. As an interesting twist, this stretch of coast is within an army firing range, which offers the plants and animals a degree of protection from disturbance.

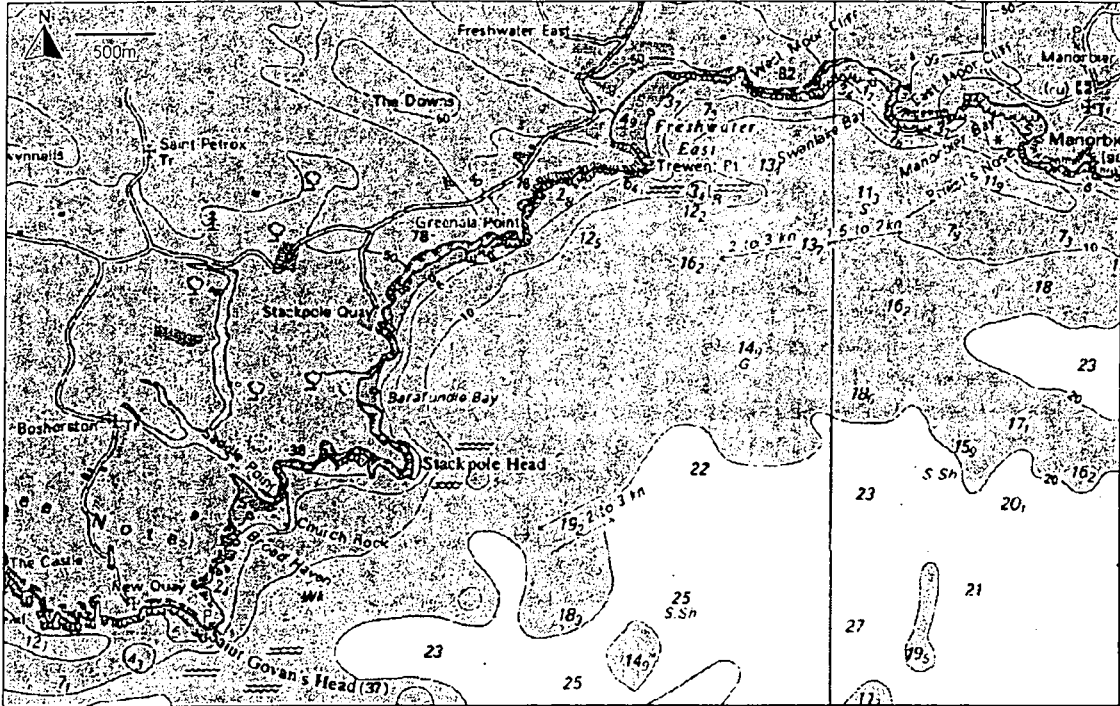


Figure 1 Admiralty Chart showing the area covered during the Stackpole Seasearch Surveys 1993 to 1998. Reproduced from Admiralty chart 1076 by permission of the Controller of Her Majesty's Stationary Office and the UK Hydrographic Office. Not to be used for navigation.

1.2 Understanding the Landscape

The Stackpole Coast we see today is a landscape formed by the awesome and often turbulent natural forces of the world, which have changed what once almost beyond recognition.

Step out of your car at Stackpole Quay, close your eyes and imagine this; the clock is turned back 345 million years. The scene is that of a forgotten world before dinosaurs with shallow tropical seas and coral reefs. Corals, lampshells and crinoids abounded in the seas with species now extinct. You certainly wouldn't find any National Trust café.

Open your eyes again, yes this tropical world is gone and the scene changed beyond all recognition. Yet all around you are the remains of those ancient seas. The grey limestone rocks are formed from the shells of the sea creatures, which formed or lived amongst the coral reefs. When these animals died, their shells sank to the seabed in millions and built up into thick oozy sediments. Over the eons the sediments have been compressed to form the limestone rocks we see today. Where corals and seashells sank into the ooze they have been preserved as fossils and these can be easily seen.

To the north-east of Stackpole Quay are older rocks formed from sands and muds laid down by rivers flowing across a coastal plain. They are the distinctive brown-red colour of Old Red Sandstone, formed between 410 and 360 million years ago. As the name suggests, sandy sediment deposits rather than the shells of plankton form the rock.

Since Carboniferous times, the rocks have drifted from their old positions in a tropical setting to their present day resting places in the cool temperate region of west Wales. Violent events have shaped the rocks over time. Continents have collided exerting such force as to actually bend the layers of rock into a series of convoluted folds and these form the impressive rock structures we see today. A dramatic example of these folding rocks can be seen in little island at Middle Cove to the east of Stackpole Quay. Or, go out in a boat and look at the cliffs to the south of the Quay, here the rock layers appear vertical.

A walk or better still a boat trip along the coastline shows how the sea has exploited weaknesses between rock layers and hollowed them out to form a rich architecture of caves, overhangs and arches. On land, the coast path allows walkers right out onto the end of Stackpole Head offering impressive views. Walkers might tread more warily if they saw Stackpole Head by sea and realised that underneath it is actually hollow!

Go the short walk along the coast path to Barafundle Bay and look south towards Stackpole Head. Here the rock strata are not contorted and are close to horizontal, as is typical of the coast between Broad Haven and Barafundle Bay. In fact the cliffs have a stepped appearance with each step representing an ancient seabed. Time to shut the eyes again and go back in time, but this time it's a short trip, 30,000 years ago to the last part of the Ice Age and watch out for cave men hunting woolly mammoths in tundra-like conditions. Remains show that cave people once occupied

Lort's Cave half way up the cliff on the south side of Barafundle Bay. It would be very cold, but geological evidence shows that the ice sheets did not quite reach this part of south Pembrokeshire. With much of the water in the world being bound up by ice, the sea level would have been a lot lower than it is today. After the Ice Age, as the climate rapidly improved, but before sea-level rose again, the Bristol Channel area was covered by deciduous woodland. Evidence of this can be seen at the nearby Freshwater West where peat and tree trunks are sometimes visible beneath the beach sand at low tide.

A good introduction to the geology of the Stackpole Estate is given in Howells (1999).

1.3 Marine Biology

The waters of the west coast of the British Isles receive a warming influence from the Gulf Stream. This is a fast flowing ocean current which travels northwards up the east coast of North America from the tropical Caribbean Sea and carries warm water to the western coasts of northern Europe. Travelling in this ocean current is a whole host of sea creatures, which make annual migrations to our coastal waters. These include the sunfish (*Mola mola*) and the leatherback turtle (*Dermochelys coriacea*), which arrive each year in late summer following shoals of their favourite food, jelly fish. Leatherback turtles are known to congregate annually in Carmarthen Bay (Rod Penrose personal communication).

People seldom see these spectacular creatures but the influence of the gulf stream is evident the whole year around in the species of plants and animals which live attached to the seabed. Species such as the trumpet anemone (*Aiptasia mutabilis*) and the penny weed (*Zanardinia prototypus*) are examples of marine life which inhabit the Gulf Stream warmed waters of the Stackpole Quay coast but are rare or absent in colder waters further north.

The old red sandstone and limestone rocks also influence the range of plant and animal life found along this coast. The red sandstone provides a stable and hard surface for the attachment of seabed plants and animals while the limestone is burrowed into by a whole host of specialised sea creatures such as the red nose piddock (*Hiatella arctica*) and the boring sponge (*Cliona celata*).

There have been several studies in the last twenty years or so which have confirmed the special nature of the marine life and habitats along the Stackpole Quay coast. The first detailed description was a diving survey led by the Field Studies Council in the late 1970's (Cartlidge and Hiscock, 1979). This study highlighted the interest of the area, particularly that between Greenala Point and Stackpole Head.

Observations and species records from the author's logbook and taken during field courses at Orielson and Dale Fort in 1980 and 1991 were compiled in a report for the Countryside Council for Wales (Bunker, Picton and Morrow, 1992).

In 1995, a European funded research project into the effects of static fishing gear on seabed communities took place at Greenala Point (Bunker *et al.* 1996).

Following the Sea Empress oil spill in 1996, a study was commissioned to look for effects of the spill on the marine subtidal communities of South Pembrokeshire (Rostrum and Bunker, 1997). Fortunately, this study found that this environmental disaster had had no lasting effects on the marine life.

Other studies include ones into the limestone shore caves at Barafundle Bay (Ward, 1992) and populations of the rare lagoon periwinkle (*Paludinella littorina*) in Broadhaven's sea caves (Kileen and Light, 1994).

The Seasearch project first targeted this stretch of coast in with a study by Shrewsbury School (Powell and Bunker, 1989) and has continued sporadically to the present day. The present report summarises the findings of Seasearch dives between 1993 and 1999.

1.4 Human Use

There is little in the way of habitation or man made developments along the study coastline. The exceptions to this are at Stackpole Quay where there is a National Trust café and small group of holiday cottages and Freshwater East, which is a popular tourist resort.

Commercial fishing is well established along the study coastline with three boats operating on a regular basis out of Stackpole Quay. Fishing activities include potting for crabs and lobsters, netting for Spider Crabs, rod and line fishing for bass and trawling inshore sediment areas. A large array of keep pots is present off Stackpole Quay, particularly in the summer months.

Sports' angling is also popular in the area with boat access to the coast from Freshwater East. There are also several popular shore fishing sites between Stackpole Quay and Stackpole Head.

Freshwater East, Barafundle Bay and Broadhaven are all popular summer tourist beaches. Barafundle Bay is the least popular as there is no direct access by car.

The army firing range extends along the Castlemartin cliffs eastwards as far as Broadhaven and access to the StGovans Head area is restricted at certain times. However, the whole of the study area is open to walkers and is part of the Pembrokeshire Coast National Park coast path.

Local field studies centres use the shores and coastline for educational purposes and outdoor pursuits such as co steering and canoeing.

2 Methods

The precise recording methodology of Seasearch has varied over the time of this study as three different versions of the recording forms were produced. Despite this, the basic recording methodology has been the same and is that outlined in the Seasearch Starter Pack by SNH (1995).

2.1 Training

A degree of training prior to a Seasearch event was essential to ensure consistency in the way data was collected. In several instances, Seasearch training took the form of a lecture to the local diving club or specially run training day or weekend.

The minimum training in all cases was a briefing on precisely how recording should be undertaken on the day of a Seasearch event prior to diving.

All divers who registered interest in attending an organised event were given copies of the Seasearch Starter Pack prior to the date.

2.2 Organising and Undertaking Seasearch Dives

With the exception of a shore dive from Stackpole Quay, boats accessed all the sites described here. The National Trust restricts boat launching from Stackpole Quay but granted access for the purposes of this project. Divers worked in pairs with each pair being designated a site with the aim being to cover as wide an area of coastline as possible.

The divers in each pair would take with them a recording slate and pencil and record the information required by the Seasearch forms. An example of the simple (and most successful) one page version of the forms used is given in Appendix 1. The main procedures for Seasearch dive recording are as follows (for details of the recording techniques refer to the Seasearch Starter Pack (SNH 1995)):

- The divers divided their site into major habitats such as kelp forest, kelp park, gravel and pebbles, etc.
- A description of each habitat was recorded together with depth limits and any species information the divers were able to provide.
- Positions of each dive were fixed with the help of charts and / or GPS units and dive times recorded by personnel in the boats.
- Following the dive, forms were filled in with the information gathered and participants were encouraged to draw sketches to depict the main features of the seabed.
- Recorded depths were adjusted to chart datum using tidal corrections for Stackpole Quay calculated by the computer program Tidecalc (Ministry of Defence Hydrographic Office, 1991).
- Most diving was planned around slack water times i.e. around Greenala Point and Stackpole Head, approximately three hours before and after high water.

2.3 Data analysis and Quality Control

The Stackpole Quay Seasearch project was greatly helped by the participation and help from several professional marine biologists. When possible marine biologists were paired with club divers and forms were completed together. This was a good way of ensuring accurate data recording but was not possible for all dives. Identification guides were provided on site to help with the writing up of forms and guidance on naming species was provided by the co-ordinator (Francis Bunker).

Forms were mostly completed immediately after dives and forms were checked before participants left. This helped sort out anomalies in the data that were obvious and ensured forms were completed.

On writing this report, the author has used his judgement and experience of the area in accepting or rejecting species identifications. Where doubts over the naming of species occur, this has been indicated in the appropriate sections of this report.

2.4 Species Names

Common names of plants and animals have been used throughout this text in order to make the work accessible to non-scientific readers. Problems with using common names are that they vary regionally and do not exist for all species. For this reason Latin names have been put in brackets after the common name (following the nomenclature of the MCS species directory; Howson and Picton, 1999).

The following protocol was used in the use of common names in this text:

- The primary source of common names was the official CCW list (Roberts, S. 2001).
- If the name was not present in the above, the Marine Conservation Society Guide to Inshore Marine Life (Erwin and Picton, 1987) was consulted.
- If the name was not present in either of the above the following authoritative texts were consulted eg Sea anemones (Gosse, P.H., 1860) and Crabs (Ingle, 1980).
- If no name could be found, then the author made up a name which appropriately described the animal.

A glossary of common and equivalent Latin names is given in Appendix 2.

3 Results

A summary description of each site dived is included in this section and the best sketches drawn by divers have been included. The study area naturally divides into two; the sandstone area to the east of Stackpole Quay (West Moor Cliff to Stackpole Quay) and the limestone area to the west (Stackpole Quay to Broadhaven). The Seasearch dive descriptions have been arranged into each of these two areas and are described from east to west.

Positions of the dive sites are shown in Figures 9 and 23 and detailed species lists for each dive are given in Appendix 3. Tables giving details of dive site positions etc are given in Appendix 4. The original 'raw' data sheets are held by CCW.

3.1 Site Information West Moor Cliff to Stackpole Quay

This section summarises the findings of 11 Seasearch dives carried out in 1995 between Westmore Cliff and Stackpole Quay. The locations of the dives are shown in Figure 9.

3.1.1 Site 8/95: S of West Moor Cliff (51.64262°N, 4.84165°W)

Surveyed 23/04/1995 by Jayne Lynch and Francis Bunker

Physical Environment

This site was studied between 7.1m to 7.9m below chart datum. Low lying silted ridges of sandstone bedrock outcropped from a sandy seabed.

This site is semi exposed to wave action and sheltered from tidal streams.

Habitat / Community Types

Only one habitat / community type was described:

1. The rocks were animal dominated with 30% cover of seaweed. Conspicuous seaweeds included pointed membranous rib weed (*Hypoglossum hypoglossoides*), red leaf weed (*Delesseria sanguinea*), cock's comb (*Plocamium cartilagineum*), red feather weed (*Heterosiphonia plumosa*), flat tentacle weed (*Calliblepharis ciliata*) and the underlying pink paint seaweed (Corallinaceae indet.). Sea squirts were the most conspicuous animal group at this site with the dominant species being the blue-mouthed red sea squirt (*Polycarpa scuba*), the orange spot club sea squirt (*Aplidium punctum*) and the large colonial sandy sea squirt (*Polyclinum aurantium*). A large variety of sponges and other attached animal species were present in low abundances.

Observations / Features of Interest

This was an especially species rich site.

3.1.2 Site 9/95: 300m E of Trewent Point (51.63924°N, 4.85583°W)

Surveyed 23/04/1995 by Paul Kay and Lucy Gilkes

Physical Environment

This site was studied between 4.3m and 8.3m below chart datum. Some areas of the seabed were formed by very low lying and scoured silted sandstone bedrock with mobile patches of sandy gravel and pebbles between. Elsewhere larger bedrock outcrops were present characterized by horizontal strata forming fissures.

This site is exposed to wave action and moderately strong tidal streams.

Habitat / Community Types

Three habitat / community type were described:

1. The low lying silted and scoured bedrock had 100% cover of the edible mussel (*Mytilus edulis*). In amongst the mussels were a variety of other species including a sparse cover of red seaweeds, dead man's fingers (*Alcyonium digitatum*), the trumpet anemone (*Aiptasia mutabilis*), horn wrack (*Flustra foliacea*) the sea cucumber (*Aslia lefevrei*) and the common starfish (*Asterias rubens*).
2. The gravely sand and pebbles had a sparse fauna including the toothpaste tubeworm (*Pomatoceros triqueter*), a few sand mason worms (*Lanice conchilega*) and the dahlia anemone (*Urticina felina*).
3. The larger bedrock outcrops with horizontal fissures were home to a variety of attached animals including the blue-mouthed red sea squirts (*Polycarpa scuba*), the orange dome seamat (*Cellepora pumicosa*) and the ross coral (*Pentapora foliacea*).

Observations / Features of Interest

This site had an interesting mix of habitat / community types and species including the trumpet anemone (*Aiptasia mutabilis*) and the ross coral (*Pentapora foliacea*).

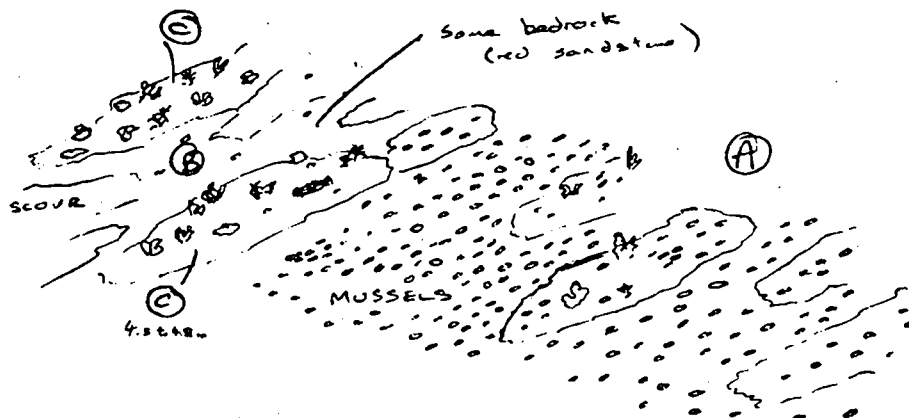


Figure 2 Sketch to show the habitats encountered at Site 9/95 (by Paul Kay and Lucy Gilkes).

3.1.3 Site 10/95: 500m SE of Trewent Point (51.63749°N, 4.85230°W)

Surveyed 23/04/1995 by Jon Moore and Paul Brazier

Physical Environment

This site was studied between 3.8m and 7.2m below chart datum. Rocky reefs of Old Red Sandstone formed the seabed.

This site is exposed to wave action and strong tidal streams.

Habitat / Community Types

Two habitat / community types were described:

1. Between 2.8m and 5.8m below chart datum the bedrock was covered in sparse plants of the northern kelp (*Laminaria hyperborea*) with an underlying cover of the edible mussel (*Mytilus edulis*).
2. From 5.8m to 7.2m below chart datum the rocky reefs bore a high diversity of sponges, hydroids and bryozoan crusts. Conspicuous species included the breadcrumb sponge (*Halichondria panicea*), the white spiky sponge (*Dysidea fragilis*) and the honeycomb sponge (*Hemimycale columella*), the straight antenna sea fir (*Nemertesia antennina*), dead man's fingers (*Alcyonium digitatum*), and the trumpet anemone (*Aiptasia mutabilis*). The brain sponge (*Axinella damicornis*) was also recorded in this habitat.

Observations / Features of Interest

Habitat two of this site was particularly rich and species included the brain sponge (*Axinella damicornis*) and the trumpet anemone (*Aiptasia mutabilis*).

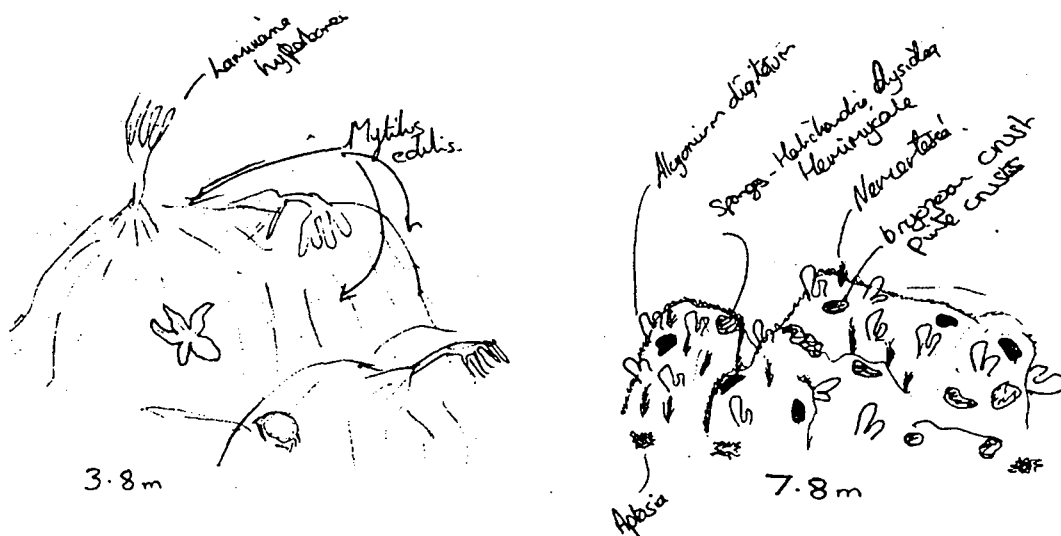


Figure 3 Sketch to show the habitats encountered at Site 10/95 (by Jon Moore and Paul Brazier).

3.1.4 Site 3/95: 900m S of Trewent Point (51.63005°N, 4.85866°W)

Surveyed 22/04/1995 by Rohan Holt and Dale Rostron

Physical Environment

This site was studied between 12.7m to 14.2m below chart datum. The seabed was formed by silted, sandstone bedrock ridges and large angular boulders outcropping from a mixture of gravel, pebbles and cobbles.

This site is exposed to both wave action and tidal streams.

Habitat / Community Types

Two habitat / community types were described:

1. The silty bedrock and boulders was dominated by the horn wrack (*Flustra foliacea*) and dead man's fingers (*Alcyonium digitatum*). A large variety of other species were also recorded.
2. The gravel, cobbles and pebbles were characterised by sparse brittle stars and the sea squirt (*Molgula manhattensis*). Both the common brittle star (*Ophiothrix fragilis*) and the black brittle star (*Ophiocomina nigra*) were present.

Observations / Features of Interest

This site was rich in species with over 50 being recorded.

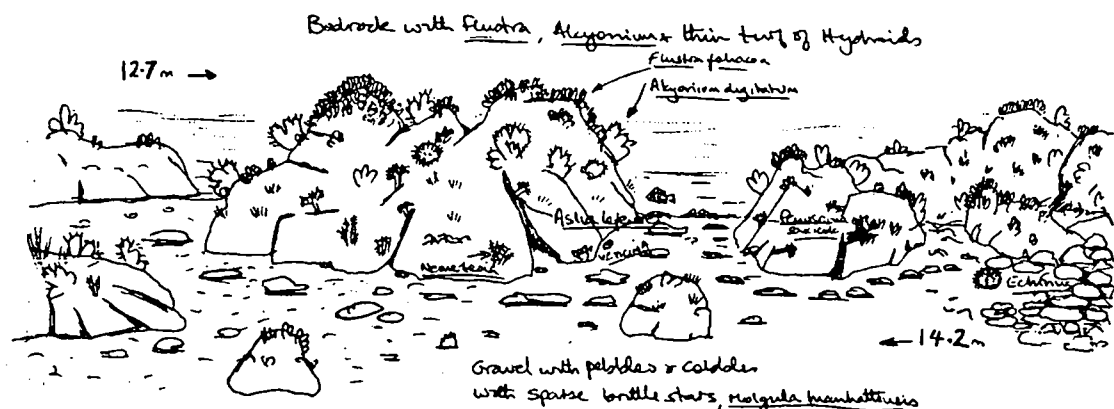


Figure 4 Sketch to show the habitats encountered at Site 3/95 (by Rohan Holt and Dale Rostron).

3.1.5 Site 2/95: 300m S of Trewent Point (51.63456°N, 4.86101°W)

Surveyed 22/04/1995 by James Perrins

Physical Environment

The depth of this site was 7.4m below chart datum. Heavily silted, broken sandstone bedrock ridges outcropped from a seabed of pebbles and sand.

This site is exposed to both wave action and tidal streams.

Habitat / Community Types

One habitat / community type was described:

1. The silty bedrock was dominated by red seaweeds, sea squirts, sponges and scattered dead mans' fingers (*Alcyonium digitatum*). Sponges included the yellow-green breadcrumb sponge (*Halichondria panicea*), the golf ball sponge (*Tethya aurantium*), the orange wisp sponge (*Esperiopsis fucorum*) and some unidentified branched sponges were present. Also recorded was the ross coral (*Pentapora foliacea*).

Observations / Features of Interest

The presence of the ross coral (*Pentapora foliacea*) was of interest at this site.

3.1.6 Site 1/95: 500m SW of Trewent Point (51.63322°N, 4.86674°W)

Surveyed 22/04/1995 by Peter Taylor

Physical Environment

The depth of this site was between 10.2m and 12.2m below chart datum. The seabed varied along the dive route with bedrock overlain with gravel and pebbles in the shallower depths giving way to pebbles with sand patches then finally bedrock and boulders in deeper water.

This site is exposed to wave action and a moderate tidal flow.

Habitat / Community Types

Three habitat / community types were described:

1. The bedrock overlain with gravel and pebbles was rather scoured. Conspicuous species included dead man's fingers (*Alcyonium digitatum*), horn wrack (*Flustra foliacea*), the golf ball sponge (*Tethya aurantium*) and the feather star (*Antedon bifida*). The plumose anemone (*Metridium senile*) was conspicuous on boulders.
2. The only species recorded from the pebbles with sand patches were (*Urticina felina*), the sponge (*Suberites* sp.) and the dogfish (*Scyliorhinus canicula*).
3. The bedrock and boulders habitat was less scoured than habitat 1 and a bryozoan turf, brittle stars, the ross coral (*Pentapora foliacea*) and sea cucumbers were recorded.

Observations / Features of Interest

The presence of the ross coral (*Pentapora foliacea*) was of interest at this site.

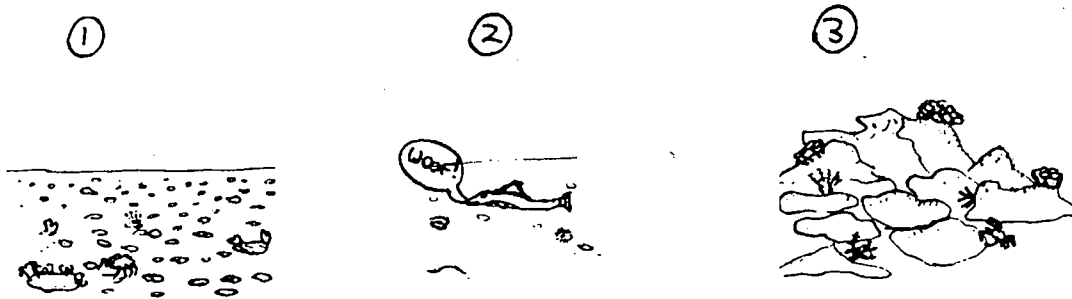
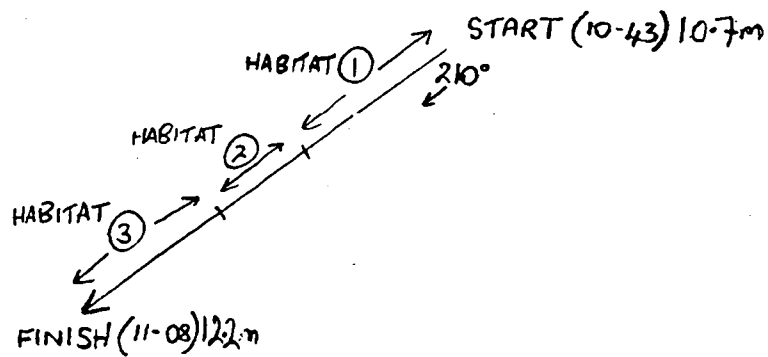


Figure 5 Sketch to show the habitats encountered at Site 1/95 (by Peter Taylor).

3.1.7 Site 12/95: 500m East of Greenala Point (51.63207°N, 4.87115°W)

Surveyed 29/06/1995 by Francis Bunker, Kate Lock, John Woolford & James Perrins

Physical Environment

The seabed was composed of sandstone bedrock outcrops at 10.6m below chart datum.

This site is exposed to wave action and moderate tidal streams.

Habitat / Community Types

One habitat / community type was described:

1. The main habitat was silty bedrock at 10.6m below chart datum with sparse foliose red algae and abundant patches of the dwarf brown sea cucumber (*Ocnus planci*) over a wide area.

Observations / Features of Interest

The occurrence of dense aggregations of the dwarf brown sea cucumber (*Ocnus planci*) has been rarely recorded in Britain (Bill Sanderson pers. comm.).

3.1.8 Site 7/95: 300m E of Greenala Point (51.63198°N, 4.87312°W)

Surveyed 23/04/1995 by James Perrins and Amanda Holloway

Physical Environment

This site was studied between 9.0m to 10.0m below chart datum. Outcrops of sandstone bedrock between 0.5m and 1.0m high, outcropped from a seabed of clean shell gravel and cobbles.

This site is exposed to both wave action and tidal streams.

Habitat / Community Types

Two habitat / community types were described:

1. The rocks were mainly animal dominated but a sparse cover of foliose red algae was present. Animals included a variety of sponges, sea squirts and bryozoans. Conspicuous species included the branched holey sponge (*Haliclona oculata*), the golf ball sponge (*Tethya aurantium*), the honeycomb sponge (*Hemimycale columella*), the orange wisp sponge (*Esperiopsis fucorum*) and the velvet dome sponge (*Suberites carnosus*). Occasional ross corals (*Pentapora foliacea*) were present.
2. The clean shell gravel had occasional scallops (*Pecten maximum*).

Observations / Features of Interest

Of note was the presence of the ross coral (*Pentapora foliacea*) at this site.

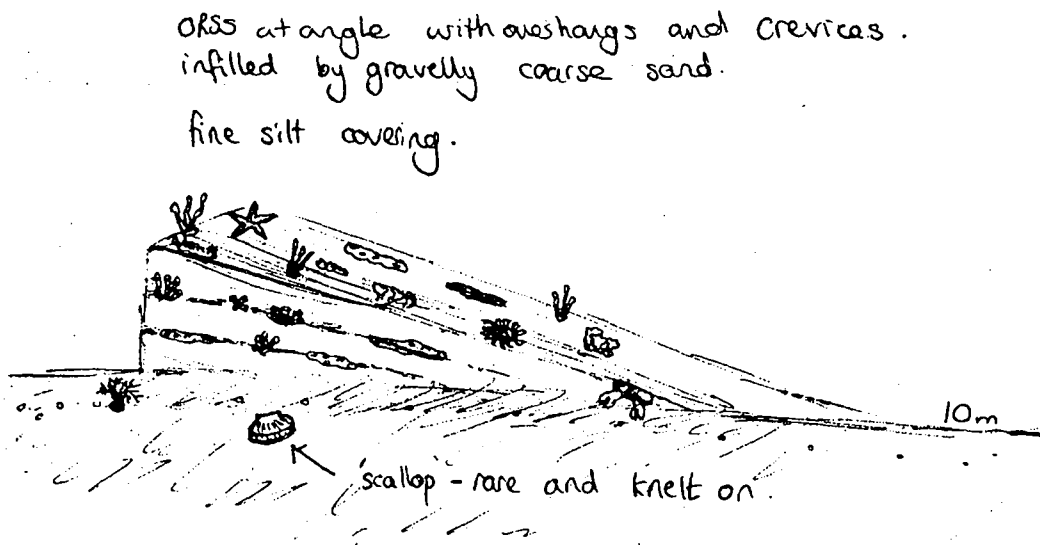


Figure 6 Sketch to show the habitats encountered at Site 7/95 (by James Perrins and Amanda Holloway).

3.1.9 Site 6/95: 100m E of Greenala Point (51.63195°N, 4.87618°W)

Surveyed 23/04/1995 by Dale Rostron and Rohan Holt

Physical Environment

This site was studied between 7.3m to 8.2m below chart datum. The seabed was characterized by low lying sandstone bedrock ridges with horizontal strata. The sides of the ridges were often vertical or overhanging and the bedrock outcropped from sand waves about 0.5m high.

This site is exposed to both wave action and tidal streams.

Habitat / Community Types

Only one habitat / community type was described:

1. The upper surfaces of the bedrock had a sparse covering of small foliose red algae mixed in with a turf of animal species. The blue-mouthed red sea squirt (*Polycarpa scuba*) was especially dense on the vertical sides of the rock outcrops. There was a rich variety of attached animal species including the trumpet anemone (*Aiptasia mutabilis*).

Observations / Features of Interest

A rich variety of species were recorded at this site including the trumpet anemone (*Aiptasia mutabilis*).

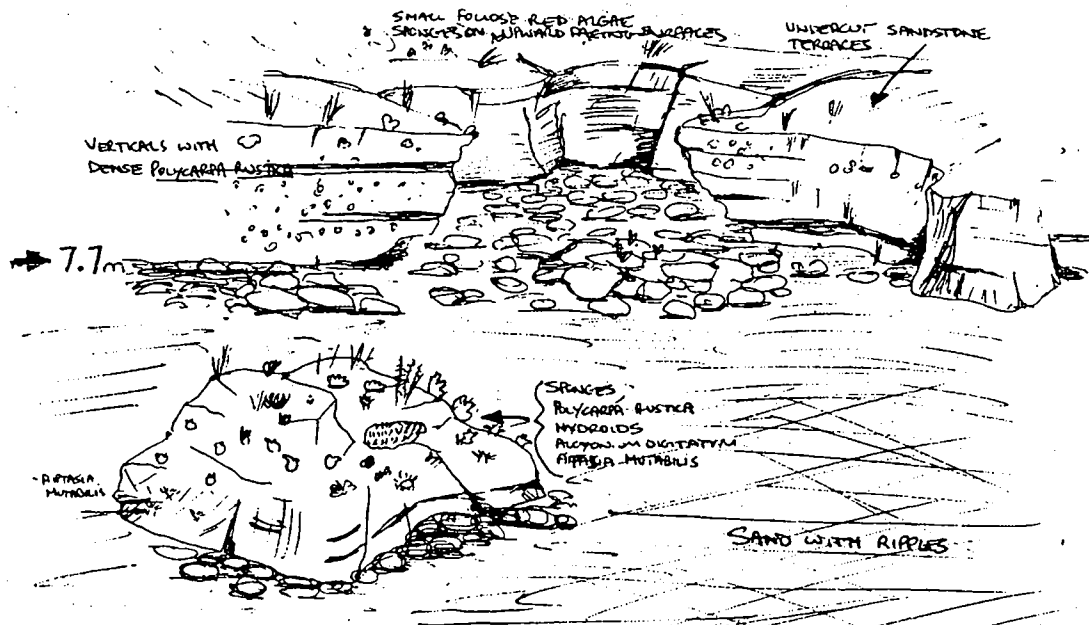


Figure 7 Sketch to show the habitats encountered at Site 6/95 (by Rohan Holt and Dale Rostron).

**3.1.10 Site 4/95: 400m S of Greenala Point (51.62735°N,
4.87649°W)**

Surveyed 22/04/1995 by Lucy Gilkes and Paul Kay

Physical Environment

This site was studied between 11.3m to 12.0m below chart datum. Low lying broken bedrock ridges outcropped from a mixed substratum of cobbles, pebbles, empty oyster shells and sand. In the deeper areas, the bedrock was less broken forming a continuous ridge

This site is exposed to both wave action and tidal streams.

Habitat / Community Types

Two habitat / community types were described:

1. The bedrock had a low lying animal turf dominated by the red gooseberry sea squirt (*Dendrodoa grossularia*) and the blue-mouthed red sea squirt (*Polycarpa scuba*). Other species included the sea anemone (*Sagartia* sp.). Other conspicuous species recorded included the golf ball sponge (*Tethya aurantium*), dead man's fingers (*Alcyonium digitatum*),
2. On the mixed substrata, toothpaste worms (*Pomatoceros* sp) encrusted cobbles and larger pebbles. Brittle stars, jelly fingers (*Alcyonidium diaphanum*), the sand mason worm (*Lanice conchilega*), the dahlia anemone (*Urticina felina*) and the shell gravel sea cucumber (*Neopentadactyla mixta*) were also present.

Observations / Features of Interest

No particular features of interest were recorded at this site.

**3.1.11 Site 5/95: 300m S of Greenala Point (51.62801°N,
4.87914°W)**

Surveyed 22/04/1995 by Paul Brazier and Jon Moore

Physical Environment

This site was studied between 7.7m to 10.7m below chart datum. Low lying broken bedrock ridges outcropped from waves of sand and gravel.

This site is exposed to both wave action and tidal streams.

Habitat / Community Types

Two habitat / community types were described:

1. The bedrock bore a rich variety of species. Particularly abundant was the blue-mouthed red sea squirt (*Polycarpa scuba*) and the red gooseberry sea squirt (*Dendrodoa grossularia*). Other common species included the straight antenna sea fir (*Nemertesia antennina*), the toothpaste tubeworm (*Pomatoceros* spp), the orange dome sea mat (*Cellepora pumicosa*), the matchstick sea mat (*Cellepora pumicosa*), horn wrack (*Flustra foliacea*) and the sponge (*Myxilla* sp.).

- Recorded on the gravel were the brittle star (*Ophiura* sp.), the shell gravel sea cucumber (*Neopentadactyla mixta*), the sand mason worm (*Lanice conchilega*), the parchment worm (*Chaetopterus variopedatus*) and sand gobies (Gobiidae indet.) were recorded.

Observations / Features of Interest

A rich variety of species were recorded at this site.

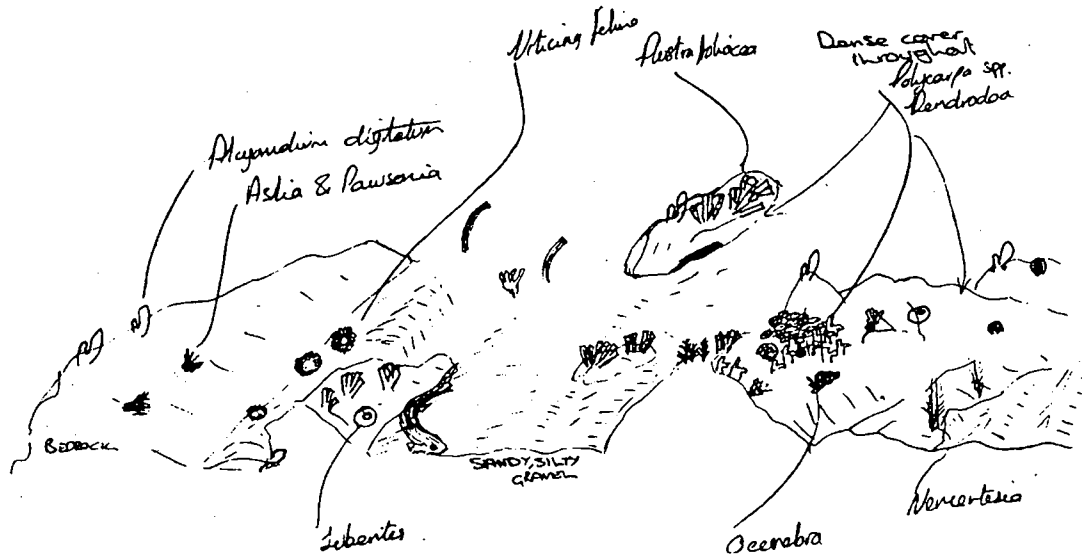


Figure 8 Sketch to show the habitats encountered at Site 5/95 (by Paul Brazier and Jon Moore).

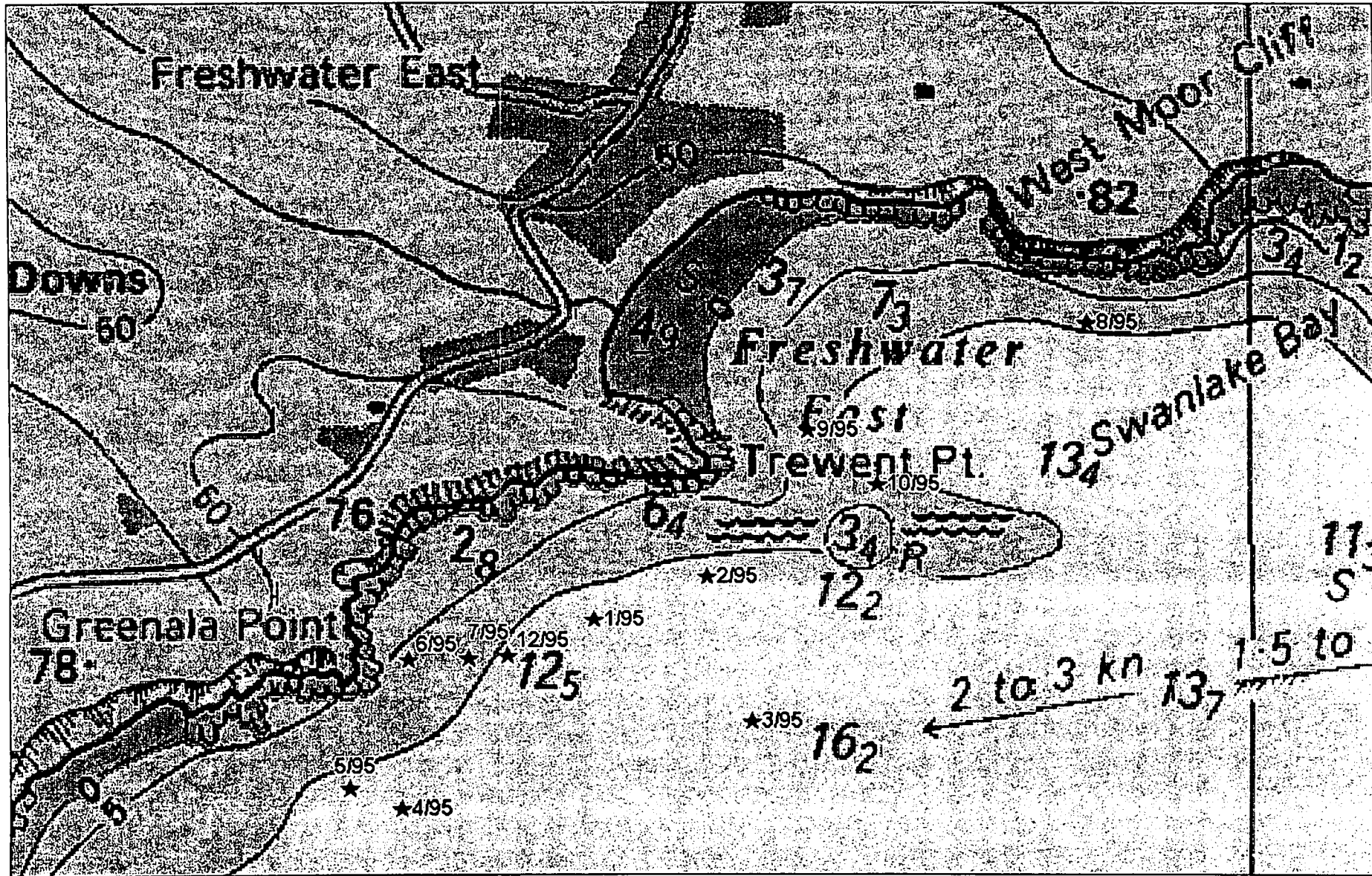


Figure 9 Chart to show the location of dives between West Moor Point and Stackpole Quay. Reproduced from Admiralty chart 1076 by permission of the Controller of Her Majesty's Stationary Office and the UK Hydrographic Office. Not to be used for navigation.

3.2 Site Information Stackpole Quay to Broadhaven

3.2.1 Site 12/98: Stackpole Quay South (51.62242°N, 4.89725°W)

Surveyed 03/09/98 by Francis Bunker and Sue Gilbert

Physical Environment

This site was studied between 0m and 2.8m below chart datum. The seabed was formed by limestone bedrock sloping steeply down from the shore to broken bedrock and boulders and eventually to a plain of fine silty sand at 2.8m below chart datum.

This site is semi-exposed to wave action and sheltered from tidal streams.

Habitat / Community Types

Two habitat / community types were described:

1. Between 0m and 2.0m below chart datum the bedrock was covered in a forest of the northern kelp (*Laminaria hyperborea*) with dense foliose red algae.
2. From 2.0m to 2.8m below chart datum boulders and cobbles affected by fine silty sand were dominated by foliose red algae. The most common species were the flat tentacle weed (*Calliblepharis ciliata*), red feather weed (*Heterosiphonia plumosa*) and the brown bottlebrush weed (*Cladostephus spongiosus*). Also recorded were a bushy form of the thin red bottlebrush weed (*Sphondylothamnion multifidum*), the bushy brown feathers (*Halopteris scoparia*), the red ghost weed (*Aglaothamnion byssoides*) and the smelly siphon weed (*Polysiphonia foetidissima*).

Observations / Features of Interest

The occurrence of the smelly siphon weed (*Polysiphonia foetidissima*) in Habitat 2 is significant. This is the first time this species has been recorded in the British Isles since 1855 (Maggs, C.A. & Hommersand, M.H. (1993).

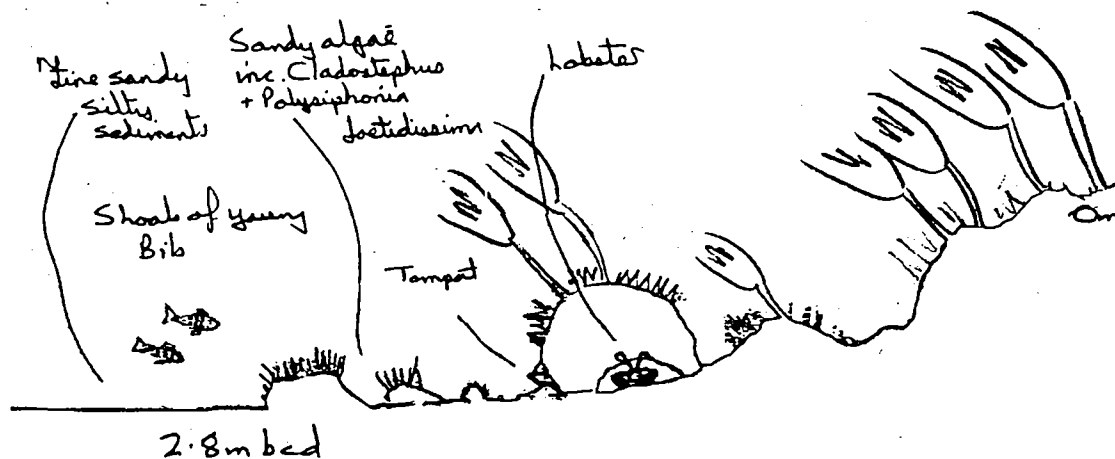


Figure 10 Sketch to show the habitats encountered at Site 12/98 (by Francis Bunker and Sue Gilbert).

3.2.2 Site 1/93: Stackpole Quay Head Sediments (51. 621752°N, 4.895001°W).

Surveyed 22/07/1993 by Francis Bunker and Lisa Brunwin

Physical Environment

This site was studied at 7.4m below chart datum. The seabed was a plain of fine silty sand with scattered pebbles.

This site is semi-exposed to wave action and moderate tidal streams.

Habitat / Community Types

One habitat / community type was described:

1. The fine silty sand with a diatom film was characterised by a fauna of burrowing anemones and animals attached to pebbles. Conspicuous species included the sand mason worm (*Lanice conchilega*), and the transparent tentacled anemone (*Sagartiogeton undatus*) and cave dwelling anemone (*Sagartia troglodytes*). Also present were the ghost hydroid (*Corymorpha nutans*) and the rarely recorded night anemone (*Halcampoides elongatus*). Mobile species included the pink swimming crab (*Liocarcinus depurator*), the dragonet (*Callionymus lyra*) and the grey gurnard (*Eutrigla gurnardus*).

Observations / Features of Interest

The presence of the rarely recorded night anemone (*Halcampoides elongatus*) was of special interest at this site.

3.2.3 Site 11/95: Stackpole Quay Head (51.62169°N, 4.89638°W)

Surveyed 15/06/95 by Francis Bunker and John Woolford

Physical Environment

This site was studied between 4.0m and 6.0m below chart datum. Limestone bedrock ridges sloping down from the shore to broken bedrock and boulders and eventually to a plain of fine silty sand at 6.0m below chart datum formed the seabed. Between ridges were cobble and silty sediment filled gullies.

This site is semi-exposed to wave action and moderate tidal streams.

Habitat / Community Types

Three habitat / community types were described:

1. A park of the northern kelp (*Laminaria hyperborea*) with dense foliose red algae on upward facing surfaces occurred between 4.0m and 6.0m below chart datum.
2. Steeply sloping or vertical sides to the limestone bedrock ridges between 4.0m and 6.0m below chart datum characterised by dead man's fingers (*Alcyonium digitatum*), the straight antenna sea fir (*Nemertesia antennina*), the trumpet anemone (*Aiptasia mutabilis*), the blue-mouthed red sea squirt (*Polycarpa scuba*) and the red-nosed piddock (*Hiatella arctica*). Other species included the golf ball sponge (*Tethya aurantium*), the branched holey sponge

(*Haliclona oculata*), the matchstick sea mat (*Cellaria spp*), the orange-dome sea mat (*Cellepora pumicosa*), and the white Christmas tree sea mat (*Bugula plumosa*).

- Between 4.0m and 6.0m below chart datum, the bedrock formed overhangs that often bore colonies of the elephants hide sponge (*Pachymatisma johnstonia*) and the velvet swimming crab (*Necora puber*).

Observations / Features of Interest

The general richness of species at this site and the sometimes-dense aggregations of the trumpet anemone (*Aiptasia mutabilis*) make this site of special interest.

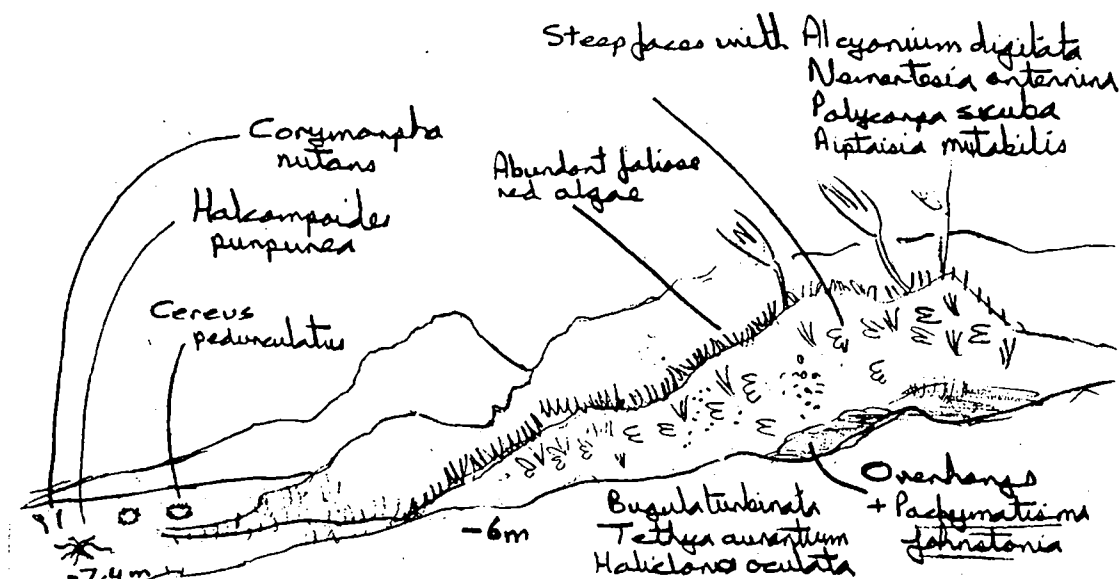


Figure 11 Sketch to show the habitats encountered at Site 1/93 (by Francis Bunker and John Woolford).

3.2.4 Site 11/98 Barafundle Arch East Side (51.61569°N, 4.89889°W)

Surveyed 09/05/98 by Sue Gilbert and Colin Garlic.

Physical Environment

This site was surveyed at 1.1m below chart datum. The seabed was composed of flat sloping bedrock and boulders. Deep cracks and caves were noted by the cliff at this site but were not surveyed.

This site is semi-exposed to wave action and exposed to tidal streams.

Habitat / Community Types

Two habitat / community types were described:

- Rock surfaces dominated by the northern kelp (*Laminaria hyperborea*) with a red algal under storey. The trumpet anemone (*Aiptasia mutabilis*) was recorded here.

- Overhangs between boulders and rock ridges characterised by dead man's fingers (*Alcyonium digitatum*), the golf ball sponge (*Tethya aurantium*), the elephants hide sponge (*Pachymatisma johnstonia*), the black cave sponge (*Dercitus bucklandi*) and the blue-mouthed red sea squirt (*Polycarpa scuba*).

Observations / Features of Interest

The deep cracks and caves noted by the cliff at this site warrant further investigation.

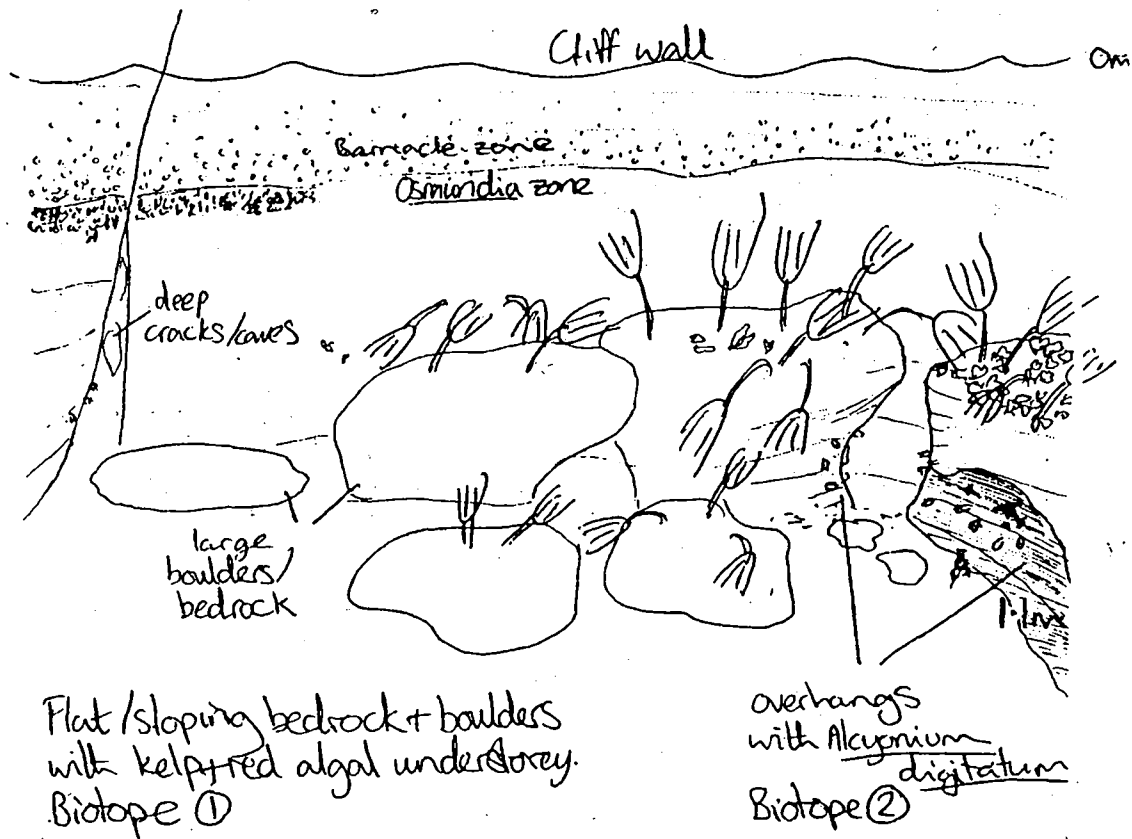


Figure 12 Sketch to show the habitats encountered at Site 11/98 (by Sue Gilbert and Colin Garlic).

3.2.5 Site 8/98 Barafundle Arch South Side (51.61525°N, 4.89914°W)

Surveyed 09/05/98 by Ron Hinks & Dale Rostron

Physical Environment

The depth of this site was close to the shoreline and between 3.5 and 6.0m below chart datum. The seabed was composed of limestone rock ridges up to 3.0 m high, between which were gullies filled with silty sand and pebbles.

This site is semi-exposed to wave action and sheltered from tidal streams.

Habitat / Community Types

Only one habitat / community types was described:

1. Kelp forest and foliose algae on the upper surfaces dominated bedrock ridges. Prominent seaweed species included the red feather weed (*Heterosiphonia plumosa*), dog dulse (*Dilsea carnosa*) and flat tentacle weed (*Calliblepharis ciliata*). Animals recorded included the boring sponge (*Cliona celata*), snake locks anemones (*Anemonia viridis*), dahlia anemones (*Urticina felina*), dead man's fingers (*Alcyonium digitatum*) and unidentified sea squirts. Mobile animals included the lobster (*Homarus gammarus*), spider crab (*Maia squinado*), ballan wrasse (*Labrus bergylta*), great pipefish (*Syngnathus acus*) and the dragonet (*Callionymus lyra*).

Observations / Features of Interest

No particular habitats or species of interest were recorded at this site.

3.2.6 Site 7/98 South of Barafundle Arch (51.61443°N, 4.89936°W)

Surveyed 09/05/98 by Colin Deller & Michelle Leslie

Physical Environment

The depth of this site was between 3.9m to 1.9m above chart datum. A seabed of boulders and pebbles sloped away from the limestone cliff grading to one of large boulders on bedrock, which formed overhangs and shallow caves.

This site is semi-exposed to wave action and sheltered from tidal streams.

Habitat / Community Types

Two habitat / community types were described:

1. The dive began on pebbles and boulders in the middle of the shore. The pebbles were scoured and bare, but the boulders bore brown wrack seaweeds (*Fucus* spp.), acorn barnacles, dogwhelks (*Nucella lapillus*) and green seaweed.
2. The second habitat was in the lower shore. Here the upper surfaces of the boulders were scoured with little conspicuous life except green seaweeds. The overhangs and small caves were more interesting with encrusting orange sponge (Porifera indet.) and the white candy striped anemone (*Actinothoe sphyrodeta*).

Observations / Features of Interest

No species or habitats of interest were recorded at this site.

3.2.7 Site 4/98 East of Stackpole Head (51.61385°N, 4.89671°E)

Surveyed 09/05/98 by Olive Fiddler and Dorothy Whitcomb

Physical Environment

The depth of this site was between 9.8m and 10.4m below chart datum. The seabed encountered here was described as sandy with pebbles and rocks.

This site is semi-exposed to wave action and subject to strong tidal streams.

Habitat / Community Types

One habitat / community type was described:

1. Numerous hermit crabs were recorded from the sand but most species occurred on pebbles and rock. Conspicuous species on pebbles and rock included the breadcrumb sponge (*Halichondria* sp.), the sea fir (*Sertularia* sp.), dahlia anemones (*Urticina felina*), barnacles and toothpaste tube-worms (*Pomatoceros* sp.).

Observations / Features of Interest

No particular habitats or species of interest were recorded at this site.

3.2.8 Site 10/98 Stackpole Head North Side (51.61331°N, 4.89752°W)

Surveyed 09/05/98 by James Perrins and Adrian from Brecon.

Physical Environment

This site was surveyed from 3.9m above chart datum to 5.1m below chart datum. Below the shore, caves extended back into the limestone cliff face. Some of these were described as extensive going over 10m into the cliff. Either side of these were boulder slopes descending steeply to a sandy plain.

This site is semi-exposed to wave action and exposed to tidal streams.

Habitat / Community Types

Two habitat / community types were described:

- 1 Limestone caves with rather barren walls for the most part. Dominant species included barnacles, white rock worm (*Phoronis hippocrepia*) and a sparse sponge cover.
- 2 A steep slope of limestone boulders covered in the northern kelp (*Laminaria hyperborea*) and a variety of red foliose algae.

Observations / Features of Interest

The caves are a habitat of special interest and warrant further investigation.

3.2.9 Site 9/98 Stackpole Head East Side (51.61250°N, 4.89509°W)

Surveyed 09/05/98 by Kate Lock & Simon Hagan

Physical Environment

The depth of this site was close to the shoreline and between 3.4 and 5.6m below chart datum. Boulders of different sizes extended down a slope to a sandy plain at 5.6m

This site is semi-exposed to wave action and exposed to tidal streams.

Habitat / Community Types

Two habitat / community types were described:

- 1 A forest of the northern kelp (*Laminaria hyperborea*) and foliose algae dominated the upper surfaces of the boulders. Conspicuous seaweeds included the saw wrack (*Fucus serratus*), the flat tentacle weed (*Calliblepharis ciliata*) and the rock surface had a coating of the pink paint weed (*Corallinaceae* indet.). The most conspicuous animal was the spider crab (*Maia squinado*).
- 2 Sand tolerant red algae were found growing through the sand at the base of the rock slope together with the dahlia anemone (*Urticina felina*).

Observations / Features of Interest

No particular habitats or species of interest were recorded at this site.

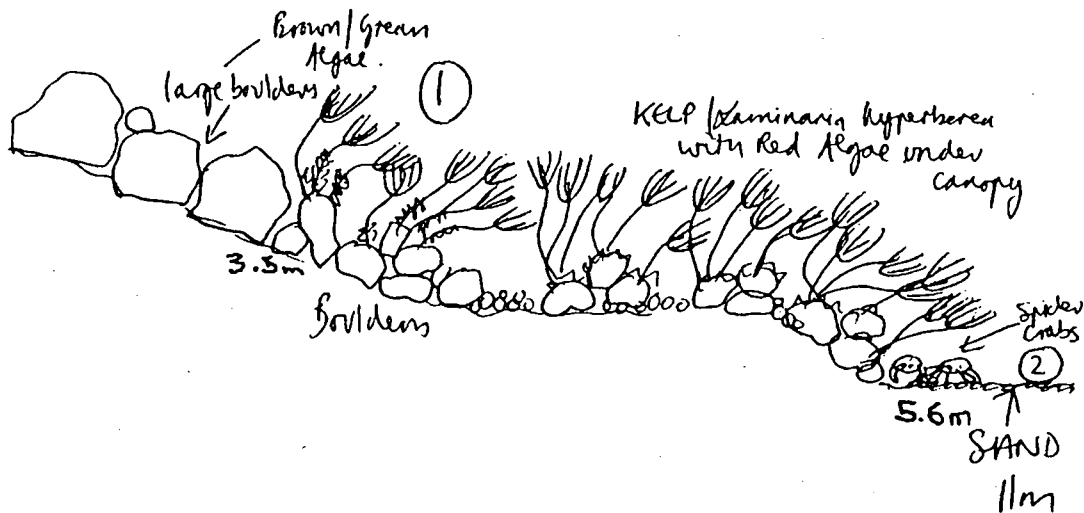


Figure 13 Sketch to show the habitats encountered at Site 9/98 (by Kate Lock and Simon Hagan).

3.2.10 Site 3/94. E of Stackpole Head 3 (51.61243°N, 4.89441°W)

Surveyed 30/04/94 by Amanda Holloway and Jon Moore

Physical Environment

The study depth of this site was not recorded but was probably between 0m and about 7m below. A gravel slope with sand patches and occasional boulders descended to a gravel plain.

This site is semi exposed to wave action and strong tidal streams.

Habitat / Community Types

One habitat / community type was described:

1. The boulders on the gravel slope had the most species including the boring sponge (*Cliona celata*), the plumose anemone (*Metridium senile*), jewel anemones (*Corynactis viridis*) and sea squirts. Conspicuous species also

included the spider crab (*Maia squinado*) and the velvet swimming crab (*Liocarcinus puber*).

Observations / Features of Interest

No special features of interest were recorded at this site.

3.2.11 Site 2/94. E of Stackpole Head 2 (51.61230°N, 4.89344°W)

Surveyed 30/04/94 by Francis Bunker and James Perrins

Physical Environment

This site was studied between 1.5m and 6.6m below chart datum. A gravel slope with occasional boulders sloped off shore to a large limestone outcrop with a small cave.

This site is semi exposed to wave action and strong tidal streams.

Habitat / Community Types

Three habitat / community types were described:

1. At 1.5m below chart datum a bed of the edible mussel (*Mytilus edulis*) consolidated much of the gravel seabed and boulder outcrops. The boulders had mussels too, but also dense patches of the blue-mouthed red sea squirt (*Polycarpa scuba*) and two sea firs, the spiralled sea fir (*Hydrallmania falcata*) and short white weed (*Sertularia argentea*). The dahlia anemone (*Urticina felina*) was conspicuous in the gravel patches.
2. Between 1.5m and 6.5m the seabed was gravel covered in the edible mussel (*Mytilus edulis*) and little else. Patches of barren gravel were also present.
3. At the base of the slope at 6.5m below chart datum were limestone bedrock outcrops, which rose to 2.5m. The bedrock was characterised by dead man's fingers (*Alcyonium digitatum*) and sponges including the boring sponge (*Cliona celata*) the orange wisp sponge (*Esperiopsis fucorum*) and the breadcrumb sponge (*Halichondria panicea*). Much of the rock surface had dense covering of white moss sea mats (*Crisiidae* indet.), a delicate sea fir (*Diphasia* sp.) and an unidentified colonial sea squirt. A small cave was recorded at the base of a limestone outcrop.

Observations / Features of Interest

The variety of tide swept habitats encountered was interesting. Both the tide swept mussel dominated communities and the cave are characteristic features of this area.

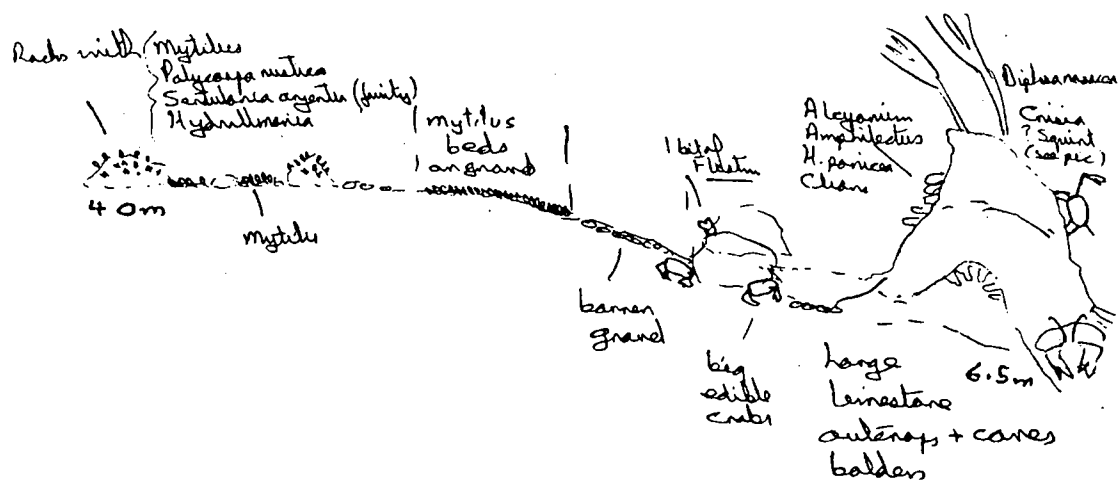


Figure 14 Sketch to show the habitats encountered at Site 2/94 (by Francis Bunker and James Perrins).

3.2.12 Site 1/94: E of Stackpole Head 1 (51.60912°N, 4.89407°W)

Surveyed 30/04/94 by Rohan Holt and Leona Shepherd

Physical Environment

This site was studied between 0m and 4.0m below chart datum. Limestone bedrock reefs sloping gently down to a plain of coarse gravelly sand and pebbles formed the seabed.

This site is semi exposed to wave action and strong tidal streams.

Habitat / Community Types

Three habitat / community types were described:

1. Between 0m and 1.0m below chart datum the bedrock was covered in sparse plants of the northern kelp (*Laminaria hyperborea*) with an underlying cover of the edible mussel (*Mytilus edulis*). Also conspicuous was the dahlia anemone (*Urticina felina*) and various sponges including the orange wisp sponge (*Esperiopsis fucorum*), the boring sponge (*Cliona celata*), large spider crabs (*Maia squinado*) and the velvet swimming crab (*Liocarcinus puber*).
2. Between 1.0m and 4m below chart datum were bedrock ridges with patches of pebbles and gravelly sand between. The community was similar to that described above but with no kelp. The diversity of animal species was greater with many small hydroids, sea anemones and nudibranchs.
3. The gravelly sand and pebbles had little conspicuous life except for a few hydroids.

Observations / Features of Interest

The tide swept mussel dominated communities are a characteristic feature of this area.

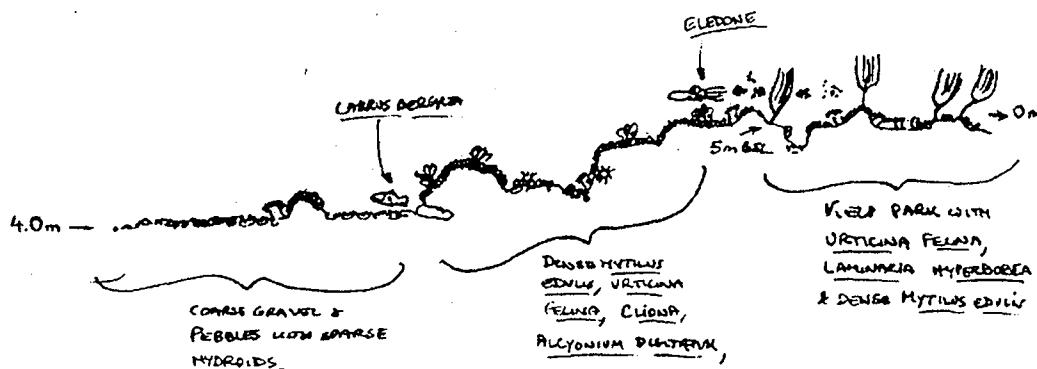


Figure 15 Sketch to show the habitats encountered at Site 1/94 (by Rohan Holt and Leona Shepard).

3.2.13 Site 6/94. E of Stackpole Head 4 (51.60947°N, 4.89230°W)

Surveyed 30/05/94 by Francis Bunker and James Perrins

Physical Environment

The study depth of this site was between 8.5m and 10.0m below chart datum. An extensive level seabed of limestone bedrock extended from the east side of Stackpole Head southwards. Occasional dips in the rock forming vertical faces and silty holes were encountered.

This site is exposed to wave action and tidal streams.

Habitat / Community Types

Two habitat / community types were described:

1. The main habitat was beds of the mussel (*Mytilus edulis*) with a characteristic assemblage of other species including the common starfish (*Asterias rubens*), many of which were spawning, sea firs including short white weed (*Sertularia argentea*), the oaten-pipes hydroid (*Tubularia indivisa*) and the thick-branched feather sea fir (*Halecium halecinum*). The feather star (*Antedon bifida*) occurred in some areas bare of mussels. Occasional patches of dead man's fingers (*Alcyonium digitatum*) were also recorded. Patches of dense blue-mouthed red sea squirt (*Polycarpa scuba*) together with large patches of the encrusting form of the boring sponge (*Cliona celata*) and the limestone fanworm (*Pseudopotamilla reniformis*) were also present.
2. Occasional vertical or overhanging faces of bedrock were dominated by sea squirts, the black cave sponge (*Dercitus bucklandi*), sea firs and the lobster (*Homarus gammarus*).

Observations / Features of Interest

This extensive flat area of tide swept limestone rock is an unusual habitat.

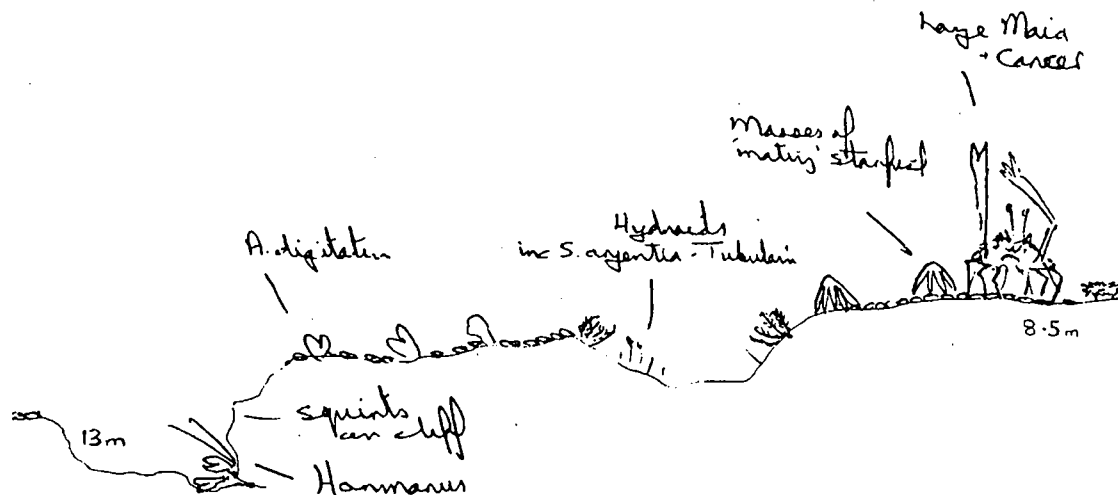


Figure 16 Sketch to show the habitats encountered at Site 6/94 (by Francis Bunker and James Perrins).

3.2.14 Site 1/98. Stackpole Head, E to W (51.60940°N, 4.89262004° W)

Surveyed 09/05/98 by Kate Lock and Simon Hagan

Physical Environment

The depth of the site was between 4.2m and 12.2m below chart datum. Here, the seabed was composed of limestone rock ridges of differing heights with cobbles and sand in the gullies between.

The site is exposed to wave action and strong tidal streams. Some effects of scour on rock communities from mobile sand were apparent.

Habitat / Community Types

Five habitat / community types were recorded along this drift dive:

1. Between 4.2m and 6.2m, bedrock was characterised by kelp, red seaweeds and attached animals. The northern kelp (*Laminaria hyperborea*) dominated the rock. Under this, red seaweeds included the red feather (*Heterosiphonia plumosa*) and flat tentacle weed (*Calliblepharis ciliata*) were common. Attached animals included, dead-man's fingers (*Alcyonium digitatum*), the dahlia anemone (*Urticina felina*) and the delicate anemone (*Sagartia elegans*). Sponges were also conspicuous with the white spiky sponge (*Dysidea fragilis*), breadcrumb sponge (*Halichondria* sp.), elephants hide sponge (*Pachymatisma johnstonia*), yellow hedgehog sponge (*Polymastia boletiformis*) and breadcrumb sponge (*Cliona celata*).
2. The common mussel (*Mytilus edulis*) dominated the rocky ridges seabed between 7.2m and 9.2m. Associated with this were the following species: the boring sponge (*Cliona celata*), the dahlia anemone (*Urticina felina*), the starfish (*Asterias rubens*), spider crab (*Maja squinado*) and the whelk (*Buccinum undatum*). Only a sparse cover of red seaweeds was present.

3. At 11.2m the mussels gave way to a bed of the common brittle star (*Ophiothrix fragilis*). The dahlia anemone (*Urticina felina*), dead-man's fingers (*Alcyonium digitatum*) and the starfish (*Asterias rubens*) were associated species.
4. By 12.2m the brittle star bed had given way to rock ridges covered with dead-man's fingers (*Alcyonium digitatum*), the horn wrack (*Flustra foliacea*) and the branched holey sponge (*Haliclona oculata*). The animal turf included a mixture of sea squirts, sponges, sea firs and sea mats.
5. Between 5.2m and 12.2m patches of cobbles mixed with sand occurred between rock ridges. Little conspicuous life was evident apart from the toothpaste tubeworm (*Pomatoceros* sp) and barnacles.

Observations / Features of Interest

An interesting variety of habitats and species occurred along the route of this dive, which extended out into the very tide-swept area to the east of Stackpole Head.

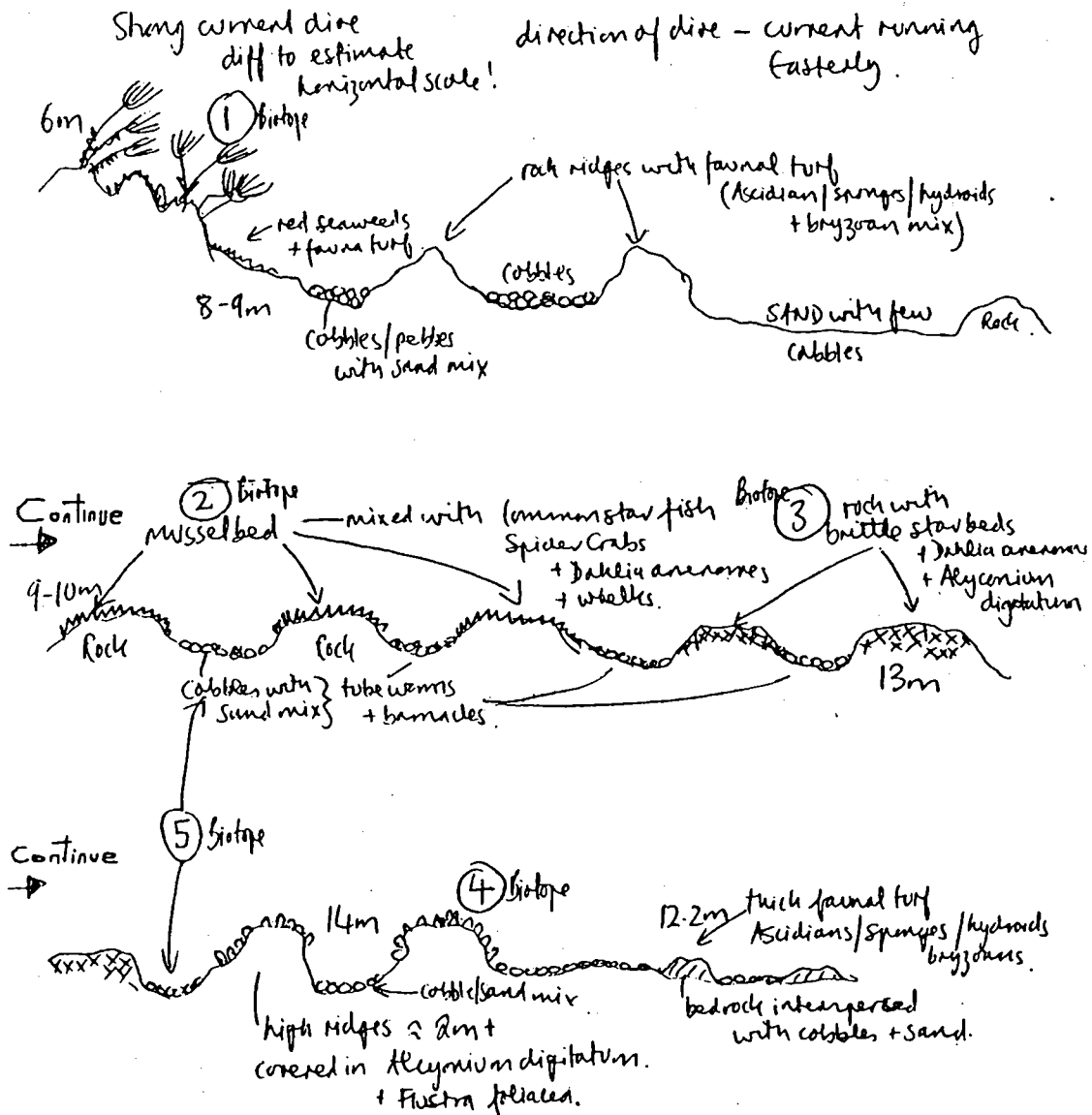


Figure 17 Sketch to show the habitats encountered at Site 1/98 (by Kate Lock and Simon Hagan).

3.2.15 Site 8/94. Stackpole Head (51.60945°N, 4.89532°W)

Surveyed 30/05/94 by Dale Rostron and Amanda Holloway

Physical Environment

The study depth of this site was between 2.3m and 3.9m below chart datum. Large and very sand scoured boulders inshore gave way to limestone bedrock ridges extending offshore between which were pebble and cobble filled gullies.

This site is exposed to wave action but sheltered from tidal streams inshore.

Habitat / Community Types

Three main habitat / community types were described:

1. Sand scoured boulders in shallow water dominated by the northern kelp (*Laminaria hyperborea*).

2. The northern kelp (*Laminaria hyperborea*) dominated the upper surfaces of the bedrock ridges away from the cliff and these also had a rich assemblage of other species. Foliose seaweed growth was well developed with species present including the reattaching glow weed (*Drachiella spectabilis*) and penny weed (*Zanardinia prototypus*).
3. Vertical and overhanging limestone gully sides dominated by the blue-mouthed red sea squirt (*Polycarpa scuba*), the elephants hide sponge (*Pachymatisma johnstonia*) and the white spiky sponge (*Dysidea fragilis*).

Observations / Features of Interest

The presence of penny weed (*Zanardinia prototypus*) at this site was of interest.

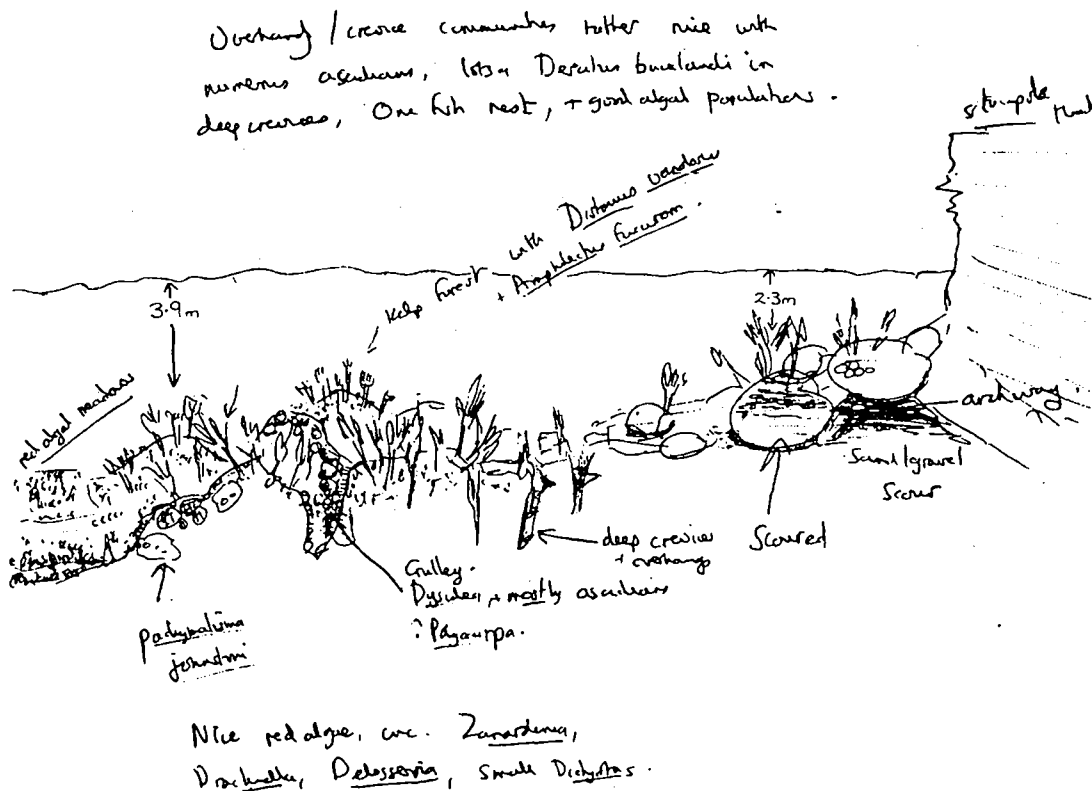


Figure 18 Sketch to show the habitats encountered at Site 8/94 (by Dale Rostron and Amanda Holloway).

3.2.16 Site 7/94. S of Stackpole Head (51.60823°N, 4.89505°W)

Surveyed 30/05/94 by Netty Little and Jon Moore

Physical Environment

The study depth of this site was between 8.0m and 10.0m below chart datum. Long, low-lying ridges of limestone bedrock were encountered at this site.

This site is exposed to wave action and tidal streams.

Habitat / Community Types

One habitat / community type was described:

1. The bedrock was dominated by the mussel (*Mytilus edulis*). Also present were a variety of sponges including the branched holey sponge (*Haliclona oculata*), the translucent breadcrumb sponge (*Halichondria bowerbanki*) and the boring sponge (*Cliona celata*). Sea fans present included the short white weed (*Sertularia argentea*), the encrusted feather sea fan (*Abietinaria abietina*), the spiralled sea fan (*Hydrallmania falcata*) and the oaten-pipes hydroid (*Tubularia indivisa*). The blue-mouthed red sea squirt (*Polycarpa scuba*) sometimes dominated areas of the seabed. Sea anemones recorded included the plumose anemone (*Metridium senile*) and the dahlia anemone (*Urticina felina*). Seaweeds recorded included the reattaching glow weed (*Drachiella spectabilis*).

Observations / Features of Interest

This extensive flat area of tide swept limestone rock is an unusual habitat.

3.2.17 Site 4/94. S of Stackpole Head (51.60912°N, 4.89747°W)

Surveyed 30/05/94 by Francis Bunker and James Perrins

Physical Environment

The study depth of this site was between 5m and 6m below chart datum. Very low-lying ridges of sand-covered limestone bedrock, with sandy gullies between, formed a regular pattern on the seabed at this site.

This site is exposed to wave action and sheltered from tidal streams.

Habitat / Community Types

One habitat / community type was described:

1. Sand tolerant foliose algae growing on the bedrock characterised this site. The dominant species included flat tentacle weed (*Calliblepharis ciliata*), spiralled sand weed (*Rhodomela confervoides*) and erect sand weed (*Cordylecladia erecta*). Animals included the boring sponge (*Cliona celata*), the pencil sponge (*Ciocalyptra penicillus*), the dahlia anemone (*Urticina felina*), the white rock worm (*Phoronis hippocrepeia*) and the limestone fan worm (*Pseudopotamilla reniformis*). The blue-mouthed red sea squirt (*Polycarpa scuba*) was abundant.

Observations / Features of Interest

The sand tolerant algae were a feature of interest at this site.

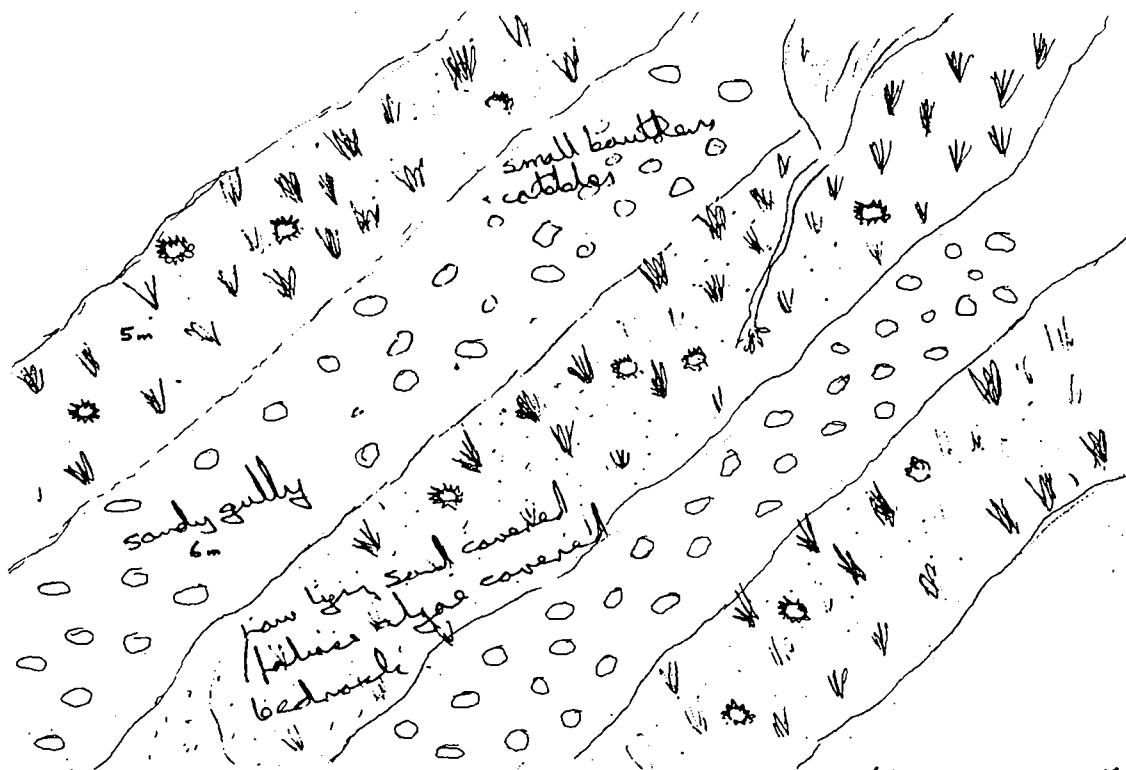


Figure 19 Sketch to show the habitats encountered at Site 4/94 (by Francis Bunker and James Perrins).

3.2.18 Site 5/94. W of Stackpole Head (51.60974°N, 4.89883°W)

Surveyed 30/05/94 by Annette Little and Jon Moore

Physical Environment

The study depth of this site was between 2.4m and 4.5m below chart datum. Limestone bedrock with 2m high vertical and overhanging sides, outcropped from a sandy seabed.

This site is exposed to wave action and sheltered from tidal streams.

Habitat / Community Types

Three habitat / community types were described:

1. Rippled sand with the heart urchin (*Echinocardium cordatum*) at 4.5m.
2. The 2m high vertical and overhanging faces on the limestone bedrock between 2.5m and 4.5m were characterised by the red nosed piddock (*Hiatella arctica*), dead man's fingers (*Alcyonium digitatum*), the blue-mouthed red sea squirt (*Polycarpa scuba*) and various other sea squirts. The black cave sponge (*Dercitus bucklandi*) together with several other sponges. A variety of foliose red seaweeds including the reattaching glow weed (*Drachiella spectabilis*).
3. Horizontal smooth scoured limestone bedrock at 2.5m below chart datum had a characteristic assemblage of seaweeds including the rare penny weed (*Zanardinia prototypus*) and the red lichen weed (*Radicilingua thysanorhizans*).

Observations / Features of Interest

The presence of penny weed (*Zanardinia prototypus*) at this site is of special interest. The vertical and overhanging bedrock was particularly species rich.

3.2.19 Site 2/98. East of Mowing Word (51.61007°N to 4.89983°W)

Surveyed 09/05/98 by Michele Leslie & Jon Moore

Physical Environment

The depth of the site was between 1.8m to 7.4m below chart datum. Here, a seabed of sand scoured bedrock extended offshore giving way to fine rippled sand.

The site is exposed to wave action but sheltered from strong tidal streams.

Habitat / Community Types

Two habitat / community types were described:

1. Between 0m and 2m, sand scoured rock was characterised by kelp plants and sand tolerant algae including the pink coral weed (*Corallina officinalis*), pink paint weed (encrusting Corallinaceae), gut weed (*Enteromorpha* sp.), bushy green weed (*Cladophora* sp.), filamentous brown seaweeds, round based red antler weed (*Polyides rotundus*) and unidentified many-siphoned weeds (*Polysiphonia* spp.).
2. From 2m to 7.4m a seabed of fine rippled sand extended offshore with characterising species including the common heart urchin (*Echinocardium cordatum*), the hermit crab (*Pagurus bernhardus*), unidentified small hermit crabs (*Paguridae* indet.), spiny spider crab (*Maia squinado*), sea toad (*Hyas araneus*), flat fish (*Pleuronectidae* indet.) and sand eels (*Ammodytes* indet.) Patches of pebbles also occurred on the sand.

Observations / Features of Interest

An interesting variety of habitats and species occurred along the route of this dive, which extended out into the very tide-swept area to the east of Stackpole Head.

3.2.20 Site 6/98 East of Sandy Pit (51.60940°N, 4.90926°E)

Surveyed 09/05/98 by Colin Garlic and Sue Gilbert

Physical Environment

The depth of this site was between 2.0m to 4.5m below chart datum. The seabed was formed of limestone bedrock ridges 1.5m high, filled with fine rippled sand. Sand and silt was conspicuous on the ridge tops.

This site is exposed to wave action and sheltered from tidal streams.

Habitat / Community Types

Three habitat / community types were described:

1. The tops of the bedrock ridges were flat and gently sloping. These were dominated by the northern kelp (*Laminaria hyperborea*) and red foliose algae including the reattaching glow-weed (*Drachiella spectabilis*), cocks comb (*Plocamium cartilagineum*), coral weed (*Corallina officinalis*), landladies wig (*Desmarestia aculeata*) and a rich sea squirt turf including the small colonial sandy sea squirt (*Aplidium densum*) and the blue-mouthed red sea squirt (*Polycarpa scuba*). The spiny spider crab (*Maia squinado*) was conspicuous in this habitat.
2. The sides of the ridges presented vertical faces 1.5m high. These were sand scoured and characterised by the toothpaste tubeworm (*Pomatoceros* sp.) and barnacles. Some of the species that occurred on the rock tops were also present.
3. The fine rippled sand at the base of the gullies was not recorded in detail.

Observations / Features of Interest

The record of the reattaching glow-weed (*Drachiella spectabilis*) in this habitat was of interest.

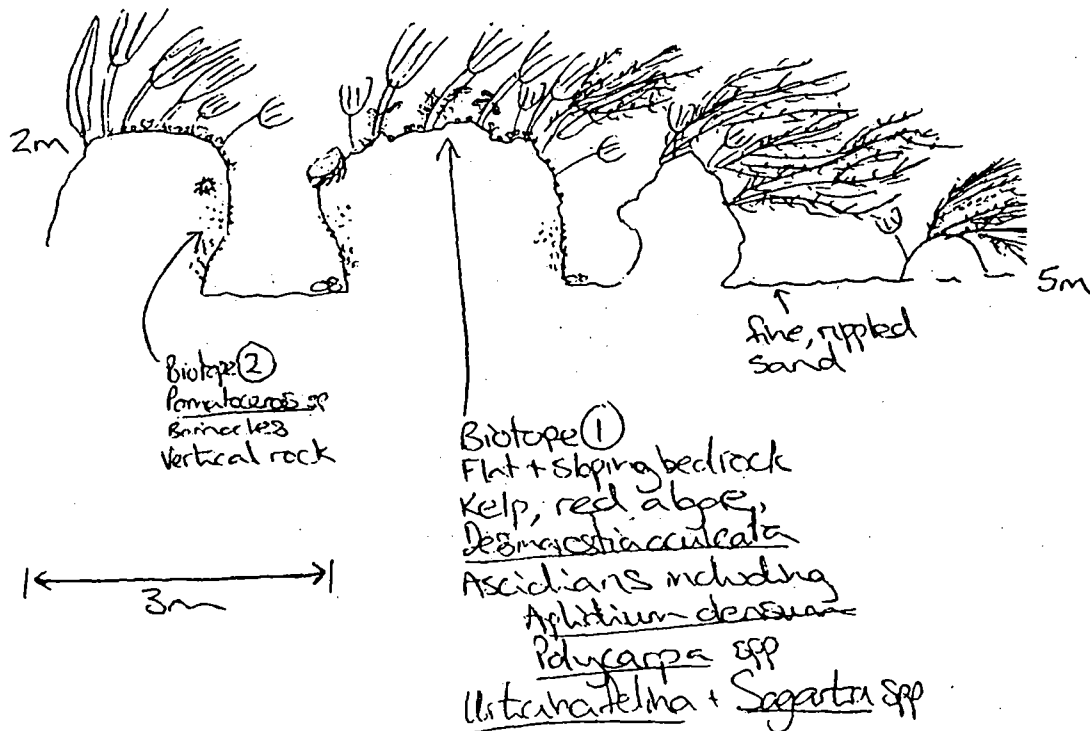


Figure 20 Sketch to show the habitats encountered at Site 6/98 (by Colin Garlic and Sue Gilbert).

3.2.21 Site 5/98 Between Saddle Head & Sandy Pit (51.60734°N, 4.91402°W)

Surveyed 09/05/98 by Colin Deller and Francis Bunker

Physical Environment

The depth of this site was between 1.2m and 4.0m below chart datum. Overhanging rock on a surge gully with a scoured boulder floor extended offshore to a series of limestone ridges running at right angles to the cliff. These ridges were approximately 1m high and descended to sand filled gullies approximately 2m wide.

This site is exposed to wave action and sheltered from tidal streams.

Habitat / Community Types

Three habitat / community types were described:

1. The overhangs between 1.2 and 2.2m were not surveyed thoroughly due to strong wave surges at the time of the survey. Dense orange encrusting sponges, sea mats, toothpaste tube worms (*Pomatoceros* sp.) and dogwhelks (*Nucella lapillus*) were recorded. Dense crustose coralline algae covered most upper surfaces.
2. The sandy gullies between limestone rock ridges were briefly surveyed and were barren apart from a few sand tolerant algae. These included black wire weed (*Ahnfeltia plicata*) and spiralled sand weed (*Rhodomela confervoides*).
3. The limestone ridges bore a forest of the northern kelp (*Laminaria hyperborea*) with a variety of associated seaweeds and attached animals. Dominant seaweeds included the brown flat branched weed (*Dictyota dichotoma*), the red feather weed (*Heterosiphonia plumosa*) and flat tentacle weed (*Calliblepharis ciliata*). Attached animals included the dahlia anemone (*Urticina felina*), the breadcrumb sponge (*Halichondria panicea*) and the blue-mouthed red sea squirt (*Polycarpa rustica*).

Observations / Features of Interest

The overhang may have led into a small cave and this warrants further investigation. The kelp forest had a rich variety of associated species.

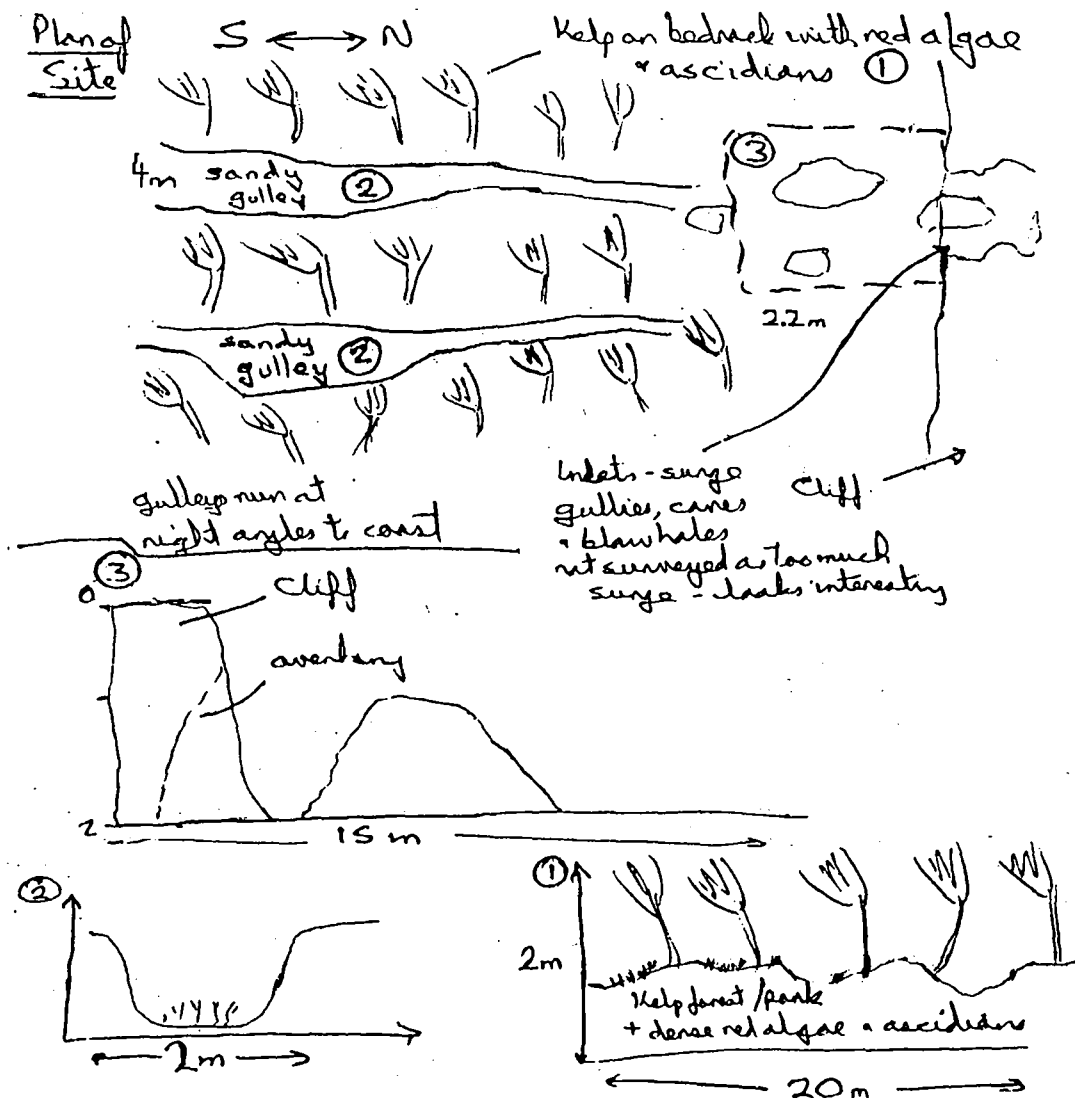


Figure 21 Sketch to show the habitats encountered at Site 5/98 (by Francis Bunker and Colin Deller).

3.2.22 Site 3/98 Offshore from Broadhaven (51.60940°N, 4.90013°W)

Surveyed 09/05/98 by James Perrins & Adrian from Brecon

Physical Environment

This site was between 9m and 12m below chart datum. The seabed encountered here was composed of smooth medium rippled sand followed by stable pebbles.

This site is exposed to wave action and strong tidal streams.

Habitat / Community Types

Two habitat / community types were described:

1. Between 9m and 12m was a plain of smooth medium grained rippled sand with a small amount of silt. The habitat was species poor with occasional hermit crabs and whelks.

- At 12m, the seabed graded to one of stable pebbles covered with toothpaste tubeworms (*Pomatoceros* sp) and a few starfish. Again, this was a species poor habitat.

Observations / Features of Interest

Little of interest was observed at this site.

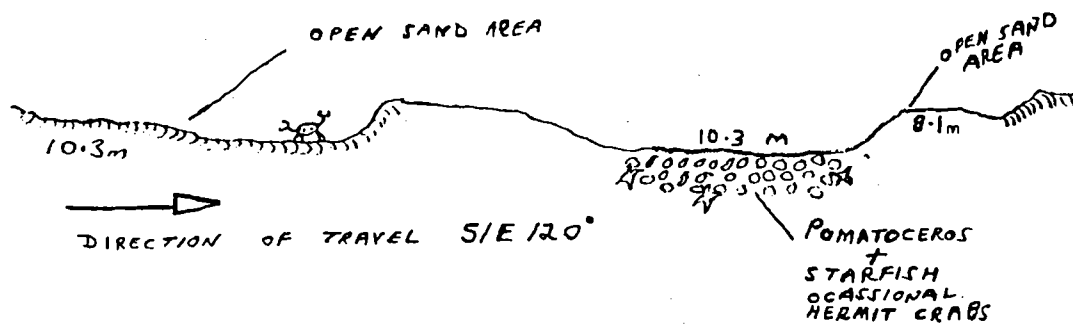


Figure 22 Profile to show the habitats encountered at Site 3/98 (by James Perrins and Ady from Brecon).

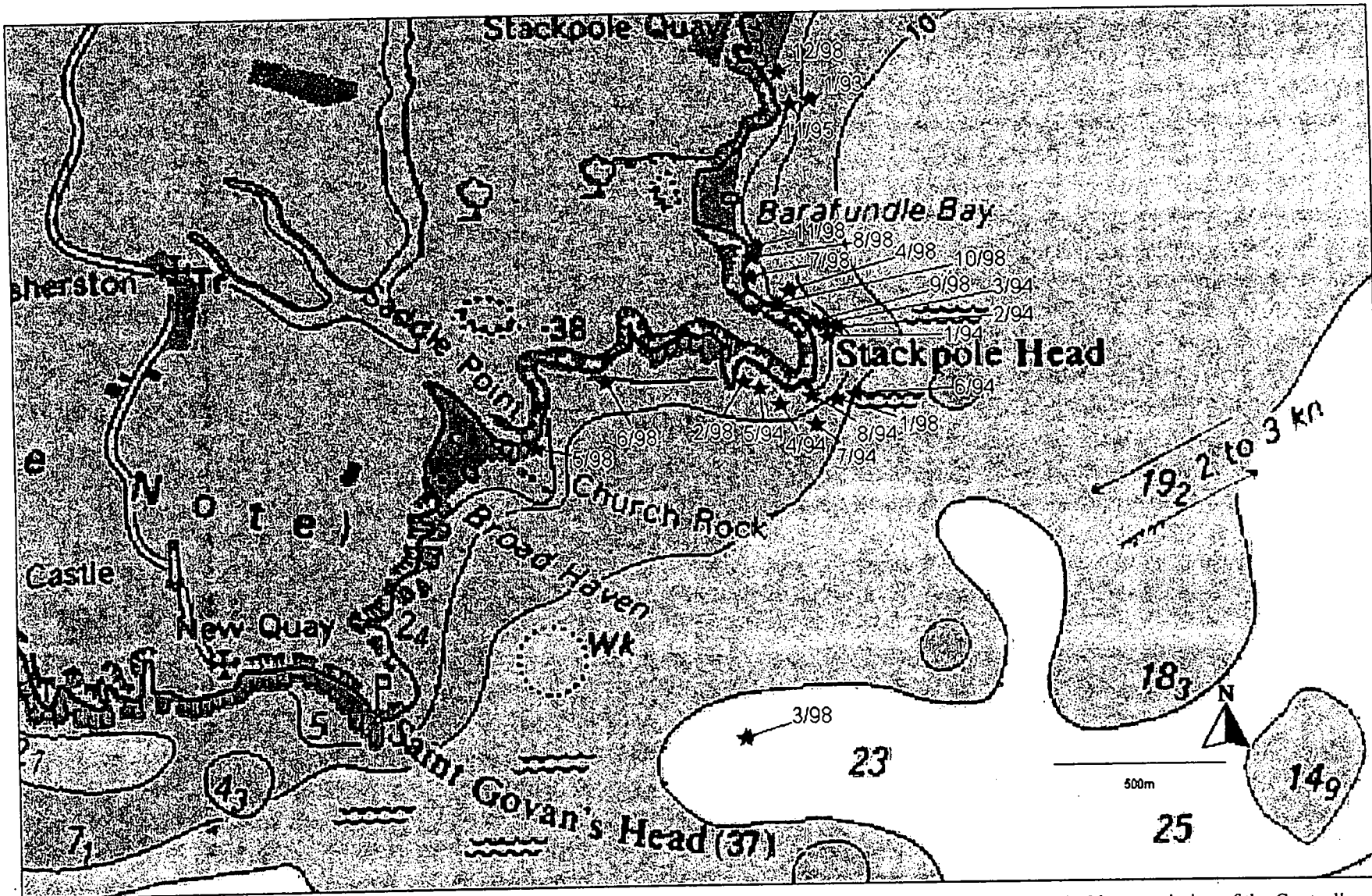


Figure 23 Chart to show the location of dives between Stackpole Quay and Broadhaven Reproduced from Admiralty chart 1076 by permission of the Controller of Her Majesty's Stationary Office and the UK Hydrographic Office. Not to be used for navigation.

4 Discussion

The general conclusions gained from the Seasearch survey data as well as some of the observations and features of interest mentioned in the site descriptions (Sections 3.1 and 3.2) are discussed here. Consideration is also given to the methods used.

4.1 Observations and Features of Interest

The 1978 diving survey reported on by Carlidge and Hiscock (1979) highlighted the marine biological interest of the communities between Greenala Point and Stackpole Head as being 'of outstanding scientific interest'. The results of this survey confirm these original findings and go towards providing a more detailed picture of the area.

4.1.1 General Features of the Stackpole Quay Coast

The entire rocky coastline is fringed in shallow water by a forest of the northern kelp (*Laminaria hyperborea*), but the character of the seabed communities changes along the length of the study coast as environmental conditions change. Generalised descriptions of the shallow subtidal habitat have been compiled below, starting in the east with West Moor Cliff and working westwards. These descriptions (as the survey) concentrate on the inshore areas of rocky substrata rather than the sediments.

West Moor cliff lies at the eastern extent of the study area and provides a good example of sandstone reefs semi-exposed to wave action, but sheltered from strong tidal streams. This site was rich in species and did not show the same signs of scouring as the more exposed sandstone coast between Trewent Point and Greenala Point to the west.

The Trewent Point area was characterised by scoured low-lying current swept bedrock and gravel. Some larger non-scoured bedrock outcrops were also present. In shallow water, the low lying areas were covered by beds of the edible mussel (*Mytilus edulis*), while in deeper water, brittle stars dominated the seabed, with both the common brittle star (*Ophiothrix fragilis*) and the black brittle star (*Ophiocomina nigra*) present. Larger bedrock outcrops were rich in species including the trumpet anemone (*Aiptasia mutabilis*) and the ross coral (*Pentapora foliacea*). The blue-mouthed red sea squirt (*Polycarpa scuba*) was abundant on most rocky surfaces. Of interest was the presence of the uncommon brain sponge (*Axinella damicornis*).

The Greenala Point area was similar to Trewent Point with most dives recording large growths of the ross coral (*Pentapora foliacea*). Between rocky outcrops, sandy gravel areas had a burrowing infauna including the white burrowing sea cucumber (*Neopentadactyla mixta*). To the east of Greenala Point was an area of shallow rock dominated by the dwarf brown sea cucumber (*Ocnus planci*). This is the only area along the coast where this species has been recorded.

Limestone rocks form the coastline to the west of Stackpole Quay and these are heavily burrowed into by burrowers such as the red-nose piddock (*Hiatella arctica*), the limestone fanworm (*Pseudopotamilla reniformis*), the boring sponge (*Cliona celata*) and the white horseshoe worm (*Phoronis hippocrepia*). The activities of these burrowers create holes and crevices, which in turn are exploited by a wide variety of species, adding to the species richness of the subtidal bedrock and creating a characteristic community (see Carlidge and Hiscock, 1979).

The coast between Stackpole Quay and Barafundle Bay is sheltered from direct wave action and subject to moderate tidal flow. Shallow silty limestone reefs give way to fine sandy sediments which extend offshore and the marine communities recorded here are exceptionally rich and diverse. The vertical rock strata have been eroded to form a series of underwater gullies, which present a variety of different habitats for marine life. On the limestone, the trumpet anemone (*Aiptasia mutabilis*) is especially widespread and the seaweed flora included the rare smelly siphon weed (*Polysiphonia foetidissima*) at Stackpole Quay. Burrowing anemones are a feature of the sediments here and include the rarely recorded night anemone (*Halcampoides elongatus*).

South of Barafundle Bay, the shallow marine habitats are exposed to strong currents, which run north and south of Stackpole Head. Near Barafundle Bay, bedrock slopes to sand and by Stackpole Head, to gravel with boulders and bedrock outcrops. Extensive caves, (> 10m deep) were recorded by the shore and a small cave was found in a large rocky outcrop away from the cliff.

The seabed to the south of Stackpole Head is an extensive expanse of flat bedrock carpeted by mussels with sea fans including short white weed (*Sertularia argentea*), the oaten-pipes hydroid (*Tubularia indivisa*) and the feather star (*Antedon bifida*). The bedrock is formed in layers and small areas of vertical and overhanging rock punctuate the bedrock cliff. These were dominated by the blue-mouthed red sea squirt (*Polycarpa scuba*) together with the white horseshoe worm (*Phoronis hippocrepia*) and a variety of other species.

On the south side of Stackpole Head, the inshore area is characterised by limestone bedrock ridges and gullies creating a variety of habitats including many vertical and overhanging faces and small caves and tunnels. The rare penny weed (*Zanardinia prototypus*) was recorded on upward facing bedrock at two sites in 1998. In summer, the 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*) congregate here (Francis Bunker, diving log book).

Between Stackpole Head and Broadhaven are extensive areas of low-lying, sand inundated rock with well developed communities of sand tolerant algal species such as brown bottlebrush weed (*Cladostephus spongiosus*), black wire weed (*Ahnfeltia plicata*) and spiralled sand weed (*Rhodomela confervoides*). There are several shallow caves and surge gullies along the coast, but most are scoured by sand.

One dive was carried out offshore to the east of St Govan's Head. The seabed here was of coarse gravel and sand and is of little biological interest.

4.1.2 General Observations and Species of Interest

Several species listed as nationally rare or nationally scarce (Sanderson 1996 and personal communication¹) were recorded along the Stackpole Quay coast during the course of this study. These are included in the table below. Recorded locations for all species are given in Appendix 3.

Species	Designation / Conservation interest	Comment
Brain sponge (<i>Axinella damicornis</i>)	Nationally Scarce	One record from southeast of Trewent Point (site 10/95)
Trumpet anemone (<i>Aiptasia mutabilis</i>)	Nationally Scarce	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).
Night anemone (<i>Halcampoides elongatus</i>)	Nationally Rare	Found close to the rocks on silted sediment at Stackpole Quay Head (site 1/93).
Penny weed (<i>Zanardinia prototypus</i>)	Nationally Scarce	Recorded from two sites south of Stackpole Head in 1998 (sites 8/94 and 5/94).
Smelly siphon weed (<i>Polysiphonia foetidissima</i>)	Not yet designated	Recorded just outside Stackpole Quay (site 12/98). This is the first record of the species from the British Isles since 1855 (Maggs & Hommersand, 1993). Voucher specimens of this species have been kept by (Christine Maggs and Francis Bunker).
Dwarf brown sea cucumber (<i>Ocnus planci</i>)	Dense aggregations recorded as a rare biotope in Britain (Connor <i>et al.</i> , 1997).	Found at one site east of Greenala Point (site 12/95).

¹ An updated list of nationally rare and scarce species was provided by Bill Sanderson to assist with this project. It is derived from Sanderson (1996) and the JNCC *Coastal Directories* series (Barne *et al.* 1995a-b, 1996a-e, 1997a-c, in prep. a-e) with further advise from W. G. Sanderson and J. Plaza (pers. comm. 27/05/97). It should be noted that work on rarity assessment is still underway and the list will be amended in the light of further research.

The sometimes-large growths of the ross coral (*Pentapora foliacea*) were a feature of interest in the marine communities off Greenala Point and Trewent Point.

The occurrence of dense aggregations of spider crabs between Stackpole Quay and Barafundle Bay and along the south side of Stackpole Head, are a feature of the area and this species was recorded at most sites. Moulting mounds of spider crabs were recorded on video off the south side of Stackpole Head in July 1999 (Francis Bunker, diving log book).

4.2 Appraisal of Methods

4.2.1 Conditions Encountered During the Survey

Much of the survey area i.e. between Stackpole Head and Stackpole Quay is protected from prevailing south-westerly and westerly winds and swells. This makes the area ideal for diving surveys such as Seasearch. The exposed areas around Greenala Point and Stackpole Head are less accessible to survey dives and require very calm conditions.

Problems arise when the wind veers around to the east and southeast as the visibility in the area can drop dramatically (especially during spring tides) and then take several days to recover. One Seasearch event had to be abandoned completely due to unfavourable conditions and another weekend was cut short by one day.

4.2.2 Seasearch survey methodology

The Seasearch methodology (according to Foster-Smith, 1995) has proved to be a robust survey method capable of producing data which gives a broad overview of the marine habitats and communities of the Stackpole Quay area. This survey was fortunate in attracting many marine biologists to join the Seasearch events, which greatly enhanced both the quality and quantity of data collected. A detailed record from a pair of divers including a marine biologist gives credence to the data of other amateur biologist surveyors working nearby.

5 Recommendations for Further Work

This study has highlighted several areas, which justify further investigation, and these are listed below:

- Shallow sediments dominate the sea area offshore from the Stackpole Quay coast. This has been rather neglected in this study and warrants further investigation.
- The sea caves along the limestone coast, particularly those to the east of Stackpole Head have not been described and warrant further investigation.
- A detailed comparison between the fauna and flora of limestone and sandstone areas would be interesting and provide a more detailed insight into the distribution of species along the two major habitats of the coastline.
- Further investigations into populations of some of the rare species, particularly the smelly siphon weed (*Polysiphonia foetidissima*) are warranted.
- It would be useful to draw together data and species information from the various surveys which have taken place along this coast.

6 References

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7 Acknowledgements

The author would like to thank the National Trust for providing access to the site from Stackpole Quay and the café management for their hospitality to the diving parties.

Special thanks to all the volunteer divers who gave their time to work on this project: Paul Brazier, Adrian Brecon, Colin Deller, Olive Fiddler, Colin Garlic, Sue Burton (née Gilbert), Simon Hagan, Ron Hinks, Jayne Lynch, Rohan Holt, Paul Kay, Lucy Kay (née Gilkes), Michele Leslie, Annette Little, Kate Lock, John Moore, Amanda Perrins (née Holloway), James Perrins, Dale Rostron, Leona Shepard, Peter Taylor, Dorothy Whitcomb and John Woolford. Thank you to Rod Penrose for information on turtle sightings in the area.

The Marine Conservation Society would like to thank the Countryside Council for Wales and PADI Project AWARE for supporting the production of this report. Thanks also to members of the National Seasearch Steering Group who commented on the format of the reports produced as part of this project. Particular thanks to Sue Burton, Kate Lock, Jon Moore and Sam Fanshawe (née Pollard), for commenting on draft versions of the report.

Finally, thank you to Anne Bunker for help with the report production, boat handling and general logistical support.

Appendix 1

Example of a recording form used during this study (side 1 and 2 of form):

Side 1



1/94

SEASEARCH

Marine Nature Conservation Review

①



MARINE CONSERVATION SOCIETY

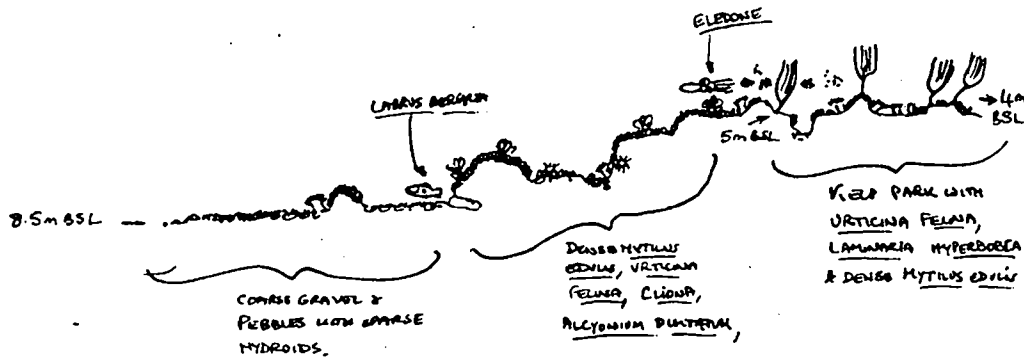
SEASEARCH is run by the Marine Conservation Society on behalf of the Joint Nature Conservation Committee

DIVE RECORDING FORM

Survey name: STACKPOLE QUAY Date: 30.4.94
 Site name: E OF STACKPOLE HEAD ① Dive number: _____
 Name and address of recorder: ROMAN HOLT / LEONA SHEPHERD
DOVE MARINE LAB, CULLERBOATS, TYNEDWAR NE 30 4PZ
 Time of dive (24hr clock please): Start: 14.37 Finish: 15.19 Duration: 42
 Depth range below sea level: From: 4m To: 2.5m ~~3.5m~~
 Depth range below chart datum: From: 0m To: 4.5m 4.0m
 Underwater visibility: 2m
 Location: OS Grid Reference: _____
 or Latitude: _____ Longitude: _____
 Decca: _____

Sketch:

Please sketch your dive in plan (map) and profile. Draw in any habitats, communities or peculiar features marking depths. Indicate positions corresponding to your written habitat descriptions.



Side 2

Dive Description:

Describe the following four points for each habitat you wish to describe. Try to use terms in the Check List. Please start with the shallowest (where applicable); number your habitats and indicate their position on your sketch map and profile.

1. Sea floor type 2. Depth (range) of habitat 3. Communities (dominant and conspicuous species, appearance) 4. Any special features that might influence the community (e.g. silt, urchin grazing).

- ①. Bedrock ridges and occasional medium boulders covered with dense Nycteis edulis and occasional Laminaria lemaneiformis at around 4m below sea level. Lots of very variable coloured Utricina felina and various sponges including Amphilectus and Cliona, large Mya, few Lisoclinus puber.
- ②. Bedrock ridges and outcrops in pebbles and gravelly sand at 5-8m below sea level. Most hard substrate covered in dense Nycteis edulis with Utricina felina, occasional red algae, inc Placodium and Delessaria and small Cliona celata colonies. Small hydroids including Nematocystis antennata & Hydrulmania falcata and small clumps of Tubularia indivisa. Several nudibranchs including Coryphella pedata and Goniodoris rosacea, Tritonia lineata. Lots of Sagittia elegans and Achnanthes. Few Macropodia, Mya & L. puber.
- ③. Gravelly sand and pebbles and 8-5m BSL with little life other than a few sparse hydroids.

Appendix 2

The table below lists the common and Latin Names of species compiled by the author for use in the Seasearch Project (not only this report). The following protocol was used devising this name list:

- The primary source of common names was the official CCW list (Roberts, S. 2001).
- If the name was not present in the above, the Marine Conservation Society Guide to Inshore Marine Life (Erwin and Picton, 1987) was consulted.
- If the name was not present in either of the above the following authoritative texts were consulted eg Sea anemones (Gosse, P.H., 1860) and Crabs (Ingle, 1980).

If no name could be found, then the author made up a name, which appropriately described the animal.

Common Name	Latin Name
Sponges	Porifera
breadcrumb sponge	<i>Halichondria panicea</i>
translucent breadcrumb sponge	<i>Halichondria bowerbanki</i>
hairy antler sponge	<i>Raspailia ramosa</i>
yellow hedgehog sponge	<i>Polymastia boletiformis</i>
bread crumb sponge	<i>Halichondria panicea</i>
blueberry sponge	<i>Terpios fugax</i>
yellow stag sponge	<i>Axinella dissimilis</i>
white lace sponge	<i>Clathrina coriacea</i>
elephants ear sponge	<i>Pachymatisma johnstonia</i>
black cave sponge	<i>Dercitus bucklandi</i>
pink wisp sponge	<i>Hymeniacidon perleve</i>
orange wisp sponge	<i>Esperiopsis fucorum</i>
boring sponge	<i>Cliona celata</i>
white spiky sponge	<i>Dysidea fragilis</i>
branched holey sponge	<i>Haliclona oculata</i>
golf ball sponge	<i>Tethya aurantium</i>
guarded flask sponge	<i>Scypha ciliata</i>
velvet dome sponge	<i>Suberites carnosus</i>
rough dome sponge	<i>Suberites ficus</i>
honeycomb sponge	<i>Hemimycale columella</i>
brain sponge	<i>Axinella damicornis</i>
pencil sponge	<i>Ciocalypta penicillus</i>
Coelenterata	Sea firs, anemones, jellyfish and corals
red speckled pimplet anemone	<i>Anthopleura balli</i>
Spiralled sea fir	<i>Hydrallmania falcata</i>
smooth dahlia anemone	<i>Urticina eques</i>
night anemone	<i>Halcampoides elongatus</i>
transparent tentacled anemone	<i>Sagartiogeton undatus</i>
cave dwelling anemone	<i>Sagartia troglodytes</i>
delicate anemone	<i>Sagartia elegans</i>
snowy anemone	<i>Sagartia elegans</i> var. <i>nivea</i> (all white):
scarlet fringed anemone	<i>Sagartia elegans</i> var. <i>miniata</i> (with a patterned disk)
rosy anemone	<i>Sagartia elegans</i> var. <i>rosea</i> (purple variety)

Common Name	Latin Name
orange-disked anemone	<i>Sagartia elegans</i> var. <i>venusta</i> (orange disk)
eel grass sea fir	<i>Laomedea angulata</i>
starlet sea anemone	<i>Nematostella vectensis</i>
phosphorescent sea pen	<i>Pennatula phosphorea</i>
slender sea pen	<i>Funiculina quadrangularis</i>
stiff sea pen	<i>Virgularia mirabilis</i>
kelp sea fir	<i>Obelia geniculata</i>
dead man's fingers	<i>Alcyonium digitatum</i>
Northern sea fan	<i>Swiftia pallida</i>
broad sea fan	<i>Eunicella verrucosa</i>
Devonshire cup coral	<i>Caryophyllia smithii</i>
oaten-pipes hydroid	<i>Tubularia indivisa</i>
jewel anemone	<i>Corynactis viridis</i>
olive-green wart anemone	<i>Phellia gausapata</i>
white trumpet anemone	<i>Parazoanthus anguicomus</i>
yellow trumpet anemone	<i>Parazoanthus axinellae</i>
pink soft coral	<i>Parerythropodium corallioides</i>
Weymouth carpet coral	<i>Hoplangia durotrix</i>
trumpet anemone	<i>Aiptasia mutabilis</i>
short white weed	<i>Sertularia argentea</i>
white weed	<i>Sertularia cupressina</i>
thick-branched feather sea fir	<i>Halecium halecinum</i>
encrusted feather sea fir	<i>Abietinaria abietina</i>
straight antenna sea fir	<i>Nemertesia antennina</i>
branched antenna sea fir	<i>Nemertesia ramosa</i>
white candy striped anemone	<i>Actinothoe sphyrodeta</i>
zigzag kelp hydroid	<i>Obelia geniculata</i>
delicate sea fir	<i>Diphasia</i> sp.
ghost sea fir	<i>Corymorpha nutans</i>
Annelida	True Worms
mole-nosed mudworm	<i>Scoloplos armiger</i>
sand mason worm	<i>Lanice conchilega</i>
sugar cone worms	<i>Lagis</i> spp.
white cat worm	<i>Nephtys cirrosa</i>
white abra	<i>Abra alba</i>
fan mussel	<i>Atrina fragilis</i>
lug worm	<i>Arenicola marina</i>
two-horned sandworm	<i>Scolecopsis squamata</i>
the gallery worm	<i>Capitella capitata</i>
lug worm	<i>Arenicola marina</i>
peacock worm	<i>Sabella pavonia</i>
reef sandworm	<i>Sabellaria alveolata</i>
ridged toothpaste worm	<i>Pomatoceros triqueter</i>
smooth toothpaste worm	<i>Pomatoceros lamarckii</i>
limestone fan worm	<i>Pseudopotamilla reniformis</i>
Crustacea	Crabs, Prawns and Shrimps
common shrimp	<i>Crangon vulgaris</i>
green estuary shrimps	<i>Gammarus zaddachi</i>
shore crab	<i>Carcinus maenas</i>
common shrimp	<i>Crangon vulgaris</i>
sand-digger shrimp	<i>Bathyporeia pelagica</i>
bulldozer shrimp	<i>Haustorius arenarius</i>
speckled sea-louse	<i>Eurydice pulchra</i>
Goodsir's shrimp-tadpole	<i>Cumopsis goodsiri</i>

Common Name	Latin Name
lagoon mud shrimp	<i>Corophium insidiosum</i>
crab sponge	<i>Suberites pagurorum</i>
scampi prawn	<i>Nephrops norvegicus</i>
acorn barnacle	<i>Semibalanus balanoides</i>
shore crab	<i>Carcinus maenas</i>
sea toad	<i>Hyas araneus</i>
spiny spider crab	<i>Maia squinado</i>
long legged spider crab	<i>Macropodia rostrata</i>
masked crab	<i>Corystes cassivelaunus</i>
circular crab	<i>Atelecyclus rotundus</i>
edible crab	<i>Cancer pagurus</i>
velvet swimming crab	<i>Liocarcinus puber</i>
harbour crab	<i>Liocarcinus depurator</i>
Molluscs	Snails, Seaslugs, Bivalves, Octopus and Squid
limpets	<i>Patella vulgata</i>
red-nosed piddock	<i>Hiatella arctica</i>
common piddock	<i>Pholas dactylus</i>
edible periwinkle	<i>Littorina littorea</i>
purple topshell	<i>Gibbula umbilicalis</i>
northern octopus	<i>Eledone cirrhosa</i>
horse mussel	<i>Modiolus modiolus</i>
queen scallops	<i>Aequipecten opercularis</i>
edible mussel	<i>Mytilus edulis</i>
trough shells	<i>Spisula and Mactra species</i>
razor shells	<i>Ensis sp</i>
sea tellin	<i>Tellina fabulina</i>
common nut shell	<i>Nucula nitidosa</i>
edible cockle	<i>Cerastoderma edule</i>
native oyster	<i>Ostrea edulis</i>
peppery furrow shell	<i>Scrobicularia plana</i>
mud snail	<i>Hydrobia ulvae</i>
edible cockle	<i>Cerastoderma edule</i>
edible mussel	<i>Mytilus edulis</i>
lagoon seaslug	<i>Tenellia adspersa</i>
lagoon mud snail	<i>Hydrobia ventrosa</i>
lagoon cockles	<i>Cerastoderma glaucum</i>
edible mussel	<i>Mytilus edulis</i>
horse mussel	<i>Modiolus modiolus</i>
whit-ruffed sea-slug	<i>Aeolidiella alderi</i>
thin tellin	<i>Angulus tenuis</i>
blue rayed limpet	<i>Helcion pellucidum</i>
grey topshell	<i>Gibbula cineraria</i>
painted topshell	<i>Calliostoma zizyphinum</i>
toothed top shell	<i>Monodonta lineata</i>
European cowrie	<i>Trivia monacha</i>
dog whelk	<i>Nucella lapillus</i>
netted whelk	<i>Hinia reticulata</i>
sea hare	<i>Aplysia punctata</i>
dog cockle	<i>Glycymeris glycymeris</i>
razor shell	<i>Ensis sp.</i>
Bryozoa	Sea Mats
lagoon lace-mat	<i>Conopeum seurati</i>
orange dome seamat	<i>Cellepora pumicosa</i>
the matchstick seamat	<i>Cellaria spp</i>

Common Name	Latin Name
kelp seamat	<i>Membranipora membranacea</i>
ross coral	<i>Pentapora foliacea</i>
grey horn wrack	<i>Flustra foliacea</i>
yellow Christmas tree sea mat	<i>Bugula turbinata</i>
white Christmas tree sea mat	<i>Bugula plumosa</i>
flat Christmas tree sea mat	<i>Bugula flabellata</i>
jelly fingers	<i>Alcyonidium diaphanum</i>
white moss sea mat	Crisiidae indet
hairy sea mat	<i>Electra pilosa</i>
Phoronida	Horseshoe Worms
white horseshoe worm	<i>Phoronis hippocrepi</i>
Echinodermata	Starfish, Brittlestars, Sea Urchins and Sea Cucumbers
common brittle star	<i>Ophiothrix fragilis</i>
slender-armed brittle star	<i>Amphiura filiformis</i>
Mottled-brown brittlestar	<i>Ophiura ophiura</i>
dwarf brown seacucumber	<i>Ocnus planci</i>
shell gravel sea cucumber	<i>Neopentadactyla mixta</i>
black brittle star	<i>Ophiocomina nigra</i>
common heart urchin	<i>Echinocardium cordatum</i>
feather star	<i>Antedon bifida</i>
sun star	<i>Crossaster papposus</i>
bloody henry	<i>Henricia oculata</i>
common starfish	<i>Asterias rubens</i>
spiny starfish	<i>Marthasterias glacialis</i>
sea urchin	<i>Echinus esculentus</i>
cotton spinner	<i>Holothuria forskali</i>
Ascidacea	Sea squirts
red gooseberry sea squirt	<i>Dendrodoa grossularia</i>
red pimple sea squirt	<i>Distomus variolosus</i>
orange gooseberry sea squirt	<i>Stolonica socialis</i>
gut squirt	<i>Ciona intestinalis</i>
star sea squirt	<i>Botryllus schlosseri</i>
linear colonial sea squirt	<i>Botrylloides leachii</i>
light bulb sea squirt	<i>Clavelina lepadiformis</i>
football sea squirt	<i>Diazona violacea</i>
blue-mouthed red sea squirt	<i>Polycarpa scuba</i>
yellow rimmed sea squirt	<i>Ciona intestinalis</i>
pink colonial sea squirt	<i>Distaplia rosea</i>
pigmented mucus mat sea squirt	<i>Diplosoma listerianum</i>
gelatinous mucus mat sea squirt	<i>Diplosoma spongiforme</i>
large colonial sandy sea squirt	<i>Polyclinum aurantium</i>
small colonial sandy sea squirt	<i>Aplidium densum</i>
flat-lobed colonial sea squirt	<i>Aplidium proliferum</i>
orange spot club sea squirt	<i>Aplidium punctum</i>
no spot club sea squirt	<i>Morchellium argus</i>
hard small pored hard sea squirt	<i>Didemnum maculosum</i>
hard lacey sea squirt	<i>Lissoclinum perforatum</i>
gas mantle sea squirt	<i>Corella parallelogramma</i>
fluted siphoned sea squirt	<i>Ascidella aspersa</i>
striped siphoned sea squirt	<i>Ascidella scabra</i>
thick coated sea squirt	<i>Ascidia mentula</i>
Korean sea squirt	<i>Styela clava</i>

Common Name	Latin Name
teapot sea squirt	<i>Polycarpa pomaria</i>
yellow pin-head sea squirt	<i>Pycnoclavella aurilucens</i>
flat topped white colonial sea squirt	<i>Sidnyum</i> sp.
Pices	Fish
flounder	<i>Platichthys flesus</i>
salmon	<i>Salmo salar</i>
sea trout	<i>Salmo trutta</i>
alis shad	<i>Alosa alosa</i>
twaite shad	<i>Alosa fallax</i>
cuckoo wrasse	<i>Labrus mixtus</i>
Chlorophyta	Green Seaweeds
slubweed weed (or gut weed?)	<i>Enteromorpha</i> sp
emerald cave weed	<i>Pseudoclonium submarinum</i>
bushy green weed	<i>Cladophora</i> sp
Phyphaeta	Brown Seaweeds
long bladdered wrack	<i>Fucus ceranoides</i>
bladder wrack	<i>Fucus vesiculosus</i>
egg wrack	<i>Ascophyllum nodosum</i> ecad mackii
egg wrack	<i>Ascophyllum nodosum</i>
northern kelp	<i>Laminaria hyperborea</i>
brown feather weed	<i>Halopteris filicina</i>
penny weed	<i>Zanardinia prototypus</i>
brown bottlebrush weed	<i>Cladostephus spongiosus</i>
bush brown feathers	<i>Halopteris scoparia</i>
forked ribbons	<i>Dictyota dichotoma</i>
tangle	<i>Laminaria digitata</i>
sea belt	<i>Laminaria saccharina</i>
furbelows	<i>Saccorhiza polyschides</i>
dabber locks	<i>Alaria esculenta</i>
mermaid's tresses	<i>Chorda filum</i>
pod weed	<i>Halidrys siliquosa</i>
landladies wig	<i>Desmarestia aculeata</i>
Red Seaweeds	Rhodophyta
red-teat weed	<i>Scinaia</i> spp.
interrupted rib-weed	<i>Stenogramme interrupta</i>
pink paint weeds	Corallinaceae indet
diaphanous spotted weed	<i>Nitophyllum punctatum</i>
brandy paint weed	<i>Hildenbrandia rubra</i>
coral weed	<i>Corallina officinalis</i>
red jelly seaweed	<i>Schmitzia hiscockiana</i>
red feather weed	<i>Heterosiphonia plumosa</i>
flat tentacle weed	<i>Calliblepharis ciliata</i>
round-based red antler weed	<i>Polyides rotundus</i>
many-siphoned weeds	<i>Polysiphonia</i> spp.
pointed membranous rib weed	<i>Hypoglossum hypoglossoides</i>
rounded membranous rib weed	<i>Apoglossum ruscifolium</i>
cock's comb	<i>Plocamium cartilagineum</i>
toothed vein weed	<i>Erythrogllossum laciniatum</i>
iridescent ruffle weed	<i>Cryptopleura ramosa</i>
red kidney weed	<i>Kallymenia reniformis</i>
red-wedge fan weed	<i>Callophyllis laciniata</i>
black wire weed	<i>Ahnfeltia plicata</i>

Common Name	Latin Name
spiralled sand weed	<i>Rhodomela confervoides</i>
spiralled four-siphoned weed	<i>Polysiphonia stricta</i>
smelly siphon weed	<i>Polysiphonia foetidissima</i>
elongated siphon weed	<i>Polysiphonia elongata</i>
reattaching glow weed	<i>Drachiella spectabilis</i>
red rags	<i>Dilsea carnosia</i>
red leaf weed	<i>Delesseria sanguinea</i>
erect sand weed	<i>Cordylecladia erecta</i>
red lichen weed	<i>Radicilingua thysanorhizans</i>
red bottlebrush weed	<i>Halurus equisetifolius</i>
thin red bottlebrush weed	<i>Sphondylothamnion multifidum</i>
red ghost weed	<i>Aglaothamnion byssoides</i>
Dulse	<i>Palmaria palmata</i>
red oak weed	<i>Phycodrys rubens</i>
Irish moss	<i>Chondrus crispus</i>
Lichens	
Yellow dust lichens	<i>Caloplaca marina</i>
Black paint lichen	<i>Verrucaria</i> sp. (black)
Higher Plants	
Sea Pink	<i>Armeria maritima</i>
Sea Lavender	<i>Limonium</i> spp.
Eel Grass	<i>Zostera marina</i>
Eel Grass	<i>Zostera</i> spp
Tassel Weed	<i>Ruppia</i> species
Fox-Tailed Stonewort	<i>Lamprothamnion pustulosum</i>
Eel grass	<i>Zostera marina</i>
Intertidal Eel Grass	<i>Zostera</i> spp.

Appendix 3

All the species records from the sites described in this report are included below. The Latin names for species are given and these follow the nomenclature of the MCS species directory; Howson and Picton (1999).

Species	Site Numbers											
	1/93		1/94			2/94			3/94		4/94	
		1	2	3	1	2	3	4		1	2	
PORIFERA - Calcarea												
<i>Porifera indet.</i>												
<i>Scypha ciliata</i>												O
PORIFERA - Demospongiae												
<i>Pachymatisma johnstonia</i>												
<i>Tethya aurantium</i>												
<i>Suberites</i> sp.												
<i>Suberites carnosus</i>												
<i>Polymastia</i> sp.												
<i>Polymastia boletiformis</i>												
<i>Polymastia mamillaris</i>												
<i>Ciona celata</i>		P	P					P	P	C	C	
<i>Axinella damicornis</i>												
<i>Stelligera</i> sp.												
<i>Stelligera rigida</i>												
<i>Stelligera stuposa</i>												
<i>Raspailia hispida</i>												
<i>Raspailia ramosa</i>												
<i>Halichondria</i> sp.												
<i>Halichondria panicea</i>								P		F		
<i>Halichondria bowerbankia</i>												
<i>Ciocalypta penicillus</i>										O		
<i>Esperiopsis fucorum</i>		P						P				
<i>Myxilla</i> sp.												
<i>Myxilla incrustans</i>										O		
<i>Myxilla rosacea</i>												

Species	Site Numbers										
	1/93		1/94		2/94				3/94		4/94
		1	2	3	1	2	3	4		1	2
<i>Phorbas fictitius</i>											
<i>Hemimycale columella</i>											
<i>Haliclona</i> sp.											
<i>Haliclona fistulosa</i>											
<i>Haliclona oculata</i>											
<i>Haliclona viscuosa</i>											
<i>Dysidea fragilis</i>											O
<i>Dercitus bucklandii</i>											R
<i>Hymeniacion perleve</i>											
Porifera indet. (crusts)								P			
CNIDARIA - Hydrozoa											
Hydroid indet.				P	P						
<i>Corymorpha nutans</i>	R										
<i>Tubularia indivisa</i>			P								F
<i>Halecium</i> sp.											
<i>Halecium halecinum</i>					P			P		F	O
<i>Halopteris catharina</i>											
<i>Nemertesia antennina</i>			P								O
<i>Nemertesia ramosa</i>											
<i>Plumaria setacea</i>											
<i>Abietinaria abietina</i>											
<i>Diphasia</i> sp.								P			
<i>Diphasia rosacea</i>								P			
<i>Diphasia attenuata</i>											F
<i>Hydrallmania falcata</i>			P		P			P			O
<i>Sertularia argentea</i>					P			P			F
<i>Obelia dichotoma</i>											F
<i>Obelia geniculata</i>											
CNIDARIA - Anthozoa											
Anthozoa indet.											
<i>Caryophyllia smithii</i>											
<i>Alcyonium digitatum</i>								P			F

Species	Site Numbers										
	1/93		1/94		2/94		3/94		4/94		
		1	2	3	1	2	3	4		1	2
<i>Sarcodictyon roseum</i>											
<i>Isozoanthus sulcatus</i>											
<i>Actinia equina</i>											
<i>Anemonia viridis</i>											
<i>Urticina felina</i>		P	P		P			P	P	C	C
<i>Metndium senile</i>									P		O
<i>Sagartia sp.</i>											
<i>Sagartia elegans</i>			P					P			O
<i>Sagartia troglodytes</i>	O									F	C
<i>Cereus pedunculatus</i>											
<i>Actinothoe sphyrodeta</i>			P					P			
<i>Sagartiogeton undatus</i>	O										
<i>Corynactis viridis</i>									P		
<i>Hacampoides purpurea</i>	O										
<i>Aiptasia mutabilis</i>								P			
NEMERTEA											
<i>Lineus longissimus</i>											
ANNELIDA - Polychaeta											
Teribellidae indet.											
<i>Polydora sp.</i>											
<i>Chaetopterus variopedatus</i>											
<i>Lanice conchilega</i>	F										
<i>Bispira volutacomis</i>											
Sabellidae indet.											
<i>Pseudopotamilla reneformis</i>										C	F
<i>Pomatoceros sp.</i>											
<i>Pomatoceros triqueter</i>											
CRUSTACEA - Cirripedia											
Cirripedia indet.											
<i>Semibalanus balanoides</i>											
<i>Balanus balanus</i>											

Species	Site Numbers										
	1/93	1/94			2/94				3/94	4/94	
		1	2	3	1	2	3	4		1	2
<i>Balanus crenatus</i>											
CRUSTACEA - Malacostraca											
<i>Galathea strigosa</i>											
<i>Homarus gammarus</i>								P			R
Paguridae indet.											
<i>Pagurus bernhardus</i>								P		F	
<i>Inachus</i> sp.											
<i>Inachus dorsettensis</i>											
<i>Inachus phalangium</i>											
<i>Macropodia rostrata</i>			P					P			
<i>Cancer pagurus</i>								P			C
<i>Liocarcinus depurator</i>	P										
<i>Necora puber</i>		P	P						P		
<i>Carcinus maenas</i>											
<i>Hyas araneus</i>								P			
<i>Maia squinado</i>		P						P	P	F	C
<i>Natantia</i> indet. (prawn)										F	
MOLLUSCA - Gastropoda											
<i>Patella</i> sp.											
<i>Heliccion pellucida</i>											
<i>Trochidae</i> indet.											
<i>Gibbula cineraria</i>											
<i>Gibbula magus</i>											
<i>Calliostoma zizyphinum</i>										O	O
<i>Trivia</i> sp.											
<i>Trivia arctica</i>											
<i>Trivia monacha</i>											
<i>Polinices polianus</i>											
<i>Ocenebra erinacea</i>											O
<i>Nucella lapillus</i>											
<i>Buccinum undatum</i>											
<i>Hinia</i> sp.											
<i>Hinia incrassata</i>											

Species	Site Numbers										
	1/93	1/94			2/94				3/94	4/94	
		1	2	3	1	2	3	4		1	2
<i>Hinia reticulata</i>											
<i>Aplysia punctata</i>											
<i>Janolus cristatus</i>											
<i>Flabellina pedata</i>			P					P		O	
<i>Coryphella lineata</i>										O	
<i>Archidoris pseudoargus</i>											
<i>Jorunna tomentosa</i>											
<i>Goniidoris nodosa</i>			P					P		O	
<i>Onchidoris</i> sp.											
<i>Polycera</i> sp.											
<i>Polycera faeroensis</i>										O	
<i>Tritonia</i> sp.											
<i>Tritonia hombergi</i>								P			
<i>Tritonia lineata</i>			P								
<i>Hiatella arctica</i>											
<i>Mytilus edulis</i>		P	P		P	P					S
<i>Pecten maximus</i>											
<i>Mya arenaria</i>			P								
MOLLUSCA - Cephalopoda											
<i>Eledone cirrhosa</i>											
BRYOZOA											
Bryozoa indet.											
Crisiidae indet.								P			
<i>Crisia denticulata</i>											
<i>Alcyonidium diaphanum</i>										F	
<i>Membranipora membranacea</i>											
<i>Flustra foliacea</i>											R
<i>Chartella papyracea</i>											
<i>Bugula flabellata</i>											
<i>Bugula plumosa</i>											
<i>Bugula turbinata</i>											
<i>Bugula</i> sp.											

Species	Site Numbers										
	1/93	1/94			2/94				3/94	4/94	
		1	2	3	1	2	3	4		1	2
<i>Scrupocellaria</i> sp.											
<i>Cellaria</i> spp.											
<i>Cellaria sinuosa</i>											
Pink encrusting bryozoan											
<i>Pentapora foliacea</i>											
<i>Cellepora pumicosa</i>								P		O	
PHORONIDA											
<i>Phoronis hippocrepia</i>										C	
ECHINODERMATA											
<i>Antedon bifida</i>											C
<i>Crossaster papposus</i>											
<i>Henricia</i> sp.											
<i>Henricia oculata</i>											
<i>Asterias rubens</i>											A
<i>Ophiuroidea</i> indet.											
<i>Ophiura albida</i>										O	
<i>Echinus esculentus</i>											
<i>Holothuroidea</i> indet.											
<i>Echinocardium cordatum</i>											
<i>Pawsonia saxicola</i>											
<i>Neopentadactyla mixta</i>											
<i>Aslia lefevrei</i>											
CHORDATA / TUNICATA - Ascidiacea											
Ascidiacea indet.								P	P		
<i>Clavelina lepadiformis</i>										O	
<i>Polyclinid</i> spp.											
<i>Polyclinum</i> sp.											
<i>Polyclinum aurantium</i>											
<i>Morchellium argus</i>											
<i>Sidnyum</i> indet. orange and cream circular siphons											
<i>Sidnyum</i> indet. white stalked											

Species	Site Numbers									
	1/93			2/94				3/94		4/94
	1	2	3	1	2	3	4		1	2
<i>Sidnyum turbinatum</i>										
<i>Sidnyum elegans</i>										
<i>Aplidium</i> sp.										
<i>Aplidium densum</i>										
<i>Aplidium punctum</i>										
<i>Diplosoma listerianum</i>										
<i>Ciona intestinalis</i>									R	
<i>Corella parallelogramma</i>									O	
<i>Ascidella scabra</i>										
<i>Polycarpa scuba</i>					P				A	A
<i>Polycarpa</i> sp.										
<i>Dendrodoa grossularia</i>										
<i>Distomus variolosus</i>										
<i>Botryllus schlosseri</i>									F	
<i>Botrylloides leachi</i>									O	
<i>Molgula manhattensis</i>										
CHORDATA - Chondrichthyes										
<i>Scyliorhinus canicula</i>										
CHORDATA - Osteichthyes										
<i>Pollachius pollachius</i>										
<i>Trisopterus minutus</i>										
<i>Taurulus bubalis</i>										
<i>Eutrigla gurnardus</i>	R									
<i>Zeugopterus punctatus</i>										
<i>Ctenolabrus rupestris</i>										
<i>Labrus bergylta</i>										
<i>Labrus mixtus</i>										
<i>Parablennius gattorugine</i>										
<i>Callionymus lyra</i>	F									
<i>Pholis gunnellus</i>										
<i>Ammodytes</i> sp.										
<i>Gobiidae</i> indet.										

Species	Site Numbers											
	1/93	1/94				2/94				3/94	4/94	
		1	2	3		1	2	3	4		1	2
<i>Pomatoschistus</i> sp.									P			
<i>Pomatoschistus minutus</i>												
<i>Pomatoschistus pictus</i>	?P											
<i>Thorogobius ephippiatus</i>												
Pleuronectidae indet.												
RHODOPHYTA												
Corallinaceae indet. (crusts)												
<i>Corallina officinalis</i>												
Non calcareous red crusts												
Unidentified foliose red algae												
<i>Lomentaria articulata</i>												
<i>Ahnfeltia plicata</i>												
<i>Palmaria palmata</i>												
<i>Dilsea camosa</i>												
<i>Callophyllis laciniata</i>												
<i>Meridithia microphylla</i>												
<i>Polyides rotundus</i>												
<i>Plocamium cartilagineum</i>				P								O
<i>Calliblepharis ciliata</i>												C
<i>Cordylecladia erecta</i>												C
<i>Kallymenia reniformis</i>												
<i>Membranoptera alata</i>												
<i>Aglaothamnion byssoides</i>												
<i>Ceramium</i> sp.												
<i>Cryptopleura ramosa</i>												F
<i>Delesseria sanguinea</i>				P								F
<i>Phycodrys rubens</i>												
<i>Hypoglossum hypoglossoides</i>												F
<i>Apoglossum ruscifolia</i>												
<i>Heterosiphonia plumosa</i>												F
<i>Brogmatella byssoides</i>												O
<i>Sphondylothamnion multifidum</i>												
<i>Aglaothamnion byssoides</i>												

Species	Site Numbers										
	1/93	1/94			2/94				3/94	4/94	
		1	2	3	1	2	3	4		1	2
<i>Spondylothamnion multifidum</i>											
<i>Polysiphonia</i> sp.										F	
<i>Polysiphonia elongata</i>										F	
<i>Polysiphonia foetidissima</i>											
<i>Polysiphonia stricta</i>											
<i>Drachiella heterocarpa</i>										F	
<i>Drachiella</i> sp.											
<i>Drachiella spectabilis</i>											
<i>Rhodomela confervoides</i>										C	
<i>Griffithsia equisetifolius</i>										O	
<i>Erythrogloussum laciniatum</i>											
<i>Osmundea pinnatifida</i>											
<i>Phyllophora</i> sp.											
<i>Phyllophora pseudoceranooides</i>											
<i>Phyllophora crispa</i>											
<i>Schottera nicaeensis</i>											
<i>Radicilingua thyzanorizans</i>											
PHAEOPHYTA											
<i>Dictyopteris membranacea</i>										O	
<i>Dictyota dichotoma</i>										F	
<i>Desmarestia aculeata</i>											
<i>Chorda filum</i>											
<i>Alaria esculenta</i>											
<i>Laminaria digitata</i>											
<i>Laminaria hyperborea</i>		O								O	
<i>Laminaria saccharina</i>											
<i>Sacchoriza polyschides</i>											
<i>Fucus serratus</i>											
<i>Cladostephus spongiosus</i>											
<i>Halopteris filicina</i>											
<i>Halopteris scoparea</i>											
<i>Zanardinia protypus</i>											
filamentous browns'											

Species	Site Numbers										
	1/93	1/94			2/94				3/94	4/94	
		1	2	3	1	2	3	4		1	2
CHLOROPHYTA											
<i>Cladophora pellucida</i>											
<i>Enteromorpha</i> sp.											
<i>Ulva</i> sp.											
<i>Cladophora</i> sp.											
<i>Chaetomorpha melagonium</i>											
<i>Bryopsis plumosa</i>											

Species	Site Numbers			6/94			7/94			8/94			1/95		
	1	2	3	1	2		1	1	2	1	2	3			
PORIFERA - Calcarea															
<i>Porifera indet.</i>															
<i>Scypha ciliata</i>															
PORIFERA - Demospongiae															
<i>Pachymatisma johnstonia</i>		P							P						
<i>Tethya aurantium</i>										P					
<i>Suberites sp.</i>														P	
<i>Suberites carnosus</i>		P												P	
<i>Polymastia sp.</i>															
<i>Polymastia boletiformis</i>															
<i>Polymastia mamillaris</i>															
<i>Cliona celata</i>			P	P			P								
<i>Axinella damicornis</i>															
<i>Stelligera sp.</i>															
<i>Stelligera rigida</i>															
<i>Stelligera stuposa</i>															
<i>Raspailia hispida</i>															
<i>Raspailia ramosa</i>															
<i>Halichondria sp.</i>															
<i>Halichondria panicea</i>		P													
<i>Halichondria bowerbankia</i>							P								
<i>Ciocalypta penicillus</i>															
<i>Esperiopsis fucorum</i>									P						
<i>Myxilla sp.</i>															
<i>Myxilla incrustans</i>															
<i>Myxilla rosacea</i>															
<i>Phorbast fictitius</i>															
<i>Hemimycale columella</i>															
<i>Haliclona sp.</i>															
<i>Haliclona fistulosa</i>															
<i>Haliclona oculata</i>		P					P								
<i>Haliclona viscosa</i>															

Species	Site Numbers											
	5/94			6/94			7/94	8/94		1/95		
	1	2	3	1	2		1	1	2	1	2	3
<i>Dysidea fragilis</i>		P							P			
<i>Dercitus bucklandii</i>		P			P							
<i>Hymeniacion perleve</i>												
Porifera indet. (crusts)												
CNIDARIA - Hydrozoa												
Hydroid indet.					P							
<i>Corymorpha nutans</i>												
<i>Tubularia indivisa</i>		P		P			P					
<i>Halecium</i> sp.							P					
<i>Halecium halecinum</i>				P								
<i>Halopteris catharina</i>												
<i>Nemertesia antennina</i>		P	P									
<i>Nemertesia ramosa</i>		P										
<i>Plumaria setacea</i>												
<i>Abietinaria abietina</i>							P					
<i>Diphasia</i> sp.												
<i>Diphasia rosacea</i>												
<i>Diphasia attenuata</i>												
<i>Hydrallmania falcata</i>							P					
<i>Sertularia argentea</i>				P			P					
<i>Obelia dichotoma</i>												
<i>Obelia geniculata</i>												
CNIDARIA - Anthozoa												
Anthozoa indet.												
<i>Caryophyllia smithii</i>												
<i>Alcyonium digitatum</i>		P		P			P			P		
<i>Sarcodictyon roseum</i>												
<i>Isozoanthus sulcatus</i>												
<i>Actinia equina</i>												
<i>Anemonia viridis</i>												
<i>Urticina felina</i>		P		P			P				P	
<i>Metridium senile</i>							P			P		

Species	Site Numbers		3	6/94	2	7/94	8/94	2	1/95	2	3
	5/94	1									
	1	2		1	2	1	1	2	1	2	3
<i>Sagartia</i> sp.											
<i>Sagartia elegans</i>											
<i>Sagartia troglodytes</i>											
<i>Cereus pedunculatus</i>		P									
<i>Actinothoe sphyrodeta</i>											
<i>Sagartiogeton undatus</i>											
<i>Corynactis viridis</i>											
<i>Hacampoides purpurea</i>											
<i>Aiptasia mutabilis</i>		P									
NEMERTEA											
<i>Lineus longissimus</i>											
ANNELIDA - Polychaeta											
Teribellidae indet.											
<i>Polydora</i> sp.			P								
<i>Chaetopterus variopedatus</i>											
<i>Lanice conchilega</i>											
<i>Bispira volutacomis</i>		P				P					
Sabellidae indet.											
<i>Pseudopotamilla reneformis</i>		P		P		P					
<i>Pomatoceros</i> sp.											
<i>Pomatoceros triqueter</i>											
CRUSTACEA - Cirripedia											
Cirripedia indet.											
<i>Semibalanus balanoides</i>											
<i>Balanus balanus</i>											
<i>Balanus crenatus</i>											
CRUSTACEA - Malacostraca											
<i>Galathea strigosa</i>											
<i>Homarus gammarus</i>											
Paguridae indet.											
<i>Pagurus bernhardus</i>											

Species	Site Numbers											
	5/94			6/94		7/94		8/94		1/95		
	1	2	3	1	2	1	1	2	1	2	3	
<i>Inachus</i> sp.		P				P						
<i>Inachus dorsettensis</i>												
<i>Inachus phalangium</i>												
<i>Macropodia rostrata</i>												
<i>Cancer pagurus</i>				P		P						
<i>Liocarcinus depurator</i>												
<i>Necora puber</i>												
<i>Carcinus maenas</i>												
<i>Hyas araneus</i>												
<i>Maia squinado</i>		P		P		P			P			
<i>Natantia</i> indet. (prawn)												
MOLLUSCA - Gastropoda												
<i>Patella</i> sp.												
<i>Helicion pellucida</i>												
<i>Trochidae</i> indet.												
<i>Gibbula cineraria</i>												
<i>Gibbula magus</i>												
<i>Calliostoma zizyphinum</i>		P							P			
<i>Trivia</i> sp.												
<i>Trivia arctica</i>												
<i>Trivia monacha</i>												
<i>Polinices polianus</i>												
<i>Ocenebra erinacea</i>												
<i>Nucella lapillus</i>												
<i>Buccinum undatum</i>												
<i>Hinia</i> sp.												
<i>Hinia incrassata</i>												
<i>Hinia reticulata</i>												
<i>Aplysia punctata</i>												
<i>Janolus cristatus</i>												
<i>Flabellina pedata</i>												
<i>Coryphella lineata</i>												
<i>Archidoris pseudoargus</i>		P										

Species	Site Numbers											
	5/94			6/94		7/94		8/94		1/95		
	1	2	3	1	2	1	1	2	1	2	3	
<i>Jorunna tomentosa</i>												
<i>Goniadoris nodosa</i>												
<i>Onchidoris</i> sp.												
<i>Polycera</i> sp.									P			
<i>Polycera faeroensis</i>												
<i>Tritonia</i> sp.												
<i>Tritonia hombergi</i>												
<i>Tritonia lineata</i>												
<i>Hiatella arctica</i>		P										
<i>Mytilus edulis</i>				S		P						
<i>Pecten maximus</i>												
<i>Mya arenaria</i>												
MOLLUSCA - Cephalopoda												
<i>Eledone cirrhosa</i>						P						
BRYOZOA												
Bryozoa indet.											P	
Crisiidae indet.		P										
<i>Crisia denticulata</i>												
<i>Alcyonidium diaphanum</i>												
<i>Membranipora membranacea</i>												
<i>Flustra foliacea</i>									P			
<i>Chartella papyracea</i>												
<i>Bugula flabellata</i>		P										
<i>Bugula plumosa</i>												
<i>Bugula turbinata</i>												
<i>Bugula</i> sp.						P						
<i>Scrupocellaria</i> sp.												
<i>Cellaria</i> spp.						P			P			
<i>Cellaria sinuosa</i>												
Pink encrusting bryozoan												
<i>Pentapora foliacea</i>											P	
<i>Cellepora pumicosa</i>						P						

Species	Site Numbers											
	5/94			6/94			7/94	8/94		1/95		
	1	2	3	1	2		1	1	2	1	2	3
PHORONIDA												
<i>Phoronis hippocrepia</i>												
ECHINODERMATA												
<i>Antedon bifida</i>				P	P					P		
<i>Crossaster papposus</i>												
<i>Henricia</i> sp.												
<i>Henricia oculata</i>												
<i>Asterias rubens</i>				S								
<i>Ophiuroidea</i> indet.												P
<i>Ophiura albida</i>												
<i>Echinus esculentus</i>												
<i>Holothuroidea</i> indet.												P
<i>Echinocardium cordatum</i>	P											
<i>Pawsonia saxicola</i>		?										
<i>Neopentadactyla mixta</i>												
<i>Aslia lefevrei</i>												
CHORDATA / TUNICATA - Ascidiacea												
Ascidiacea indet.		P										P
<i>Clavelina lepadiformis</i>		P										
<i>Polyclinid</i> spp.		P										P
<i>Polyclinum</i> sp.		P										
<i>Polyclinum aurantium</i>												
<i>Morchellium argus</i>		P										P
<i>Sidnyum</i> indet. orange and cream circular siphons												
<i>Sidnyum</i> indet. white stalked												
<i>Sidnyum turbinatum</i>												
<i>Sidnyum elegans</i>		?										
<i>Aplidium</i> sp.												
<i>Aplidium densum</i>												
<i>Aplidium punctum</i>												
<i>Diplosoma listerianum</i>												

Species	Site Numbers										
	5/94			6/94		7/94	8/94		1/95		
	1	2	3	1	2	1	1	2	1	2	3
<i>Ciona intestinalis</i>											
<i>Corella parallelogramma</i>											
<i>Ascidella scabra</i>											
<i>Polycarpa scuba</i>		P		P		P					
<i>Polycarpa sp.</i>								P			
<i>Dendrodoa grossularia</i>											
<i>Distomus variolosus</i>		P						P			
<i>Botryllus schlosseri</i>						P					
<i>Botrylloides leachi</i>											
<i>Molgula manhattensis</i>											
CHORDATA - Chondrichthyes											
<i>Scyliorhinus canicula</i>										P	
CHORDATA - Osteichthyes											
<i>Pollachius pollachius</i>											
<i>Trisopterus minutus</i>											
<i>Taurulus bubalis</i>						P					
<i>Eutrigla gurnardus</i>											
<i>Zeugopterus punctatus</i>											
<i>Ctenolabrus rupestris</i>											
<i>Labrus bergylta</i>											
<i>Labrus mixtus</i>											
<i>Parablennius gattorugine</i>											
<i>Callionymus lyra</i>											
<i>Pholis gunnellus</i>											
<i>Ammodytes sp.</i>											
Gobiidae indet.											
<i>Pomatoschistus sp.</i>											
<i>Pomatoschistus minutus</i>											
<i>Pomatoschistus pictus</i>											
<i>Thorogobius ephippiatus</i>											
Pleuronectidae indet.											

Species	Site Numbers											
	5/94			6/94			7/94	8/94		1/95		
	1	2	3	1	2		1	1	2	1	2	3
RHODOPHYTA												
Corallinaceae indet. (crusts)												
<i>Corallina officinalis</i>												
Non calcareous red crusts												
Unidentified foliose red algae												
<i>Lomentaria articulata</i>												
<i>Ahnfeltia plicata</i>												
<i>Palmaria palmata</i>												
<i>Dilsea carosa</i>												
<i>Callophyllis laciniata</i>												
<i>Mendithia microphylla</i>												
<i>Polyides rotundus</i>												
<i>Plocamium cartilagineum</i>		P										
<i>Calliblepharis ciliata</i>		P										
<i>Cordylecladia erecta</i>												
<i>Kallymenia reniformis</i>												
<i>Membranoptera alata</i>												
<i>Aglaothamnion byssoides</i>												
<i>Ceramium</i> sp.		P										
<i>Cryptopleura ramosa</i>		P										
<i>Delesseria sanguinea</i>									P			
<i>Phycodrys rubens</i>												
<i>Hypoglossum hypoglossoides</i>		P	P				P					
<i>Apoglossum ruscifolia</i>		P										
<i>Heterosiphonia plumosa</i>		P										
<i>Brogmatella byssoides</i>		P	P									
<i>Spondylothamnion multifidum</i>												
<i>Aglaothamnion byssoides</i>												
<i>Spondylothamnion multifidum</i>												
<i>Polysiphonia</i> sp.		P	P									
<i>Polysiphonia elongata</i>												
<i>Polysiphonia foetidissima</i>												
<i>Polysiphonia stricta</i>												
<i>Drachiella heterocarpa</i>												

Species	Site Numbers													
	5/94			6/94			7/94			8/94			1/95	
	1	2	3	1	2	1	1	2	1	2	3			
<i>Drachiella</i> sp.														
<i>Drachiella spectabilis</i>		P				P		P						
<i>Rhodomela confervoides</i>														
<i>Griffithsia equisetifolius</i>														
<i>Erythroglossum laciniatum</i>		P												
<i>Osmundea pinnatifida</i>														
<i>Phyllophora</i> sp.														
<i>Phyllophora pseudoceranioides</i>		P												
<i>Phyllophora crista</i>		P												
<i>Schottera nicaeensis</i>		P												
<i>Radicilingua thyzanorizans</i>			P											
PHAEOPHYTA														
<i>Dictyopterus membranacea</i>														
<i>Dictyota dichotoma</i>								P						
<i>Desmarestia aculeata</i>														
<i>Chorda filum</i>														
<i>Alaria esculenta</i>														
<i>Laminaria digitata</i>														
<i>Laminaria hyperborea</i>								P	P					
<i>Laminaria saccharina</i>														
<i>Sacchoriza polyschides</i>														
<i>Fucus serratus</i>														
<i>Cladostephus spongiosus</i>														
<i>Halopteris filicina</i>														
<i>Halopteris scoparea</i>														
<i>Zanardinia protypus</i>			P					P						
filamentous browns'			P											
CHLOROPHYTA														
<i>Cladophora pellucida</i>														
<i>Enteromorpha</i> sp.														
<i>Ulva</i> sp.														
<i>Cladophora</i> sp.														
<i>Chaetomorpha melagonium</i>														
<i>Bryopsis plumosa</i>			P											

Species	Site Numbers											
	2/95		3/95		4/95		5/95		6/95	7/95		
	1	2	1	2	1	2	1	2	1	1	2	
PORIFERA - Calcarea												
<i>Porifera indet.</i>												
<i>Scypha ciliata</i>												
PORIFERA - Demospongiae												
<i>Pachymatisma johnstonia</i>												
<i>Tethya aurantium</i>	P						P		R	P	P	
<i>Suberites</i> sp.									R			
<i>Suberites carnosus</i>											P	
<i>Polymastia</i> sp.									R		P	
<i>Polymastia boletiformis</i>										P		
<i>Polymastia mamillaris</i>										P		
<i>Cliona celata</i>			P									
<i>Axinella damicornis</i>												
<i>Stelligera</i> sp.										P		
<i>Stelligera rigida</i>										P		
<i>Stelligera stuposa</i>			P									
<i>Raspailia hispida</i>	P								R	P	?	
<i>Raspailia ramosa</i>									O			
<i>Halichondria</i> sp.												
<i>Halichondria panicea</i>	P											
<i>Halichondria bowerbankia</i>			P									
<i>Ciocalypta penicillus</i>									R	P		
<i>Esperiopsis fucorum</i>	P		P						O		P	
<i>Myxilla</i> sp.									C			
<i>Myxilla incrustans</i>												
<i>Myxilla rosacea</i>												
<i>Phorbas fictitius</i>										P		
<i>Hemimycale columella</i>	P								R	P	P	
<i>Haliclona</i> sp.			P								P	
<i>Haliclona fistulosa</i>										P		
<i>Haliclona oculata</i>										P		
<i>Haliclona viscosa</i>										P		
<i>Dysidea fragilis</i>			P						O	P		

Species	Site Numbers											
	2/95		3/95		4/95		5/95		6/95		7/95	
	1	2	1	2	1	2	1	2	1	1	2	
<i>Dercitus bucklandii</i>												
<i>Hymeniacion perleve</i>									O			
Porifera indet. (crusts)												
CNIDARIA - Hydrozoa												
Hydroid indet.												
<i>Corymorpha nutans</i>												
<i>Tubularia indivisa</i>												
<i>Halecium</i> sp.			P									
<i>Halecium halecinum</i>									R			
<i>Halopteis catharina</i>										P		
<i>Nemertesia antennina</i>			P						F	P	P	
<i>Nemertesia ramosa</i>												
<i>Plumaria setacea</i>			P							P		
<i>Abietinaria abietina</i>									O			
<i>Diphasia</i> sp.												
<i>Diphasia rosacea</i>												
<i>Diphasia attenuata</i>												
<i>Hydrallmania falcata</i>			P						R			
<i>Sertularia argentea</i>			P							P		
<i>Obelia dichotoma</i>												
<i>Obelia geniculata</i>												
CNIDARIA - Anthozoa												
Anthozoa indet.	P											
<i>Caryophyllia smithii</i>			P									
<i>Alcyonium digitatum</i>	P		P			P				P	P	
<i>Sarcodictyon roseum</i>												
<i>Isozoanthus sulcatus</i>										P		
<i>Actinia equina</i>												
<i>Anemonia viridis</i>										P		
<i>Urticina felina</i>	P		P			P			O		P	
<i>Metridium senile</i>												
<i>Sagartia</i> sp.						P						
<i>Sagartia elegans</i>												

Species	Site Numbers											
	2/95		3/95		4/95		5/95		6/95		7/95	
	1	2	1	2	1	2	1	2	1	1	2	
<i>Sagartia troglodytes</i>												
<i>Cereus pedunculatus</i>												
<i>Actinothoe sphyrodeta</i>												
<i>Sagartiogeton undatus</i>												
<i>Corynactis vindis</i>												
<i>Hacampoides purpurea</i>												
<i>Aiptaisia mutabilis</i>										P		
NEMERTEA												
<i>Lineus longissimus</i>			P							P		
ANNELIDA - Polychaeta												
Teribellidae indet.			P									
<i>Polydora</i> sp.												
<i>Chaetopterus variopedatus</i>								P				
<i>Lanice conchilega</i>				P	P			P				
<i>Bispira volutacornis</i>												
Sabellidae indet.			P					?			P	
<i>Pseudopotamilla reneformis</i>												
<i>Pomatoceros</i> sp.					P				P	P		
<i>Pomatoceros triqueter</i>				P								
CRUSTACEA - Cirripedia												
Cirripedia indet.												
<i>Semibalanus balanoides</i>												
<i>Balanus balanus</i>				P						P		
<i>Balanus crenatus</i>				P					F			
CRUSTACEA - Malacostraca												
<i>Galathea strigosa</i>			P									
<i>Homarus gammarus</i>												
Paguridae indet.												
<i>Pagurus bernhardus</i>										P		
<i>Inachus</i> sp.												
<i>Inachus dorsettensis</i>												
<i>Inachus phalangium</i>			P									

Species	Site Numbers											
	2/95		3/95		4/95		5/95		6/95		7/95	
	1	2	1	2	1	2	1	2	1	1	2	
<i>Macropodia rostrata</i>												
<i>Cancer pagurus</i>			P			P						
<i>Liocarcinus depurator</i>												
<i>Necora puber</i>			P					R	P	P		
<i>Carcinus maenas</i>												
<i>Hyas araneus</i>						P						
<i>Maia squinado</i>			P			P		O			P	
<i>Natantia</i> indet. (prawn)												
MOLLUSCA - Gastropoda												
<i>Patella</i> sp.												
<i>Heliccion pellucida</i>												
<i>Trochidae</i> indet.												
<i>Gibbula cineraria</i>								O	P			
<i>Gibbula magus</i>												
<i>Calliostoma zizyphinum</i>						P		O	P			
<i>Trivia</i> sp.												
<i>Trivia arctica</i>										P		
<i>Trivia monacha</i>			P							P		
<i>Polinices polianus</i>												
<i>Ocenebra ernacea</i>			P			P		O	P			
<i>Nucella lapillus</i>												
<i>Buccinum undatum</i>			P									
<i>Hinia</i> sp.												
<i>Hinia incrassata</i>										P		
<i>Hinia reticulata</i>										P		
<i>Aplysia punctata</i>												
<i>Janolus cristatus</i>												
<i>Flabellina pedata</i>								R	P			
<i>Coryphella lineata</i>												
<i>Archidoris pseudoargus</i>								R				
<i>Jorunna tomentosa</i>										P		
<i>Goniodoris nodosa</i>												
<i>Onchidoris</i> sp.												
<i>Polycera</i> sp.												

Species	Site Numbers											
	2/95		3/95		4/95		5/95		6/95		7/95	
	1	2	1	2	1	2	1	2	1	1	2	
<i>Polycera faeroensis</i>												
<i>Tritonia</i> sp.			P									
<i>Tritonia hombergi</i>												
<i>Tritonia lineata</i>									P			
<i>Hiatella arctica</i>												
<i>Mytilus edulis</i>												
<i>Pecten maximus</i>					P							P
<i>Mya arenaria</i>												
MOLLUSCA - Cephalopoda												
<i>Eledone cirrhosa</i>										R		
BRYOZOA												
Bryozoa indet.												
Crisiidae indet.			P							P		
<i>Crisia denticuleta</i>												
<i>Alcyonidium diaphanum</i>				P	P				O	P		
<i>Membranipora membranacea</i>												
<i>Flustra foliacea</i>			P						C			
<i>Chartella papyracea</i>			P							P		
<i>Bugula flabellata</i>												
<i>Bugula plumosa</i>			P									
<i>Bugula turbinata</i>										P		
<i>Bugula</i> sp.												
<i>Scrupocellaria</i> sp.										O		
<i>Cellaria</i> spp.	P					P						
<i>Cellaria sinuosa</i>			P						F			
Pink encrusting bryozoan			P									
<i>Pentapora foliacea</i>	P								O	P	P	
<i>Cellepora pumicosa</i>			P						F	P	P	
PHORONIDA												
<i>Phoronis hippocrepia</i>			P							P		
ECHINODERMATA												

Species	Site Numbers											
	2/95		3/95		4/95		5/95		6/95		7/95	
	1	2	1	2	1	2	1	2	1	1	2	
<i>Antedon bifida</i>			P							P		
<i>Crossaster papposus</i>						P						
<i>Henricia</i> sp.	P											
<i>Henricia oculata</i>			P									
<i>Asterias rubens</i>			P									
<i>Ophiuroidea</i> indet.												
<i>Ophiura albida</i>				P	P		P					
<i>Echinus esculentus</i>			P						R			
<i>Holothuroidea</i> indet.	P										P	
<i>Echinocardium cordatum</i>												
<i>Pawsonia saxicola</i>			P						O			
<i>Neopentadactyla mixta</i>							?	?				
<i>Aslia lefevrei</i>			P						O	P		
CHORDATA / TUNICATA - Ascidiacea												
Ascidiacea indet.												
<i>Clavelina lepadiformis</i>												
<i>Polyclinid</i> spp.												
<i>Polyclinum</i> sp.												
<i>Polyclinum aurantium</i>										P		
<i>Morchellium argus</i>			P						?R			
<i>Sidnyum</i> indet. orange and cream circular siphons												
<i>Sidnyum</i> indet. white stalked												
<i>Sidnyum turbinatum</i>												
<i>Sidnyum elegans</i>												
<i>Aplidium</i> sp.	P										P	
<i>Aplidium densum</i>												
<i>Aplidium punctum</i>			P							P		
<i>Diplosoma listerianum</i>												
<i>Ciona intestinalis</i>												
<i>Corella parallelogramma</i>												
<i>Asciella scabra</i>										P		
<i>Polycarpa scuba</i>			P						S	P		
<i>Polycarpa</i> sp.												
<i>Dendrodoa grossularia</i>							P		F			

Species	Site Numbers											
	2/95		3/95		4/95		5/95		6/95		7/95	
	1	2	1	2	1	2	1	2	1	2	1	2
<i>Distomus variolosus</i>										R		
<i>Botryllus schlosseri</i>										O		
<i>Botrylloides leachi</i>												
<i>Molgula manhattensis</i>				P							P	
CHORDATA - Chondrichthyes												
<i>Scyliorhinus canicula</i>	P					P				R		P
CHORDATA - Osteichthyes												
<i>Pollachius pollachius</i>												
<i>Trisopterus minutus</i>			P									
<i>Taurulus bubalis</i>												
<i>Eutrigla gurnardus</i>												
<i>Zeugopterus punctatus</i>												
<i>Ctenolabrus rupestris</i>			P								P	
<i>Labrus bergylta</i>												
<i>Labrus mixtus</i>												
<i>Parablennius gattorugine</i>	P		P									
<i>Callionymus lyra</i>										O		
<i>Pholis gunnellus</i>			P									
<i>Ammodytes</i> sp.												
Gobiidae indet.								P				
<i>Pomatoschistus</i> sp.												
<i>Pomatoschistus minutus</i>												
<i>Pomatoschistus pictus</i>			P									
<i>Thorogobius ephippiatus</i>										R		
Pleuronectidae indet.												
RHODOPHYTA												
Corallinaceae indet. (crusts)				P							P	
<i>Corallina officinalis</i>												
Non calcareous red crusts												
Unidentified foliose red algae												
<i>Lomentaria articulata</i>												
<i>Ahnfeltia plicata</i>												

Species	Site Numbers											
	2/95		3/95		4/95		5/95		6/95		7/95	
	1	2	1	2	1	2	1	2	1	1	2	
<i>Palmaria palmata</i>												
<i>Dilsea carnosa</i>										P		
<i>Callophyllis laciniata</i>												
<i>Merdithia microphylla</i>												
<i>Polyides rotundus</i>												
<i>Plocamium cartilagineum</i>										P		
<i>Calliblepharis ciliata</i>												
<i>Cordylecladia erecta</i>												
<i>Kallymenia reniformis</i>												
<i>Membranoptera alata</i>												
<i>Aglaothamnion byssoides</i>												
<i>Ceramium</i> sp.												
<i>Cryptopleura ramosa</i>												
<i>Delesseria sanguinea</i>												
<i>Phycodrys rubens</i>												
<i>Hypoglossum hypoglossoides</i>										P	P	
<i>Apoglossum ruscifolia</i>												
<i>Heterosiphonia plumosa</i>										P		
<i>Brogmatella byssoides</i>										P		
<i>Spondylothamnion multifidum</i>												
<i>Aglaothamnion byssoides</i>												
<i>Spondylothamnion multifidum</i>												
<i>Polysiphonia</i> sp.												
<i>Polysiphonia elongata</i>												
<i>Polysiphonia foetidissima</i>												
<i>Polysiphonia stricta</i>												
<i>Drachiella heterocarpa</i>										P		
<i>Drachiella</i> sp.												
<i>Drachiella spectabilis</i>												
<i>Rhodomela confervoides</i>												
<i>Griffithsia equisetifolius</i>												
<i>ErythroGLOSSUM laciniatum</i>												
<i>Osmundea pinnatifida</i>												
<i>Phyllophora</i> sp.										P		
<i>Phyllophora pseudoceranoides</i>												

Species	Site Numbers											
	2/95		3/95		4/95		5/95		6/95	7/95		
	1	2	1	2	1	2	1	2	1	1	2	
<i>Phyllophora crista</i>												
<i>Schottera nicaeensis</i>												
<i>Radicilingua thyzanorizans</i>												
PHAEOPHYTA												
<i>Dictyopteria membranacea</i>												
<i>Dictyota dichotoma</i>									P			
<i>Desmarestia aculeata</i>												
<i>Chorda filum</i>												
<i>Alaria esculenta</i>												
<i>Laminaria digitata</i>												
<i>Laminaria hyperborea</i>									P			
<i>Laminaria saccharina</i>									P			
<i>Sacchoriza polyschides</i>												
<i>Fucus serratus</i>												
<i>Cladostephus spongiosus</i>												
<i>Halopteris filicina</i>												
<i>Halopteris scoparea</i>												
<i>Zanardinia prototypus</i>												
filamentous browns'												
CHLOROPHYTA												
<i>Cladophora pellucida</i>												
<i>Enteromorpha</i> sp.												
<i>Ulva</i> sp.												
<i>Cladophora</i> sp.												
<i>Chaetomorpha melagonium</i>												
<i>Bryopsis plumosa</i>												

Species	Site Numbers										
	8/95		9/95		10/95		11/95		1/98		
	1	1	2	3	1	2	1	2	3	1	2
PORIFERA - Calcarea											
<i>Porifera indet.</i>				P							
<i>Scypha ciliata</i>											
PORIFERA - Demospongiae											
<i>Pachymatisma johnstonia</i>									P	O	
<i>Tethya aurantium</i>	F							P			
<i>Suberites sp.</i>											
<i>Suberites carnosus</i>											R
<i>Polymastia sp.</i>											
<i>Polymastia boletiformis</i>										O	
<i>Polymastia mamillaris</i>							R			O	
<i>Cliona celata</i>	R						R			O	F
<i>Axinella damicornis</i>							R				
<i>Stelligera sp.</i>											
<i>Stelligera rigida</i>	F										
<i>Stelligera stuposa</i>											
<i>Raspailia hispida</i>											
<i>Raspailia ramosa</i>	O										
<i>Halichondria sp.</i>										F	
<i>Halichondria panicea</i>	C			P			O				
<i>Halichondria bowerbankia</i>											
<i>Ciocalypa penicillus</i>											
<i>Esperiopsis fucorum</i>	O										
<i>Myxilla sp.</i>							O				
<i>Myxilla incrustans</i>	C										
<i>Myxilla rosacea</i>	F										
<i>Phorbas fictitius</i>	O										
<i>Hemimycale columella</i>	C						R				
<i>Haliclona sp.</i>											
<i>Haliclona fistulosa</i>											
<i>Haliclona oculata</i>	F						R		P		
<i>Haliclona viscuosa</i>											
<i>Dysidea fragilis</i>	F						F			O	

Species	Site Numbers										
	8/95	9/95			10/95		11/95			1/98	
	1	1	2	3	1	2	1	2	3	1	2
<i>Dercitus bucklandii</i>											
<i>Hymeniacion perleve</i>	F										
Porifera indet. (crusts)											
CNIDARIA - Hydrozoa											
Hydroid indet.											
<i>Corymorpha nutans</i>											
<i>Tubularia indivisa</i>											
<i>Halecium</i> sp.											
<i>Halecium halecinum</i>	F			P		R					
<i>Halopteris cathanna</i>											
<i>Nemertesia antennina</i>	F	P		P		O		C		O	O
<i>Nemertesia ramosa</i>											
<i>Plumaria setacea</i>						P					
<i>Abietinaria abietina</i>											
<i>Diphasia</i> sp.											
<i>Diphasia rosacea</i>											
<i>Diphasia attenuata</i>											
<i>Hydrallmania falcata</i>	R										
<i>Sertularia argentea</i>											
<i>Obelia dichotoma</i>											
<i>Obelia geniculata</i>						F					
CNIDARIA - Anthozoa											
Anthozoa indet.											
<i>Caryophyllia smithii</i>				P							
<i>Alcyonium digitatum</i>	F	P		P	P	F		A		O	
<i>Sarcodictyon roseum</i>						?					
<i>Isozoanthus sulcatus</i>											
<i>Actinia equina</i>											
<i>Anemonia viridis</i>	F					R					R
<i>Urticina felina</i>	F		P							F	A
<i>Metridium senile</i>											
<i>Sagartia</i> sp.											
<i>Sagartia elegans</i>										R	

Species	Site Numbers											
	8/95		9/95		10/95		11/95		1/98			
	1	1	2	3	1	2	1	2	3	1		2
<i>Sagartia troglodytes</i>												
<i>Cereus pedunculatus</i>												
<i>Actinothoe sphyrodeta</i>												
<i>Sagartiogeton undatus</i>												
<i>Corynactis viridis</i>												
<i>Hacampoides purpurea</i>												
<i>Aiptasia mutabilis</i>		P				O		F				
NEMERTEA												
<i>Lineus longissimus</i>												
ANNELIDA - Polychaeta												
Teribellidae indet.												
<i>Polydora</i> sp.												
<i>Chaetopterus variopedatus</i>												
<i>Lanice conchilega</i>			P									
<i>Bispira volutacomis</i>												
Sabellidae indet.												
<i>Pseudopotamilla reneformis</i>										O		
<i>Pomatoceros</i> sp.	F		P									
<i>Pomatoceros triqueter</i>												
CRUSTACEA - Cirripedia												
Cirripedia indet.												
<i>Semibalanus balanoides</i>												
<i>Balanus balanus</i>	o					O						
<i>Balanus crenatus</i>						F						
CRUSTACEA - Malacostraca												
<i>Galathea strigosa</i>						R						
<i>Homarus gammarus</i>												
Paguridae indet.												
<i>Pagurus bernhardus</i>												
<i>Inachus</i> sp.						R						
<i>Inachus dorsettensis</i>	F			P		R						
<i>Inachus phalangium</i>												

Species	Site Numbers										
	8/95	9/95			10/95		11/95			1/98	
	1	1	2	3	1	2	1	2	3	1	2
<i>Macropodia rostrata</i>											
<i>Cancer pagurus</i>	O			P				P			
<i>Liocarcinus depurator</i>											
<i>Necora puber</i>	F	P				O			P		
<i>Carcinus maenas</i>											
<i>Hyas araneus</i>											
<i>Maia squinado</i>		P				O		P			A
<i>Natantia</i> indet. (prawn)											
MOLLUSCA - Gastropoda											
<i>Patella</i> sp.											
<i>Heliccion pellucida</i>											
<i>Trochidae</i> indet.											
<i>Gibbula cineraria</i>						R					
<i>Gibbula magus</i>											
<i>Calliostoma zizyphinum</i>						R				O	
<i>Trivia</i> sp.						R					
<i>Trivia arctica</i>											
<i>Trivia monacha</i>	O										
<i>Polinices polianus</i>											
<i>Ocenebra erinacea</i>				P		O					
<i>Nucella lapillus</i>										F	
<i>Buccinum undatum</i>											
<i>Hinia</i> sp.						O					
<i>Hinia incrassata</i>											
<i>Hinia reticulata</i>											
<i>Aplysia punctata</i>											
<i>Janolus cristatus</i>											
<i>Flabellina pedata</i>	F			P							
<i>Coryphella lineata</i>											
<i>Archidoris pseudoargus</i>		P		P		R					
<i>Jorunna tomentosa</i>											
<i>Goniodoris nodosa</i>											
<i>Onchidoris</i> sp.										O	
<i>Polycera</i> sp.											

Species	Site Numbers										
	8/95		9/95		10/95		11/95		1/98		
	1	1	2	3	1	2	1	2	3	1	2
<i>Polycera faeroensis</i>											
<i>Tritonia</i> sp.											
<i>Tritonia hombergi</i>											
<i>Tritonia lineata</i>						R					
<i>Hiatella arctica</i>								F			
<i>Mytilus edulis</i>		P			P	E					A
<i>Pecten maximus</i>											
<i>Mya arenaria</i>											
MOLLUSCA - Cephalopoda											
<i>Eledone cirrhosa</i>											
BRYOZOA											
Bryozoa indet.											
Crisiidae indet.											
<i>Crisia denticulata</i>	O										
<i>Alcyonidium diaphanum</i>											
<i>Membranipora membranacea</i>						R					
<i>Flustra foliacea</i>		P									
<i>Chartella papyracea</i>											
<i>Bugula flabellata</i>											
<i>Bugula plumosa</i>	O					R		P		F	
<i>Bugula turbinata</i>	O							P			
<i>Bugula</i> sp.											
<i>Scrupocellaria</i> sp.											
<i>Cellaria</i> spp.								P			
<i>Cellaria sinuosa</i>											
Pink encrusting bryozoan											
<i>Pentapora foliacea</i>				P							
<i>Cellepora pumicosa</i>	F			P		R		P			
PHORONIDA											
<i>Phoronis hippocrepia</i>											
ECHINODERMATA											

Species	Site Numbers										
	8/95		9/95		10/95		11/95		1/98		
	1	1	2	3	1	2	1	2	3	1	2
<i>Antedon bifida</i>											
<i>Crossaster papposus</i>											
<i>Henricia</i> sp.											
<i>Henricia oculata</i>											
<i>Asterias rubens</i>		P			P	C					A
<i>Ophiuroidea</i> indet.											
<i>Ophiura albida</i>											
<i>Echinus esculentus</i>											
<i>Holothuroidea</i> indet.											
<i>Echinocardium cordatum</i>											
<i>Pawsonia saxicola</i>						R					
<i>Neopentadactyla mixta</i>											
<i>Aslia lefevrei</i>	F	P									
CHORDATA / TUNICATA - Ascidiacea											
Ascidiacea indet.											
<i>Clavelina lepadiformis</i>										O	
<i>Polyclinid</i> spp.		?									
<i>Polyclinum</i> sp.											
<i>Polyclinum aurantium</i>	C										
<i>Morchellium argus</i>											
<i>Sidnyum</i> indet. orange and cream circular siphons											
<i>Sidnyum</i> indet. white stalked											
<i>Sidnyum turbinatum</i>	O										
<i>Sidnyum elegans</i>											
<i>Aplidium</i> sp.											
<i>Aplidium densum</i>											
<i>Aplidium punctum</i>	C					R				O	
<i>Diplosoma listerianum</i>											
<i>Ciona intestinalis</i>											
<i>Corella parafelogramma</i>											
<i>Asciella scabra</i>											
<i>Polycarpa scuba</i>	A			P		R		A			
<i>Polycarpa</i> sp.										C	F
<i>Dendrodoa grossularia</i>						R					

Species	Site Numbers											
	8/95	9/95										
	1	1	2	3	1	2	1	2	3	1	2	
<i>Distomus variolosus</i>	F			P								
<i>Botryllus schlosseri</i>						R						
<i>Botrylloides leachi</i>										O		
<i>Molgula manhattensis</i>												
CHORDATA - Chondrichthyes												
<i>Scyliorhinus canicula</i>										R		
CHORDATA - Osteichthyes												
<i>Pollachius pollachius</i>												
<i>Trisopterus minutus</i>												
<i>Taurulus bubalis</i>												
<i>Eutrigla gurnardus</i>												
<i>Zeugopterus punctatus</i>												
<i>Ctenolabrus rupestris</i>												
<i>Labrus bergylta</i>												
<i>Labrus mixtus</i>												
<i>Parablennius gattorugine</i>						R		P				
<i>Callionymus lyra</i>												
<i>Pholis gunnellus</i>												
<i>Ammodytes</i> sp.												
Gobiidae indet.												
<i>Pomatoschistus</i> sp.												
<i>Pomatoschistus minutus</i>												
<i>Pomatoschistus pictus</i>												
<i>Thorogobius ephippiatus</i>												
Pleuronectidae indet.												
RHODOPHYTA												
Corallinaceae indet. (crusts)	F					F						
<i>Corallina officinalis</i>												
Non calcareous red crusts	O											
Unidentified foliose red algae						F	P					
<i>Lomentaria articulata</i>												
<i>Ahnfeltia plicata</i>												

Species	Site Numbers										
	8/95	9/95			10/95		11/95			1/98	
	1	1	2	3	1	2	1	2	3	1	2
<i>Palmaria palmata</i>											
<i>Dilsea carcosa</i>	F										
<i>Callophyllis laciniata</i>	O										
<i>Meridithia microphylla</i>	F										
<i>Polyides rotundus</i>											
<i>Plocamium cartilagineum</i>	F										
<i>Calliblepharis ciliata</i>	C									C	
<i>Cordylecladia erecta</i>											
<i>Kallymenia reniformis</i>											
<i>Membranoptera alata</i>											
<i>Alglaothamnion byssoides</i>											
<i>Ceramium</i> sp.											
<i>Cryptopleura ramosa</i>	F										
<i>Delesseria sanguinea</i>	F	P									
<i>Phycodrys rubens</i>											
<i>Hypoglossum hypoglossoides</i>	C										
<i>Apoglossum ruscifolia</i>											
<i>Heterosiphonia plumosa</i>	F									O	
<i>Brogmatella byssoides</i>										O	
<i>Sphondylothamnion multifidum</i>											
<i>Aglaothamnion byssoides</i>											
<i>Spondylothamnion multifidum</i>											
<i>Polysiphonia</i> sp.											
<i>Polysiphonia elongata</i>											
<i>Polysiphonia foetidissima</i>											
<i>Polysiphonia stricta</i>											
<i>Drachiella heterocarpa</i>											
<i>Drachiella</i> sp.											
<i>Drachiella spectabilis</i>											
<i>Rhodomela confervoides</i>											
<i>Griffithsia equisetifolius</i>											
<i>ErythroGLOSSUM laciniatum</i>											
<i>Osmundea pinnatifida</i>											
<i>Phyllophora</i> sp.											
<i>Phyllophora pseudoceranoides</i>											

Species	Site Numbers											
	8/95		9/95		10/95		11/95			1/98		
	1	1	2	3	1	2	1	2	3	1	2	
<i>Phyllophora crista</i>												
<i>Schottera nicaeensis</i>												
<i>Radicilingua thyzanorizans</i>												
PHAEOPHYTA												
<i>Dictyopteria membranacea</i>	F											
<i>Dictyota dichotoma</i>	C											
<i>Desmarestia aculeata</i>												
<i>Chorda filum</i>												
<i>Alaria esculenta</i>												
<i>Laminaria digitata</i>												
<i>Laminaria hyperborea</i>						F	P			C		
<i>Laminaria saccharina</i>												
<i>Sacchoriza polyschides</i>												
<i>Fucus serratus</i>												
<i>Cladostephus spongiosus</i>												
<i>Halopteris filicina</i>												
<i>Halopteris scopareæ</i>												
<i>Zanardinia protypus</i>												
filamentous browns'												
CHLOROPHYTA												
<i>Cladophora pellucida</i>												
<i>Enteromorpha</i> sp.												
<i>Ulva</i> sp.												
<i>Cladophora</i> sp.												
<i>Chaetomorpha melagonium</i>												
<i>Bryopsis plumosa</i>												

Species	Site Numbers										
	1/98 cont.			2/98		3/98		4/98	5/98		
	3	4	5	1	2	1	2	1	1	2	3
PORIFERA - Calcarea											
<i>Porifera indet.</i>											
<i>Scypha ciliata</i>									P		
PORIFERA - Demospongiae											
<i>Pachymatisma johnstonia</i>			O								
<i>Tethya aurantium</i>			O						P		
<i>Suberites sp.</i>											
<i>Suberites carnosus</i>											
<i>Polymastia sp.</i>											
<i>Polymastia boletiformis</i>			O								
<i>Polymastia mamillaris</i>			O								
<i>Cliona celata</i>			F					O			
<i>Axinella damicomis</i>											
<i>Stelligera sp.</i>											
<i>Stelligera rigida</i>											
<i>Stelligera stuposa</i>											
<i>Raspailia hispida</i>											
<i>Raspailia ramosa</i>											
<i>Halichondria sp.</i>		F	F								
<i>Halichondria panicea</i>								R	P		
<i>Halichondria bowerbankia</i>											
<i>Ciocalypa penicillus</i>											
<i>Esperiopsis fucorum</i>											
<i>Myxilla sp.</i>											
<i>Myxilla incrustans</i>											
<i>Myxilla rosacea</i>											
<i>Phorbas fictitius</i>											
<i>Hemimycale columella</i>											
<i>Haliclona sp.</i>											
<i>Haliclona fistulosa</i>											
<i>Haliclona oculata</i>			C						P		
<i>Haliclona viscuosa</i>											
<i>Dysidea fragilis</i>			O								

Species	Site Numbers											
	1/98 cont.			2/98			3/98			4/98		5/98
	3	4	5	1	2	1	2	1	1	2	3	
<i>Dercitus bucklandii</i>												
<i>Hymeniacion perleve</i>												P
Porifera indet. (crusts)												
CNIDARIA - Hydrozoa												
Hydroid indet.												
<i>Corymorpha nutans</i>												
<i>Tubularia indivisa</i>												
<i>Halecium</i> sp.												
<i>Halecium halecinum</i>												
<i>Halopteis catharina</i>												
<i>Nemertesia antennina</i>		O	C									
<i>Nemertesia ramosa</i>												
<i>Plumaria setacea</i>												
<i>Abietinaria abietina</i>												
<i>Diphasia</i> sp.												
<i>Diphasia rosacea</i>												P
<i>Diphasia attenuata</i>												
<i>Hydrailmania falcata</i>												
<i>Sertularia argentea</i>										C		
<i>Obelia dichotoma</i>												
<i>Obelia geniculata</i>												P
CNIDARIA - Anthozoa												
Anthozoa indet.												
<i>Caryophyllia smithii</i>												
<i>Alcyonium digitatum</i>		F	A							R		
<i>Sarcodictyon roseum</i>												
<i>Isozoanthus sulcatus</i>												
<i>Actinia equina</i>										R		
<i>Anemonia viridis</i>												
<i>Urticina felina</i>		A	C							C	P	
<i>Metridium senile</i>			R									
<i>Sagartia</i> sp.												
<i>Sagartia elegans</i>												P

Species	Site Numbers														
	1/98 cont.				2/98			3/98			4/98	5/98			
	3	4	5	1	2	1	2	1	2	1	1	2	3		
<i>Sagartia troglodytes</i>												P			
<i>Cereus pedunculatus</i>			O							F					
<i>Actinothoe sphyrodeta</i>															
<i>Sagartiogeton undatus</i>															
<i>Corynactis viridis</i>															
<i>Hacampoides purpurea</i>															
<i>Aiptaisia mutabilis</i>															
NEMERTEA															
<i>Lineus longissimus</i>															
ANNELIDA - Polychaeta															
Teribellidae indet.															P
<i>Polydora</i> sp.															
<i>Chaetopterus variopedatus</i>															
<i>Lanice conchilega</i>									F		O				
<i>Bispira volutacomis</i>															
Sabellidae indet.															
<i>Pseudopotamilla reneformis</i>															P
<i>Pomatoceros</i> sp.							O		A		F				P
<i>Pomatoceros triqueter</i>															
CRUSTACEA - Cirripedia															
Cirripedia indet.	F										O				
<i>Semibalanus balanoides</i>							O		A						
<i>Balanus balanus</i>															
<i>Balanus crenatus</i>					F										
CRUSTACEA - Malacostraca															
<i>Galathea strigosa</i>															
<i>Homarus gammarus</i>															
Paguridae indet.						P					C				
<i>Pagurus bernhardus</i>					P		O		C						P
<i>Inachus</i> sp.															
<i>Inachus dorsettensis</i>											R				P
<i>Inachus phalangium</i>															

Species	Site Numbers										
	1/98 cont.				2/98		3/98		4/98	5/98	
	3	4	5	1	2	1	2	1	1	2	3
<i>Macropodia rostrata</i>											
<i>Cancer pagurus</i>		R									
<i>Liocarcinus depurator</i>											
<i>Necora puber</i>											
<i>Carcinus maenas</i>								O			
<i>Hyas araneus</i>					P						
<i>Maia squinado</i>		A	F		P	O	O	R			P
<i>Natantia</i> indet. (prawn)											
MOLLUSCA - Gastropoda											
<i>Patella</i> sp.											
<i>Heliccion pellucida</i>											
<i>Trochidae</i> indet.											
<i>Gibbula cineraria</i>											
<i>Gibbula magus</i>								?			
<i>Calliostoma zizyphinum</i>											P
<i>Trivia</i> sp.											
<i>Trivia arctica</i>											
<i>Trivia monacha</i>											P
<i>Polinices polianus</i>								R			
<i>Ocenebra erinacea</i>											
<i>Nucella lapillus</i>											P
<i>Buccinum undatum</i>						O	F	F			P
<i>Hinia</i> sp.											
<i>Hinia incrassata</i>											
<i>Hinia reticulata</i>											
<i>Aplysia punctata</i>											
<i>Janolus cristatus</i>											
<i>Flabellina pedata</i>											
<i>Coryphella lineata</i>											
<i>Archidoris pseudoargus</i>											
<i>Jorunna tomentosa</i>											
<i>Goniodoris nodosa</i>											
<i>Onchidoris</i> sp.											
<i>Polycera</i> sp.											

Species	Site Numbers												
	1/98 cont.			2/98			3/98			4/98	5/98		
	3	4	5	1	2	1	2	1	1	1	2	3	
<i>Polycera faeroensis</i>													
<i>Tritonia</i> sp.													
<i>Tritonia hombergi</i>													
<i>Tritonia lineata</i>													
<i>Hiatella arctica</i>													
<i>Mytilus edulis</i>													
<i>Pecten maximus</i>													
<i>Mya arenaria</i>													
MOLLUSCA - Cephalopoda													
<i>Eledone cirrhosa</i>													
BRYOZOA													
Bryozoa indet.													
Crisiidae indet.													P
<i>Crisia denticulata</i>													
<i>Alcyonidium diaphanum</i>									O				
<i>Membranipora membranacea</i>													
<i>Flustra foliacea</i>			C										
<i>Chartella papyracea</i>													
<i>Bugula flabellata</i>													
<i>Bugula plumosa</i>													
<i>Bugula turbinata</i>													
<i>Bugula</i> sp.													
<i>Scrupocellaria</i> sp.													
<i>Cellaria</i> spp.													
<i>Cellaria sinuosa</i>													
Pink encrusting bryozoan													
<i>Pentapora foliacea</i>													
<i>Cellepora pumicosa</i>													P
PHORONIDA													
<i>Phoronis hippocrepia</i>													

Species	Site Numbers										
	1/98 cont.			2/98		3/98		4/98	5/98		
	3	4	5	1	2	1	2	1	1	2	3
ECHINODERMATA											
<i>Antedon bifida</i>		R									
<i>Crossaster papposus</i>											
<i>Henricia</i> sp.											
<i>Henricia oculata</i>											
<i>Asterias rubens</i>		F				F	F				
<i>Ophiuroidea</i> indet.		A									
<i>Ophiura albida</i>											
<i>Echinus esculentus</i>											
<i>Holothuroidea</i> indet.											
<i>Echinocardium cordatum</i>				P							
<i>Pawsonia saxicola</i>											
<i>Neopentadactyla mixta</i>											
<i>Aslia lefevrei</i>											
CHORDATA / TUNICATA - Ascidiacea											
Ascidiacea indet.											
<i>Clavelina lepadiformis</i>		O									
<i>Polyclinid</i> spp.											
<i>Polyclinum</i> sp.											
<i>Polyclinum aurantium</i>											
<i>Morchellium argus</i>											
<i>Sidnyum</i> indet. orange and cream circular siphons									P		
<i>Sidnyum</i> indet. white stalked									P		
<i>Sidnyum turbinatum</i>											
<i>Sidnyum elegans</i>											
<i>Aplidium</i> sp.											
<i>Aplidium densum</i>											
<i>Aplidium punctum</i>		O									
<i>Diplosoma listerianum</i>									P		
<i>Ciona intestinalis</i>											
<i>Corella parallelogramma</i>											
<i>Ascidella scabra</i>											
<i>Polycarpa scuba</i>									P		
<i>Polycarpa</i> sp.			C								

Species	Site Numbers										
	1/98 cont.			2/98		3/98		4/98	5/98		
	3	4	5	1	2	1	2	1	1	2	3
<i>Dendrodoa grossularia</i>											
<i>Distomus variolosus</i>											
<i>Botryllus schlosseri</i>											
<i>Botrylloides leachi</i>											
<i>Molgula manhattensis</i>											
CHORDATA - Chondrichthyes											
<i>Scyliorhinus canicula</i>		R					R				
CHORDATA - Osteichthyes											
<i>Pollachius pollachius</i>											
<i>Trisopterus minutus</i>											
<i>Taurulus bubalis</i>		R									
<i>Eutrigla gurnardus</i>											
<i>Zeugopterus punctatus</i>											
<i>Ctenolabrus rupestris</i>											
<i>Labrus bergylta</i>											
<i>Labrus mixtus</i>											
<i>Parablennius gattorugine</i>											
<i>Callionymus lyra</i>											
<i>Pholis gunnellus</i>											
<i>Ammodytes</i> sp.					P						
Gobiidae indet.						R		O			
<i>Pomatoschistus</i> sp.											
<i>Pomatoschistus minutus</i>								?			
<i>Pomatoschistus pictus</i>											
<i>Thorogobius ephippiatus</i>											
Pleuronectidae indet.					P						
RHODOPHYTA											
Corallinaceae indet. (crusts)				C							
<i>Corallina officinalis</i>				F							
Non calcareous red crusts											
Unidentified foliose red algae											
<i>Lomentaria articulata</i>											

Species	Site Numbers													
	1/98 cont.			2/98			3/98			4/98			5/98	
	3	4	5	1	2	1	2	1	2	1	1	2	3	
<i>Ahnfeltia plicata</i>													P	
<i>Palmaria palmata</i>														
<i>Dilsea camosa</i>														
<i>Callophyllis laciniata</i>											P			
<i>Meridithia microphylla</i>														
<i>Polyides rotundus</i>			F											
<i>Plocamium cartilagineum</i>											P			
<i>Calliblepharis ciliata</i>											P			
<i>Cordylecladia erecta</i>														
<i>Kallymenia reniformis</i>											P			
<i>Membranoptera alata</i>														
<i>Aglaothamnion byssoides</i>														
<i>Ceramium</i> sp.														
<i>Cryptopleura ramosa</i>											P			
<i>Delesseria sanguinea</i>											P			
<i>Phycodrys rubens</i>														
<i>Hypoglossum hypoglossoides</i>											P			
<i>Apoglossum ruscifolia</i>														
<i>Heterosiphonia plumosa</i>											P			
<i>Brogniatella byssoides</i>														
<i>Sphondylothamnion multifidum</i>														
<i>Aglaothamnion byssoides</i>														
<i>Spondylothamnion multifidum</i>														
<i>Polysiphonia</i> sp.			O											
<i>Polysiphonia elongata</i>														
<i>Polysiphonia foetidissima</i>														
<i>Polysiphonia stricta</i>											P			
<i>Drachiella heterocarpa</i>														
<i>Drachiella</i> sp.														
<i>Drachiella spectabilis</i>														
<i>Rhodomela confervoides</i>												P		
<i>Griffithsia equisetifolius</i>														
<i>Erythrogllossum laciniatum</i>											P			
<i>Osmundea pinnatifida</i>														
<i>Phyllophora</i> sp.														

Species	Site Numbers										
	1/98 cont.			2/98		3/98		4/98	5/98		
	3	4	5	1	2	1	2	1	1	2	3
<i>Phyllophora pseudoceranooides</i>											
<i>Phyllophora crista</i>											
<i>Schottera nicaeensis</i>											
<i>Radicilingua thyanorizans</i>											
PHAEOPHYTA											
<i>Dictyopteris membranacea</i>											
<i>Dictyota dichotoma</i>									P		
<i>Desmarestia aculeata</i>											
<i>Chorda filum</i>											
<i>Alaria esculenta</i>											
<i>Laminaria digitata</i>				F							
<i>Laminaria hyperborea</i>									P		
<i>Laminaria saccharina</i>											
<i>Sacchoriza polyschides</i>									P		
<i>Fucus serratus</i>											
<i>Cladostephus spongiosus</i>											
<i>Halopteris filicina</i>									P		
<i>Halopteris scoparea</i>											
<i>Zanardinia protypus</i>											
filamentous browns'				F					P		
CHLOROPHYTA											
<i>Cladophora pellucida</i>									P		
<i>Enteromorpha sp.</i>				O							
<i>Ulva sp.</i>											
<i>Cladophora sp.</i>				O							
<i>Chaetomorpha melagonium</i>											
<i>Bryopsis plumosa</i>											

Species	Site Numbers			7/98	8/98	9/98	10/98	11/98
	6/98							
	1	2	3	1	2	1	2	1
PORIFERA - Calcarea								
<i>Porifera indet.</i>								
<i>Scypha ciliata</i>								
PORIFERA - Demospongiae								
<i>Pachymatisma johnstonia</i>								0
<i>Tethya aurantium</i>								0
<i>Suberites sp.</i>								
<i>Suberites camosus</i>		R						
<i>Polymastia sp.</i>								
<i>Polymastia boletiformis</i>								
<i>Polymastia mamillaris</i>								
<i>Ciona celata</i>					0			
<i>Axinella damicornis</i>								
<i>Stelligera sp.</i>								
<i>Stelligera rigida</i>								
<i>Stelligera stuposa</i>								
<i>Raspailia hispida</i>								
<i>Raspailia ramosa</i>								
<i>Halichondria sp.</i>				0	0			
<i>Halichondria panicea</i>								
<i>Halichondria bowerbankia</i>								
<i>Ciocalypa penicillus</i>								
<i>Esperiopsis fucorum</i>								0
<i>Myxilla sp.</i>								
<i>Myxilla incrustans</i>								
<i>Myxilla rosacea</i>								
<i>Phorbas fictitius</i>								
<i>Hemimycale columella</i>								
<i>Haliclona sp.</i>								0
<i>Haliclona fistulosa</i>								
<i>Haliclona oculata</i>								
<i>Haliclona viscuosa</i>								
<i>Dysidea fragilis</i>						0		

Species	Site Numbers										
	6/98		7/98		8/98		9/98		10/98		11/98
	1	2	3	1	2	1	1	2	1	2	1
<i>Dercitus bucklandii</i>											
<i>Hymeniacion perleve</i>			0	0			0				
Porifera indet. (crusts)											
CNIDARIA - Hydrozoa											
Hydroid indet.						0					
<i>Corymorpha nutans</i>											
<i>Tubularia indivisa</i>											
<i>Halecium</i> sp.											
<i>Halecium halecinum</i>											
<i>Halopteris catharina</i>											
<i>Nemertesia antennina</i>											
<i>Nemertesia ramosa</i>											
<i>Plumaria setacea</i>											
<i>Abietinaria abietina</i>											
<i>Diphasia</i> sp.											
<i>Diphasia rosacea</i>											
<i>Diphasia attenuata</i>											
<i>Hydrallmania falcata</i>											
<i>Sertularia argentea</i>											
<i>Obelia dichotoma</i>											
<i>Obelia geniculata</i>											
CNIDARIA - Anthozoa											
Anthozoa indet.				R	R						
<i>Caryophyllia smithii</i>											
<i>Alcyonium digitatum</i>											
<i>Sarcodictyon roseum</i>											
<i>Isozoanthus sulcatus</i>											
<i>Actinia equina</i>										0	
<i>Anemonia viridis</i>											
<i>Urticina felina</i>	F	0					0	0			
<i>Metridium senile</i>											
<i>Sagartia</i> sp.											
<i>Sagartia elegans</i>	F	R									

Species	Site Numbers											
	6/98			7/98		8/98		9/98		10/98		11/98
	1	2	3	1	2	1	1	2	1	2	1	
<i>Sagartia troglodytes</i>												
<i>Cereus pedunculatus</i>												
<i>Actinothoe sphyrodeta</i>												
<i>Sagartiogeton undatus</i>												
<i>Corynactis viridis</i>												
<i>Hacampoides purpurea</i>												
<i>Aiptasia mutabilis</i>											O	
NEMERTEA												
<i>Lineus longissimus</i>												
ANNELIDA - Polychaeta												
Teribellidae indet.												
<i>Polydora</i> sp.												
<i>Chaetopterus variopedatus</i>												
<i>Lanice conchilega</i>												
<i>Bispira volutacornis</i>												
Sabellidae indet.												
<i>Pseudopotamilla reneformis</i>												
<i>Pomatoceros</i> sp.	O	A								C		
<i>Pomatoceros triqueter</i>												
CRUSTACEA - Cirripedia												
Cirripedia indet.	F	A		C	O			C				
<i>Semibalanus balanoides</i>												
<i>Balanus balanus</i>												
<i>Balanus crenatus</i>												
CRUSTACEA - Malacostraca												
<i>Galathea strigosa</i>												
<i>Homarus gammarus</i>												
Paguridae indet.		O										
<i>Pagurus bernhardus</i>												
<i>Inachus</i> sp.												
<i>Inachus dorsettensis</i>												
<i>Inachus phalangium</i>												

Species	Site Numbers									
	6/98			7/98		8/98	9/98	10/98		11/98
	1	2	3	1	2	1	1	2	1	2
<i>Macropodia rostrata</i>										
<i>Cancer pagurus</i>	R						O		F	
<i>Liocarcinus depurator</i>										
<i>Necora puber</i>						O				
<i>Carcinus maenas</i>										
<i>Hyas araneus</i>										
<i>Maia squinado</i>	F					F	C		F	
<i>Natantia</i> indet. (prawn)										
MOLLUSCA - Gastropoda										
<i>Patella</i> sp.				F	F		F		A	
<i>Heliccion pellucida</i>	R									
<i>Trochidae</i> indet.						O				
<i>Gibbula cineraria</i>									O	
<i>Gibbula magus</i>										
<i>Calliostoma zizyphinum</i>	R						O			
<i>Trivia</i> sp.										
<i>Trivia arctica</i>										
<i>Trivia monacha</i>										
<i>Polinices polianus</i>										
<i>Ocenebra erinacea</i>										
<i>Nucella lapillus</i>							F			
<i>Buccinum undatum</i>										
<i>Hinia</i> sp.										
<i>Hinia incrassata</i>										
<i>Hinia reticulata</i>										
<i>Aplysia punctata</i>						F				
<i>Janolus cristatus</i>	R									
<i>Flabellina pedata</i>										
<i>Coryphella lineata</i>										
<i>Archidoris pseudoargus</i>										
<i>Jorunna tomentosa</i>										
<i>Goniodoris nodosa</i>										
<i>Onchidoris</i> sp.										
<i>Polycera</i> sp.										

Species	Site Numbers																
	6/98			7/98			8/98			9/98			10/98			11/98	
	1	2	3	1	2	1	1	2	1	2	1	2	1	2	1		
<i>Polycera faeroensis</i>																	
<i>Tritonia</i> sp.																	
<i>Tritonia hombergi</i>																	
<i>Tritonia lineata</i>																	
<i>Hiatella arctica</i>																	
<i>Mytilus edulis</i>																	
<i>Pecten maximus</i>																	
<i>Mya arenaria</i>																	
MOLLUSCA - Cephalopoda																	
<i>Eledone cirrhosa</i>																	
BRYOZOA																	
Bryozoa indet.																	
Crisiidae indet.																	
<i>Crisia denticulata</i>																	
<i>Alcyonidium diaphanum</i>																	
<i>Membranipora membranacea</i>																	
<i>Flustra foliacea</i>																	
<i>Chartella papyracea</i>																	
<i>Bugula flabellata</i>																	
<i>Bugula plumosa</i>	F																
<i>Bugula turbinata</i>																	
<i>Bugula</i> sp.																	
<i>Scrupocellaria</i> sp.																	
<i>Cellaria</i> spp.																	
<i>Cellaria sinuosa</i>																	
Pink encrusting bryozoan																	
<i>Pentapora foliacea</i>																	
<i>Cellepora pumicosa</i>																	
PHORONIDA																	
<i>Phoronis hippocrepia</i>															A		
ECHINODERMATA																	

Species	Site Numbers										
	6/98		7/98		8/98	9/98	10/98		11/98		
	1	2	3	1	2	1	1	2	1	2	1
<i>Antedon bifida</i>											
<i>Crossaster papposus</i>											
<i>Henricia</i> sp.											
<i>Henricia oculata</i>											
<i>Asterias rubens</i>						R					
<i>Ophiuroidea</i> indet.											
<i>Ophiura albida</i>											
<i>Echinus esculentus</i>											
<i>Holothuroidea</i> indet.											
<i>Echinocardium cordatum</i>											
<i>Pawsonia saxicola</i>											
<i>Neopentadactyla mixta</i>											
<i>Aslia lefevrei</i>											
CHORDATA / TUNICATA - Ascidiacea											
Ascidiacea indet.						A					
<i>Clavelina lepadiformis</i>											
<i>Polyclinid</i> spp.											
<i>Polyclinum</i> sp.											
<i>Polyclinum aurantium</i>											
<i>Morchellium argus</i>											
<i>Sidnyum</i> indet. orange and cream circular siphons											
<i>Sidnyum</i> indet. white stalked											
<i>Sidnyum turbinatum</i>											
<i>Sidnyum elegans</i>											
<i>Aplidium</i> sp.											
<i>Aplidium densum</i>	A	F									
<i>Aplidium punctum</i>							O				
<i>Diplosoma listerianum</i>											
<i>Ciona intestinalis</i>											
<i>Corella parallelogramma</i>											
<i>Asciella scabra</i>											
<i>Polycarpa scuba</i>											
<i>Polycarpa</i> sp.	C										
<i>Dendrodoa grossularia</i>											

Species	Site Numbers																
	6/98			7/98			8/98			9/98			10/98			11/98	
	1	2	3	1	2	1	1	2	1	2	1	2	1	2	1	2	1
<i>Distomus variolosus</i>																	
<i>Botryllus schlosseri</i>																	
<i>Botrylloides leachi</i>																	
<i>Molgula manhattensis</i>																	
CHORDATA - Chondrichthyes																	
<i>Scyliorhinus canicula</i>																	
CHORDATA - Osteichthyes																	
<i>Pollachius pollachius</i>				P													
<i>Trisopterus minutus</i>																	
<i>Taurulus bubalis</i>									R				O				
<i>Eutrigla gurnardus</i>																	
<i>Zeugopterus punctatus</i>																	
<i>Ctenolabrus rupestris</i>																	
<i>Labrus bergylla</i>																	
<i>Labrus mixtus</i>																	
<i>Parablennius gattorugine</i>																	
<i>Callionymus lyra</i>																	
<i>Pholis gunnellus</i>																	
<i>Ammodytes</i> sp.																	
Gobiidae indet.																	
<i>Pomatoschistus</i> sp.																	
<i>Pomatoschistus minutus</i>																	
<i>Pomatoschistus pictus</i>																	
<i>Thorogobius ephippiatus</i>																	
Pleuronectidae indet.																	
RHODOPHYTA																	
Corallinaceae indet. (crusts)	F	C							F								
<i>Corallina officinalis</i>	F	F															
Non calcareous red crusts																	
Unidentified foliose red algae																	
<i>Lomentaria articulata</i>									O								
<i>Ahnfeltia plicata</i>																	

Species	Site Numbers																
	6/98			7/98			8/98			9/98			10/98			11/98	
	1	2	3	1	2	1	1	2	1	2	1	2	1	2	1		
<i>Palmaria palmata</i>	F								O			O					
<i>Dilsea carcosa</i>	O								O			F					
<i>Callophyllis laciniata</i>																	
<i>Meridithia microphylla</i>																	
<i>Polyides rotundus</i>											O						
<i>Plocamium cartilagineum</i>	C								O			O					
<i>Calliblepharis ciliata</i>	O								F								
<i>Cordylecladia erecta</i>																	
<i>Kallymenia reniformis</i>									?								
<i>Membranoptera alata</i>	O																
<i>Aglaothamnion byssoides</i>																	
<i>Ceramium</i> sp.																	
<i>Cryptopleura ramosa</i>																	
<i>Delesseria sanguinea</i>				C					O			F					
<i>Phycodrys rubens</i>	O																
<i>Hypoglossum hypoglossoides</i>																	
<i>Apoglossum ruscifolia</i>																	
<i>Heterosiphonia plumosa</i>									O			F					
<i>Brogniatella byssoides</i>																	
<i>Sphondylothamnion multifidum</i>																	
<i>Aglaothamnion byssoides</i>																	
<i>Spondylothamnion multifidum</i>																	
<i>Polysiphonia</i> sp.																	
<i>Polysiphonia elongata</i>																	
<i>Polysiphonia foetidissima</i>																	
<i>Polysiphonia stricta</i>																	
<i>Drachiella heterocarpa</i>																	
<i>Drachiella</i> sp.												O					
<i>Drachiella spectabilis</i>	C								O								
<i>Rhodomela confervoides</i>																	
<i>Griffithsia equisetifolius</i>																	
<i>Erythrogloussum laciniatum</i>																	
<i>Osmundea pinnatifida</i>									O								
<i>Phyllophora</i> sp.																	
<i>Phyllophora pseudoceranoides</i>																	

Species	Site Numbers												
	6/98			7/98			8/98		9/98		10/98		11/98
	1	2	3	1	2	1	1	2	1	2	1	2	1
<i>Phyllophora crista</i>													
<i>Schottera nicaeensis</i>													
<i>Radicilingua thyzanorizans</i>													
PHAEOPHYTA													
<i>Dictyopterus membranacea</i>													
<i>Dictyota dichotoma</i>	/												
<i>Desmarestia aculeata</i>	A	F											
<i>Chorda filum</i>													
<i>Alaria esculenta</i>	O												
<i>Laminaria digitata</i>	O												
<i>Laminaria hyperborea</i>	C	O						A		F		P	
<i>Laminaria saccharina</i>													
<i>Sacchoriza polyschides</i>	R												
<i>Fucus serratus</i>				F				F		C			
<i>Cladostephus spongiosus</i>													
<i>Halopteris filicina</i>													
<i>Halopteris scopareæ</i>													
<i>Zanardinia protypus</i>													
filamentous browns'													
CHLOROPHYTA													
<i>Cladophora pellucida</i>													
<i>Enteromorpha sp.</i>				F	O			O		F			
<i>Ulva sp.</i>	R							O		C			
<i>Cladophora sp.</i>													
<i>Chaetomorpha melagonium</i>	O	O											
<i>Bryopsis plumosa</i>													

Species	Site Numbers		
	11/98 cont.	12/98	
	2	1	2
PORIFERA - Calcarea			
<i>Porifera indet.</i>			
<i>Scypha ciliata</i>			
PORIFERA - Demospongiae			
<i>Pachymatisma johnstonia</i>	P		
<i>Tethya aurantium</i>	P		
<i>Suberites sp.</i>			
<i>Suberites camosus</i>			
<i>Polymastia sp.</i>			
<i>Polymastia boletiformis</i>			
<i>Polymastia mamillaris</i>			
<i>Ciona celata</i>			
<i>Axinella damicornis</i>			
<i>Stelligera sp.</i>			
<i>Stelligera rigida</i>			
<i>Stelligera stuposa</i>			
<i>Raspailia hispida</i>			
<i>Raspailia ramosa</i>			
<i>Halichondria sp.</i>			
<i>Halichondria panicea</i>			
<i>Halichondria bowerbankia</i>			
<i>Ciocalypta penicillus</i>			
<i>Esperiopsis fucorum</i>			
<i>Myxilla sp.</i>			
<i>Myxilla incrustans</i>			
<i>Myxilla rosacea</i>			
<i>Phorbas fictitius</i>			
<i>Hemimycale columella</i>			
<i>Haliclona sp.</i>			
<i>Haliclona fistulosa</i>			
<i>Haliclona oculata</i>			
<i>Haliclona viscuosa</i>			
<i>Dysidea fragilis</i>			

Species	Site Numbers		
	11/98 cont.	12/98	
	2	1	2
<i>Dercitus bucklandii</i>	P		
<i>Hymeniacion perleve</i>			
Porifera indet. (crusts)			
CNIDARIA - Hydrozoa			
Hydroid indet.			
<i>Corymorpha nutans</i>			
<i>Tubularia indivisa</i>			
<i>Halecium</i> sp.			
<i>Halecium halecinum</i>			
<i>Halopteris catharina</i>			
<i>Nemertesia antennina</i>			
<i>Nemertesia ramosa</i>			
<i>Plumaria setacea</i>			
<i>Abietinaria abietina</i>			
<i>Diphasia</i> sp.			
<i>Diphasia rosacea</i>			
<i>Diphasia attenuata</i>			
<i>Hydrallmania falcata</i>			
<i>Sertularia argentea</i>			
<i>Obelia dichotoma</i>			
<i>Obelia geniculata</i>			
CNIDARIA - Anthozoa			
Anthozoa indet.			
<i>Caryophyllia smithii</i>	R		
<i>Alcyonium digitatum</i>	P		
<i>Sarcodictyon roseum</i>			
<i>Isozoanthus sulcatus</i>			
<i>Actinia equina</i>			
<i>Anemonia viridis</i>			
<i>Urticina felina</i>			
<i>Metridium senile</i>			
<i>Sagartia</i> sp.			
<i>Sagartia elegans</i>			

Species	Site Numbers		
	11/98 cont.	12/98	
	2	1	2
<i>Sagartia troglodytes</i>			
<i>Cereus pedunculatus</i>			
<i>Actinothoe sphyrodeta</i>			
<i>Sagartiogeton undatus</i>			
<i>Corynactis viridis</i>			
<i>Hacampoides purpurea</i>			
<i>Aiptasia mutabilis</i>			
NEMERTEA			
<i>Lineus longissimus</i>			
ANNELIDA - Polychaeta			
Teribellidae indet.			
<i>Polydora</i> sp.			
<i>Chaetopterus variopedatus</i>			
<i>Lanice conchilega</i>			
<i>Bispira volutacomis</i>			
Sabellidae indet.			
<i>Pseudopotamilla reneformis</i>			
<i>Pomatoceros</i> sp.			
<i>Pomatoceros triqueter</i>			
CRUSTACEA - Cirripedia			
Cirripedia indet.			
<i>Semibalanus balanoides</i>			
<i>Balanus balanus</i>			
<i>Balanus crenatus</i>			
CRUSTACEA - Malacostraca			
<i>Galathea strigosa</i>			
<i>Homarus gammarus</i>		P	
Paguridae indet.			
<i>Pagurus bernhardus</i>			
<i>Inachus</i> sp.			
<i>Inachus dorsettensis</i>			
<i>Inachus phalangium</i>			

Species	Site Numbers		
	11/98 cont.	12/98	
	2	1	2
<i>Macropodia rostrata</i>			
<i>Cancer pagurus</i>			
<i>Liocarcinus depurator</i>			
<i>Necora puber</i>			
<i>Carcinus maenas</i>			
<i>Hyas araneus</i>			
<i>Maia squinado</i>			
Natantia indet. (prawn)			
MOLLUSCA - Gastropoda			
<i>Patella</i> sp.			
<i>Heliccion pellucida</i>			
<i>Trochidae</i> indet.			
<i>Gibbula cineraria</i>			
<i>Gibbula magus</i>			
<i>Calliostoma zizyphinum</i>			
<i>Trivia</i> sp.			
<i>Trivia arctica</i>			
<i>Trivia monacha</i>			
<i>Polinices polianus</i>			
<i>Ocenebra erinacea</i>			
<i>Nucella lapillus</i>			
<i>Buccinum undatum</i>			
<i>Hinia</i> sp.			
<i>Hinia incrassata</i>			
<i>Hinia reticulata</i>			
<i>Aplysia punctata</i>			
<i>Janolus cristatus</i>			
<i>Flabellina pedata</i>			
<i>Coryphella lineata</i>			
<i>Archidoris pseudoargus</i>			
<i>Jorunna tomentosa</i>			
<i>Goniodoris nodosa</i>			
<i>Onchidoris</i> sp.			
<i>Polycera</i> sp.			

Species	Site Numbers		
	11/98 cont.	12/98	
	2	1	2
<i>Polycera faeroensis</i>			
<i>Tritonia</i> sp.			
<i>Tritonia hombergi</i>			
<i>Tritonia lineata</i>			
<i>Hiatella arctica</i>			
<i>Mytilus edulis</i>			
<i>Pecten maximus</i>			
<i>Mya arenaria</i>			
MOLLUSCA - Cephalopoda			
<i>Eledone cirrhosa</i>			
BRYOZOA			
Bryozoa indet.			
Crisiidae indet.			
<i>Crisia denticulata</i>			
<i>Alcyonidium diaphanum</i>			
<i>Membranipora membranacea</i>			
<i>Flustra foliacea</i>			
<i>Chartella papyracea</i>			
<i>Bugula flabellata</i>			
<i>Bugula plumosa</i>			
<i>Bugula turbinata</i>			
<i>Bugula</i> sp.			
<i>Scrupocellaria</i> sp.			
<i>Cellaria</i> spp.			
<i>Cellaria sinuosa</i>			
Pink encrusting bryozoan			
<i>Pentapora foliacea</i>			
<i>Cellepora pumicosa</i>			
PHORONIDA			
<i>Phoronis hippocrepia</i>			
ECHINODERMATA			

Species	Site Numbers		
	11/98 cont.	12/98	
	2	1	2
<i>Antedon bifida</i>			
<i>Crossaster papposus</i>			
<i>Henricia</i> sp.			
<i>Henricia oculata</i>			
<i>Asterias rubens</i>			
<i>Ophiuroidea</i> indet.			
<i>Ophiura albida</i>			
<i>Echinus esculentus</i>			
<i>Holothuroidea</i> indet.			
<i>Echinocardium cordatum</i>			
<i>Pawsonia saxicola</i>			
<i>Neopentadactyla mixta</i>			
<i>Aslia lefevrei</i>			
CHORDATA / TUNICATA - Ascidiacea			
Ascidiacea indet.			
<i>Clavelina lepadiformis</i>			
<i>Polyclinid</i> spp.			
<i>Polyclinum</i> sp.			
<i>Polyclinum aurantium</i>			
<i>Morchellium argus</i>			
<i>Sidnyum</i> indet. orange and cream circular siphons			
<i>Sidnyum</i> indet. white stalked			
<i>Sidnyum turbinatum</i>			
<i>Sidnyum elegans</i>			
<i>Aplidium</i> sp.			
<i>Aplidium densum</i>			
<i>Aplidium punctum</i>			
<i>Diplosoma listerianum</i>			
<i>Ciona intestinalis</i>			
<i>Corella parallelogramma</i>			
<i>Ascidella scabra</i>			
<i>Polycarpa scuba</i>			
<i>Polycarpa</i> sp.	P		
<i>Dendrodoa grossularia</i>			

Species	Site Numbers		
	11/98 cont.	12/98	
	2	1	2
<i>Distomus variolosus</i>			
<i>Botryllus schlosseri</i>			
<i>Botrylloides leachi</i>			
<i>Molgula manhattensis</i>			
CHORDATA - Chondrichthyes			
<i>Scyliorhinus canicula</i>			
CHORDATA - Osteichthyes			
<i>Pollachius pollachius</i>			
<i>Trisopterus minutus</i>			P
<i>Taurulus bubalis</i>			
<i>Eutrigla gurnardus</i>			
<i>Zeugopterus punctatus</i>			P
<i>Ctenolabrus rupestris</i>			
<i>Labrus bergylta</i>			P
<i>Labrus mixtus</i>			P
<i>Parablennius gattorugine</i>		P	
<i>Callionymus lyra</i>			
<i>Pholis gunnellus</i>			
<i>Ammodytes</i> sp.			
Gobiidae indet.			
<i>Pomatoschistus</i> sp.			
<i>Pomatoschistus minutus</i>			
<i>Pomatoschistus pictus</i>			
<i>Thorogobius ephippiatus</i>			
Pleuronectidae indet.			
RHODOPHYTA			
Corallinaceae indet. (crusts)			
<i>Corallina officinalis</i>			
Non calcareous red crusts			
Unidentified foliose red algae			
<i>Lomentaria articulata</i>			
<i>Ahnfeltia plicata</i>			

Species	Site Numbers		
	11/98 cont.	12/98	
	2	1	2
<i>Palmaria palmata</i>			
<i>Dilsea carosa</i>			
<i>Callophyllis laciniata</i>			
<i>Meridithia microphylla</i>			
<i>Polyides rotundus</i>			
<i>Plocanium cartilagineum</i>			
<i>Calliblepharis ciliata</i>			P
<i>Cordylecladia erecta</i>			
<i>Kallymenia reniformis</i>			
<i>Membranoptera alata</i>			
<i>Aglaothamnion byssoides</i>			P
<i>Ceramium sp.</i>			
<i>Cryptopleura ramosa</i>			
<i>Delesseria sanguinea</i>			
<i>Phycodrys rubens</i>			
<i>Hypoglossum hypoglossoides</i>			
<i>Apoglossum ruscifolia</i>			
<i>Heterosiphonia plumosa</i>			
<i>Brogmatella byssoides</i>			
<i>Spondylothamnion multifidum</i>			
<i>Aglaothamnion byssoides</i>			
<i>Spondylothamnion multifidum</i>			P
<i>Polysiphonia sp.</i>			
<i>Polysiphonia elongata</i>			
<i>Polysiphonia foetidissima</i>			P
<i>Polysiphonia stricta</i>			
<i>Drachiella heterocarpa</i>			
<i>Drachiella sp.</i>			
<i>Drachiella spectabilis</i>			
<i>Rhodomela confervoides</i>			
<i>Griffithsia equisetifolius</i>			
<i>Erythroglossum laciniatum</i>			
<i>Osmundea pinnatifida</i>			
<i>Phyllophora sp.</i>			
<i>Phyllophora pseudoceranoides</i>			

Species	Site Numbers		
	11/98 cont.	12/98	
	2	1	2
<i>Phyllophora crispa</i>			
<i>Schottera nicaeensis</i>			
<i>Radicilingua thyzanonzans</i>			
PHAEOPHYTA			
<i>Dictyopterus membranacea</i>			
<i>Dictyota dichotoma</i>			
<i>Desmarestia aculeata</i>			
<i>Chorda filum</i>			
<i>Alaria esculenta</i>			
<i>Laminaria digitata</i>			
<i>Laminaria hyperborea</i>		P	
<i>Laminaria saccharina</i>			
<i>Sacchoriza polyschides</i>			
<i>Fucus serratus</i>			
<i>Cladostephus spongiosus</i>			P
<i>Halopteris filicina</i>			
<i>Halopteris scoparea</i>			P
<i>Zanardinia protypus</i>			
filamentous browns'			
CHLOROPHYTA			
<i>Cladophora pellucida</i>			
<i>Enteromorpha</i> sp.			
<i>Ulva</i> sp.			
<i>Cladophora</i> sp.			
<i>Chaetomorpha melagonium</i>			
<i>Bryopsis plumosa</i>			

Appendix 4

Details of survey dive sites.

Site No.	Site Names	Dive Type	Mid Site Latitude	Mid Site Longitude	Dept	Date	Recorders	No. Habitats
1/93	Stackpole Quay Head Sediments	Spot	51.62175	-4.89500	7.4m	22/07/1993	Francis Bunker and Lisa Brunwin	1
4/94	S of Stackpole Head	Swim	51.60912	-4.89747	5m to 6m	30/05/1994	Francis Bunker and James Perrins	3
5/94	W of Stackpole Head	Swim	51.60974	-4.89883	2.5m to 4.5m	30/05/1994	Annette Little and Jon Moore	3
6/94	E of Stackpole Head 4	Drift	51.60947	-4.89230	8.5m to 10.0m	30/05/1994	Francis Bunker and James Perrins	1
7/94	S of Stackpole Head	Drift	51.60823	-4.89505	8.0m to 10.0m	30/05/1994	Netty Little and Jon Moore	1
8/94	Stackpole Head	Swim	51.60945	-4.89532	2.3m to 3.9m	30/05/1994	Dale Rostron and Amanda Holloway	1
1/94	E of Stackpole Head 1	Swim	51.61191	-4.89407	0m to 4.5m	30/04/1994	Rohan Holt and Leona Shepherd	3
2/94	E of Stackpole Head 2	Swim	51.61230	-4.89344	1.5m to 6.5m	30/04/1994	Francis Bunker and James Perrins	4
3/94	E of Stackpole Head 3	Swim	51.61243	-4.89441	?	30/04/1994	Amanda Holloway and Jon Moore	2
1/95	500m SW of Trewent Point	Swim	51.63322	-4.86674	10.2m to 12.2m	22/04/1995	Peter Taylor	3
2/95	300m S of Trewent Point	Spot	51.63456	-4.86101	7.4m	22/04/1995	James Perrins	4
3/95	900m S of Trewent Point	Spot	51.63005	-4.85866	12.7m to 14.2m	22/04/1995	Rohan Holt and Dale Rostron	2
4/95	400m S of Greenala Point	Swim	51.62735	-4.87649	11.3m to 12.0m	22/04/1995	Lucy Gilkes and Paul Kay	2
5/95	300m S of Greenala Point	Swim	51.62801	-4.87914	7.7m to 10.7m	22/04/1995	Paul Brazier and Jon Moore	2
6/95	100m E of Greenala Point	Spot	51.63195	-4.87618	7.3m to 8.2m	23/04/1995	Dale Rostron and Rohan Holt	1
7/95	300m E of Greenala Point	Spot	51.63198	-4.87312	9.0m to 10.0m	23/04/1995	James Perrins and Amanda	1

							Holloway	
8/95	S of West Moor Cliff	Swim	51.64262	-4.84165	7.1m to 7.9m	23/04/1995	Jayne Lynch and Francis Bunker	3
9/95	300m E of Trewent Point	Drift	51.63924	-4.85583	4.3m to 8.3m	23/04/1995	Paul Kay and Lucy Gilkes	3
10/95	500m SE of Trewent Point	Drift	51.63749	-4.85230	3.8m to 7.2m	23/04/1995	Jon Moore and Paul Brazier	2
11/95	Stackpole Quay Head	Spot	51.62159	-4.89638	4.0m to 6.0m	15/06/1995	Francis Bunker and John Woolford	3
12/95	500m E of Greenala Point	Drift	51.63207	-4.87115	10.6m	29/06/1995	Francis Bunker, Kate Lock, John Wo	0
1/98	Stackpole Head, E to W	Drift	51.60924	-4.89355	4.2m to 12.2m	09/05/1998	Kate Lock & Simon Hagan	5
2/98	E of Mowing Word	Swim	51.61007	-4.89983	1.8m to 7.4m	09/05/1998	Michele Leslie & Jon Moore	2
3/98	Offshore from Broadhaven	Drift	51.59506	-4.90013	9.0m m to 12.0	09/05/1998	James Perrins & Adrian from Brecon	2
4/98	East of Stackpole Head	Spot	51.61385	-4.89671	9.8m to 10.4m	09/05/1998	Olive Fiddler & Dorothy Whitcomb	1
5/98	Between Saddle Head & Sandy Pit	Swim	51.60734	-4.91402	1.2m to 4.0m	09/05/1998	Colin Deller & Francis Bunker	2
6/98	East of Sandy Pit	Spot	51.61011	-4.90926	2.0m to 4.5m	09/05/1998	Colin Garlic & Sue Gilbert	3
7/98	South of Barafundle Arch	Swim	51.61443	-4.89936	+3.9m to +1.9m	09/05/1998	Colin Deller & Michelle Leslie	2
8/98	Barafundle Arch South Side	Swim	51.61525	-4.89914	3.3m	09/05/1998	Ron Hinks & Dale Rostron	1
9/98	Stackpole Head East Side	Swim	51.61250	-4.89509	3.4m to 5.6m	09/05/1998	Kate Lock & Simon Hagan	2
10/98	Stackpole Head North Side	Swim	51.61331	-4.89752	+3.9m to 5.1m	09/05/1998	James Perrins & Adrian from Brecon	2
11/98	Barafundle Arch East Side	Swim	51.61569	-4.89889	1.1m	09/05/1998	Sue Gilbert & Colin Garlic	2
12/98	Stackpole Quay South	Swim	51.62285	-4.89715	4.0m to 6.0m	03/09/1998	Francis Bunker & Sue Gilbert	0