



Report for Sussex Seasearch

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Report on the Chalk Reefs of Sussex, exemplified by the recreational dive sites: South West Rocks (mSNCI), Looe gate (mSNCI) and Ship Rock (mSNCI).

Report on the Chalk Reefs of Sussex

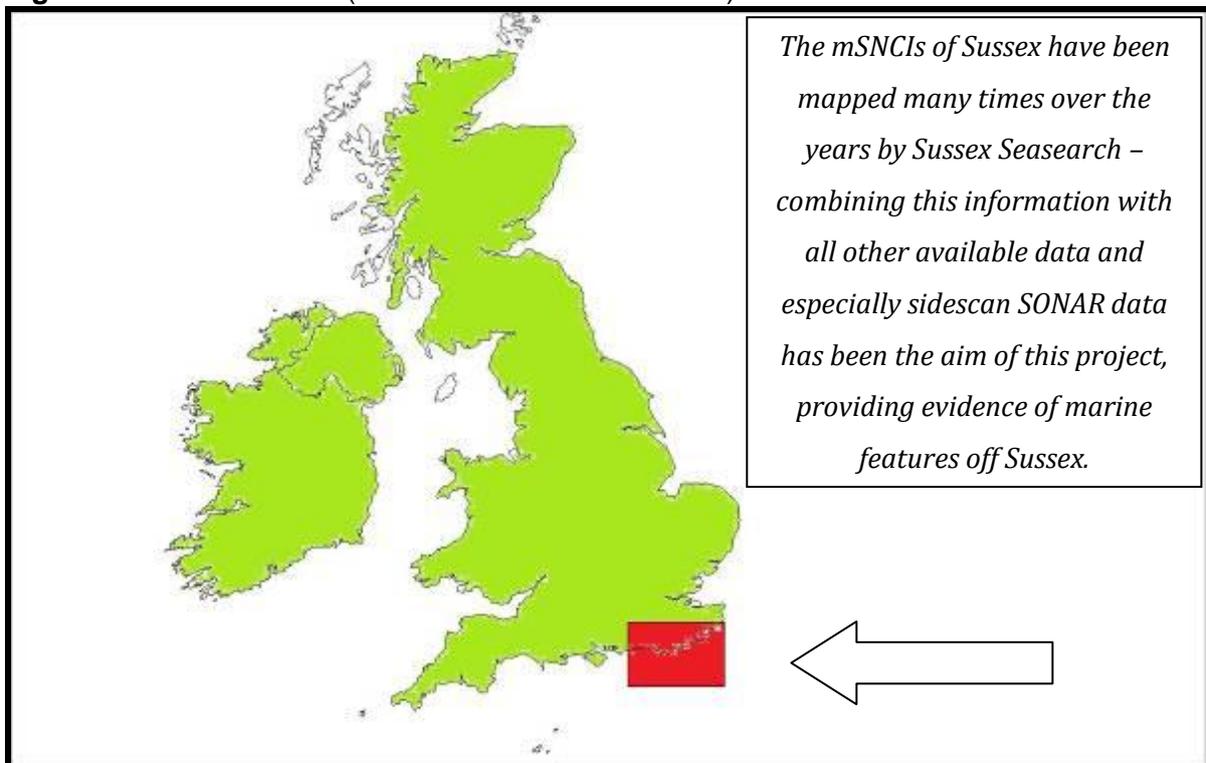
1. Background:

This report presents a variety of data, approaches and information sources to describe the features, habitats and biotopes of the sites (SW Rocks, Looe gate and Ship Rock) and demonstrates how using a variety of available data and techniques can provide high resolution micro-scale information about marine sites / underwater features. The benefit of cooperation and information exchange (in this case between Natural England, Sussex Sea Fisheries Committee, Sussex Seasearch and local divers / 'Brighton Marina Divers') is also made clear in the context of providing evidence and presenting available evidence and relevant information. It is hoped that detailed descriptions of sites of this nature and at this level of detail (without the need for external contracts or survey work) will help provide evidence about fragile and rare marine habitats found off the Sussex coast, an example of which being chalk reef – a key feature of the area which is otherwise uncommon in the UK.

Marine Sites of Nature Conservation Importance (mSNCIs) are non-statutory sites identified due to the occurrence of special interest features (habitats, flora, fauna, unusual geology or geomorphology), in the case of these sites, their submerged chalk reefs and associated biological communities (for full background see appendix 1).

The original mSNCI sites off Sussex were identified by dive surveys carried out from 1992-1998 for the Sussex Seasearch project (Seasearch was originally developed by the Marine Conservation Society in conjunction with the Nature Conservancy Council's Marine Nature Conservation Review).

Figure 1: Area of interest (and Sussex Seasearch area) relative to British coastline



Marine Sites of Nature Conservation Importance in Sussex

The Sussex Seasearch produced the data and through the Seasearch committee the project recommended that particular sites, found to be of specific interest, should be granted some form of conservation status or recognition, if not protection. These sites were selected by a Panel (see appendix 2 for details) consisting of marine biologists, nature conservation and local government ecologists. The reports note that many of the marine SNCIs described, would merit the status of Site of Special Scientific Interest (SSSI) if this designation were ever to be extended beyond low water mark¹.

East and West Sussex County Councils recognised these sites as marine Sites of Nature Conservation Importance.

Sussex Seasearch was instrumental in providing the data to make the case for mSNCI status². A wide variety of substrata in the sub littoral zone were identified and surveys by the MCS in 1984 (Wood, see below). Between Beachy Head and Selsey Bill in particular the community structure on chalk and sandstone bedrock was noteworthy and helped in the subsequent declaration of a voluntary Marine Nature Reserve. **From NCC- MNCR, R. Covey (1991)**

East and West Sussex County Councils and Brighton & Hove City Council designated 12 ('original') such areas as Marine Sites of Nature Conservation Importance (March 1996)³, the only such sites in the country.

A further 12 ('new') were identified and were identified by the panel and adopted in 2001 **See Figures 2 and 3 below.**

Other designations in the vicinity: Seven Sisters Voluntary Marine Conservation Area

The Seven Sisters Voluntary Marine Conservation Area (VMCA) runs from the Martello Tower at Seaford to the Wish Tower at Eastbourne, and out to sea for about 2km. The VMCA covers the wave cut chalk platform and recognises its significant biological, geological and archaeological interest.

Figure 2: study site coordinates with general description

South-West Rocks	4.5 km SW of Hove	50° 47.60' N 0° 12.50' W	Chalk cliff, sand and pebbles
Looe Gate	4 km SSW of Hove	50° 47.74' N 0° 11.59' W	Chalk cliff, silty sand mixed with shells
Ship Rock	3km S of Hove	50°48.05' N 0°09.82' W	An area of mixed ground and gravel with extensive excavated nests of black-bream

¹ Irving, R. (1996) A Dossier of Sussex Marine Sites of Nature Conservation Importance. Compiled on behalf of the Sussex Marine SNCI Steering Group & Irving, R. (1999)

² Report of the Sussex SEASEARCH Project, 1992-1998. Published by the Sussex SEASEARCH Project. English Nature, Lewes and Brighton & Hove Council, Brighton.

³ Irving, R. (1996) A Dossier of Sussex Marine Sites of Nature Conservation Importance. Compiled on behalf of the Sussex Marine SNCI Steering Group & Irving, R. (1999)

out the various types of sea bed and community found in the near-shore zone around the whole of the Britain and Ireland. In addition, Seasearch record species for each area surveyed, establish the richest sites for marine life, the sites where there are problems or specific threats and the sites which need protection. All Seasearch records are stored on the Marine Recorder database and feed into the National Biodiversity Network database and are publicly available. For more information visit www.nbn.org.uk .

Seasearch Supporters and Funding

Seasearch is co-ordinated by The Marine Conservation Society on behalf of a National Steering Group which includes the following organisations and individuals: British Sub Aqua Club (BSAC), Countryside Council for Wales (CCW), Environment Agency (EA), Environment and Heritage Service (Northern Ireland), Joint Nature Conservation Committee (JNCC), Marine Conservation Society (MCS), Marine Biological Association (MarLIN), Natural England, Nautical Archaeology Society (NAS), Professional Association of Diving Instructors (PADI), Scottish Natural Heritage (SNH), Scottish Sub Aqua Club (SSAC), Sub Aqua Association (SAA), The Wildlife Trusts.

Independent Marine Life Experts: Robert Irving, Paul Kay. Seasearch is supported financially by many of the organisations on the Steering Group. The local Seasearch projects are also supported by a variety of local and governmental organisations

Sussex Seasearch

The Sussex 'branch' began its 5-year programme in 1992. Funded by a number of organisations (listed in appendix 2) the project was immediately successful and expanded its remit to include covering sites for both East and West Sussex by the end of 1996. Over 250 sites had been surveyed by the end of 1995, demonstrating a cost-effective and productive approach to gathering baseline and specific data for the marine environment. Photographic and video data have been combined and worked into the Seasearch data collection and verification process.

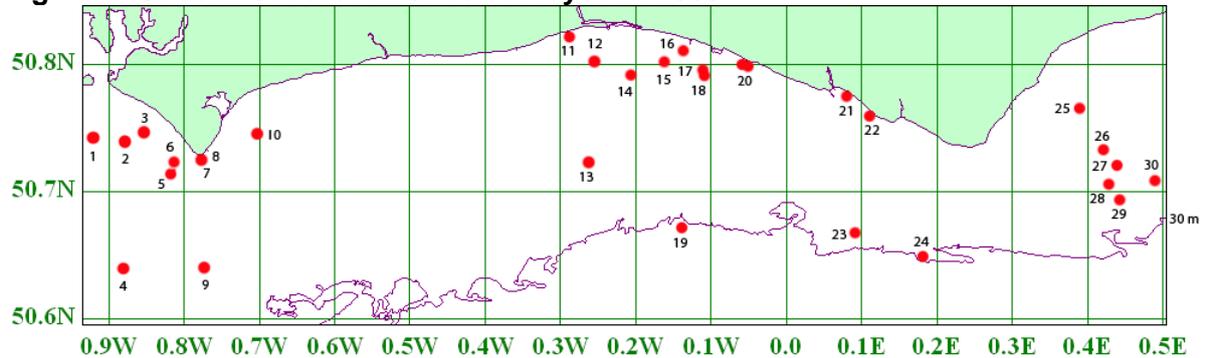
The £12,000 per year from local authorities, which represented funding for about 10 years (on an annual basis) was a unique source of funding NE and the RSPB. Robert Irving was coordinating activities at that time and was the sole paid staff member for the programme. This again shows the importance of cooperation and shared ownership over the projects, in terms of both effectiveness and costs, which have been minimal relative to the outputs from Sussex Seasearch together with local divers. After 2001 ESCC took over (Kate Cole) coordinating Sussex Seasearch, which finally moved to Natural England (Chris Williams) in 2009.

Sussex Seasearch in 2009

2009 was a considerable improvement on the previous year in terms of the numbers of dives and records made. First of all our thanks must go to the 61 divers who contributed the records. The 2009 season saw 70 dives on 30 sites, two of which were re-visits to Marine Sites of Nature Conservation Importance. 215 species were recorded covering 11 phyla (see Appendices for details). Of these 51 were Observer and 19 Surveyor dives. Dives spanned

from the far west (our thanks to Hampshire Seasearch and others divers) to the far east of the County, see below.⁴

Figure 4: Sussex Seasearch Sites surveyed in 2009



Latitude Longitude of Sussex Seasearch sites surveyed in 2009

1 HMS A1 Submarine, Bracklesham Bay 50.741938 -0.919852	15 King West Rocks 50.800529 -0.162256
2 Bracklesham Bay, fossil beds 50.739215 -0.878151	15 West Reef 50.800529 -0.162256
2 Bracklesham Bay 50.73927 -0.876357	16 Palace Pier Reef to Anchor Lumps 50.811751 -0.135452
3 Bracklesham Bay, near landing craft 50.746189 -0.852617	17 Brighton Marina Reef 50.794383 -0.111733
4 Barge 20243 50.63908 -0.880516	18 Measers Rocks (Mesors Rocks) 50.793796 -0.110183
5 Bracklesham Bay, near 'The Streets' 50.716667 -0.814492	19 Wreck: 'City of Waterford' 50.671064 -0.138117
6 Bracklesham Bay, near 'The Streets' 50.721641 -0.812737	20 Rottingdean beach 50.800581 -0.052937
7 Selsey Lifeboat Station 50.726031 -0.777173	20 Rottingdean beach 50.801497 -0.056646
7 Selsey Lifeboat Station 50.72693 -0.77715	21 Seaford: mid-beach 50.776808 0.0823919
8 Selsey E beach by Lifeboat station 50.726031 -0.777173	22 Seaford Head 50.759633 0.112119
9 The Patch Landing Craft LCT 50.640357 -0.773344	23 Wreck: 'T R Thompson' 50.667731 0.0912333
10 Outer Mulberry 50.744419 -0.701847	24 Wreck: 'Braunton' 50.647731 0.1807483
10 Outer Mulberry 50.745422 -0.701508	25 Sovereign Shoals 50.732826 0.4216246
11 Off Widewater 50.823324 -0.289005	26 Sovereign Shoals 50.764367 0.3886419
12 Wreck: 'Miown' 50.802751 -0.254798	27 Wreck: 'Gambri' 50.719898 0.4402857
13 Wreck: 'Pentrych' 50.722413 -0.261454	28 Wreck: 'Ocean' 50.704743 0.4289878
13 Wreck: 'Pentrych' 50.722745 -0.262618	29 Wreck: 'Heathpool' 50.69359 0.4443862
14 South-west Rocks 50.791085 -0.206787	30 Wreck: 'Hullington' 50.707623 0.4898252
14 South West Rocks 50.791915 -0.208117	

Seasearch and mSNCIs

Two of the sites identified and put forward by Sussex Seasearch (SW Rocks and Looe Gate listed above) have been re-surveyed by Sussex Seasearch divers and have also had ring bolts for permanent monitoring transects put in place by members of Brighton Marina Divers BSAC club (June 2010). Ship Rocks comprises a third site, slightly further east and therefore outside the sidescan SONAR track presented later.

The sections below show the key finding from Seasearch and other data sources since the mid 1980's to 2010⁵.

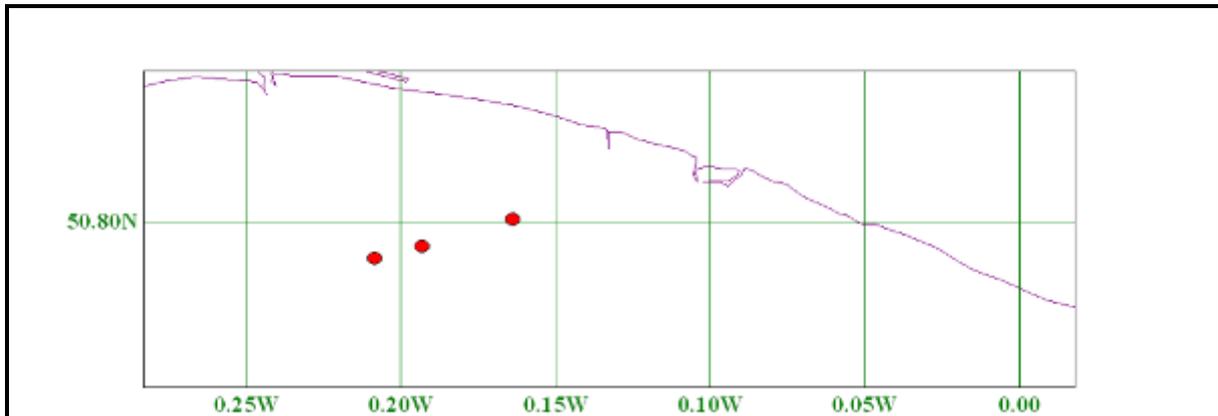
The 3 sites identified in Figure 5 have been used as recreational dive sites for a number of years and have been repeatedly mapped by Sussex Seasearch divers since the early 1990's.

⁴ Sussex Seasearch Summary, 2009, G. Legg.

⁵ Original Seasearch data: Chris Wood 1984

Figure 5: (W-E: SW Rocks, Looe Gate, Ship Rock)

All 3 sites relative to each other and Sussex coastline (with Lat & Long grid)



Images 1 and 2: Transect set-up: Ringbolts and ‘tags’



3. DATA SOURCES: The section below presents previous findings

SUSSEX MARINE SITES OF NATURE Conservation Importance - mSNCI dossier (Irving, R. 1996) –

Site: South-West Rocks		Ref. No. 9
Location: 4.5 km SW of Hove		Other conservation designation? No
Lat./Long. position of centre of site: 50° 47.60' N 0° 12.50' W	OS grid ref. of centre of site: TQ 262 009	Author: Robert Irving
Sea bed type: Chalk cliff, sand and pebbles	Depth range (below chart datum): 8 - 11 m	Date Identified: November 1995

Summary

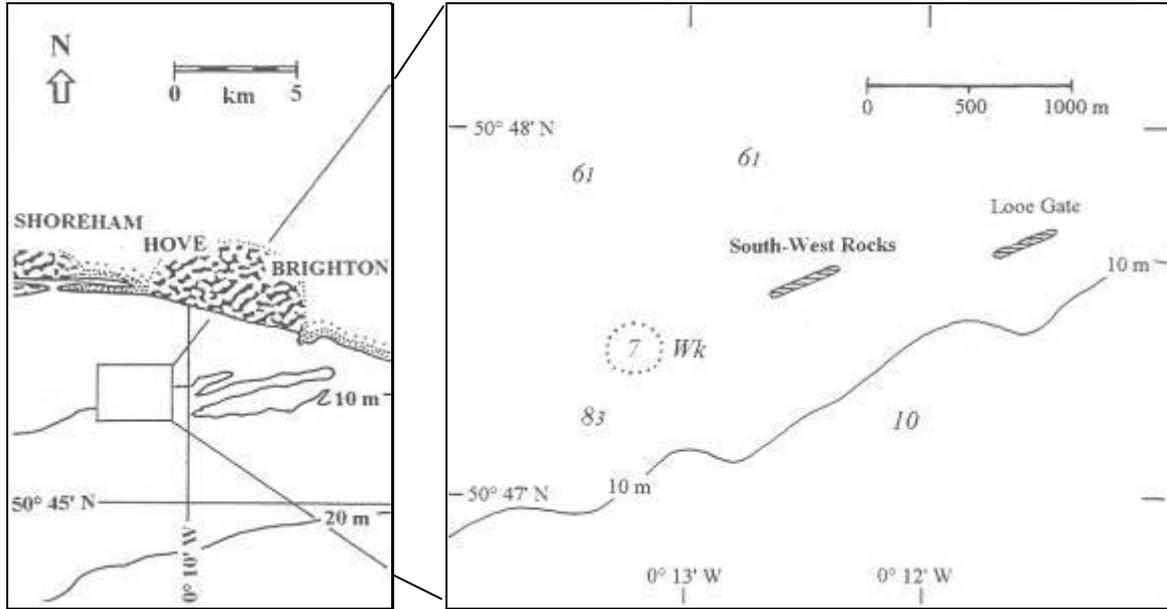
South-West Rocks is a length of exposed vertical chalk cliff, 270 m long, northward-facing and running approximately 240°/60°. It is believed (though not proven) that this is the same chalk stratum which forms the Worthing Lumps (mSNCI 8), Looe Gate (10) and Ship Rock (11), following the 10 m contour. The general height of the cliff is 1.0 m, though in places (especially to the east of the central point) it reaches a maximum height of 2.0 m. At the western end the cliff face diminishes to become covered by sand. The vertical face of the cliff is undercut at its base, giving way to a sea bed of fine sand and pebbles. Leading away from the top of the cliff is a relatively flat chalk plateau which again gradually becomes covered by sand and pebbles. Occasional rock mills, circular holes formed by flint pebbles being swirled around in the currents, are present.

Biological description

The area most densely covered by marine life is the upper party of the vertical face extending onto the upper horizontal surface. A dense animal turf dominates, with the hydroids being common, particularly the stalks of *Tubularia indivisa*. Foliose red algae occur on the upper horizontal surface though plants tend to be small and silt-covered. The green alga *Bryopsis plumose* is also found occasionally. Other faunal components of the 'turf' include sponges, principally *Esperiopsis fucorum* and *Dysidea fragilis*, and bryozoans such as *Flustra foliacea* and *Bugula* spp. The soft coral *Alcyonium digitatum* may be common in some areas, though their occurrence is sporadic. The vertical chalk cliff face is peppered by many small holes made by boring piddock bivalves. In 1990, a small group of burrowing sea cucumbers, thought to be *Aslia lefeveri*, were found occupying abandoned vertical piddock holes (Wood 1992). This is believed to be the only record of burrowing sea cucumbers in the eastern part of the Channel, though they have not been recorded from this sites since. The cowrie *Trivia arctica* may be common, feeding on colonial stalked sea squirts *Aplidium* sp. Crustaceans are not as common as one might expect, though certain fish species, such as bib *Trisopterus luscus*, poor cod *Trisopterus minutus*, ballan wrasse *Labrus bergylta* and goldsinny *Ctneolabrus rupestris*, are frequently seen.

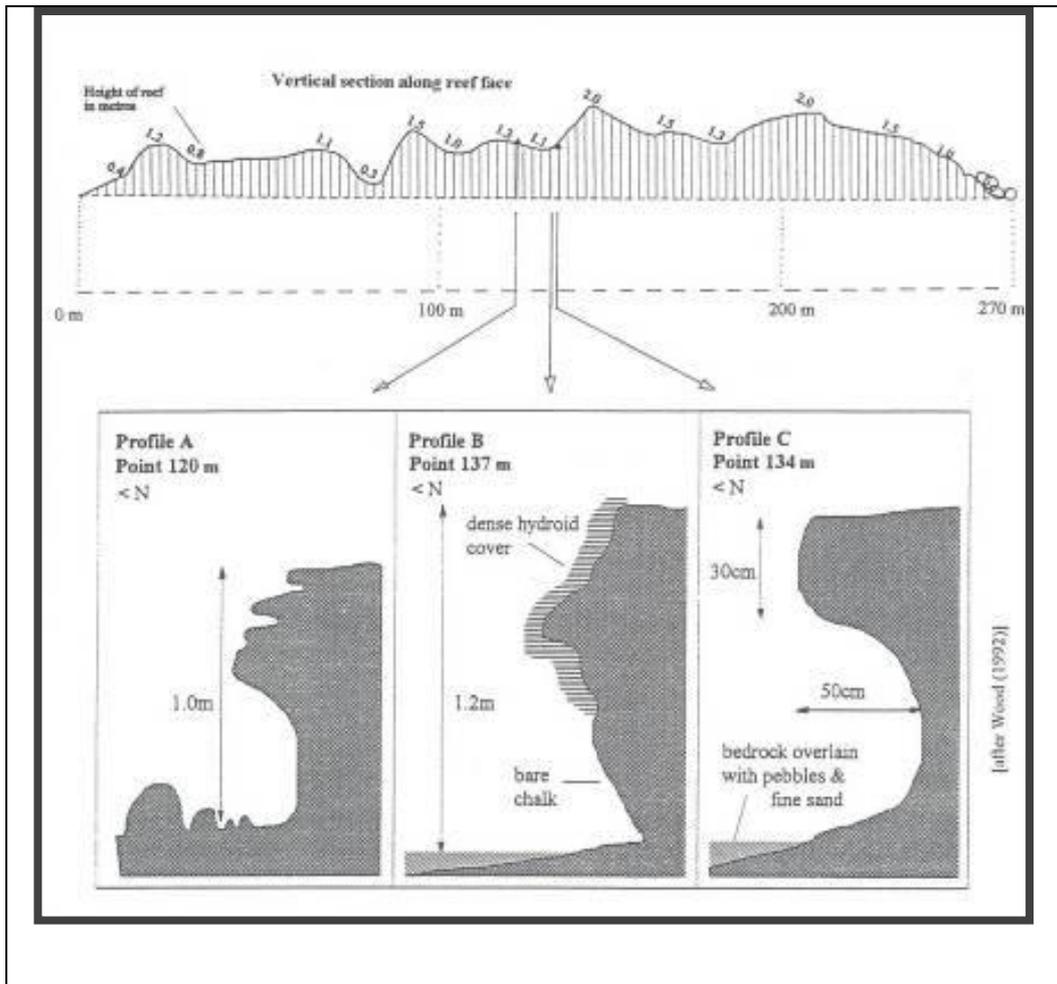
The flora and fauna at this site appears to have changed considerably during the period from 1984/5 to 1994. Records made in 1984/5 listed 47 algal species yet only 7 were recorded in 1990. The hydroid turf composition in 1990 included *Hydrallmania falcate* and *Obelia dichotoma* (neither recorded in 1984/5), but did not include *Eudendrium ramosum* nor *Sertularia cupressina* which were respectively abundant and common in 1986.

Site location



Diagrammatic representation of site:

SOUTH-WEST ROCKS



Site: Looe Gate		Ref. No.10
Location: 4 km SW of Hove		Other conservation designation? No
Lat./Long. position of centre of site: 50° 47.74' N 0° 11.59' W	OS grid ref. of centre of site: TQ 273 009	Author: Robert Irving
Sea bed type: Chalk cliff, silty sand mixed with shells	Depth range (below chart datum): 6 - 9 m	Date Identified: November 1995

Summary

The feature known as Looe Gate (reasons for name unknown, although a hole in the cliff has been reported at one point) is a low-lying chalk cliff, mostly 0.5 m in height but reaching a maximum height of 1.5 m in places. The length of exposed chalk is approximately 22 m. Its width can vary with shifting overlying sand, but may reach up to 5 m. The surrounding sea bed is of silty sand with shell debris. The northward-facing cliff face varies in profile from a vertical face with an undercut base, through a low series of terraces, angled faces, smooth slope top jumbled chalk boulders and broken bedrock (Wood 1992).

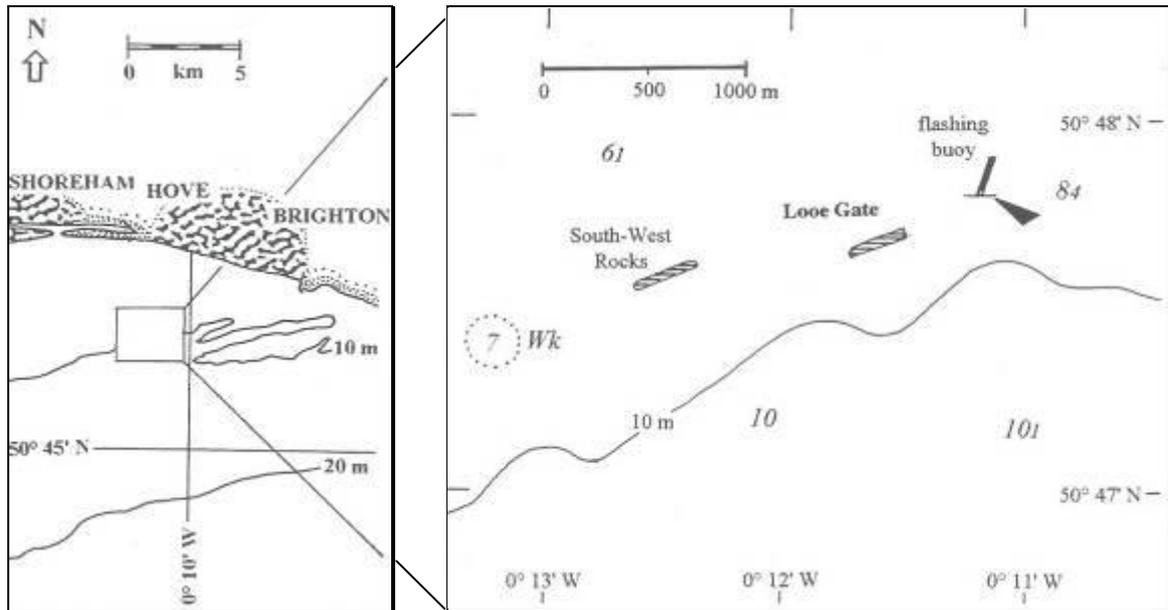
Biological description

The uppermost (shallowest) parts of the cliff support a sparse foliose red algal turf. Surveys in 1986 and 1994 revealed the attached fauna to be varied and densely packed, except on broken surfaces. Dominant elements of the cover were sponges and bryozoans. Eleven species of sponges were recorded in 1986, the most common being *Cliona celata* (the boring form), *Esperiopsis fucorum* and *Dysidea fragilis* (Wood 1992). The bryozoans *Flustra foliacea*, *Cellepora pumicosa* and *Bugula* spp. are frequently recorded. Anthozoans represented include the anemone *Sagartia troglodytes* and the soft coral *Alcyonium digitatum*. The tubicolous worm *Sabellaria spinulosa* is known to occur here, as is the 'feather duster' worm *Bispira volutacornis*. Two species of piddock are present: the common piddock *Pholas dactylus*, which tends to prefer boring vertically into horizontal bedrock, and the smaller 'red nose' *Hiatella arctica*, which favours boring horizontally. Amongst the smaller sessile groups, sea squirts were particularly varied in 1986, with 12 species being recorded, seven of which were common.

These included *Aplidium punctum*, *Morchellium argus*, *Pynoclavella auriculens*, *Asciella scabra* and *Molgula manhattensis*. A variety of fishes have been recorded from this site, with bib *Trisopterus minutes* being common, and goldsinny *Ctenolabrus rupestris* and corkwing wrasse *Ctenolabrus melops* also being present.

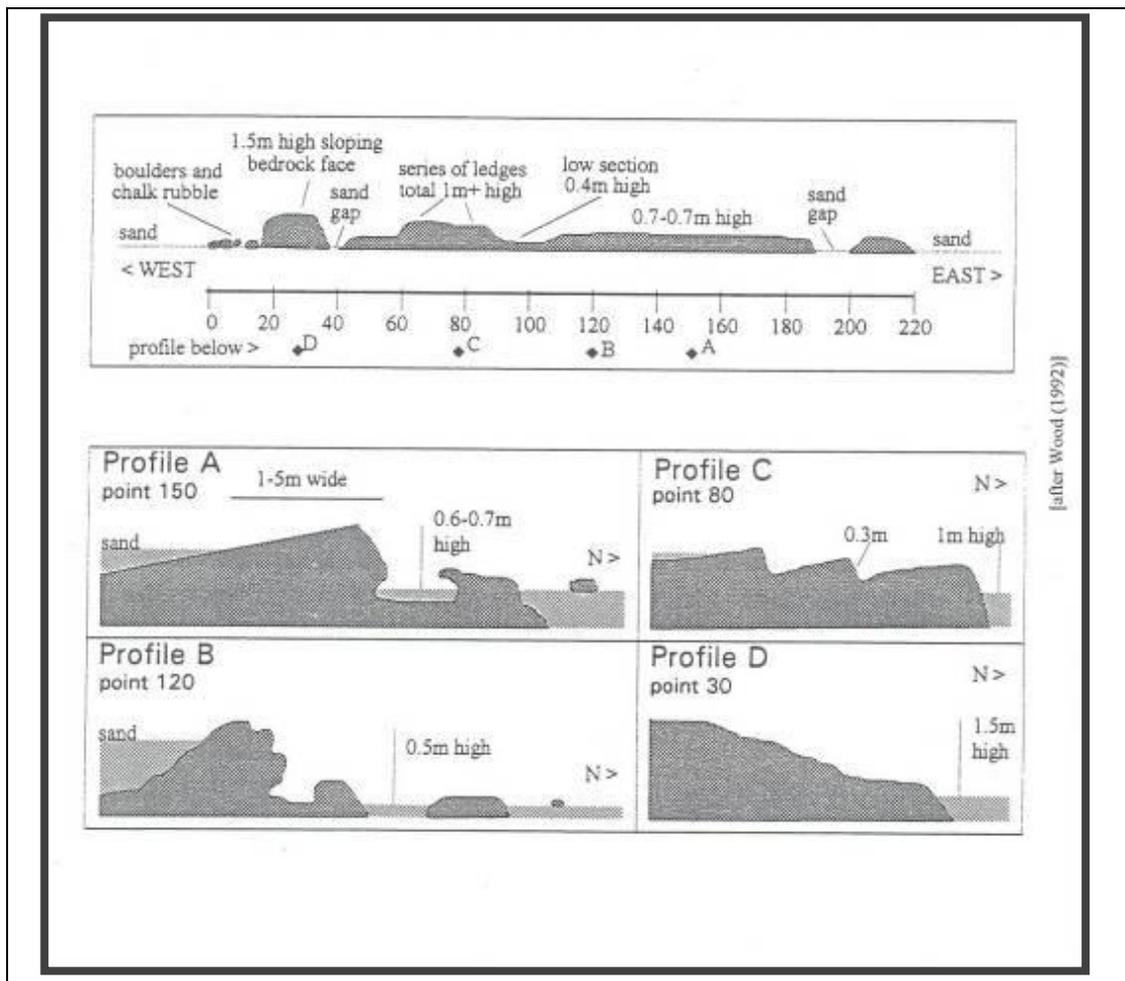
The sea bed on the north (lower) side of the reef is of mixed sediment: chalk pebbles, gravel, sand, shell debris and occasional small chalk boulders. Occasional sparse red algae can be found attached to cobbles and small boulders. Otherwise, the fauna is typical of this type of sea bed, with the anemones *Urticina felina* and *Cerianthus lloydi*, the crabs *Necora puber* and *Cancer pagarus*, the topshell *Calliostoma zizyphinum* and occasional chains of slipper limpets *Crepididula fornicata*.

Site location



Diagrammatic representation of site:

LOOE GATE



Ship Rock

Site: Ship Rock		Ref. No.17
Location: 2 km SSW of the West Pier, Hove.		
Lat./Long. position of centre of site: 50° 47.95' N 0° 09.90' W	OS grid ref. of centre of site: TQ 293 016	Author: Robert Irving
Sea bed type: Low-lying chalk reef/cliff	Depth range (below chart datum): 9 - 11 m	Date Identified: June 2001

Summary

Ship Rock is a sublittoral exposure of low-lying chalk cliff (or ledge) approximately 2 km SSW of the West Pier, Hove. The cliff lies at a depth of 9-11 m BCD and is reported to be just over 100 m long. The maximum height of the cliff is 1.0 m (along two short sections), though it has an average height of nearer 0.5 m. It is assumed this is the same site known by some divers as Kingswest Ledge. Indeed, this may be a more appropriate name for the whole linear feature. It is reported that sections of the cliff appear to have collapsed, possibly the result of fishing gear being towed over them.

Biological description

As with the other sections of sublittoral chalk cliffs present off Sussex, the line of the cliff forming Ship Rock runs approximately WSW/ENE. The cliff face itself faces the shore (i.e. northwards), the top of the cliff being on the seaward (although shallower side).

The cliff is roughly stepped for much of its length, with many fissures, crevices and holes. Many of the exposed sheltered surfaces are heavily silted. The cliff's horizontal top has sparse foliose red algae growing on it, with occasional clumps of hydroids on the current-swept edge. The vertical chalk faces have a general covering of hydroid-bryozoan turf and are frequently riddled by piddock holes (most likely to be *Pholas dactylus*). Other fauna, such as colonial ascidians (e.g. *Aplidium punctum*), sponges and erect bryozoans cover the chalk surface. Occasional clusters of *Bispira volutacornis* tubeworms are present in places. The base of the cliff has been eroded in places to form small caves, often occupied by crustacean, especially prawns and edible crabs *Cancer pagarus*. Other mobile fauna present include occasional velvet swimming crabs *Necora puber*, goldsinny *Ctenolabrus rupestris*, ballan wrasse *Labrus bergylta*, tompot blennies *Parablennius gattorugine*, and leopard-spotted gobies *Thorogobius ephippiatus*. Triggerfish *Balistes carolinensis* have also been recorded from this vicinity and seen sheltering within the small caves. At the foot of the cliff, horizontal exposed chalk bedrock is present, with scattered chalk boulders, cobbles and mixed sediments.

Justification

Sussex is the only location on the British Isles where chalk strata appear as offshore, linear 'cliffs' (i.e. vertical faces between 1-4 m in height). These exposures are therefore of regional, if not

national, importance, more as an unusual feature rather than on account of the marine communities they possess. Other sublittoral chalk cliff exposures off Sussex include the Worthing Lumps (mSNCI ref. 8), South-West Rocks (mSNCI ref. 9) and Looe Gate (mSNCI ref.10).

Site location & other Seasearch descriptions:

Ship Rock (also known as Kingswest Ledge) lies 2km SSW of West Pier. It is a chalk cliff reportedly to be just over 100m long, with an average height of 0.5m but reaching 1.5 at two short sections. The site was divided into three distinct habitats.

Ship Rock is an additional site to the East of Both Looe Gate and SW Rocks which comprises a portion of the same Chalk reef System, 3km South of Hove.

Seasearch description: chalk reef, bedrock, boulders and 'flat topped table'. Diverse and plenty of life. An area of mixed ground and gravel with **extensive excavated nests of black-bream**⁶; 7-9 nests per 10m sq. 0.5-1.0m in diameter. 3km s of Brighton, Chalk bedrock. Chalk reef with 2m drop-off

OTHER DESCRIPTIONS OF THE SITES

SOUTH-WEST ROCKS (RSPB)⁷

MAIN FEATURES: Chalk cliff, sand and pebbles.

SITE DESCRIPTION: Approximately 270m of exposed vertical chalk cliff, reaching a maximum height of 2m. The cliff is undercut at its base giving way to a seabed of fine sand and pebbles. The vertical face and upper horizontal surfaces are the most densely covered by marine life with hydroids, foliose red algae, sponges and bryozoans. There are also numerous small holes made by boring piddocks. A small group of burrowing sea cucumbers were found occupying abandoned holes (in 1990) and are believed to be the only record of this species in the eastern part of the Channel, although they have not been recorded since then. The cowrie *Trivia arctic* is common in some areas and, although crustaceans are not as common as one might expect, fish such as bib, poor cod, ballan wrasse and the goldsinny wrasse are frequently seen.

LOOE GATE (RSPB)⁸

MAIN FEATURES: Chalk cliff, silty sand mixed with shells.

SITE DESCRIPTION: Low-lying chalk cliff up to 1.5m high in places and approximately 220m long surrounding by a seabed of silty sand with shell debris. The profile varies from vertical with an undercut base, through a low series of terraces, angled faces and smooth slopes, to jumbled chalk boulders and broken bedrock. The uppermost part of the cliff supports a sparse foliose red algal turf and a varied and densely packed attached fauna except on broken surfaces. The dominant elements are sponges and bryozoans but there are also anemones, soft coral, two species of piddock and a good variety of sea squirts. The surrounding seabed has a fauna typical of this type of sediment, with anemones, crabs, the topshell and occasional chains of slipper limpets. A variety of fish have been recorded from the site with bib and poor cod being common, and goldsinny and corkwing wrasse also present. **JNCC database records**

⁶ For information on Black Bream contact Sussex sea Fisheries Committee <http://www.sussex-sfc.gov.uk/>

⁷ http://www.rspb.org.uk/Images/marineareas_tcm9-163468.pdf

⁸ http://www.rspb.org.uk/Images/marineareas_tcm9-163468.pdf

JNCC has one biotope record (from Seasearch).

South West Rocks 1 (Shoreham)

713.069.001 1994 Sussex Seasearch: Chichester Harbour to Pevensy Bay sublittoral survey JNCCMNCR60000713 20/07/1994 50.79382946 -0.205646305 Sussex - Shoreham	East English Channel Andy Willett 20/07/1994 ChartUnk -9.6 -8.7 -14.4 -13.5
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Description:

Fairly level seabed at 8.7-9.6m BCD, covered with irregular boulders up to 1.5 metres high with a scattering of cobbles and pebbles with a few broken and whole shells. Some or all boulders and cobbles of chalk; bedrock usually covered, but one seam or bed of black clay, heavily bored by piddocks, seen, with detached pieces scattered around. Boulders heavily overgrown by animal turf and several sponge species with very sparse foliose red algae, hydroids, lightbulb and perhaps other ascidians, and white sea anemones. Swimming and edible crabs frequent, and one lobster, but no fish recorded.

JNCC Biotope code⁹:

SS.SMp Sublittoral macrophyte-dominated communities on sediments

1994 Sussex Seasearch: Chichester Harbour to Pevensy Bay sublittoral survey

Species search - direct reference to south west rocks found in the following surveys:

1994 Sussex Seasearch: Chichester Harbour to Pevensy Bay sublittoral survey

2003 Sussex Seasearch: Pagham Harbour to Cuckmere

South west rocks is listed in the JNCC Coastal Directory as a site of importance.

4. SEASEARCH Species List DATA - SW Rocks (2009)

The SW Rocks are a continuation of a chalk exposure that runs as a ledge parallel with the coast, one to just over four metres in height. The fissures on the top of the ledge are home to a variety of typical Sussex reef species. Cod, *Gadus morhua*, are reported to be found 'sleeping' during the day in crevices in the vertical face¹⁰.

⁹ <http://www.seasearch.org.uk/downloads/Rough%20Guide%20to%20Biotopes.pdf>

¹⁰ Sussex Seasearch report 2009

SPP LIST 2009

<i>Corallina officinalis</i> <i>Nemertesia antennina</i> <i>Tethya aurantium</i> <i>Bispira volutacornis</i> <i>Cliona celata</i> <i>Conger conger</i> <i>Labrus bergylta</i> <i>Trisopterus luscus</i> <i>Ctenolabrus rupestris</i> <i>Parablennius gattorugine</i> <i>Cancer pagurus</i> <i>Homarus gammarus</i> <i>Gracilaria gracilis</i> <i>Laminaria digitata</i> <i>Laminaria saccharina</i> <i>Pholis gunnellus</i>	<i>Plocamium cartilagineum</i> <i>Palmaria palmata</i> <i>Chondrus crispus</i> <i>Enteromorpha</i> <i>Bryopsis plumosa</i> <i>Polysiphonia</i> <i>Halurus</i> <i>Dynamena pumila</i> <i>Electra pilosa</i> <i>Membranipora membranacea</i> <i>Gibbula cineraria</i> <i>Bispira volutacornis</i> <i>Mytilus edulis</i> <i>Necora puber</i>
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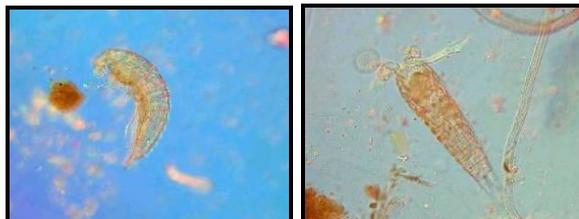
5. Species new to science found off Sussex coast

Currently a paper is being prepared by Ventham, D. (2010) that includes work on the SW Rocks. The full reference is given below for his previous studies on copepods off the Sussex coast.

Harpacticoid copepods from the Sussex coast (Eastern English Channel): records 1992-1997.

Harpacticoid crustaceans (Copepods – see images below) as described by Ventham, D. (1997) are now also being described for the South West Rocks. This paper is currently being prepared for publication. *In summary* Ventham has found a significant number of *harpacticoid crustaceans* of which some are new to science. All of his surveys were off Sussex and included dive and dredge samples which have revealed a surprising diversity and wealth of these invertebrate fauna, characteristic of the region, although previously unknown. This suggests that by examining an order (in this case *harpacticoidia* within the class Crustacea) in detail, further new species discoveries are possible.

Harpacticoid crustacean and copepod: Image from WoRMS
<http://www.marinespecies.org/aphia.php?p=taxdetails&id=1102>



6. Sussex SFC SONAR work: with CEFAS 2010

SIDESCAN SONAR DATA – SUSSEX SFC AND CEFAS

Methodology¹¹:

Acoustic Survey Equipment

This data collection was performed using the Fisheries patrol vessel *Watchful*. *Watchful* is equipped for surveying with sidescan SONAR.

All Sidescan SONAR data relevant to the SW Rocks site was collected by the **FPV *Watchful*** on **Friday 21st May 2010 using the 'Fish' shown below**. As the sidescan SONAR images show there is a 'relic' comprising a vertical white line on the images which is a function of the survey technique and does not reflect a feature of the seabed.

Image 3: 'The Fish'



7. DATA, MAP INFO LAYERS AND EUNIS

The subsequent sections deal in detail with SONAR records made available by Sussex SFC and interpreted along with all available data. This is followed by a description of the SONAR trail, screen grabs showing seabed features (and chalk reef features), an interpretation of these screen shots and a GIS (MapInfo 9.5) presentation of this interpreted data.

Data has come from a variety of sources which include the Sussex SFC, MALSF and REC¹² data; drop-down video data and Seasearch surveys.

This data has been combined to classify the area in terms of EUNIS¹³, to EUNIS level 3 (or EUNIS level 4 or 5 where possible / appropriate).¹⁴

¹¹ [http://www.sussexfsc.gov.uk/documents/Sussex%20SFC%20MAL%2000020%20ext%20Final%20Report%20\(reduced%20size\).pdf](http://www.sussexfsc.gov.uk/documents/Sussex%20SFC%20MAL%2000020%20ext%20Final%20Report%20(reduced%20size).pdf)

¹² James, J.W.C., Pearce, B., Coggan, R.A., Arnott, S.H.L., Clark, R., Plim, J.F., BarrionFrojan, C., Pinnion, J., Gardiner, J.P., Morando, A., Baggeley, P.A., Scott, G., Bigournal, N. (2010). The South Coast Regional Environmental Characterisation. British Geological Survey Open Report OR/09/51. 250pp.

¹³ <http://eunis.eea.europa.eu/>

The EUNIS descriptions below generically classify the sites. For a detailed view of all known EUNIS descriptions and locations within the area of interest see **posters in appendix 3**. The image appendices (appendix 2) also show characterising species and their respective EUNIS codes.

EUNIS level	EUNIS code	EUNIS name
1	A	Marine habitats
2	A4	Cirralittoral rock and other hard substrata
3	A4.2	Atlantic and Mediterranean moderate energy cirralittoral rock
4	A4.23	Communities on soft cirralittoral rock

Broad scale habitats were originally described in the **Regional Environmental Characterisation (REC) surveys for the South Coast**¹⁵. The figures presented below (Figure 19 onwards) show the EUNIS classifications available from the sites, produced from a combination of the above mentioned data.

Rather than summarise the background of all of these separate data sources and collection methods, links are provided in the reference section.

The following figures provide a combination of visual representations of the sidescan SONAR trail relative to the Sussex coastline and the area of interest and mSNCIs. Additional work was conducted at CEFAS in Lowestoft and at the Sussex SFC office in Shoreham to regionalise records into distinct SONAR signatures. This work is also presented below. Furthermore the detailed sidescan SONAR was interpreted by experts at CEFAS as **detailed in section 8**.

Figure 6 – Multibeam Sidescan SONAR trail from *FPV Watchful Fri 21st May 2010*

¹⁴ <http://eunis.eea.europa.eu/>

¹⁵ <http://www.alsf-mepf.org.uk/projects/2008/rec-0802/final-report.aspx>

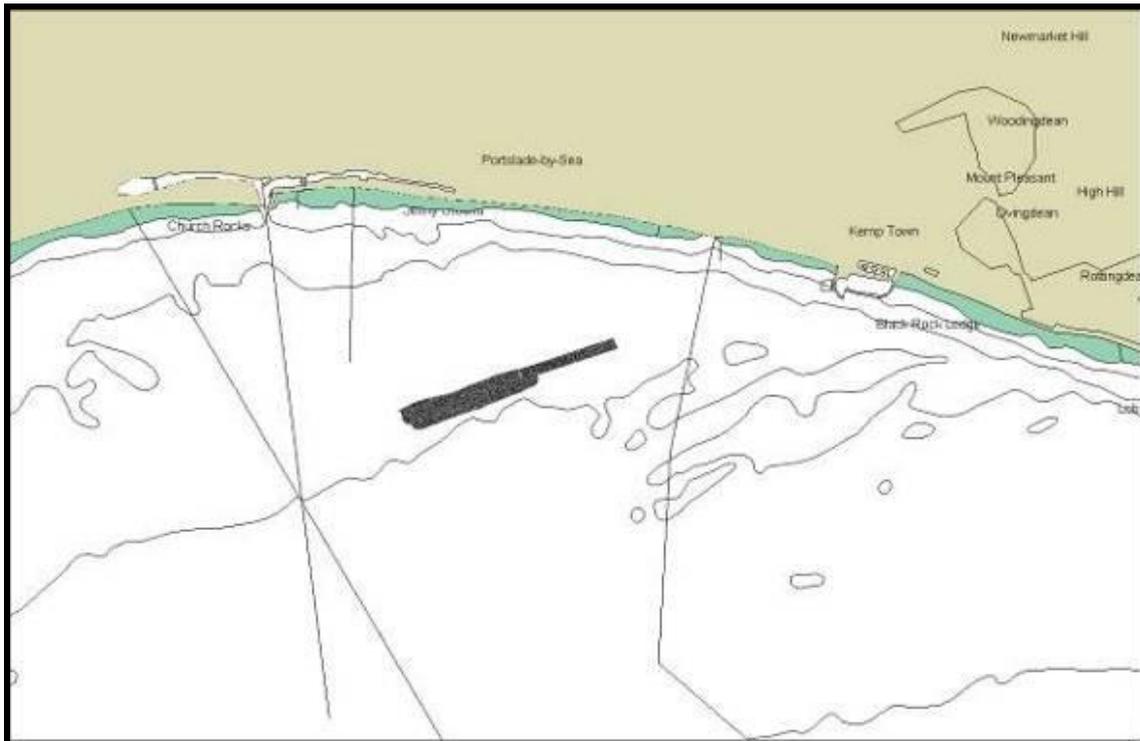


Figure 7 – Area including all regional data points from all data sources in section 6

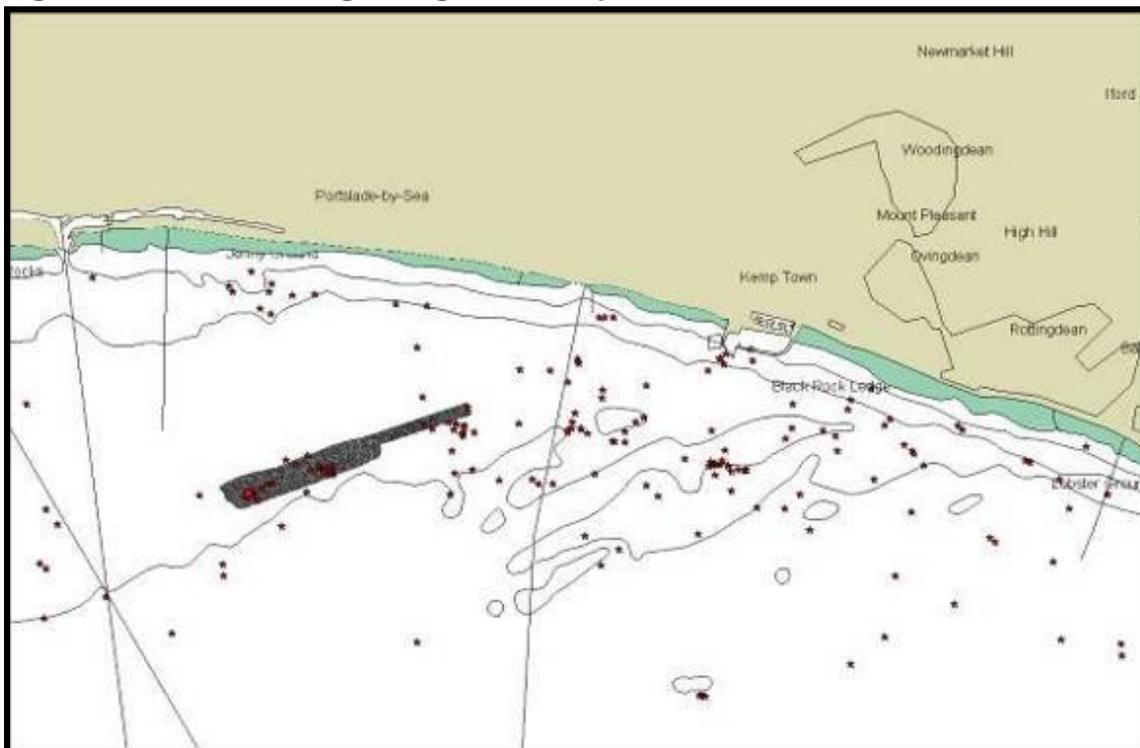


Figure 8 – all data points (●– ring bolts A, B and C and *–data points) within SW Rocks sidescan SONAR track

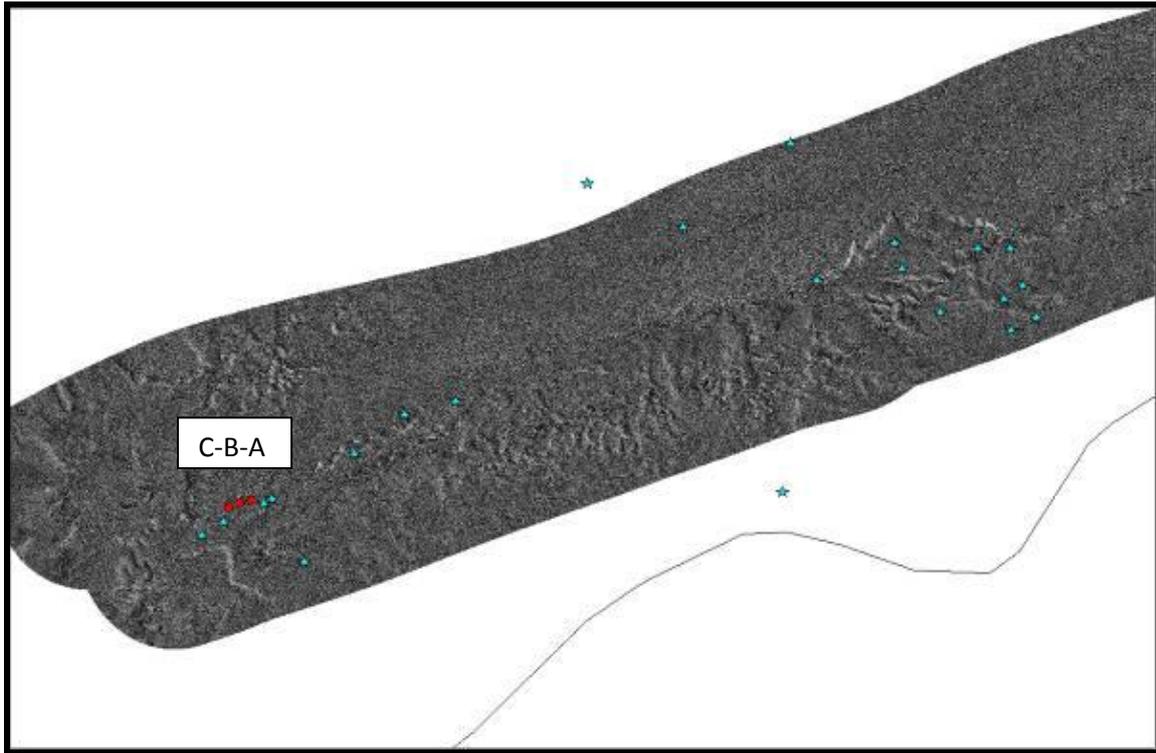


Figure 9 – Detailed sidescan SONAR image of seabed and position of chalk reef feature (○- ring bolts C, B and A) within SW Rocks sidescan SONAR track.

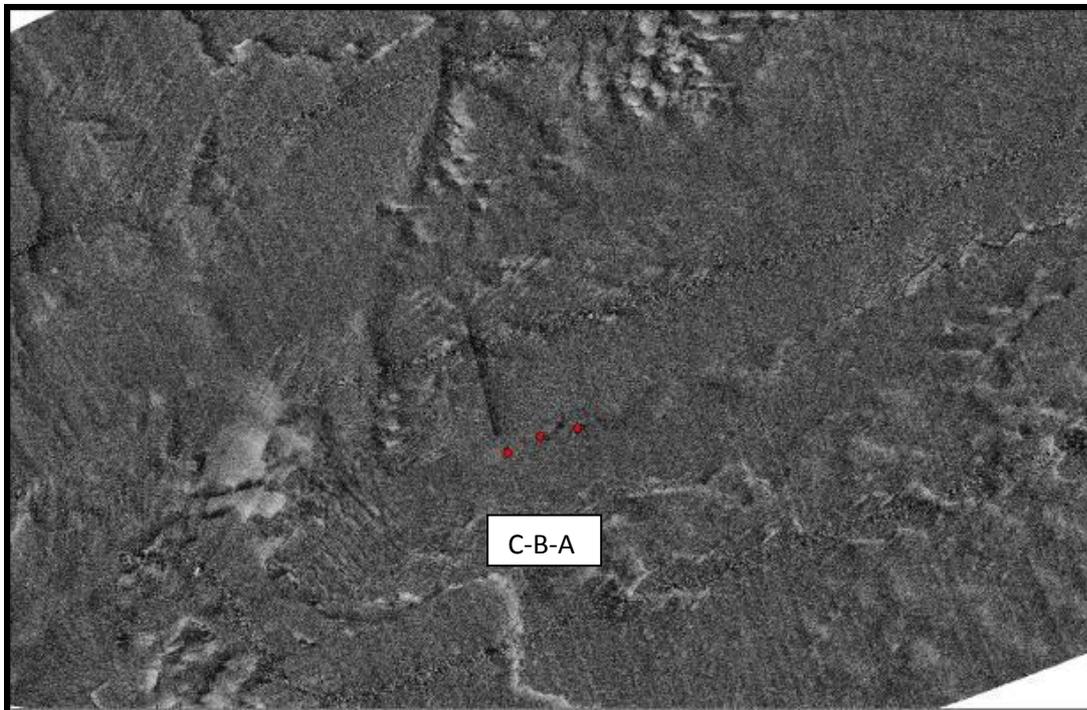


Figure 10: SW Rocks Overview CEFAS interpretations - survey tracks (standard settings)



Figure 11. Image with adapted grey scale. Images are the same, but with a different colour scheme applied. The image was produced at a later stage to increase the contrast in the dataset.



The following section shows the decimal Latitude / Longitude for the 'screen grabs' taken during the sidescan SONAR survey, along with the images taken at each one of

the 13 points listed below. These images are related to seabed features in the attached poster ('Poster Features', Appendix 3).

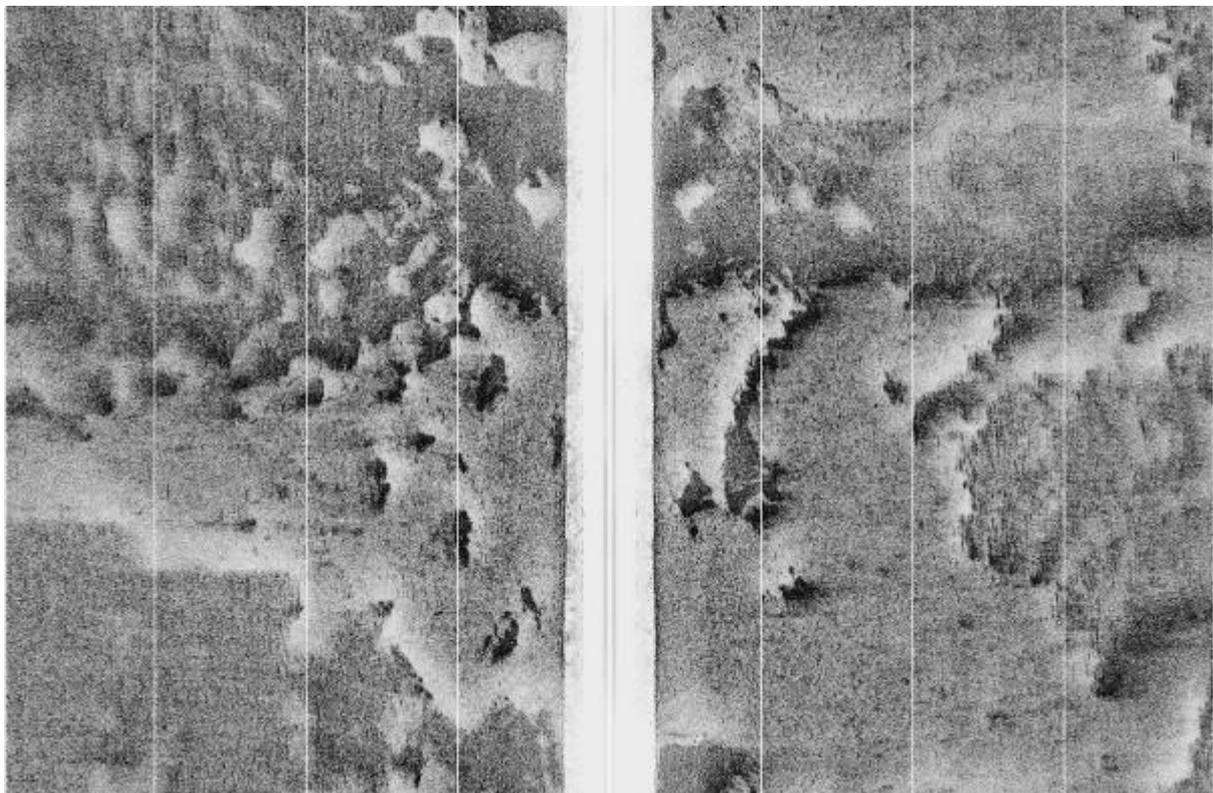
<u>Feature / image #</u>	<u>Lat</u>	<u>Long</u>
1	50.7940683	0.1987017
2	50.79299	0.2071133
3	50.7929233	0.2104167
4	50.792235	0.2138033
5	50.7928783	-0.211205
6	50.7937117	0.206985
7	50.7945717	0.2029933
8	50.7942983	0.2045667
9	50.7952183	0.197675
10	50.7959867	0.1930017
11	50.797205	0.18898
12	50.7951133	0.203825
13	50.79742	0.1838867

Note: The white vertical line represents a 'relic' which *is a function of the survey technique and NOT a seabed feature* - these screen shots are presented in the supporting poster in their actual locations along the sidescan SONAR trail.

SW Rocks Screen Shots – Whole image represents 100m either side of vessel

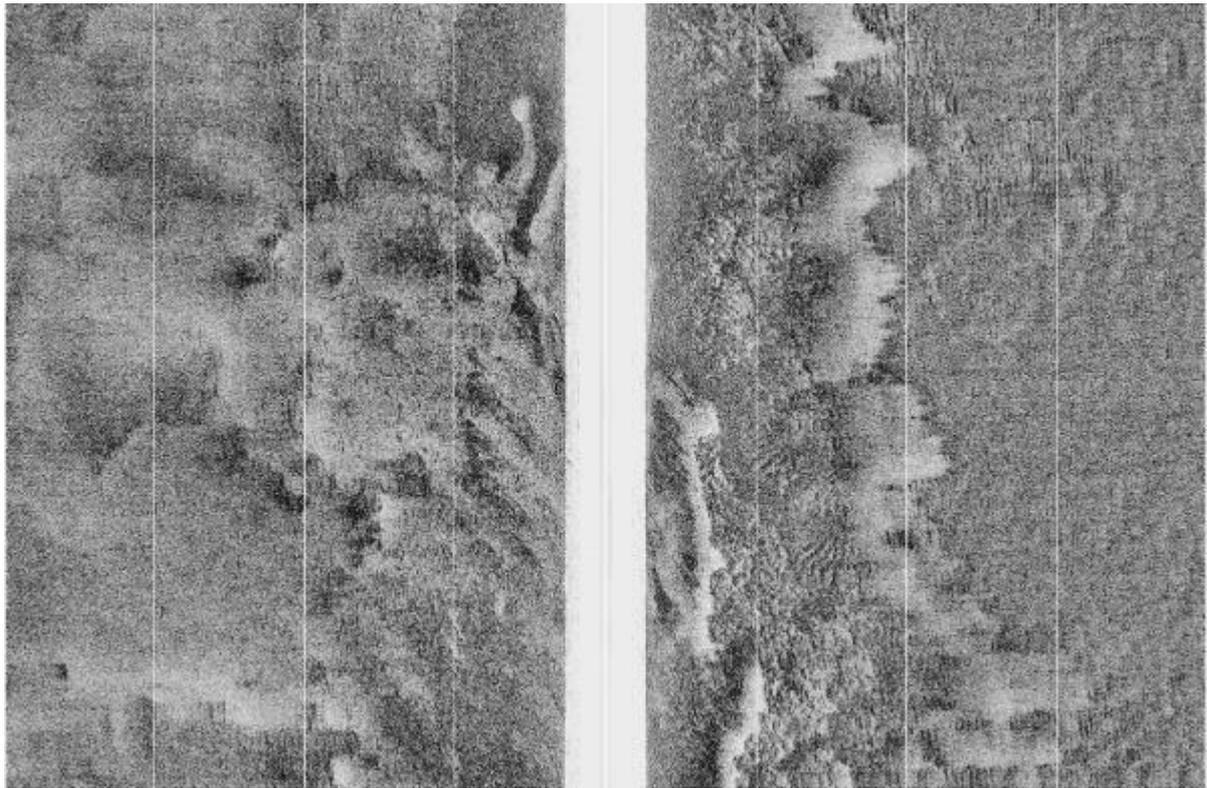
1 Mixed Gravel and Sand

Scale | ←~25m → |



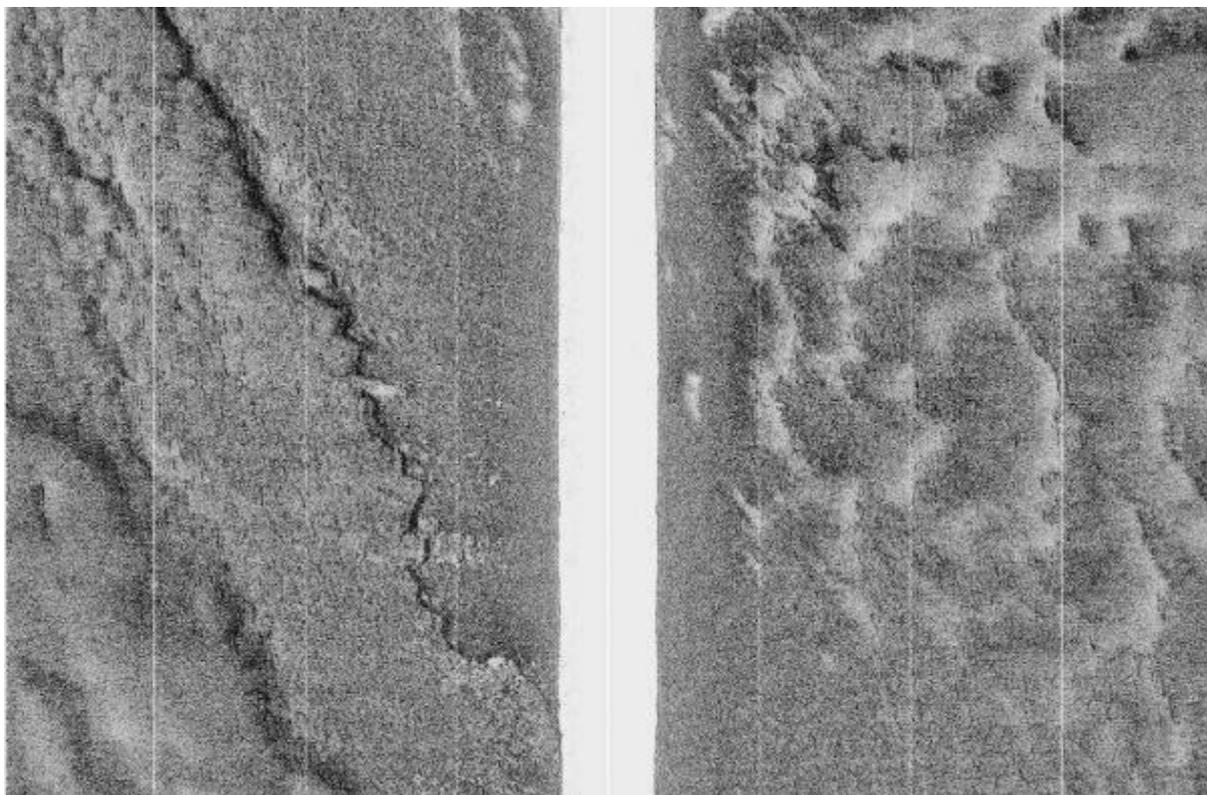
2 Boulders or Bream Nests – Ripples

Scale | ←≈25m → |



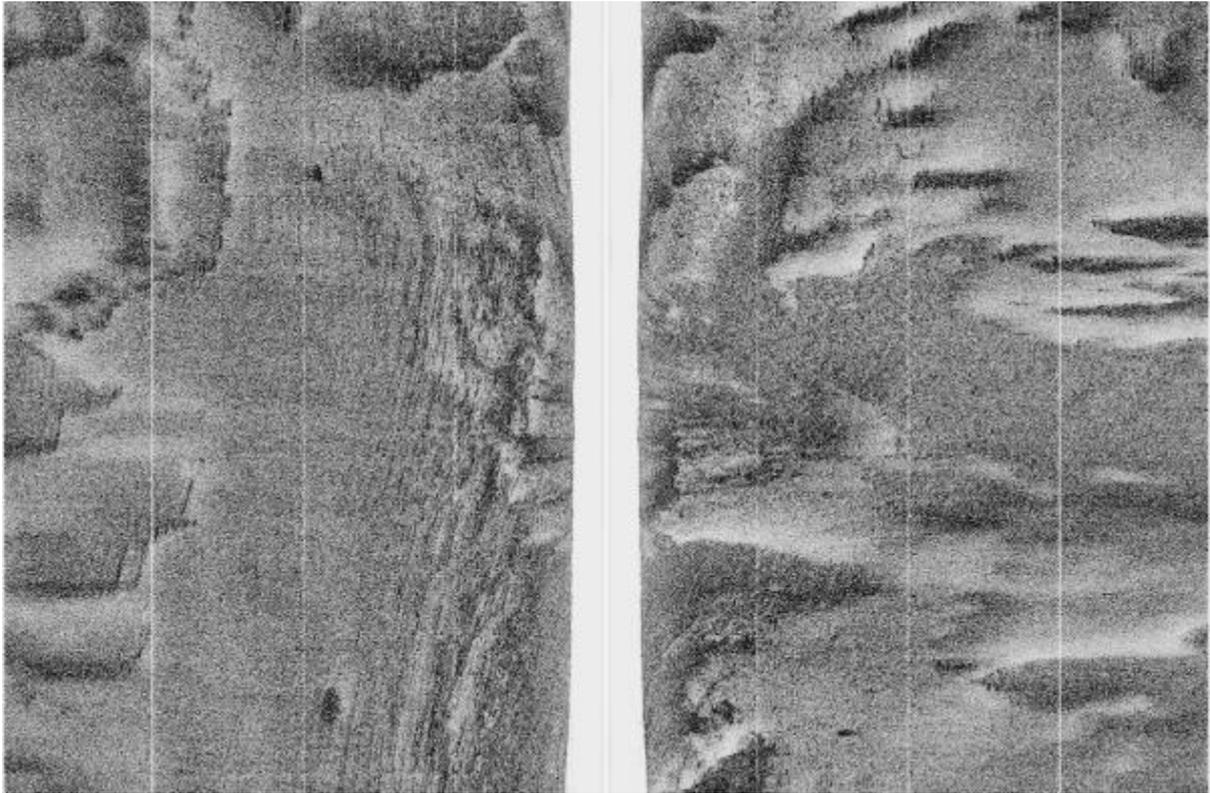
3 Chalk Ridge

Scale | ←≈25m → |



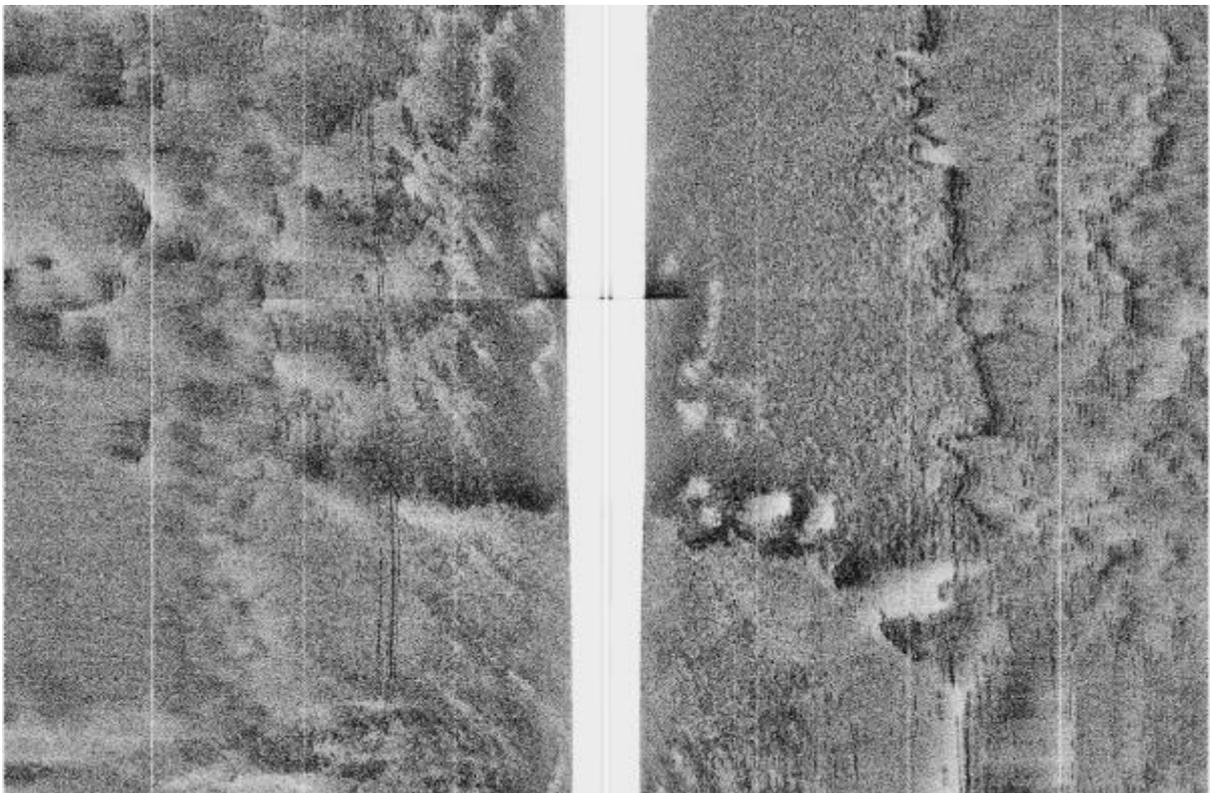
4 Striations

Scale | ←≈25m → |



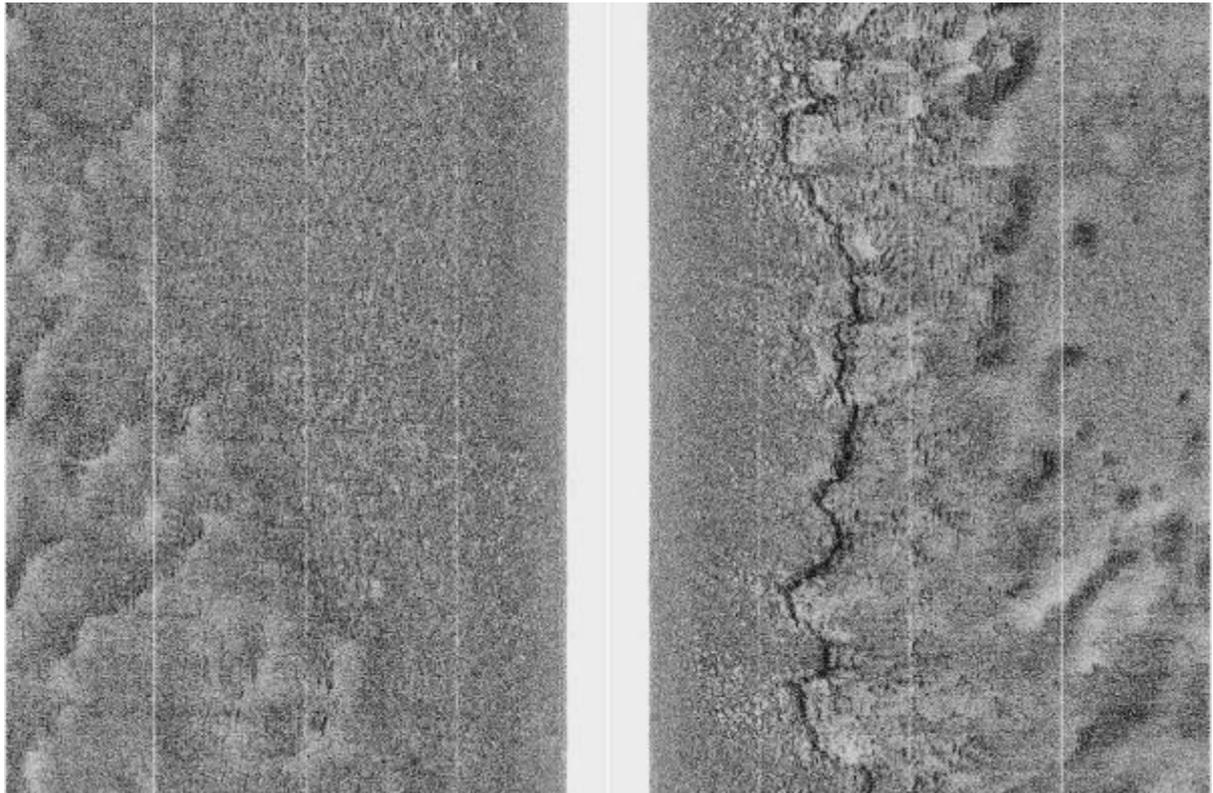
5 Trawl Scars

Scale | ←≈25m → |



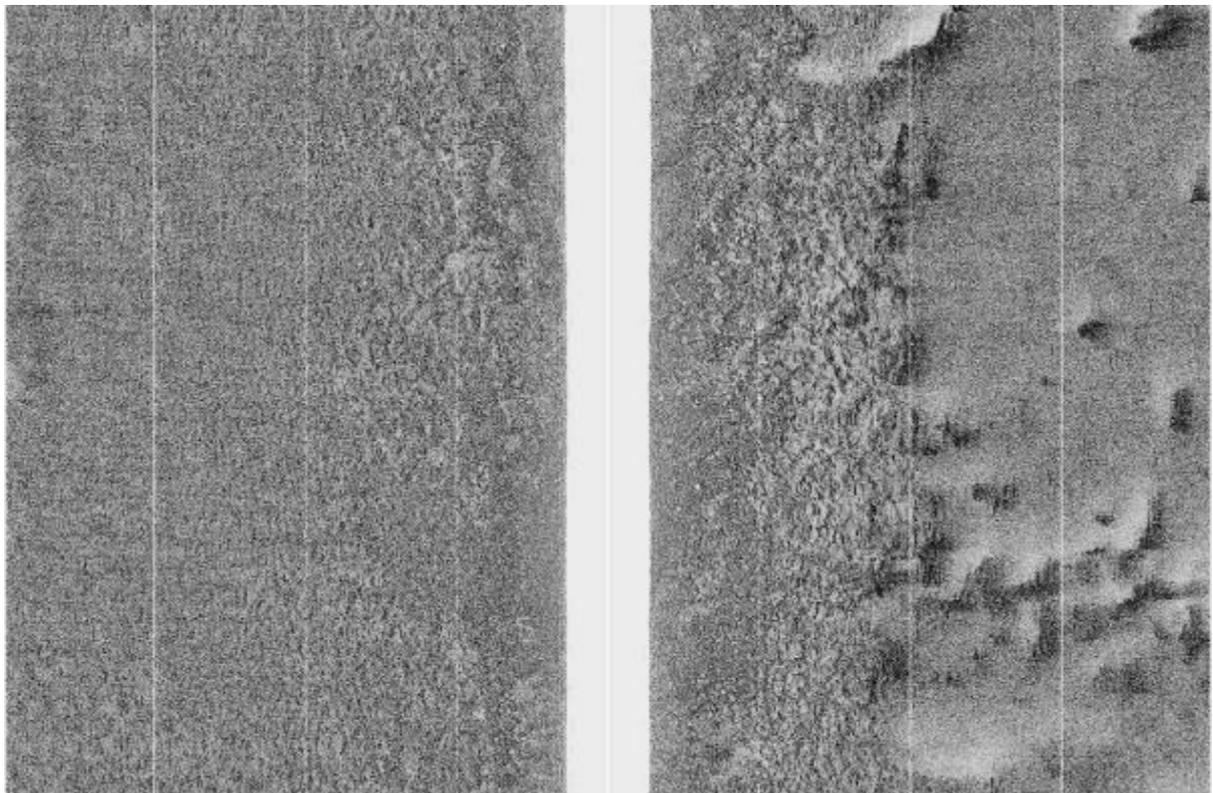
6 Chalk Ridge with potential Bream nests

Scale | ←≈25m → |



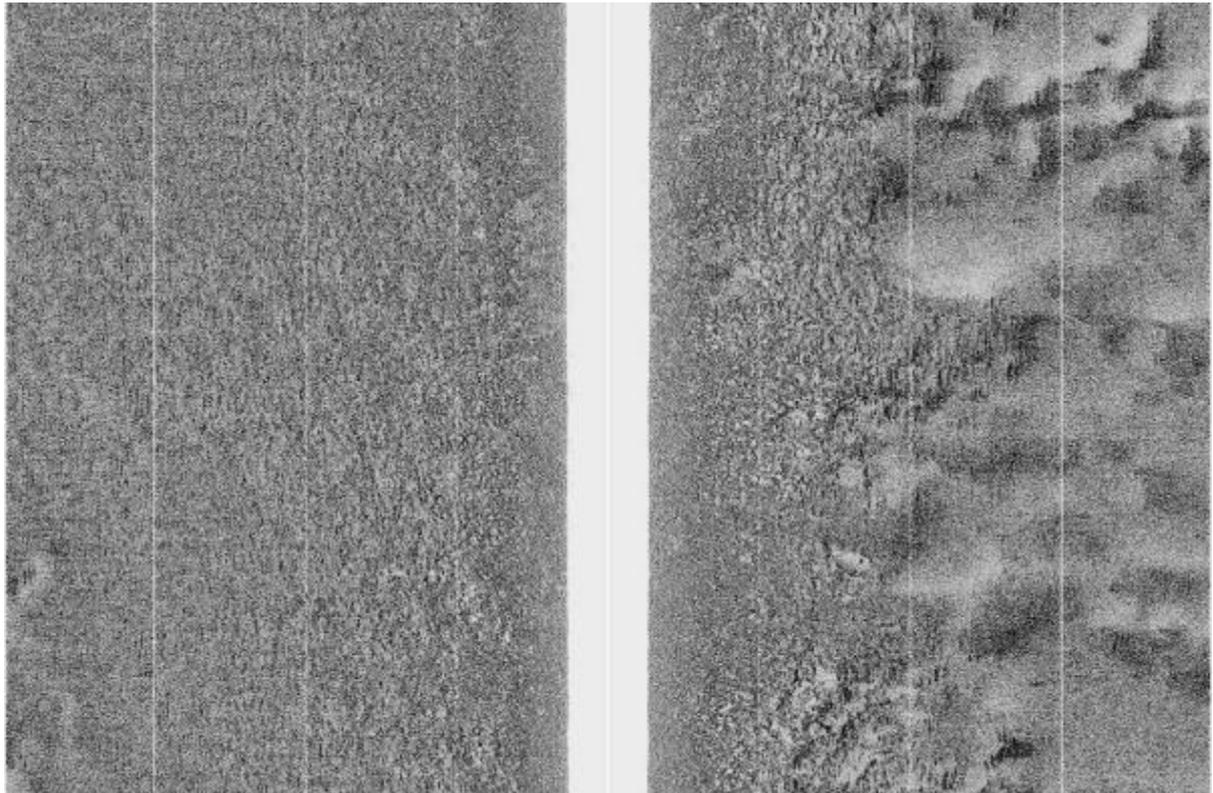
7 Potential Boulders

Scale | ←≈25m → |



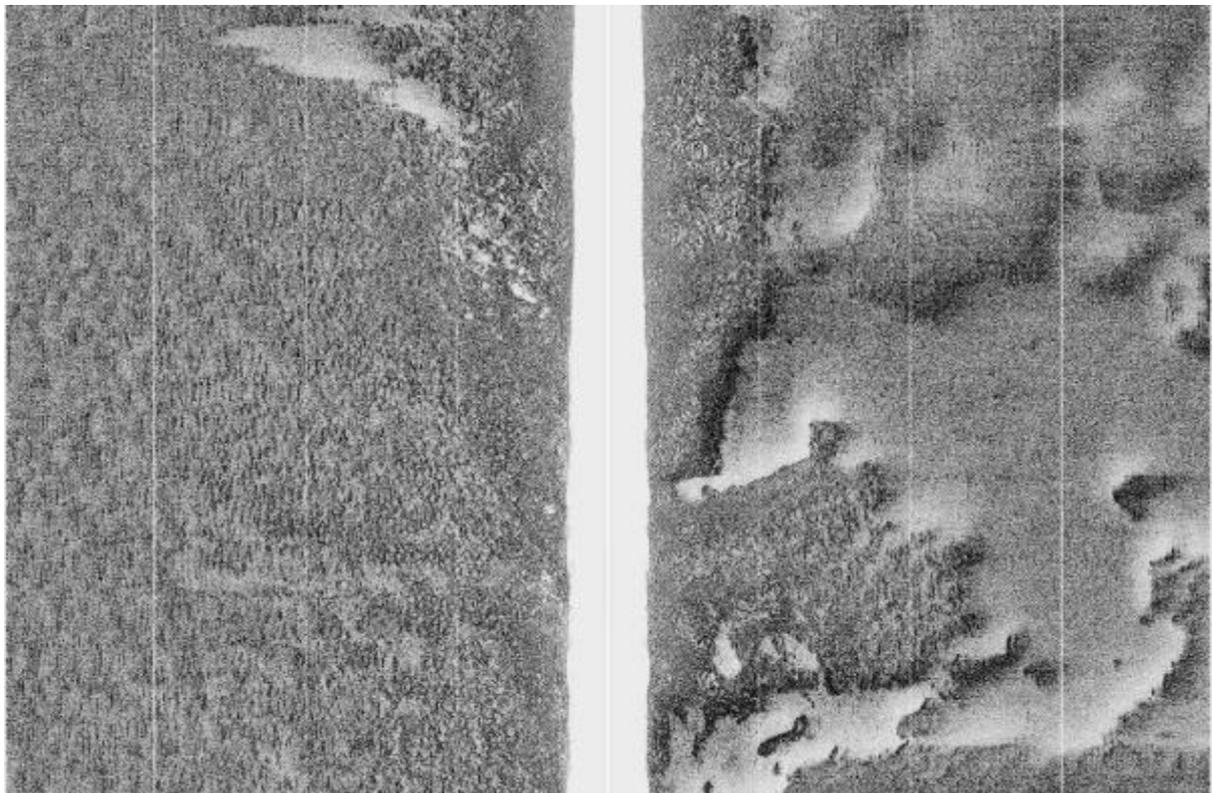
8 Bream Nests

Scale | ←≈25m → |



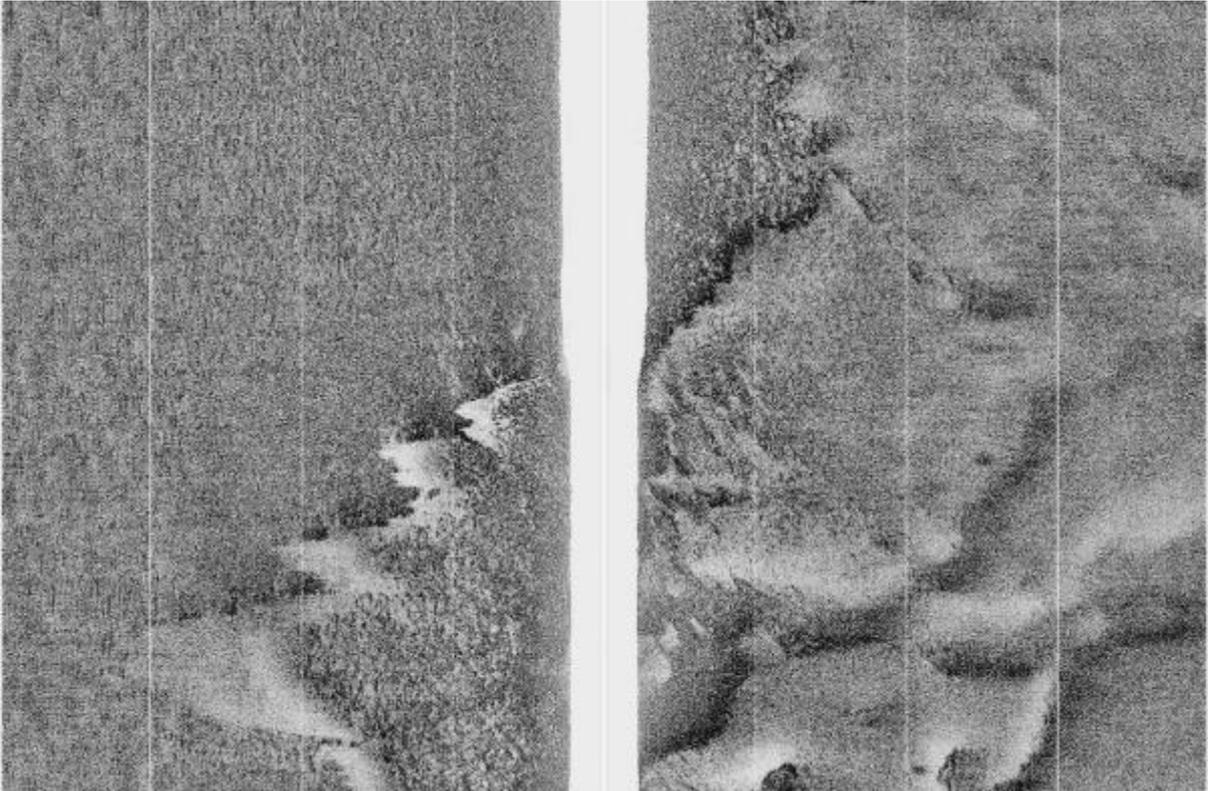
9 Bream Nests

Scale | ←≈25m → |



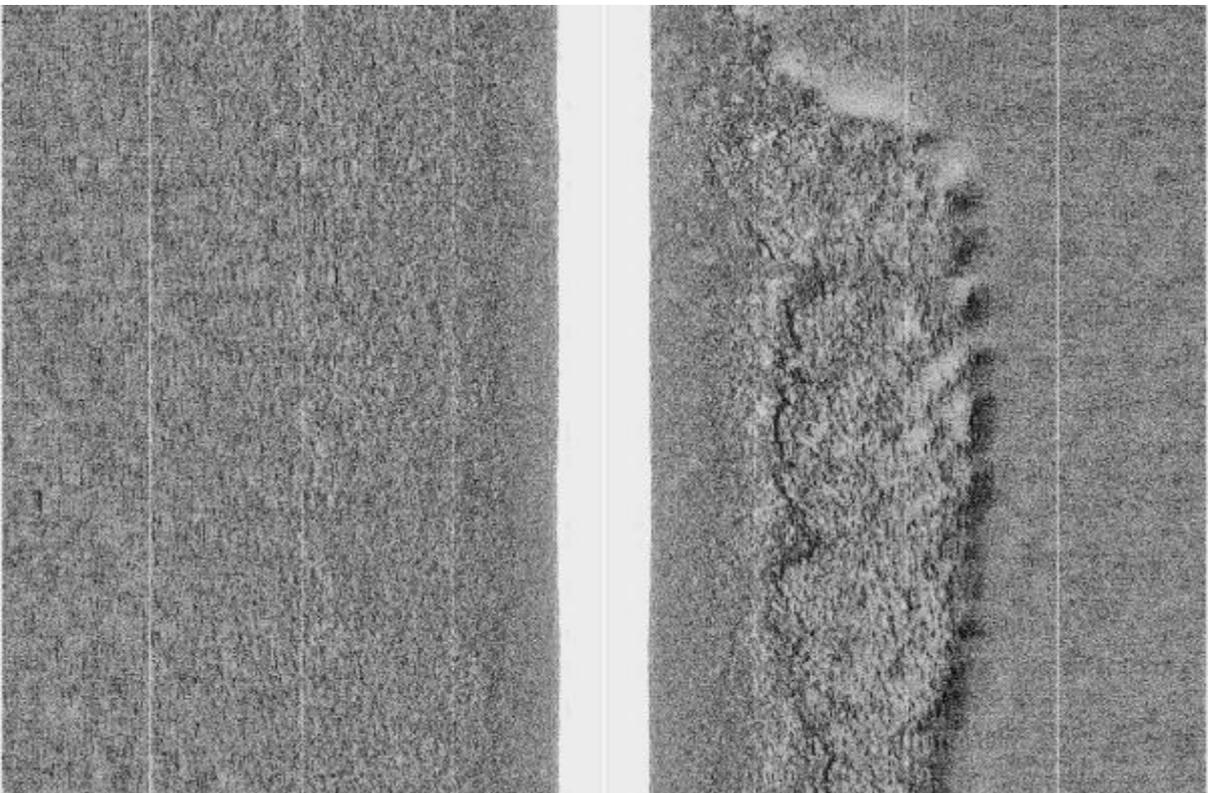
10 Potential Chalk Ridge

Scale | ←≈25m → |



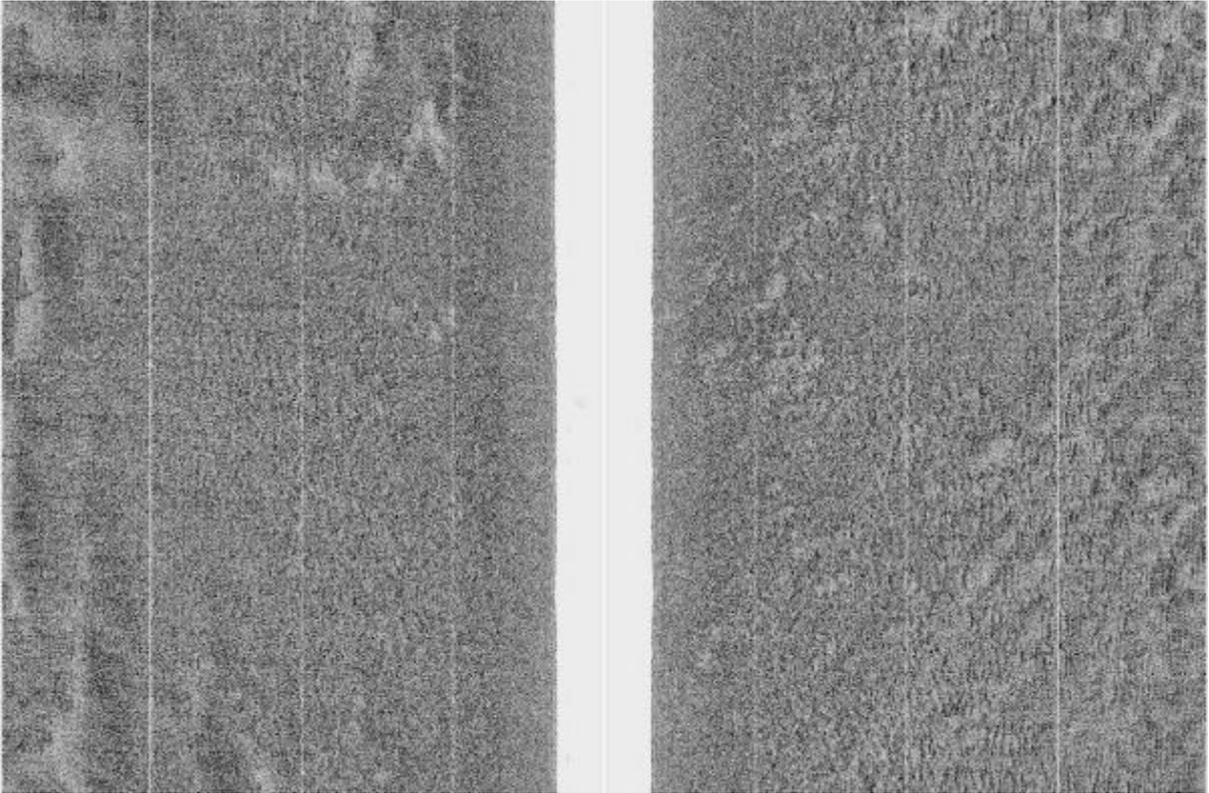
11 Potential Double Ridge

Scale | ←≈25m → |



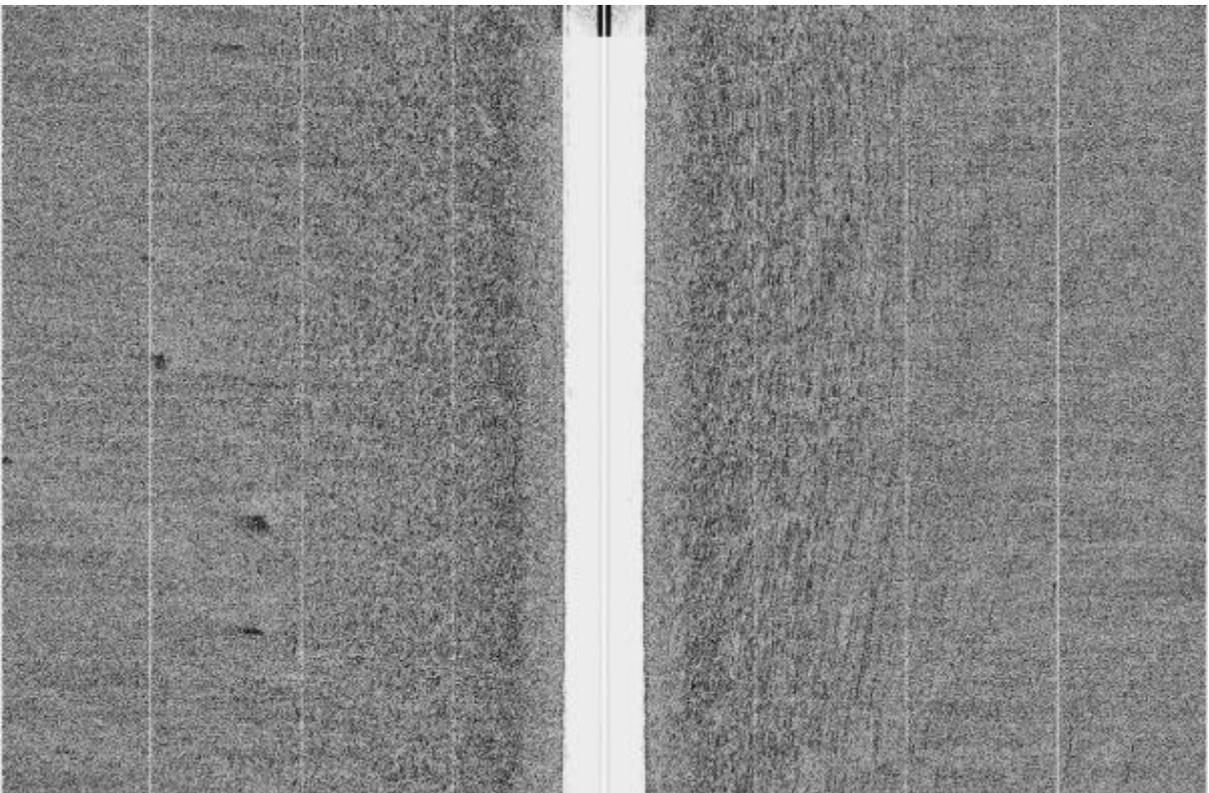
12 No features Gravel

Scale | ←≈25m → |



13 No features Sand

Scale | ←≈25m → |



8. Interpretative Data – habitat and feature classification

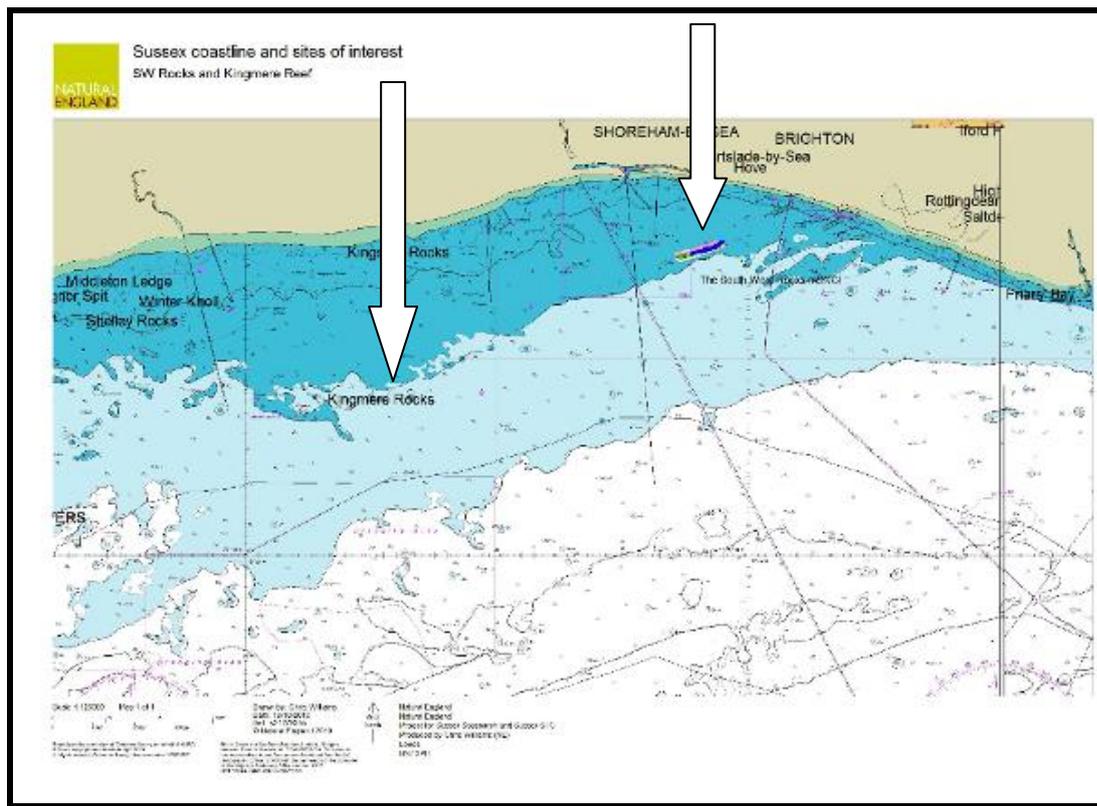
The subsequent section was created with the help of specialists at CEFAS (www.cefas.co.uk) who used their expertise in interpreting sidescan SONAR and relating features they observed in the previous 13 images to features and marine substrates. As the images make clear, there are a range of substrates found in the study site and these have been classified using the same colour scheme as the CEFAS technical report **139: The eastern English Channel marine habitat map**¹⁶.

The purpose of this visual interpretation by specialists is characterise the survey region and provide an opportunity to combine various scales on available data, mainly focusing on combining ground-truthed dive survey data with sidescan SONAR.

Presenting data in the way gives an insight into the reef features, bream nests and substrate in the area and has revealed an area of interest which is not referenced or visible on the UK Hydrographic Office charts of the Sussex offshore features.

UKHO (<http://www.ukho.gov.uk/Pages/Home.aspx>)

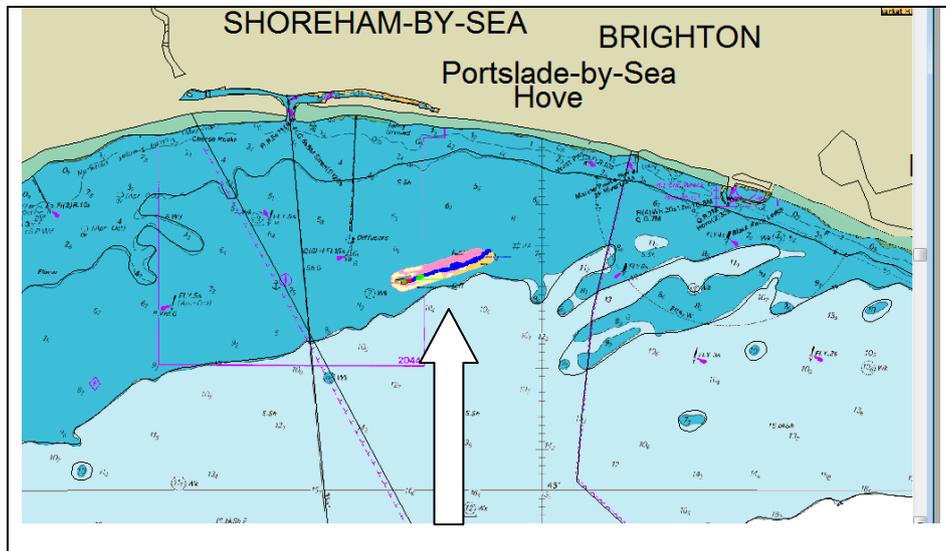
Figure 12: Location of Kingmere Rocks / South West Rocks (Sussex)



¹⁶ (available from '<http://www.cefas.co.uk/publications/scientific-series/technical-reports.aspx>)

Figure 13: Detailed view ¹⁷

As the image below shows, the area of sidescan SONAR which has been visually interpreted. The interpretation covers the mSNCIs and recreational dive sites (from W-E) SW Rocks, Looe Gate and Ship Rock, which are all within the Sussex SFC district, specifically within a 5 mile radius of Brighton / Hove within a shallow depth contour of under 15m.



The above image shows the location of the study area (SW Rocks \hat{U}) in relation to the Sussex coastline and Sussex SFC district, as well as in relation to admiralty chart depth contours (UKHO).

The SW Rocks study site is characterised by a chalk reef system which is generally not in excess of 2.5m in height had previously not been picked up as it falls between presented depth bands.

The majority of the site is found in shallow water (under 12m in depth) and has been used as a site for recreational diving (BMD BSAC club¹⁸) and commercial fishing for a number of years. These sites represent exceptional sites for Sussex as only a tiny proportion of the region is compromised of chalk reefs of this type.

This is a restricted structure and habitat which only occurs on chalk outcrops, rare off Sussex and extremely rare off the rest of the UK coastline¹⁹

Description²⁰

¹⁷ (*colour scheme adopted from EECMHM BGS Survey © NERC and Crown)

¹⁸ <http://www.brightonmarinadivers.org.uk/>

¹⁹ <http://www.jncc.gov.uk/marine/biotopes/biotope.aspx?biotope=JNCCMNCR00002162>

²⁰ UK Biodiversity Action Plan; Priority Habitat Descriptions. BRIG (ed. Ant Maddock) 2008.

A characteristic of chalk coasts, in contrast to many harder rocky coasts of western and northern Britain is the geomorphological structure in which, because of subaerial and marine erosion, a vertical cliff face abuts an extensive Foreshore (a wave eroded platform) often extending several hundreds of metres seawards. This is of significance in the formation of subtidal chalk sea caves and reefs habitats and the occurrence of the associated communities / biotopes (Tittley *et al.* 1998).

The most extensive areas of sublittoral chalk in Britain occur in Kent and Sussex. In south-east England shallow sublittoral (up to 5 m) communities are limited or absent due to the unusual friable and easily eroded nature of chalk and the prevailing harsh environment, characterised by extreme water temperatures, high levels of turbidity, siltation and scouring (UK BAP). In these conditions it is difficult to undertake sublittoral surveys and hence the extent of this habitat and its associated communities are not well documented (Tittley *et al.*, 1998). However less robust species e.g. large seaweeds which are more prone to scouring are replaced by more opportunistic species. As a result the shallow sublittoral is dominated by animals and communities that are low in species richness reflecting the hostile environment.

The following images present higher and higher resolution and detail of the site. The wide variety of interest features, both geologically and in terms of species diversity (and new species to science) and species of commercial importance to fisheries (bream) characterise this site.

Images of species and EUNIS classification are included as appendices and also presented in the attached posters (appendix 3).

Figure 15: MapInfo Map Layout of site relative to UKHO depth contours

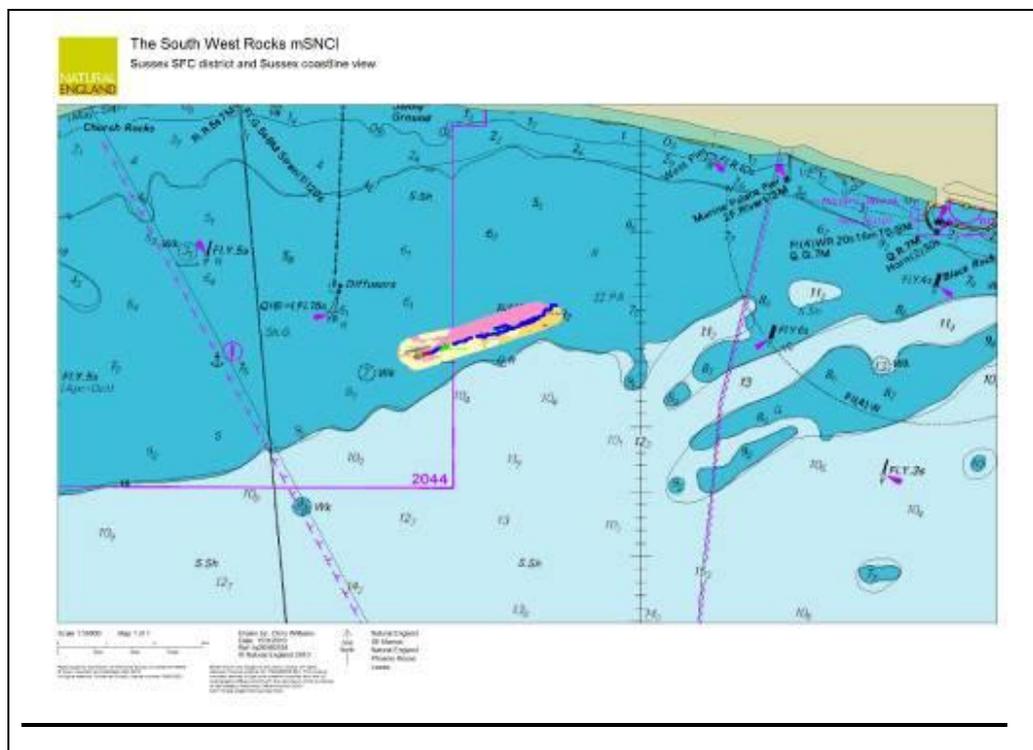
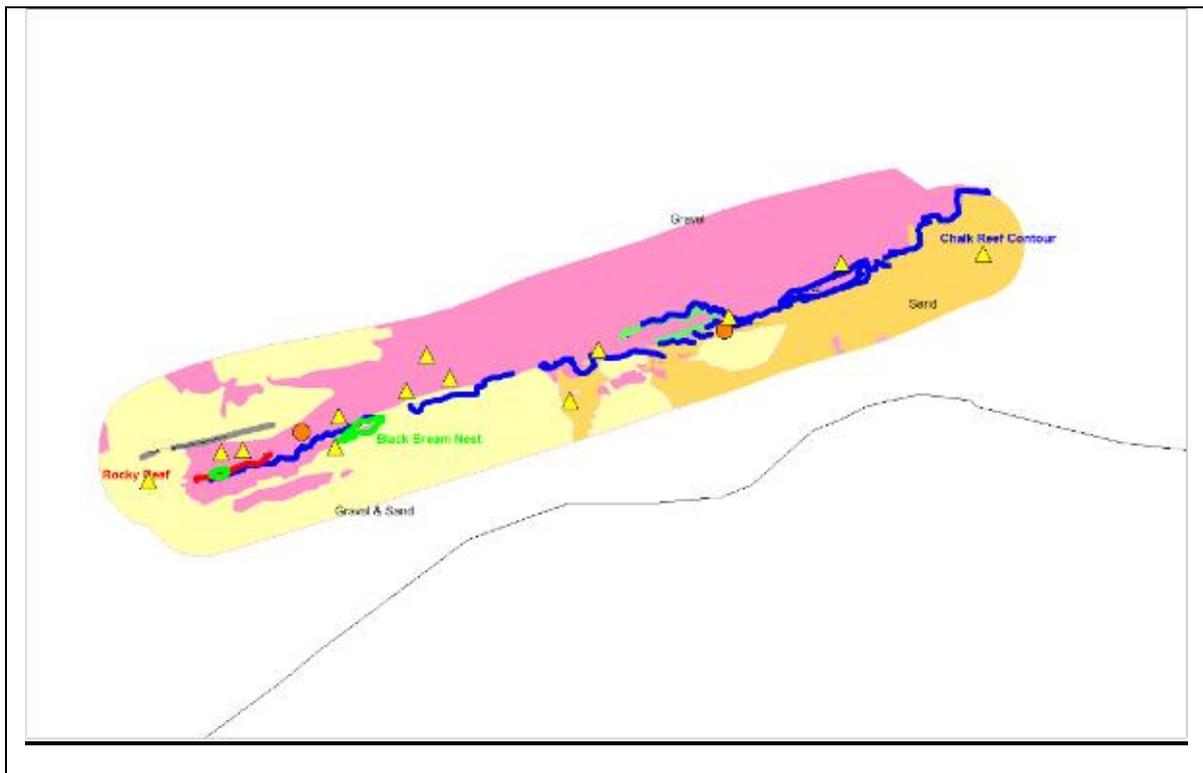


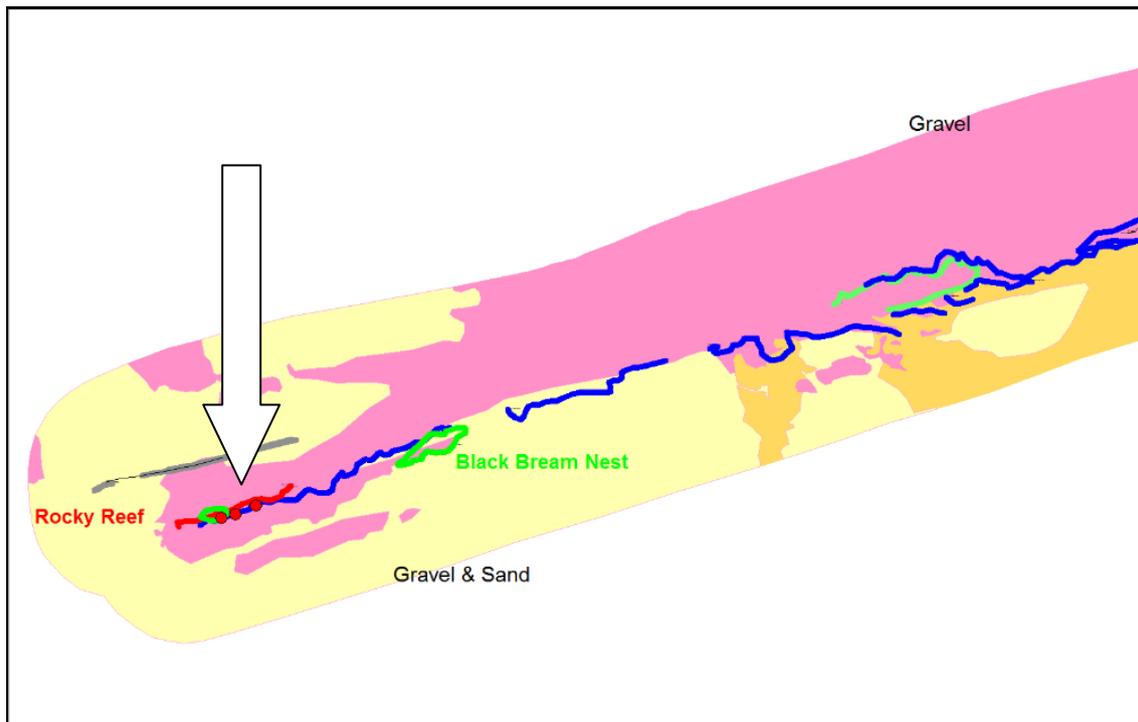
Figure 16: Detailed view of the South West Rocks habitats / substrates and features²¹



The above image shows the detail of the study site, distinguishing between seabed type / substrate (Sand, Gravel & Sand and Gravel) as well as Reef contours (chalk reef in blue, rocky reef in red) and Black Bream nesting sites (in green). Locations for screen grabs from the sidescan SONAR are indicated by yellow triangles, the dive sites (From West-East: SW Rocks, Looe Gate, Ship Rock) are indicated by orange circles. Reef features are indicated in blue, bream nests in green and substrate is coded according to the colour-coding used for the Eastern English Channel REC.

²¹ (*colour scheme adopted from EECMHM BGS Survey © NERC and Crown)

Figure 17: Ringbolt locations relative to reef features ²²



As the above image makes clear, the three key substrates for the site (which includes SW Rocks, Looe Gate and Ship Rock) are: Gravel; Sand and Gravel & Sand. Key features of note include a Chalk reef contour (blue) as well as Rocky Reef contours (red).

In terms of additional features of interest (and indeed commercial fisheries value) are nesting sites for Black Bream (green).

Presented in the colour scheme adopted from EECMHM BGS Survey²³.

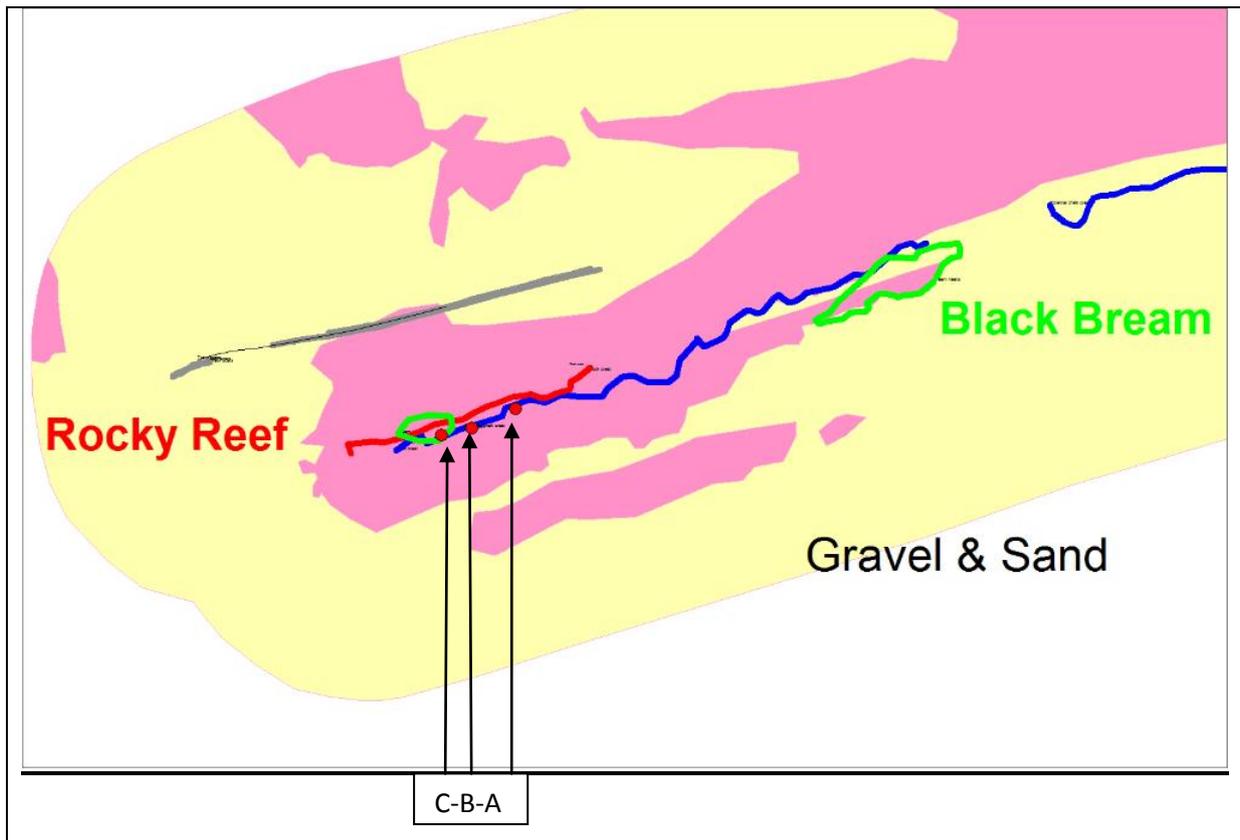
For full details on Black Bream, their nesting behaviour and details on how nests can be observed in SONAR images **please contact Rob Clark at Sussex SFC**.

<http://www.sussex-sfc.gov.uk/>

²² (*colour scheme adopted from EECMHM BGS Survey © NERC and Crown)

²³ James, J.W.C., Pearce, B., Coggan, R.A., Arnott, S.H.L., Clark, R., Plim, J.F., BarrionFrojan, C., Pinnion, J., Gardiner, J.P., Morando, A., Baggeley, P.A., Scott, G., Bigournal, N. (2010). The South Coast Regional Environmental Characterisation. British Geological Survey Open Report OR/09/51. 250pp.

Fig 18: Ringbolt locations relative to reef features – detail (● C: B: A)



EUNIS classification and corresponding EUNIS Level

The following shows list shows the different levels of EUNIS classification, each progressive level adds detail and specific criteria to describe the biotope.

Section 7 above explains the classification scheme in detail and provides links to the EUNIS website.

A4 - circalittoral rock and other hard substrata (level 2)

A4.13 Mixed faunal turf communities on circalittoral rock (Level 4)

A4.2 Atlantic and Mediterranean moderate energy circalittoral rock (level 3)

A4.23 Communities on soft circalittoral rock (Level 4)

A4.231 Piddocks with a sparse associated fauna in sublittoral very soft chalk or clay (level 5)

Figure 19: Sites in the study area that we have EUNIS classification available for from existing data (indicated by black dots)

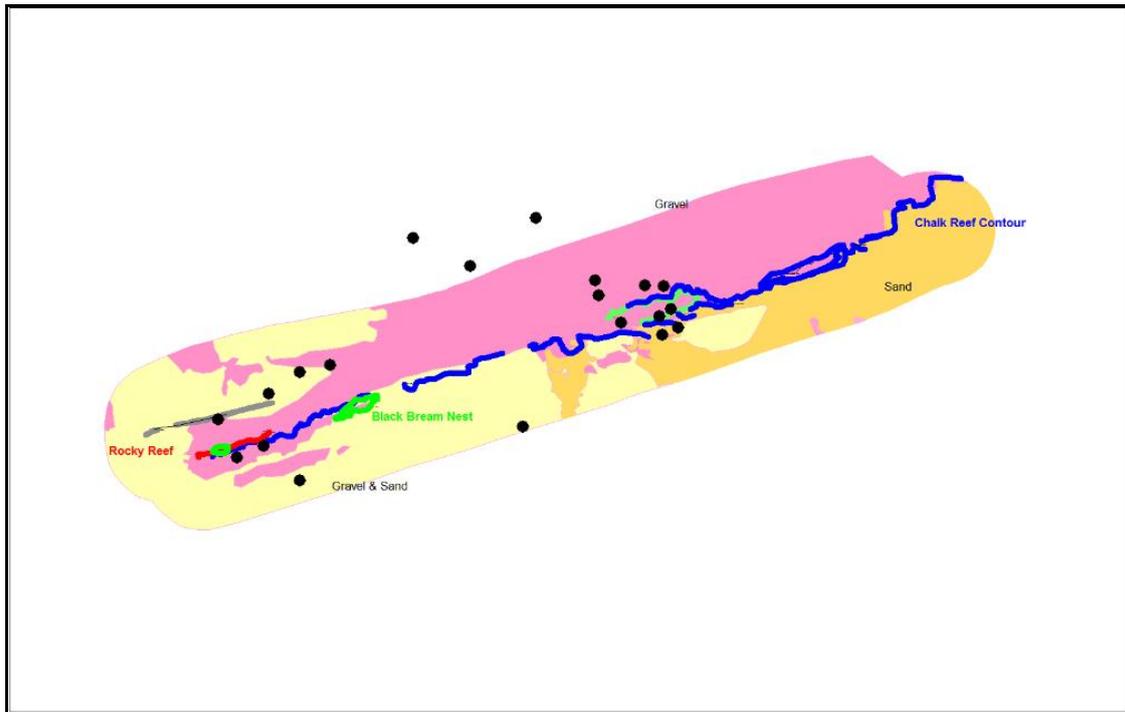
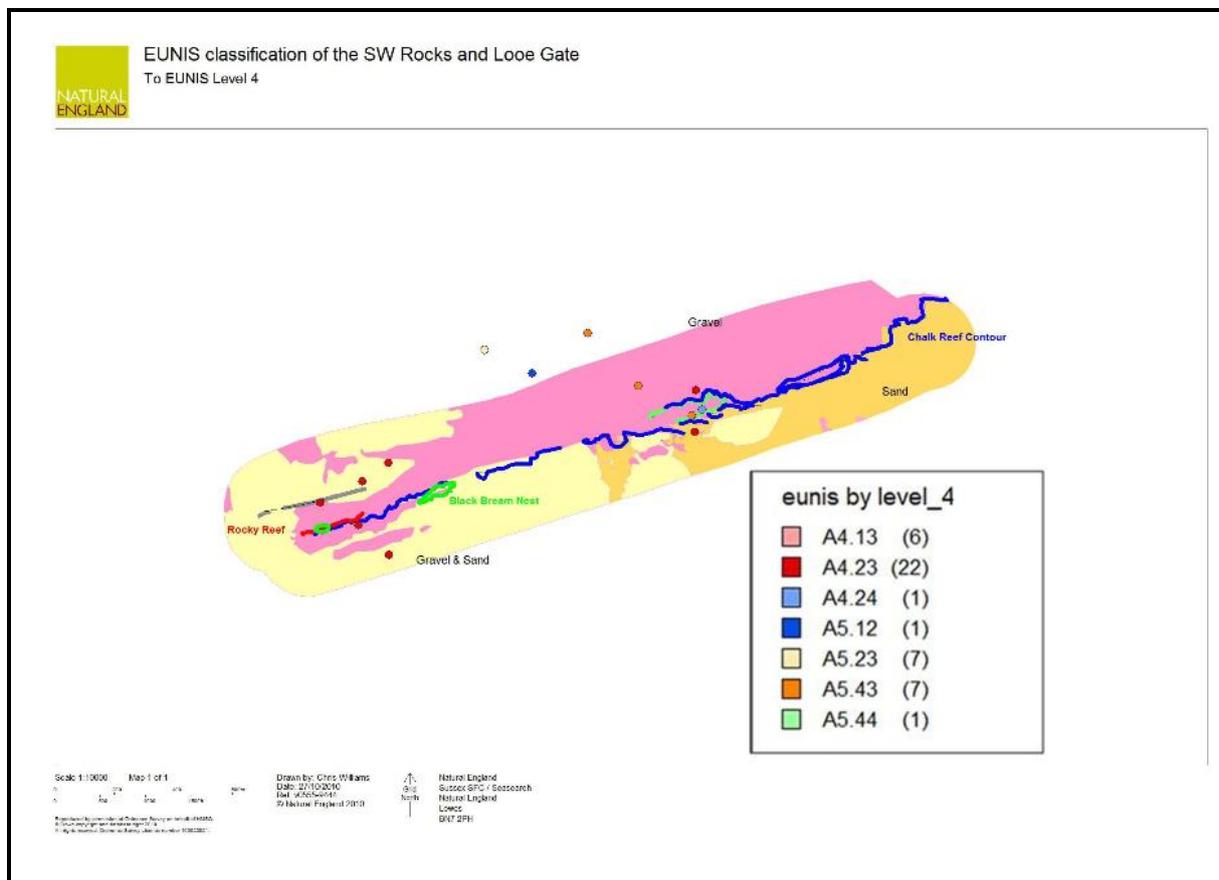


Figure 20: SW Rocks EUNIS classification to Level 4 (detail - see attached poster EUNIS)

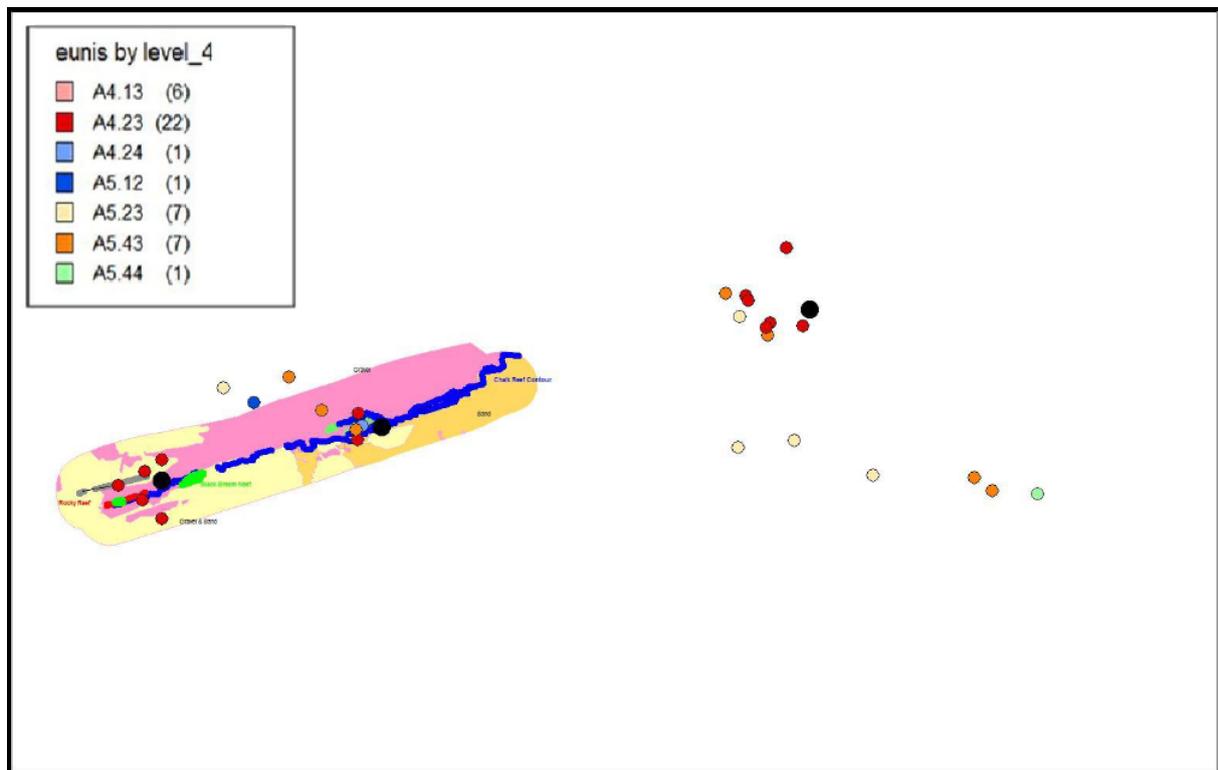


All EUNIS descriptions for the three sites

EUNIS code	EUNIS description
A3	Infralittoral rock and other hard substrata
A4.2	Atlantic and Mediterranean moderate energy circalittoral rock
A4.13	Mixed faunal turf communities on circalittoral rock
A4.242	[Musculus discors] beds on moderately exposed circalittoral rock
A4.231	Piddocks with a sparse associated fauna in sublittoral very soft chalk or clay
A5.43	Infralittoral mixed sediments
A5.431	[Crepidula fornicata] with ascidians and anemones on infralittoral coarse mixed sediment
A5.127	Dense [Lanice conchilega] and other polychaetes in tide-swept infralittoral sand and mixed gravelly sand
A5.23	Infralittoral fine sand
A5.232	[Sertularia cupressina] and [Hydrallmania falcata] on tide-swept sublittoral sand with cobbles or pebbles
A5.43	Infralittoral mixed sediments
A5.5	Sublittoral macrophyte-dominated sediment
A5.444	[Flustra foliacea] and [Hydrallmania falcata] on tide-swept circalittoral mixed sediment

The subsequent figure shows where these respective EUNIS descriptions have been found relative the three sites described in this report.

Figure 21: EUNIS classification showing distribution of all available classifications relative to the three sites (West to East) SW Rocks, Looe Gate and Ship Rock) off Sussex. The larger black dots represent the respective dive sites from W-E. For EUNIS Level 4 see the key.



EUNIS explanation of analysis

As can be seen from the two diagrams above the sites of interest all fall within the description of 'mixed faunal turf communities on circalittoral rock', which has been observed 22 times in the area of search. Combining this with the species list and images below areas of 'Piddocks with a sparse associated fauna in sublittoral very soft chalk or clay' can be seen seven times.

Those biotopes seen as less common on the site include those described as c 'Musculus discors beds on moderately exposed circalittoral rock', described once. The same is true for 'Dense [*Lanice conchilega*] and other polychaetes in tide-swept infralittoral sand and mixed gravelly sand'. Reference to the prevalent slipper limpet '*Crepidula fornicata* with ascidians and anemones on infralittoral coarse mixed sediment' is more common and appears seven times within the area of interest.

[*Sertularia cupressina*] and [*Hydrallmania falcata*] on tide-swept sublittoral sand with cobbles or pebbles is noted on seven occasions within the area and '*Flustra foliacea* and *Hydrallmania falcata* on tide-swept circalittoral mixed sediment' were also classified, but only observed once for the area in question.

Image 4: Exposed chalk

Chalk

A relatively soft rock which is characterised by burrowing species, most notably bivalve shells called piddocks. Two species are common in subtidal chalk. The largest is the common piddock *Pholas dactylus* which seems to prefer horizontal chalk and commonly bores vertically downwards. On boulders and vertical surfaces, the red-nose *Hiatella arctica* is much more common. In addition, rock surfaces are often riddled with the tiny burrows of the polychaete worm *Polydora ciliata*. Only the young boring phase of the yellow sponge *Cliona ciliata* is found in the central and eastern Channel, its massive form being present only further west. The breadcrumb sponge *Halichondria panicea* is common on current-swept chalk exposures, as is the 'shredded carrot' sponge *Esperiopsis fucorum*. Partially hidden within crevices, the tompot blenny *Parablennius gattorugine* is frequently seen together with the less bold leopard-spotted goby *Thorogobius ephippiatus*.



9. From: Scoping report for the Rampion Offshore Windfarm ²⁴

Subtidal Zone

In the subtidal area chalk reefs are present, which have created a series of ridges and gullies running perpendicular to the coast as a result of wave action. This is most notable close to the coast where wave action is most prominent; smaller ridges and gullies are present further offshore. Various floral and faunal communities are present on the chalk bedrock. Some of the faunal species present are borers and may contribute to the erosion of the chalk structures through their activities.

Intertidal and subtidal chalk is a UK Biodiversity Action Plan (BAP) priority habitat. Sussex is the only location in the British Isles where linear offshore chalk cliffs occur (i.e. as vertical faces between 1m and 4m in height), although less well-developed features are known off the Kent, Isle of Wight and Dorset coasts. The offshore Sussex chalk cliffs are regarded as regionally important on the basis of their geomorphological interest (Irving, 1999). Particularly good examples of chalk cliffs on the seabed have been identified 1km beyond Black Rock and further offshore; these cliffs have been proposed as potential marine sites of nature conservation importance (mSNCIs) (Irving, 1996).

The chalk reef system close inshore gives way to expansive areas of unstable deposited material ranging from small boulders, cobbles and gravel to finer sediments such as sand and mud further offshore. Several Seasearch studies undertaken on the sand-dominated seabed beyond the chalk reef system and extending some 3–4km offshore noted sandy seabed of varying types including rippled sand, flat sand, silty sand, sandy silt, sand waves, coarse sands, clean rippled sand and muddy sand.

²⁴ <http://infrastructure.independent.gov.uk/wp-content/uploads/2010/09/Rampion-Scoping-Report.pdf>

The majority of the area further offshore does not benefit from the level of survey and data that is available for the inshore, shallow areas along this coastline, although the sea remains relatively shallow in some areas for a significant distance from shore. For example the 10m-depth contour is more than 5km offshore of Pagham. However, there are areas where the seabed shelves more steeply, such as at Beachy Head where the 20m-depth contour lies barely 500m from the base of the cliffs. With increasing distance offshore, the sediment-dominated seabed is generally characterised by the boreal offshore sand community and the muddy sand and gravel associations (Holme, 1966).

UK BAP

The Convention of Biological Diversity was signed in Rio de Janeiro in 1992 (and hence is also referred to as the Rio Convention), and entered into force in 1993. It was the first treaty to provide a legal framework for biodiversity conservation, and included calls for national strategies and action plans to ‘conserve, protect and enhance biological diversity’.

The UK response was the UK BAP, launched in 1994. The UK plan includes the identification of a number of habitats and species, together with a series of local action plans. The following priority maritime species and habitats have been identified by the Sussex Biodiversity Partnership (East and West Sussex and Brighton and Hove councils) and the UK BAP:

- Coastal saltmarsh
- **Littoral and sublittoral chalk**
- Biogenic reef
- Maritime cliffs and slopes
- Saline lagoons

10. CHARACTERISING SPECIES

Figure 22: CHARACTERISTIC SPECIES FOR EUNIS / PREVIOUS SURVEYS – G. Legg





Seamat - Membranipora



Piddock



Mytilus edulis



Piddock



Mytilus edulis and ectoprocta bryozoan



Dynamena spp



Red seaweeds



Parablennius gattorugine (tompot blenny)



Dahlia Anemone



Sponge / Mussel (*Mytilus edulis*)



Cancer pagarus



Dahlia anemone



Bispira voluticornis



Homarus gamarus



Sponge - Suberites	Seafir - Dynamena
	
Necora puber	Necora puber

Figure 23: Some additional examples of species found at SW Rocks – P. Jackman

	<i>Homarus gamarus</i> (Lobster)
	<i>Conger conger</i> (Conger eel)
	<i>Trisopterus luscus</i> (Bib)
	<i>Bispira volutacornis</i> (Spiral Fan Worm)

	<i>Sepia officinalis</i> (Cuttlefish)
	<i>Cancer pagurus</i> (Brown crab)
	<i>Urticina felina</i> (Dahlia anemone)
	<i>Alcyonium digitatum</i> (Deadmen's finger coral)

Acknowledgements

Chris Williams (Natural England) would like to thank Sussex SFC for their continued support in the production of this report, without their expertise and use of their data and resources it would not have been possible.

Special thanks as well to David Harvey and Alex Tait for their insights and support from Sussex Seasearch and their local dive expertise and access to boats through Brighton Marina Divers.

Very special thanks to Koen Vanstaen at Cefas (and Ali Evans, NE) for his expertise and time in making the visual assessments and interpretations of the sidescan SONAR images and the features that they reveal.

Thanks as well to Dr Gerald Legg at the Booth Museum for his taxonomic and marine recorder expertise and enthusiasm for this project.

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JNCC

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Barne, J.H., Robson, C.F., Kaznowska, S.S., Doody, J.P., Davidson, N.C., & Buck, A.L., eds. 1998. *Coasts and seas of the United Kingdom. Region 8 Sussex: Rye Bay to Chichester Harbour*. Peterborough, Joint Nature Conservation Committee. (Coastal Directories Series.)

Recommended citation for a chapter in this volume (example):

Davidson, N.C. 1997. Chapter 4.1 Estuaries. *In: Coasts and seas of the United Kingdom. Region 8 Sussex: Rye Bay to Chichester Harbour*, ed. by J.H. Barne, C.F. Robson, S.S. Kaznowska, J.P. Doody, N.C. Davidson & A.L. Buck, 53-56. Peterborough, Joint Nature Conservation Committee. (Coastal Directories Series.)

CEFAS resources

[The Eastern English Channel Marine Habitat Map \(PDF, 60.1 MB\)](#)

J.W.C. James, R.A. Coggan*, V.J. Blyth-Skyrme, A. Morando, S.N.R. Birchenough*, E. Bee, D.S. Limpenny*, E. Verling, K. Vanstaen*, B. Pearce, C.M. Johnston, K.F. Rocks, S.L. Philpott, and H.L. Rees* (2007) Science Series, Technical Report, Cefas Lowestoft, 139: 191pp

[Eastern English Channel Marine Habitat Map](#)

J.W.C. James, R.A. Coggan*, V.J. Blyth-Skyrme, A. Morando, S.N.R. Birchenough*, E. Bee, D.L. Limpenny*, E. Verling, K. Vanstaen*, B. Pearce, C.M. Johnston, K.F. Rocks, S.L. Philpott, H.L. Rees*. (2007) Marine Aggregate Dredging: Helping to determine good practice. Marine Aggregate Levy Sustainability Fund (ALSF) Conference Proceedings, September 2006.

Regional Environmental Characterisation (REC) surveys for the South Coast.

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Internet resources:

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<http://www.ukho.gov.uk/Pages/Home.aspx>

<http://www.ukbap.org.uk/ukplans.aspx?id=31>

<http://www.habitas.org.uk/marinelife/>

<http://www.seasearch.co.uk/achievements.htm>

<http://www.searchmesh.net/>

http://www.dassh.ac.uk/SEABED/data_access.php

<http://www.nbn.org.uk/>

http://www.rspb.org.uk/Images/marineareas_tcm9-163468.pdf

http://www.sussex-sfc.gov.uk/project_malsf02.htm

http://www.searchmesh.net/pdf/Case_Study_Sussex_Sea_Fisheries_Management.pdf

<http://www.ukbap.org.uk/UKPrioritySpecies.aspx> (Marine BAP)

Appendices

1. SPECIES ID AND TRANSECT IMAGES

a) Images from South West Rocks Surveys (June 2010) By transect section (A-F)

SW ROCKS – P Jackman Images, June 2010 (50° 47.60' N 0° 12.50' W)

A



Mixed faunal turf communities on circalittoral rock



Infralittoral rock and other hard substrata

Sublittoral macrophyte-dominated sediment



Atlantic and Mediterranean moderate energy circalittoral rock



Sublittoral macrophyte-dominated sediment



Infralittoral mixed sediments



Infralittoral mixed sediments



Asterias rubens (common starfish)



Cliona celeta (Boring sponge)



Infralittoral rock and other hard substrata

B



Painted top shell - *Calliostoma zizyphinum*



Mixed faunal turf communities on circalittoral rock and *Asterias rubens*



Sublittoral macrophyte-dominated sediment

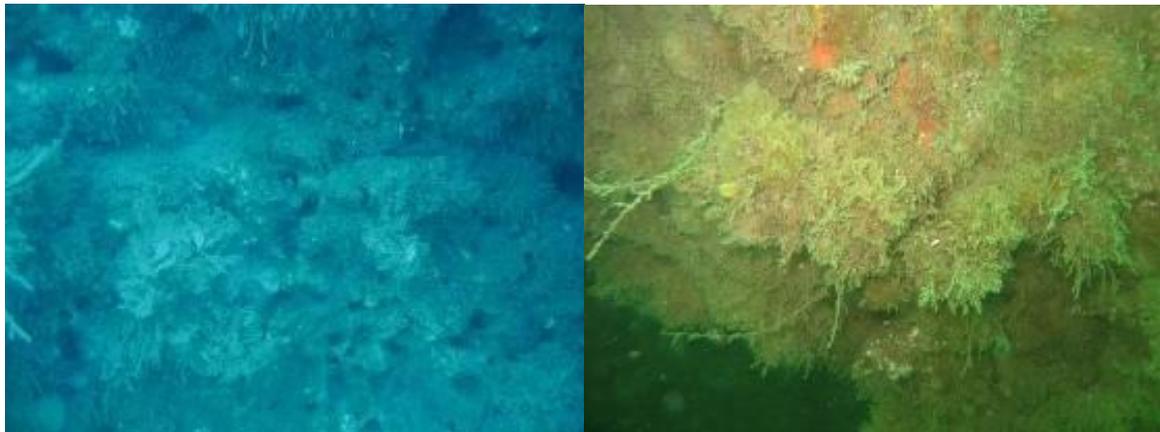
Lanice conchilega tubes



Infralittoral rock and other hard substrata



Piddocks with a sparse associated fauna in sublittoral very soft chalk or clay



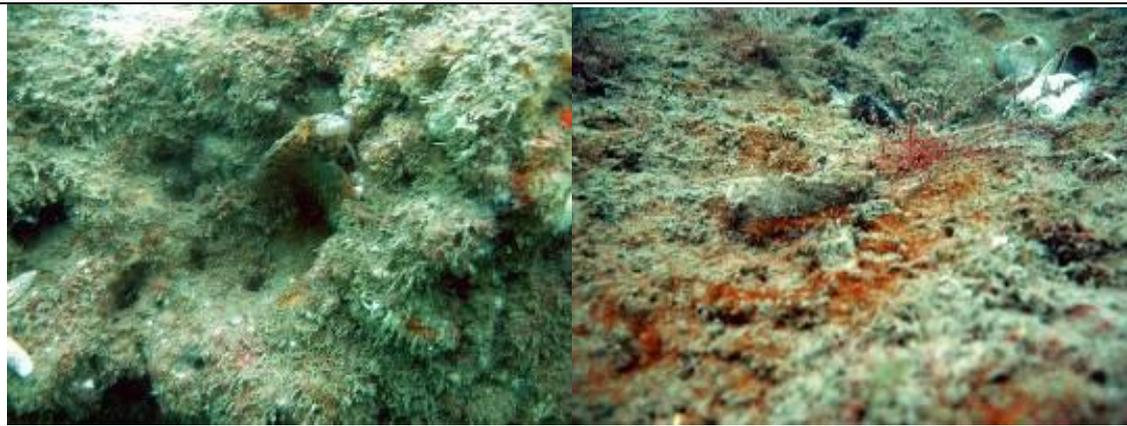


Mixed faunal turf communities on circalittoral rock

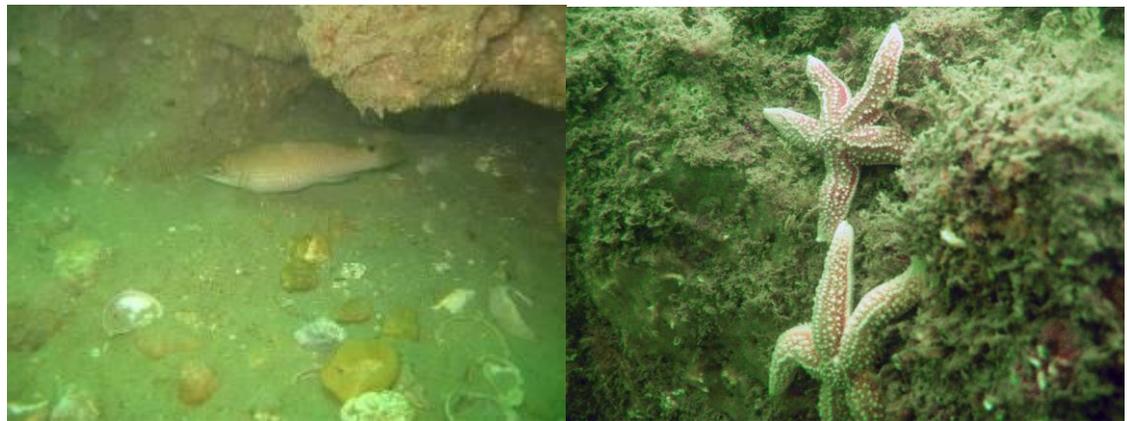


Sublittoral macrophyte-dominated sediment

c



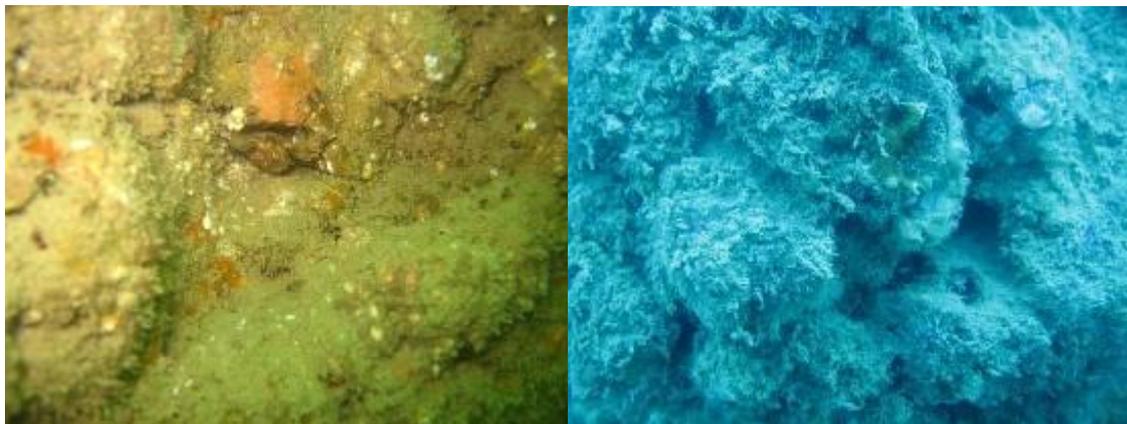
Atlantic and Mediterranean moderate energy circalittoral rock



Infralittoral mixed sediments



Conger conger



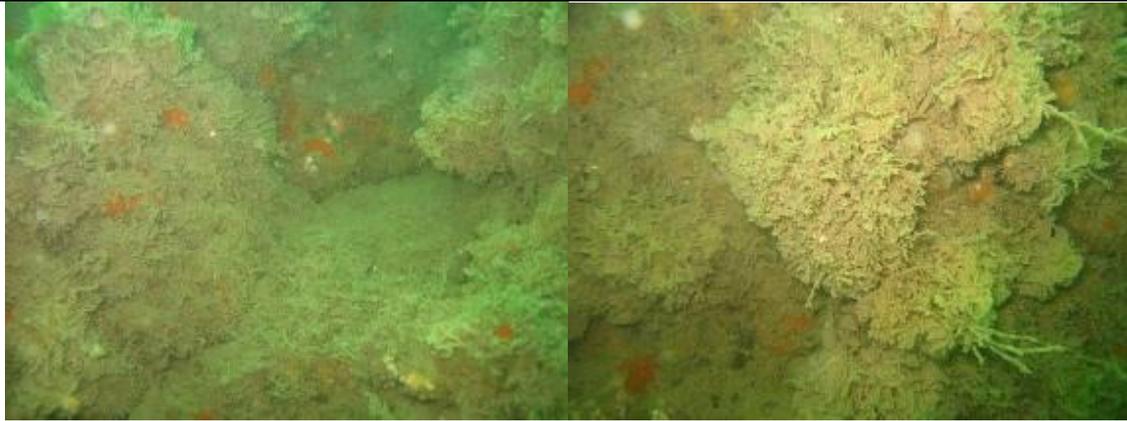
Atlantic and Mediterranean moderate energy circalittoral rock



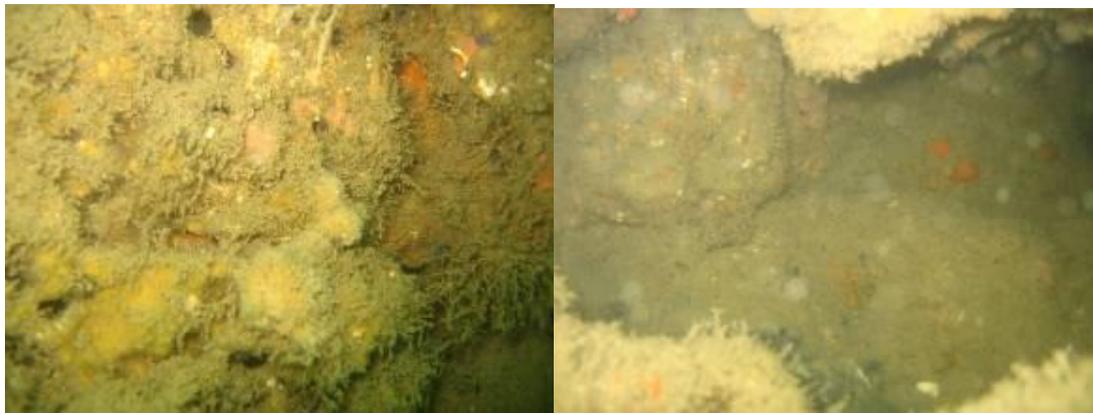
D



Goldsinny wrasse (*Ctenolabrus rupestris*)



Sublittoral macrophyte-dominated sediment

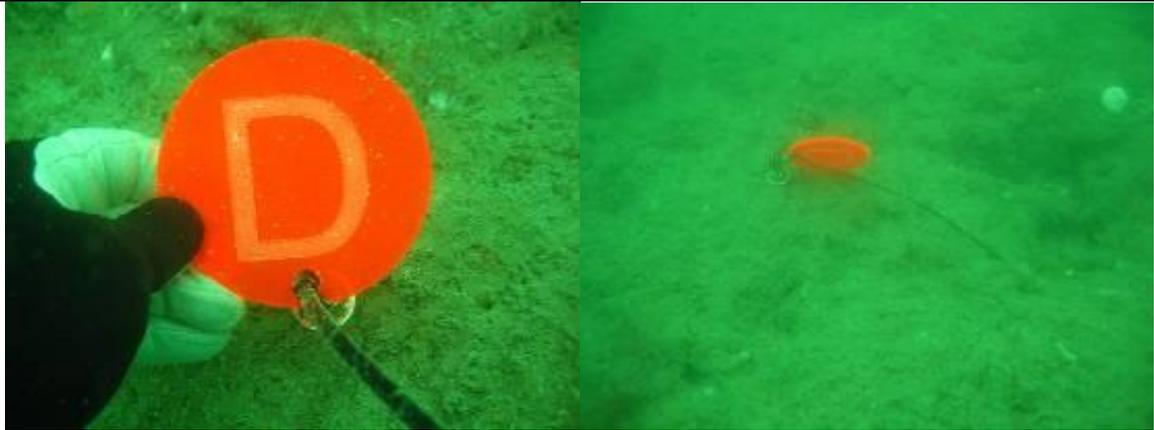


Sublittoral macrophyte-dominated sediment



Mixed faunal turf communities on circalittoral rock

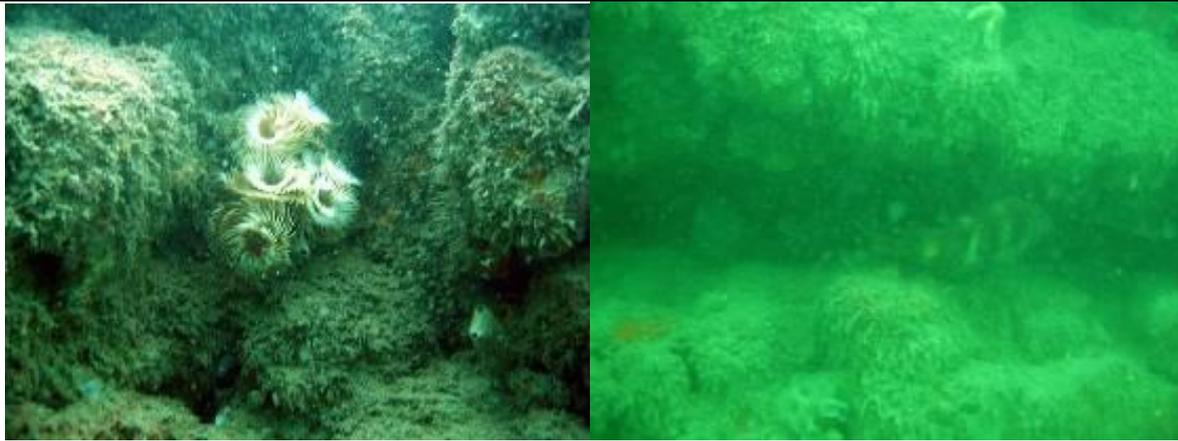




Boring sponge and common starfish (*Asterias rubens*)

E





Bispira voluticornis



Trisopterus luscus (bib) and Infralittoral rock and other hard substrata





Homarus gamarus



Infralittoral rock and other hard substrata



Infralittoral rock and other hard substrata



Mixed faunal turf communities on circalittoral rock

F





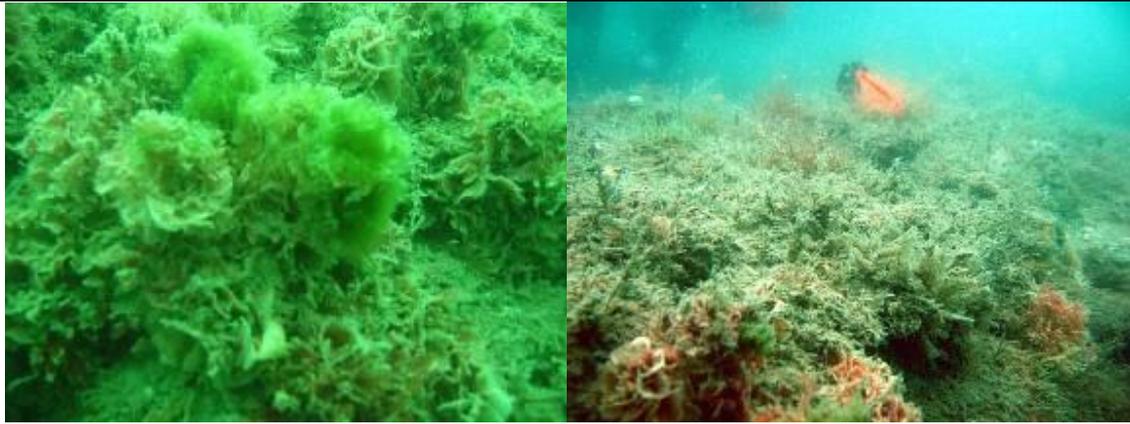
Infralittoral rock and other hard substrata



Mixed faunal turf communities on circalittoral rock



Infralittoral rock and other hard substrata



Sublittoral macrophyte-dominated sediment



Sublittoral macrophyte-dominated sediment



Sublittoral macrophyte-dominated sediment



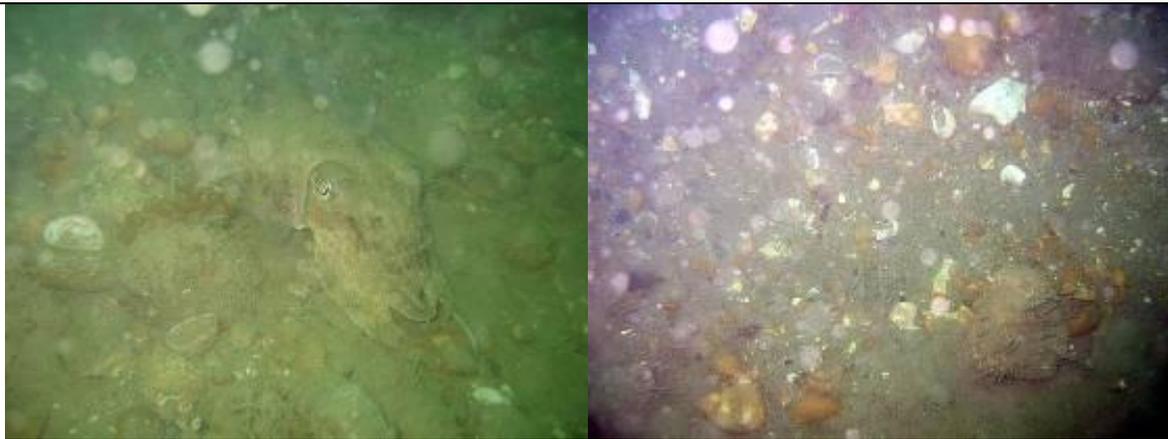
Mixed faunal turf communities on circalittoral rock



Mixed faunal turf communities on circalittoral rock



b) Other images SW Rocks (June 2010)



Sepia officinalis (common cuttlefish) and Infralittoral mixed sediments



Urticina feline (Dahlia anemone)





Asterias rubes and *crepidula* shells



Alcyonium digitatum

[*Crepidula fornicata*] with ascidians and anemones on infralittoral coarse mixed sediment



Cancer pagarus



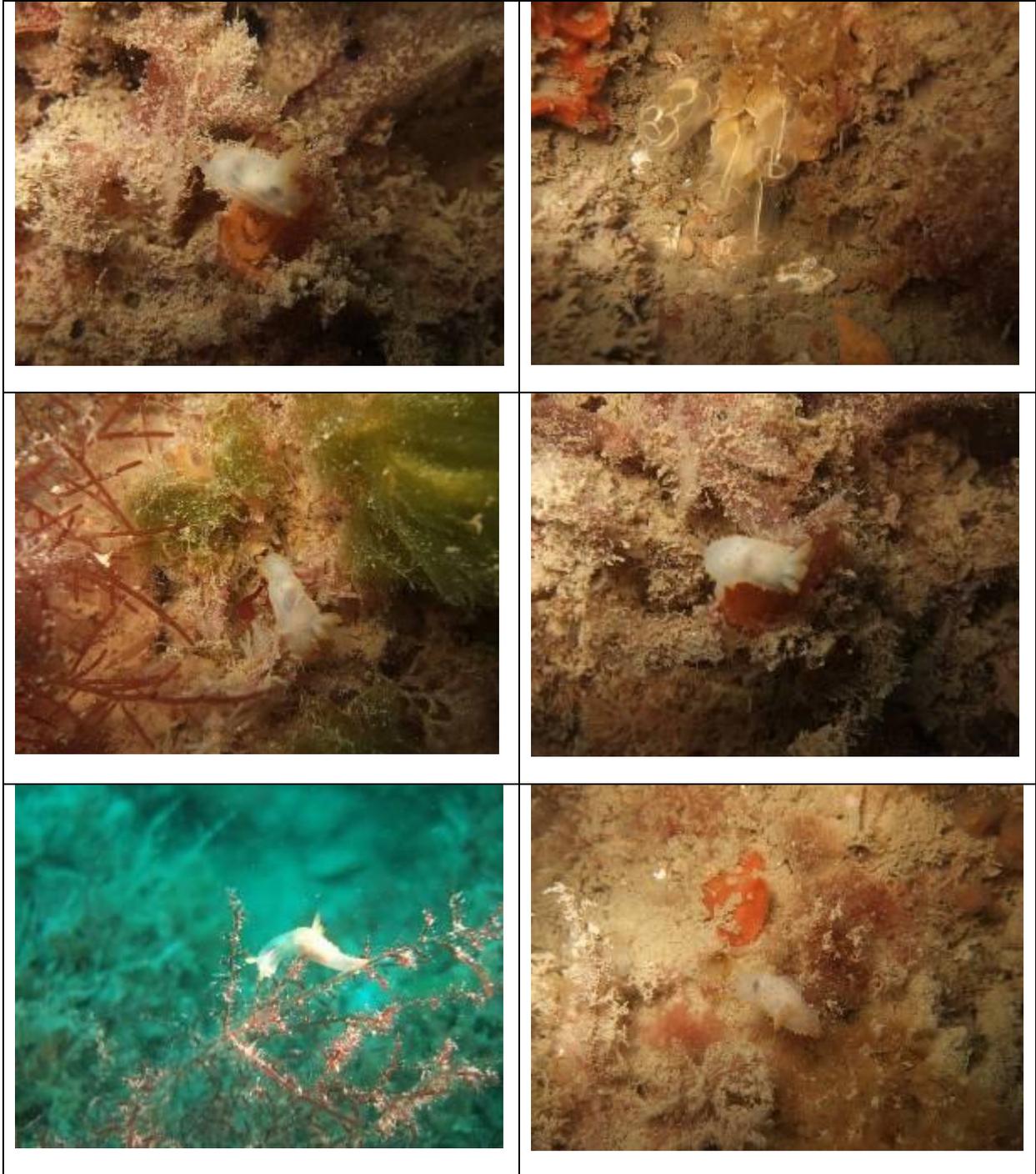
Sepia officinalis



Bispira tubes and goldsinny wrasse (*Ctenolabrus rupestris*)

c) **Looe gate** (*Polycera nudibranch* spp and Lightbulb tunicates (*Clavelina lepadiformis*))

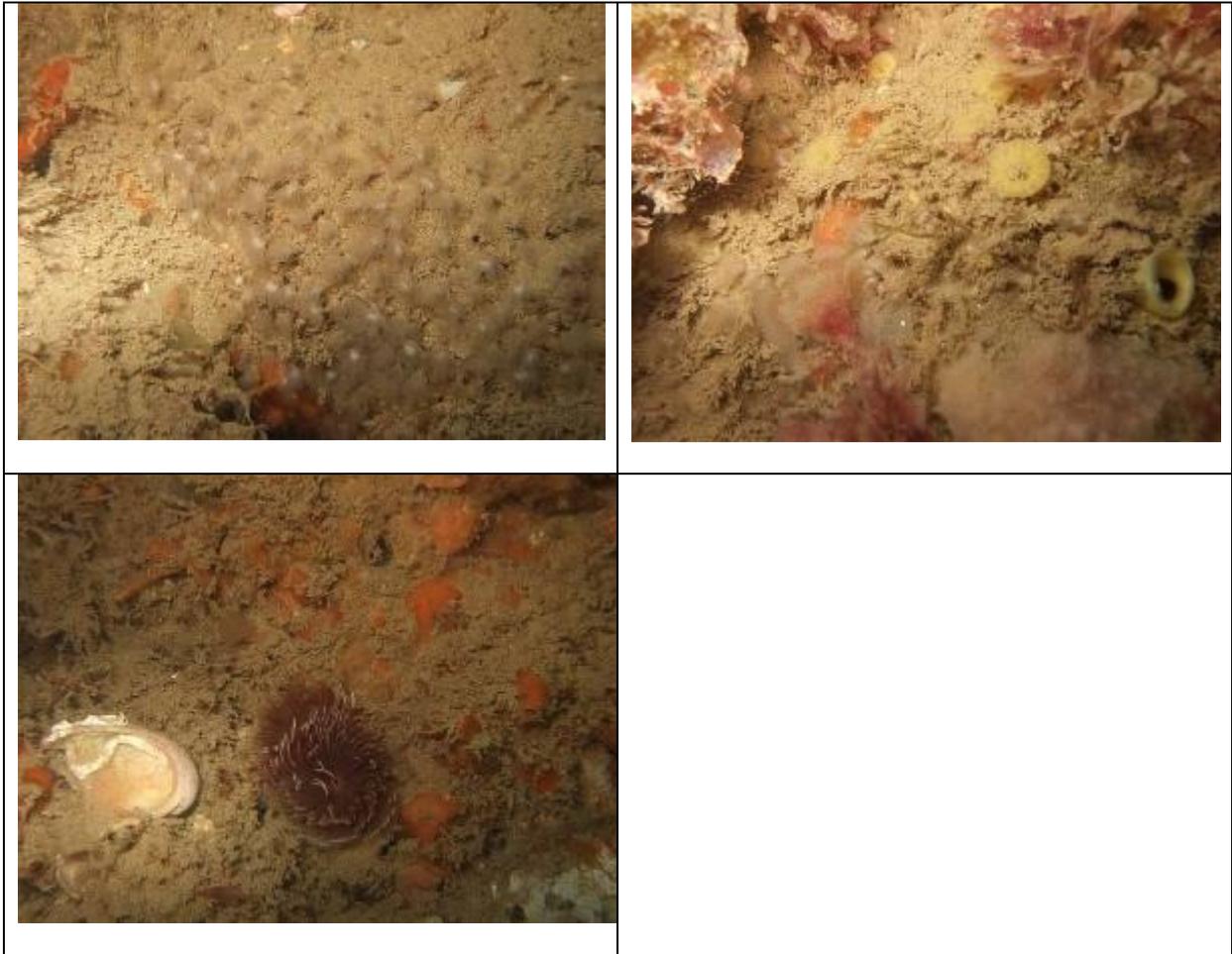
LOOE GATE – Images C Williams (**50° 47.74' N 0° 11.59' W**)



d) Ship Rock (Tompot blenny, *Polycera* spp, Wrasse, boring sponges, bispira, red seaweeds)

Ship Rock Images C Williams

Ship rock	50.800508	-0.164592	50.80109277	-0.166138941
				
				
				



Appendix 2: Major Habitats of the Sussex Coast

http://www.searchmesh.net/pdf/Case_Study_Sussex_Sea_Fisheries_Management.pdf

Kelp and/or algae on inshore reefs
 Algal turf on offshore reefs
 Silty faunal turf on bedrock & boulders
 Mussel beds on bedrock
 Rich algal turf on cobble
 Sparse mixed algal/faunal turf on cobble
 Silty faunal turf on deep boulder/cobble
 Sparse faunal turf on cobble
 Mussel beds on sand
 Sand
 Sand & cobble

Purpose of mSNCIs

4. mSNCIs: THEIR PURPOSE

Local authorities in Sussex have together identified a large number (over 500) of terrestrial Sites of Nature Conservation Importance (SNCIs) since 1991. These sites fall outside the protective legislative umbrella provided by NNR or SSSI designations and yet they remain as being of considerable wildlife value. The prime objective of the identification of terrestrial SNCIs has been to protect their habitats and important wildlife from harmful land use and land management changes and to encourage sensitive management.

Prior to the initiation of the Sussex *SEASEARCH* project in 1992, there had been no systematic survey of the near-shore zone along the whole of the Sussex coast (see section 5.1). The descriptive biological information which the project has produced confirmed that a number of the sites visited, and several of the plant and animal species identified, were of nature conservation interest, some in a regional context and a few in a national context. If it were feasible to notify SSSIs below low water mark, then many of these sites would warrant this status and the accompanying statutory protection it affords. However, present legislation does not allow this to happen.

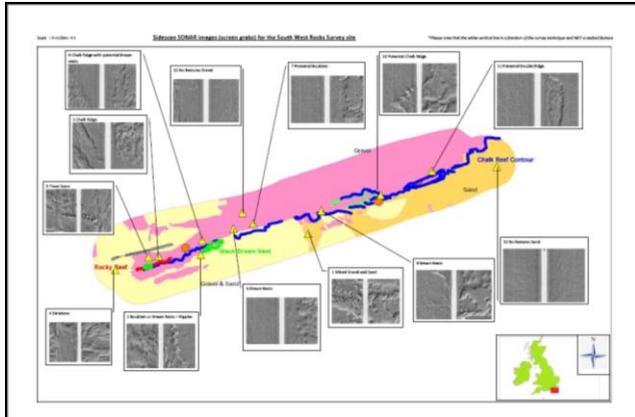
It was realised that there was nothing to prevent county-wide SNCI notification being extended to sites of interest below low water mark. By so doing, the importance of a site offered by the SNCI label could be emphasised, thereby raising general awareness. It is also hoped that this recognition will encourage those who carry out activities at or near them to act in a responsible manner, and thereby maintain the interest of the site.

Coastal district authorities and County Councils have certain responsibilities with regard to the coastal zone, though in general their statutory powers only extend to low water mark (Fig. 3). However, these authorities are consulted from time to time on such matters as near-shore marine aggregate extraction and marine oil spill contingency plans. In these situations, it is essential that planners know where there are sites of nature conservation interest and why they are important. Marine SNCIs will also provide a focus of attention in Sussex for the conservation of the marine environment.

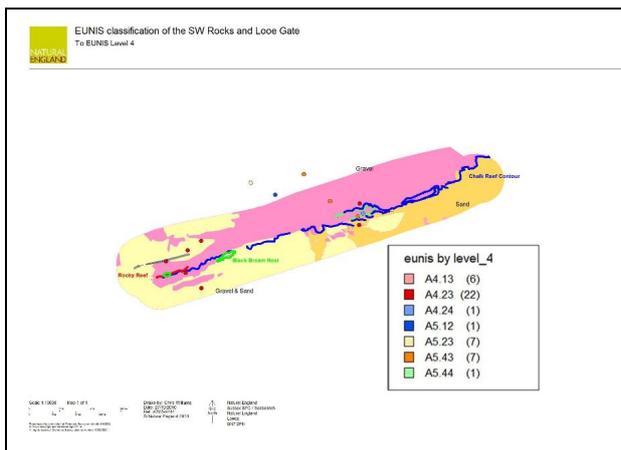
Appendix 3

POSTERS – A3 posters of each of the following are attached

1. Sidescan SONAR and features



2. EUNIS Level 4 detail



3. EUNIS and all dive sites and species (for BMD)

