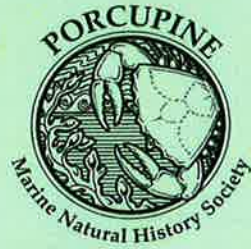


# PORCUPINE MARINE NATURAL HISTORY SOCIETY

## NEWSLETTER



Spring 2011

Number 29

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# Porcupine Marine Natural History Society

## Newsletter

No. 29 Spring 2011

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Porcupine MNHS welcomes new members- scientists, students, divers, naturalists and lay people. We are an informal society interested in marine natural history and recording particularly in the North Atlantic and 'Porcupine Bight'. Members receive 2 newsletters a year which include proceedings from scientific meetings, plus regular news bulletins

Individual £10    Student £5

☎ [www.pmnhs.co.uk](http://www.pmnhs.co.uk)

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## Editorial

There has been a buzz, or perhaps I should say a 'Bioblitz' in the air, of late. Not a summer goes by nowadays without a major convergence of marine biologists (and associates) and the public onto some peaceful, and attractive site, to set about recording as many species as possible. The term 'Bioblitz' was penned in America in 1997 for a 24 hour survey and recording at a particular location or within a specific habitat. It is therefore a relatively recent addition to our terminology, reflecting the contemporary enthusiasm for recording biodiversity and also, probably, to put a line in the sand in terms of the biodiversity of a specific site. Marine Bioblitz's have their own challenges of tides and weather, not to mention the rather small pool of experts to draw upon for each group of species. Although there are many expert amateur marine biologists, there are not the same number of specialists that you find in the world of mammals, butterflies, moths, beetles and plants. Look out for announcements of a Bioblitz in Scarborough in June.

The assorted trips to the Isles of Scilly last summer, although not in the true definition of a Bioblitz, amounted to an *endurance* Bioblitz with a rolling program of visiting taxonomic and ecological experts seeking out the outstanding habitats around the islands. The efforts were thanks to Angie Gall, Marine Project Officer for the Isles of Scilly Wildlife Trust's Marine Biodiversity Project, who in turn has had a great deal of marine wildlife recording support.

You will find this edition rich in records from the Isles of Scilly, reflecting some of those field trips and surveys. Not forgetting announcements of future meetings and trips, check out the website for continued updates ([www.pmnhs.co.uk](http://www.pmnhs.co.uk)).

## Porcupine field meeting

**Kent. September 2011 – dates to be confirmed.**

Kent is the location for the 2011 Porcupine autumn field meeting. In association with Kent Wildlife Trust there will be the opportunity to investigate the muddy shores around Reculver / Whitstable and the chalk shores of Thanet. We are also hoping to arrange some diving, weather and visibility permitting. This will be the first year that PMNHS has explored this area. Dates have yet to be confirmed but will be on the spring tides in September. If you are interested please contact Fiona Crouch [fcir@mba.ac.uk](mailto:fcir@mba.ac.uk)

## Conchological Society of Great Britain and Ireland Field Meeting

**South Connemara, Galway, west coast of Ireland – Monday to Friday 26-30 September 2011**

This field meeting will record all marine life, but with an emphasis on molluscs, visiting some old favourite shores (e.g. Dogs Bay, Lettermore) and some new sites. These will be mainly in south Connemara, but it is anticipated that there will be at least one day in the northern part of the area, and weather permitting a boat excursion to shores on one of the off-islands. It may be possible to arrange diving for anyone interested. The convenient spring tide times during the week enable easy arrangements for self-catering accommodation (Saturday to Saturday) in the Roundstone area where we will be based.

Co-ordination and contact for details:

Julia Nunn 028 9039 5257 (work)  
028 9181 7710 (home)

[jdn@cherrycottage.myzen.co.uk](mailto:jdn@cherrycottage.myzen.co.uk)

## 9th International Temperate Reefs Symposium (26th June – 1st July 2011).

**Sherwell Conference Centre, University of Plymouth**

The International Temperate Reef Symposium is the world's premier conference on coastal ecology and the use of rocky reefs as tractable systems for experimental ecology. It attracts some the biggest names in experimental ecology and coastal marine science from around the globe.

This will be the first time that this conference has been held in Europe. Previous locations have included the University of Adelaide, Australia (2008), University of California, Santa Barbara (2006), University of Canterbury, New Zealand (2003) and the University of Cape Town, South Africa (2000).

### Provisional themes:

- Propagules to production
- Biodiversity and ecosystem functioning
- Management and conservation
- Contribution of reef research to general ecological theory
- Coldwater coral reefs
- Macro-ecology and modelling
- Phylogeography and biogeography

Subject to demand, workshops will be organised on the afternoon of 29th June focusing on current methodological and conservation challenges. Other suggestions are welcomed.

In addition, there is a satellite advanced statistical course available following the conference. This **5 day PERMANOVA+ course (4-8th July 2011)** has a special 25% discount for ITRS participants.

To register your place please visit <http://www.itrs2011.org>

**Abstract Deadline: 1st March 2011**

**Registration:** £350 before 1st April 2011, £375 after 1st April. Additional discounts for students and members of the Marine Biological Association

Attendees will also be able to reserve University of Plymouth campus accommodation and opt to attend the final day excursion.

For all enquiries, please contact **Ms Sally Bishop-Hawes** on [pde@plymouth.ac.uk](mailto:pde@plymouth.ac.uk) or +44(0) 1752 586 005

## **Plankton 2011 Symposium (Thursday 22nd & Friday 23rd September 2011).**

**Plymouth Guildhall, England, UK  
First Announcement**

2011 marks the 80th year of the Continuous Plankton Recorder. As part of the celebrations the Sir Alister Hardy Foundation for Ocean Science (SAHFOS) is holding an international Symposium entitled: Plankton 2011: Plankton Biodiversity and Global Change. It will seek to identify causes and consequences of long-term changes in plankton communities in fresh and marine waters. The Symposium will be held on 22nd and 23rd September 2011 in Plymouth Guildhall. For more information and to register your interest please go to [www.plankton2011.org](http://www.plankton2011.org)

### **Short courses**

## **Field Skills (28 March – 1 April 2011)**

Field Skills are fundamentally important to any ecologist working in conservation biology and research. This practical course will give you the opportunity to develop skills aligned to varied specialisms yet with common approaches designed to address critical questions related to the conservation of marine, freshwater and terrestrial habitats. [www.bournemouth.ac.uk/courses/PSCFS](http://www.bournemouth.ac.uk/courses/PSCFS)

## **An Introduction to Statistics in R (6-8 April or 6-8 July 2011)**

This course aims to help new users of R to move quickly up the steep learning gradient of using R and reach the stage where their productivity will be significantly enhanced through its use. [www.bournemouth.ac.uk/courses/PSCFS](http://www.bournemouth.ac.uk/courses/PSCFS)

## **Marine Taxonomy and Habitat Survey (3-6 May 2011)**

A course aimed at both introducing and developing knowledge of coastal marine and maritime habitats, specific identification skills and intertidal habitat survey methods that support marine biodiversity conservation, monitoring and research. [www.bournemouth.ac.uk/courses/PSCFS](http://www.bournemouth.ac.uk/courses/PSCFS)

## **Fish Survey Design and Application (4-7 July 2011)**

A course designed so you will develop an applied understanding of the principles of the design and application of surveys of freshwater fishes. It will allow you to develop your knowledge of survey techniques relevant to freshwater fisheries, particularly electric fishing, and its development and use in fisheries and fish population monitoring and research. [www.bournemouth.ac.uk/courses/PSCFS](http://www.bournemouth.ac.uk/courses/PSCFS)

## **Snorkel Safari course at the Marine Biological Association (Spring 2011)**

The Marine Biological Association in Plymouth is offering a 4-day training course, covering all aspects of planning and running safe, enjoyable and educational snorkel safari events, and including full BSAC Snorkel Instructor Training in Spring 2011. At the end of the course, which is practical and interactive, delegates will be equipped to plan and run snorkel safari events for groups in sheltered inshore waters.

For further information and a booking form, please contact Guy Baker. Email: [guba@mba.ac.uk](mailto:guba@mba.ac.uk) Tel: 01752 633244

## **Benthic Taxonomy Summer School (13th -24th June)**

The two week Benthic Taxonomy Summer School provides students with hands-on experience working in the marine environment and an introduction to species identification skills. The course will build upon practical sampling and identification skills which many students will have gained during related undergraduate degree courses and provides skill and experience vital to those wishing to pursue a commercial or academic career in Marine Biology. During the first week students have the opportunity to carry out both intertidal and subtidal sampling, using equipment that

is routinely used for both commercial and academic collections. Samples collected in the field will be sorted and identified back in the laboratory giving students a taste of the biodiversity found in British seas. The second week of the course focuses on the identification of marine polychaetes and amphipods, two of the most commonly encountered groups of benthic invertebrates. The Marine Life and Environmental Science Resource Centre, Marine Biological Association of the UK, Plymouth, PL1 2PB

For more detailed information and booking details go to [www.seasurvey.co.uk](http://www.seasurvey.co.uk)



*2010 Porcupine field trip to the Isles of Scilly - see opposite*

## Autumn Field Meeting - The Isles of Scilly, 6<sup>th</sup> – 13<sup>th</sup> September 2010

By Angie Gall, Marine Project Officer,  
Isles of Scilly Wildlife Trust

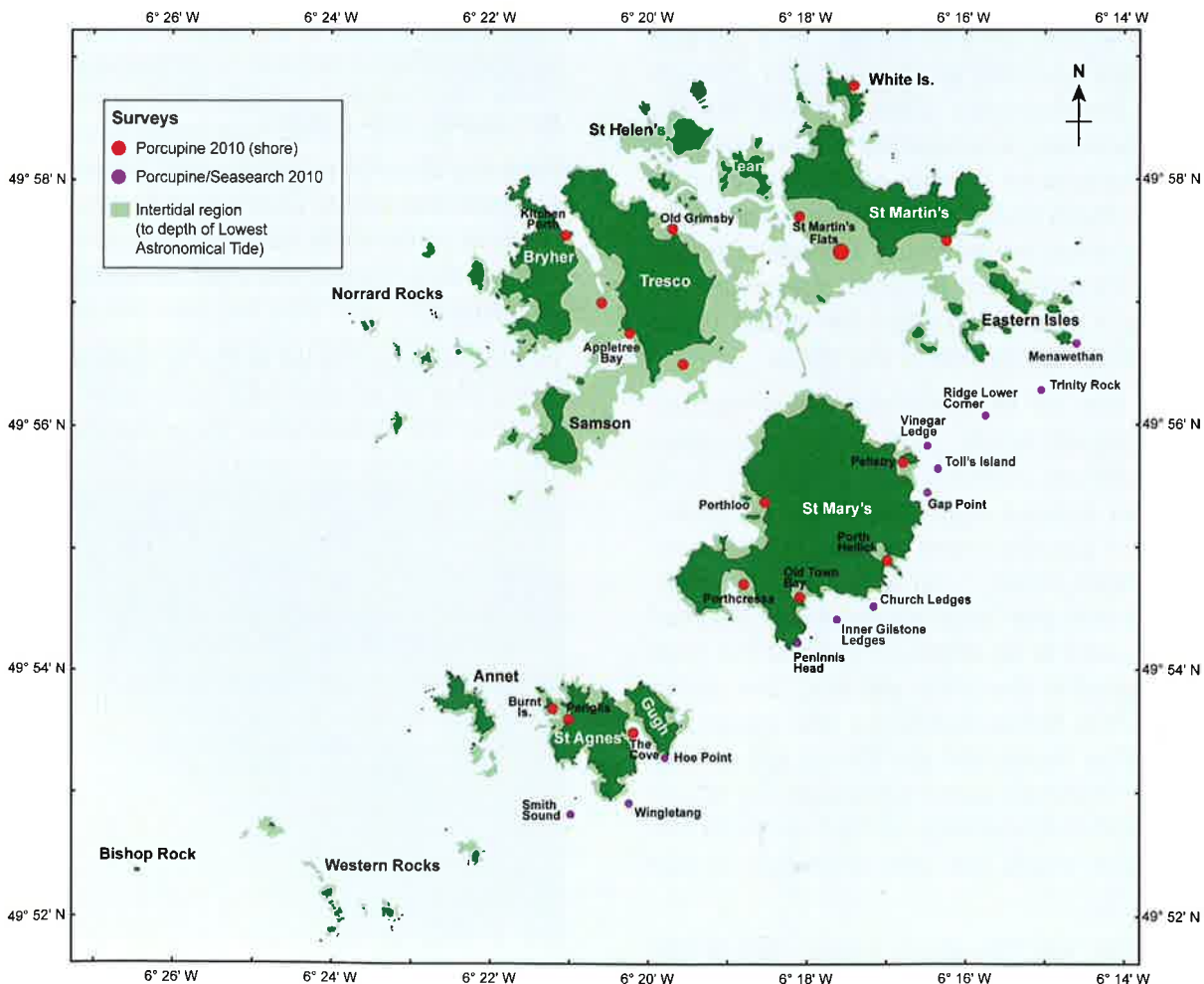
The biggest marine expedition ever to hit the shores of Scilly, our September field meeting attracted 40 participants from all over the country and produced over 2500 species records!

As we arrived at the islands in bright sunshine on the Scillonian ferry, the common dolphins leaping in our wake were a good omen for a fantastic week ahead. We disembarked and everyone settled into their accommodation which was dotted around the small town on St Mary's. Later on, everyone met up at the Scillonian Club which was to host our makeshift lab and meeting point for the week.

We didn't have far to go on the first day of fieldwork as there is an excellent shore at

Porth Loo, just a few minutes walk from town. Though the tide wasn't great this first day, it gave everyone a chance to get their eye in on a Scilly shore which is a bit different from elsewhere. Already a break-away group began to develop – the fish people! Led by Doug Herdson and Frances Dipper this group split off and started setting bottle traps and fishing with hand nets in search of the giant goby *Gobius cobitis*. Beccy Oliver from the Isles of Scilly Wildlife Trust also led a small group doing a Shoresearch survey using quadrats and recording detail about the cover types and substrate of the shore.

On Wednesday morning we crossed to Tresco, a privately owned estate which is famous for its subtropical Abbey Gardens. Although some of the group did head off to the gardens for a while (and even found a rare orchid 'autumn lady's tresses' on the way there!) many of us were captivated by the rocky shore at Appletree Bay and the sand flats between Tresco and Bryher. The tide was so low it was



possible to walk between the islands – but not without treading on thousands of daisy anemones *Cereus pedunculatus*, sand mason worms *Lanice conchilega* and even featherstars *Antedon bifida* that thrive in this tide-swept channel. On the other side of Tresco, Richard Warwick and Neville Barrett were re-living the old Exeter University field courses with a group of Porcupines by visiting the seagrass bed at Old Grimsby. They were sad to see that the bed was much diminished since their last visit, possibly due to an increase in fixed moorings in the bay.

Alongside the shore visits we also ran diving surveys each day with a team of six divers on a RIB. Different people were involved throughout the week and Steve Adams took the lead in coordinating the Seasearch survey forms which were filled out by the group for each site visited. The divers had the chance to record marine life on the reefs around the islands, some of which have fantastic sponge gardens with unusual sponges like the slime sponge *Desmacidon fruticosum* and the rare yellow sponge *Axinella flustra*. Pink sea fans *Eunicella verrucosa* are often present on these reefs and Porcupine divers came across sea fan anemones *Amphianthus dohrnii* and sea fan nudibranchs *Tritonia nilsodneri* living on them. Keith Hiscock was able to revisit a site which he has waited nearly 30 years to return to – the legendary Darrity's Hole where he set up a monitoring point for sunset corals *Leptopsammia pruvoti* in the 1980s.

On a site off Penninis, the divers spotted an unusual bright pink soft coral called *Sarcodictyon catenata* and at Trinity Rock another unusual sight was a shoal of golden boarfish (locally known as zulus) *Capros aper* (see front cover). On a few of the reefs, the divers saw crayfish *Palinurus elephas* which used to be abundant in Scilly but were overfished in the 1970s and 80s. One of the divers was Teresa Darbyshire who specialises in marine worms and was able to add greatly to the Seasearch forms, particularly by lifting up boulders underwater to find worms in the sediment which she later identified in the lab.

St Agnes was Thursday's target; this is the

furthest south west of the inhabited islands and is separated from the others by a deep channel. We headed over to the far side of the island to Periglis and out onto a big boulder outcrop known as Burnt Island. The huge tide meant we could get right down into the kelp and jewel anemones. This shore was more exposed than the others but it did yield what was thought to be the first of our giant gobies. Much debate ensued about whether this was in fact a giant goby or a large rock goby and as far as I know, the issue is still unresolved today due to the need to make scale counts to be certain about the identification.



Mystery goby - Paula Lightfoot

For many of us there was time for a snorkel in the sunshine off the sand bar by Gugh before the boat came, while for others the proximity of the pub garden to the quay was extremely convenient.

In the evenings, the lab at the Scillonian Club was a hive of activity with microscope work going on and identification books everywhere. We had a briefing each evening and gathered as much data from each day's work as we could. Jaclyn from the Isles of Scilly Wildlife Trust popped in on several evenings to interview participants for the marine show on Radio Scilly, we even made the hourly news bulletin! We were also treated one evening to a talk by Frances Dipper on her work on the coral reefs of Borneo and another night to Doug Herdson's talk on fish of the Isles of Scilly.

On Friday and Saturday we visited St Martin's. This northern-most island has a lot of variety to offer with vast intertidal sandflats which are a SSSI to the south, an interesting boulder shore which has been monitored

since the 1980s at English Island Point, and to the north on White Island there is a very exposed rocky shore with surge gullies. Julia Nunn and the other mollusc specialists from the Conchological Society of Great Britain and Ireland who were with us, were in their element on the sand flats. They found an array of burrowing bivalves such as razor shells *Ensis ensis* and many other shells that were washed up. Also living in the sediment were sea potatoes – burrowing urchins of the species *Echinocardium cordatum* and *Spatangus purpureus*.

The fish group used a push net on the sand flats and caught dozens of small plaice *Pleuronectes platessa*, showing the importance of the flats as a nursery for this species. They also found a little cuttlefish *Sepiolo atlantica* which shot around the bucket changing colour and menacing small crustaceans. Keith Hiscock took the opportunity to revisit and photograph another historic monitoring point, the underboulder communities at English Island Point. These boulders have a mosaic of colourful encrusting species living beneath them, a variety of sponges, ascidians and the bryozoan *Turbicellepora magnicostata* which occurs nowhere else in the British Isles. It was under one such boulder that Judith Oakley came across a Connemara clingfish *Lepadogaster candollei*. We had found many Cornish suckerfish *Lepadogaster lepadogaster* during the week but only one of this species. Unfortunately Judith may never look at boulders in the same way again after painfully crushing her thumb under one large lump of Scillonian granite!



Underboulder community including *Turbicellepora magnicostata* by Keith Hiscock

unbelievably the sun was still shining as it had all week. Many of us trekked across St Mary's to Pelistry on the east coast. This is another boulder shore with some freshwater running across it. On this shore we found a bootlace worm, *Lineus longissimus*, long enough to be a skipping rope (we didn't try it!) and Jamie Dyson found a cotton spinner *Holothuria forskali* on the lower shore. Further south round the coast at Porth Hellick, Roger Bamber was excited by the realisation that Porth Hellick lagoon is actually a saline lagoon, his favourite habitat.

By Sunday evening the exhausted group gathered together for a final meal and reflected on a week well spent. The 1295 shore records and 1280 Seasearch records are proof that we did work hard while at the same time enjoying our surroundings. The records, like all Porcupine records will make their way onto the National Biodiversity Network for all to use. For me the week was a fantastic culmination of the Isles of Scilly Marine Biodiversity Project and I would like to thank everyone involved including the Scillonian Club for hosting us and the Isles of Scilly Steamship Company for subsidising our travel.

Sunday was the last day of fieldwork and

## Isles of Scilly Field Trip Species List - intertidal

Species Name	Authority	Species Name	Authority
Sponges		Pycnogonids	
<i>Leuconia</i> sp	(Grant, 1826)	<i>Nymphon gracile</i>	Leach, 1814
<i>Leucosolenia</i> sp	Bowerbank, 1861	Crustacea	
<i>Scypha ciliata</i>	(Fabricius, 1780)	<i>Verruca stroemia</i>	(O F Müller, 1776)
<i>Grantia compressa</i>	(Fabricius, 1780)	<i>Chthamalus montagui</i>	Southward, 1976
<i>Pachymatisma johnstonia</i>	(Bowerbank, 1842)	<i>Balanus crenatus</i>	Brugière, 1789
<i>Terpios fugax</i>	Duchassaing & Michelotti, 1864	<i>Balanus perforatus</i>	Brugière, 1789
<i>Halichondria bowerbanki</i>	Burton, 1930	Amphipoda	
<i>Halichondria panicea</i>	(Pallas, 1766)	Talitridae	
<i>Hymeniacion perleve</i>	(Montagu, 1818)	<i>Urothoe cf. poseidonis</i>	Reibisch, 1905
<i>Myxilla incrustans</i>	(Johnston, 1842)	Sphaeromatidae	
<i>Ophlitaspongia seriat</i>	(Grant, 1826)	<i>Cymodoce truncata</i>	Leach, 1814
<i>Haliclona</i> sp	Grant, 1835	<i>Dynamene bidentata</i>	(Adams, 1800)
<i>Dysidea fragilis</i>	(Montagu, 1818)	<i>Idotea</i> sp	Fabricius, 1798
<i>Aplysilla rosea</i>	(Barrois, 1876)	<i>Idotea linearis</i>	(Pennant, 1777)
<i>Aplysilla sulfurea</i>	Schulze, 1878	<i>Tanais dulongii</i>	(Audouin, 1826)
<i>Halisarca dujardini</i>	Johnston, 1842	<i>Zeuxo holdichi</i>	Bamber, 1990
<i>Lucernariopsis campanulata</i>	(Lamouroux, 1815)	<i>Leptochelia savignyi</i>	(Kroyer, 1842)
<i>Dynamena pumila</i>	(Linnaeus, 1758)	<i>Apseudopsis latreillii</i>	(Milne-Edwards, 1828)
Hydrozoa		<i>Palaemon elegans</i>	Rathke, 1837
<i>Actinia equina</i>	(Linnaeus, 1758)	<i>Palaemon serratus</i>	(Pennant, 1777)
<i>Anemonia viridis</i>	(Forsskål, 1775)	<i>Athanas nitescens</i>	(Leach, 1813)
<i>Urticina felina</i>	(Linnaeus, 1761)	<i>Crangon crangon</i>	(Linnaeus, 1758)
<i>Aulactinia verrucosa</i>	(Pennant, 1777)	Paguridae	
<i>Anthopleura ballii</i>	(Cocks, 1850)	<i>Pagurus bernhardus</i>	(Linnaeus, 1758)
<i>Aiptasia mutabilis</i>	(Gravenhorst, 1831)	<i>Galathea squamifera</i>	Leach, 1814
<i>Sagartia elegans</i>	(Dalyell, 1848)	<i>Galathea strigosa</i>	(Linnaeus, 1767)
<i>Cereus pedunculatus</i>	(Pennant, 1777)	<i>Pisidia longicornis</i>	(Linnaeus, 1767)
<i>Corynactis viridis</i>	Allman, 1846	<i>Porcellana platycheles</i>	(Pennant, 1777)
<i>Caryophyllia smithii</i>	Stokes & Broderip, 1828	<i>Ebalia tumefacta</i>	(Montagu, 1808)
Worms		<i>Inachus</i> sp	Weber, 1795
Nemertea		<i>Macropodia</i> sp	Leach, 1814
<i>Lineus longissimus</i>	(Gunnerus, 1770)	<i>Cancer pagurus</i>	Linnaeus, 1758
Polynoidae		<i>Necora puber</i>	(Linnaeus, 1767)
<i>Alentia gelatinosa</i>	(M Sars, 1835)	<i>Carcinus maenas</i>	(Linnaeus, 1758)
<i>Lepidonotus clava</i>	(Montagu, 1808)	<i>Pilumnus hirtellus</i>	(Linnaeus, 1761)
<i>Chaetopterus variopedatus</i>	(Renier, 1804)	<i>Xantho incisus</i>	Leach, 1814
<i>Arenicola marina</i>	(Linnaeus, 1758)	<i>Xantho pilipes</i>	A Milne-Edwards, 1867
<i>Lanice conchilega</i>	(Pallas, 1766)	Springtail	
<i>Sabella pavonina</i>	Savigny, 1820	<i>Anurida maritima</i>	Guérin, 1836
<i>Pomatoceros triqueter</i>	(Linnaeus, 1758)	Molluscs	
<i>Spirorbis</i> sp	Daudin, 1800	Polyplacophora	
		<i>Lepidochitona cinerea</i>	(Linnaeus, 1767)

Species Name	Authority	Species Name	Authority
<i>Tonicella rubra</i>	(Linnaeus, 1767)	<i>Trivia monacha</i>	(da Costa, 1778)
<i>Acanthochitona crinita</i>	(Pennant, 1777)	<i>Lamellaria latens</i>	(O F Müller, 1776)
<i>Diodora graeca</i>	(Linnaeus, 1758)	<i>Euspira pulchella</i>	(Risso, 1826)
<i>Tectura virginea</i>	(O F Müller, 1776)	<i>Nucella lapillus</i>	(Linnaeus, 1758)
<i>Patella ulyssiponensis</i>	(Gmelin, 1791)	<i>Ocenebra erinacea</i>	(Linnaeus, 1758)
<i>Patella vulgata</i>	(Linnaeus, 1758)	<i>Chauvetia brunnea</i>	(Donovan, 1804)
<i>Helcion pellucidum</i>	(Linnaeus, 1758)	<i>Nassarius incrassatus</i>	(Ström, 1768)
<i>Margarites helicinus</i>	(Phipps, 1774)	<i>Hinia pygmaea</i>	(Lamarck, 1822)
<i>Osilinus lineatus</i>	(da Costa, 1778)	<i>Nassarius reticulatus</i>	(Linnaeus, 1758)
<i>Jujubinus striatus</i>	(Linnaeus, 1758)	<i>Raphitoma purpurea</i>	(Montagu, 1803)
<i>Gibbula magus</i>	(Linnaeus, 1758)	<i>Retusa</i> sp	Brown, 1827
<i>Gibbula cineraria</i>	(Linnaeus, 1758)	<i>Retusa truncatula</i>	(Bruguiere, 1792)
<i>Gibbula umbilicalis</i>	(da Costa, 1778)	<i>Runcina coronata</i>	(Quatrefages, 1844)
<i>Calliostoma zizyphinum</i>	(Linnaeus, 1758)	<i>Elysia viridis</i>	(Montagu, 1804)
<i>Tricolia pullus</i>	(Linnaeus, 1758)	<i>Hermaea bifida</i>	(Montagu, 1815)
<i>Lacuna pallidula</i>	(da Costa, 1778)	Aplysiidae	
<i>Lacuna parva</i>	(da Costa, 1778)	<i>Aplysia punctata</i>	(Cuvier, 1803)
<i>Lacuna vincta</i>	(Montagu, 1803)	<i>Berthella plumula</i>	(Montagu, 1803)
<i>Littorina littorea</i>	(Linnaeus, 1758)	<i>Polycera quadrilineata</i>	(O F Müller, 1776)
<i>Melarhaphe neritoides</i>	(Linnaeus, 1758)	<i>Archidoris pseudoargus</i>	(Rapp, 1827)
<i>Littorina mariaae</i>	(Sacchi & Rastelli, 1966)	<i>Aeolidiella glauca</i>	(Alder & Hancock, 1845)
<i>Littorina obtusata</i>	(Linnaeus, 1758)	<i>Nucula</i> sp	Lamarck, 1799
<i>Littorina nigrolineata</i>	(J E Gray, 1839)	<i>Mytilus edulis</i>	(Linnaeus, 1758)
<i>Littorina saxatilis</i>	(Olivi, 1792)	<i>Musculus discors</i>	(Linnaeus, 1767)
<i>Littorina compressa</i>	Jeffreys, 1865	<i>Modiolarca tumida</i>	(Hanley, 1843)
<i>Littorina fabalis</i>	(Turton, 1825)	<i>Modiolus barbatus</i>	(Linnaeus, 1758)
<i>Rissoa interrupta</i>	(J Adams, 1800)	<i>Modiolula phaseolina</i>	(Philippi, 1844)
<i>Rissoa parva</i>	(da Costa, 1778)	<i>Aequipecten opercularis</i>	(Linnaeus, 1758)
<i>Pusillina inconspicua</i>	(Alder, 1844)	<i>Anomia ephippium</i>	Linnaeus, 1758
<i>Cingula cingillus</i>	(Montagu, 1803)	<i>Heteranomia squamula</i>	(Linnaeus, 1758)
<i>Onoba aculeus</i>	(Gould, 1841)	<i>Lucinoma borealis</i>	(Linnaeus, 1767)
<i>Onoba semicostata</i>	(Montagu, 1803)	<i>Lasaea adansonii</i>	(Gmelin, 1791)
<i>Barleeia unifasciata</i>	(Montagu, 1803)	<i>Kellia suborbicularis</i>	(Montagu, 1803)
<i>Skeneopsis planorbis</i>	(O Fabricius, 1780)	<i>Montacuta substriata</i>	(Montagu, 1808)
<i>Omalogyra atomus</i>	(Philippi, 1841)	<i>Mysella bidentata</i>	(Montagu, 1803)
<i>Rissoella diaphana</i>	(Alder, 1848)	<i>Parvicardium exiguum</i>	(Gmelin, 1791)
<i>Rissoella opalina</i>	(Jeffreys, 1848)	<i>Lutraria</i> sp	Lamarck, 1799
<i>Eatonina fulgida</i>	(J Adams, 1797)	<i>Ensis arcuatus</i>	(Jeffreys, 1865)
<i>Bittium reticulatum</i>	(da Costa, 1778)	<i>Angulus squalidus</i>	(Pulteney, 1799)
<i>Cerithiopsis</i> sp	Forbes & Hanley, 1851	<i>Angulus tenuis</i>	(da Costa, 1778)
<i>Cerithiopsis tubercularis</i>	(Montagu, 1803)	<i>Arcopagia crassa</i>	(Pennant, 1777)
<i>Jordaniella nivosa</i>	(Montagu, 1803)	<i>Moerella donacina</i>	(Linnaeus, 1758)
<i>Turbonilla lactea</i>	(Linnaeus, 1758)	<i>Gari fervensis</i>	(Gmelin, 1791)
<i>Trivia arctica</i>	(Pulteney, 1799)	<i>Gari costulata</i>	(Turton, 1822)

## Isles of Scilly Field Trip Species List - intertidal (contd.)

Species Name	Authority	Species Name	Authority
<i>Gari tellinella</i>	(Lamarck, 1818)	<i>Clavelina lepadiformis</i>	(O F Müller, 1776)
<i>Venus verrucosa</i>	Linnaeus, 1758	<i>Polyclinum aurantium</i>	Milne-Edwards, 1841
<i>Gouldia minima</i>	(Montagu, 1803)	<i>Morchellium argus</i>	(Milne-Edwards, 1841)
<i>Dosinia exoleta</i>	(Linnaeus, 1758)	<i>Sidnyum elegans</i>	(Giard, 1872)
<i>Tapes decussatus</i>	(Linnaeus, 1758)	<i>Sidnyum turbinatum</i>	Savigny, 1816
<i>Chamelea striatula</i>	(da Costa, 1778)	<i>Aplidium nordmanni</i>	(Milne-Edwards, 1841)
<i>Clausinella fasciata</i>	(da Costa, 1778)	<i>Aplidium pallidum</i>	(Verrill, 1871)
<i>Timoclea ovata</i>	(Pennant, 1777)	<i>Aplidium proliferum</i>	(Milne-Edwards, 1841)
<i>Turtonia minuta</i>	(Fabricius, 1780)	<i>Didemnum maculosum</i>	(Milne-Edwards, 1841)
<i>Hiatella arctica</i>	(Linnaeus, 1767)	<i>Diplosoma listerianum</i>	(Milne-Edwards, 1841)
<i>Thracia phaseolina</i>	(Lamarck, 1818)	<i>Asciidiella scabra</i>	(O F Müller, 1776)
<i>Sepia orbigniana</i>	(Férussac in Orbigny, 1826)	<i>Dendrodoa grossularia</i>	(van Beneden, 1846)
<i>Sepiola atlantica</i>	(Orbigny in Férussac & Orbigny, 1840)	<i>Botryllus schlosseri</i>	(Pallas, 1766)
Bryozoans		<i>Botrylloides leachi</i>	(Savigny, 1816)
<i>Alcyonidium hirsutum</i>	(Fleming, 1828)	Cephalochordates	
<i>Flustrellidra hispida</i>	(Fabricius, 1780)	<i>Branchiostoma lanceolatum</i>	(Pallas, 1774)
<i>Umbonula littoralis</i>	Hastings, 1944	Fish	
<i>Cryptosula pallasiana</i>	(Moll, 1803)	<i>Anguilla anguilla</i>	(Linnaeus, 1758)
<i>Cellepora pumicosa</i>	(Pallas, 1766)	<i>Conger conger</i>	(Linnaeus, 1758)
<i>Turbicellepora magnicostata</i>	(Barroso, 1919)	Gobiesocidae	
<i>Membranipora</i>		<i>Lepadogaster candolii</i>	Risso, 1810
<i>membranacea</i>	(Linnaeus, 1767)	<i>Lepadogaster lepadogaster</i>	(Bonnaterre, 1788)
<i>Electra pilosa</i>	(Linnaeus, 1767)	<i>Lepadogaster purpurea</i>	(Bonnaterre, 1788)
<i>Scrupocellaria</i> sp	van Beneden, 1845	<i>Ciliata mustela</i>	(Linnaeus, 1758)
<i>Scrupocellaria reptans</i>	(Linnaeus, 1767)	<i>Gaidropsarus mediterraneus</i>	(Linnaeus, 1758)
Echinoderms		<i>Gaidropsarus vulgaris</i>	(Cloquet, 1824)
<i>Antedon bifida</i>	(Pennant, 1777)	<i>Spinachia spinachia</i>	(Linnaeus, 1758)
<i>Luidia ciliaris</i>	(Philippi, 1837)	<i>Nerophis lumbriciformis</i>	(Jenyns, 1835)
<i>Asterina gibbosa</i>	(Pennant, 1777)	<i>Taurulus bubalis</i>	(Euphrasen, 1786)
<i>Asterina phylactica</i>	Emson & Crump, 1979	Mugilidae	
<i>Asterias rubens</i>	Linnaeus, 1758	<i>Symphodus (Crenilabrus)</i>	
<i>Marthasterias glacialis</i>	(Linnaeus, 1758)	<i>melops</i>	(Linnaeus, 1758)
<i>Ophiothrix fragilis</i>	(Abildgaard, 1789)	<i>Coryphoblennius galerita</i>	(Linnaeus, 1758)
<i>Ophiocomina nigra</i>	(Abildgaard, 1789)	<i>Lipophrys pholis</i>	(Linnaeus, 1758)
<i>Amphipholis squamata</i>	(Chiaje, 1829)	<i>Pholis gunnellus</i>	(Linnaeus, 1758)
<i>Psammechinus miliaris</i>	(Gmelin, 1778)	<i>Ammodytes tobianus</i>	Linnaeus, 1758
<i>Echinus esculentus</i>	Linnaeus, 1758	<i>Callionymus</i> sp	Linnaeus, 1758
<i>Spatangus purpureus</i>	O F Müller, 1776	<i>Gobius</i> sp	Linnaeus, 1758
<i>Echinocardium cordatum</i>	(Pennant, 1777)	<i>Gobius paganellus</i>	Linnaeus, 1758
<i>Holothuria forskali</i>	Chiaje, 1841	<i>Gobiusculus flavescens</i>	(Fabricius, 1779)
<i>Pawsonia saxicola</i>	(Brady & Robertson, 1871)	<i>Pomatoschistus</i> sp	Gill, 1864
<i>Leptosynapta inhaerens</i>	(O F Müller, 1776)	<i>Pleuronectes platessa</i>	Linnaeus, 1758
Ascidians		Red algae	

Species Name	Authority	Species Name	Authority
Dark red algae encrusting		<i>Fucus serratus</i>	Linnaeus
<i>Porphyra umbilicalis</i>	(Linnaeus) Kützing	<i>Fucus spiralis</i>	Linnaeus
<i>Rhodothamniella floridula</i>	(Dillwyn) J Feldmann	<i>Fucus vesiculosus</i>	Linnaeus
<i>Nemalion helminthoides</i>	(Vellay) Batters	<i>Fucus vesiculosus</i> var <i>linearis</i>	Linnaeus
<i>Asparagopsis armata</i>	Harvey	<i>Pelvetia canaliculata</i>	(Linnaeus) Decaisne et Thuret
<i>Gelidium</i> sp	Lamouroux	<i>Himanthalia elongata</i>	(Linnaeus) S Gray
<i>Gelidium sesquipedale</i>	(Clemente y Rubio) Turner	<i>Sargassum muticum</i>	(Yendo) Fensholt
<i>Palmaria palmata</i>	(Linnaeus) Kuntze	<i>Bifurcaria bifurcata</i>	R Ross
<i>Rhodothamniella</i> sp	J Feldmann	<i>Cystoseira tamariscifolia</i>	(Hudson) Papenfuss
<i>Dilsea carnosa</i>	(Schmidel) Kuntze	Green algae	
<i>Hildenbrandia</i> sp	Nardo	<i>Ulva</i> sp	Linnaeus
<i>Corallina elongata</i>	Ellis et Solander	<i>Ulva Intestinalis</i>	Linnaeus
<i>Corallina officinalis</i>	Linnaeus	<i>Ulva lactuca</i>	Linnaeus
<i>Lithothamnion</i> sp	Heydrich	<i>Cladophora</i> sp	Kützing
<i>Mesophyllum lichenoides</i>	(Ellis) Lemoine	<i>Cladophora rupestris</i>	(Linnaeus) Kützing
<i>Mastocarpus stellatus</i>	(Stackhouse) Guiry	<i>Codium</i>	Stackhouse
<i>Chondrus crispus</i>	Stackhouse	<i>Codium fragile</i>	(Suringar) Hariot
<i>Polyides rotundus</i>	(Hudson) Greville	Lichens	
<i>Furcellaria</i> sp	Lamouroux	<i>Lichina pygmaea</i>	(Lightfoot) C. Agardh, 1821
<i>Furcellaria lumbricalis</i>	(Hudson) Lamouroux	<i>Ramalina siliquosa</i>	(Hudson) Smith, 1918
<i>Lomentaria articulata</i>	(Hudson) Lyngbye	<i>Verrucaria maura</i>	Wahlenberg, 1803
<i>Lomentaria clavellosa</i>	(Turner) Gaillon	<i>Verrucaria mucosa</i>	Wahlenberg, 1803
<i>Ceramium virgatum</i>	Roth	Higher plants	
<i>Plumaria plumosa</i>	(Hudson) Kuntze	<i>Zostera marina</i>	Linnaeus, 1758
<i>Membranoptera alata</i>	(Hudson) Stackhouse		
<i>Heterosiphonia plumosa</i>	(Ellis) Batters		
<i>Osmundea</i> sp	Stackhouse		
<i>Osmundea pinnatifida</i>	(Hudson) Stackhouse		
<i>Polysiphonia lanosa</i>	(Linnaeus) Tandy		
Brown algae			
<i>Ectocarpus</i> sp	Lyngbye		
<i>Leathesia difformis</i>	(Linnaeus) Areschoug		
<i>Halopteris filicina</i>	(Grateloup) Kützing		
<i>Cladostephus spongiosus</i>	(Hudson) C Agardh		
<i>Dictyota dichotoma</i>	(Hudson) Lamouroux		
<i>Desmarestia</i> sp	Lamouroux		
<i>Colpomenia peregrina</i>	(Sauvageau) G Hamel		
<i>Chorda filum</i>	(Linnaeus) Stackhouse		
<i>Laminaria digitata</i>	(Hudson) Lamouroux		
<i>Laminaria hyperborea</i>	(Gunnerus) Foslie		
<i>Laminaria saccharina</i>	(Linnaeus) Lamouroux		
<i>Saccorhiza polyschides</i>	(Lightfoot) Batters		
<i>Alaria esculenta</i>	(Linnaeus) Greville		
<i>Ascophyllum nodosum</i>	(Linnaeus) Le Jolis		

## Isles of Scilly Field Trip species list - Seasearch

Species	Authority	Species Name	Authority
<b>Sponge</b>		<i>Aglaophenia tubulifera</i>	(Hincks, 1861)
<i>Porifera indet</i>		<i>Gymnangium montagui</i>	(Billard, 1912)
<i>Guancha lacunosa</i>	(Bean in Johnston, 1842)	<i>Lytocarpia myriophyllum</i>	(Linnaeus, 1758)
<i>Scypha ciliata</i>	(Fabricius, 1780)	<i>Nemertesia antennina</i>	(Linnaeus, 1758)
<i>Pachymatisma johnstonia</i>	(Bowerbank, 1842)	<i>Nemertesia ramosa</i>	Lamouroux, 1816
<i>Tethya citrina</i>	(Sara and Melone 1965)	<i>Polyplumaria flabellata</i>	G O Sars, 1874
<i>Suberites carnosus</i>	(Johnston, 1842)	<i>Abietinaria</i> sp	Kirchenpauer, 1884
<i>Suberites ficus</i>	(Linnaeus, 1767)	<i>Abietinaria abietina</i>	(Linnaeus, 1758)
<i>Polymastia</i> sp	Bowerbank, 1862	<i>Diphasia alata</i>	(Hincks, 1855)
<i>Polymastia boletiformis</i>	(Lamarck, 1815)	<i>Sertularella gayi</i>	(Lamouroux, 1821)
<i>Polymastia penicillus</i>	(Montagu, 1818)	<i>Sertularella polyzonias</i>	(Linnaeus, 1758)
<i>Cliona celata</i>	Grant, 1826	<i>Obelia</i> sp	Péron & Lesueur, 1810
<i>Axinella</i> sp	Schmidt, 1862	<i>Obelia geniculata</i>	(Linnaeus, 1758)
<i>Axinella damicornis</i>	(Esper, 1794)	<i>Sarcodictyon catenatum</i>	Forbes, 1847
<i>Axinella flustra</i>	Topsent, 1892	<i>Alcyonium digitatum</i>	Linnaeus, 1758
<i>Axinella infundibuliformis</i>	(Linnaeus, 1758)	<i>Alcyonium glomeratum</i>	(Hassall, 1843)
<i>Axinella dissimilis</i>	(Bowerbank, 1866)	<i>Eunicella verrucosa</i>	(Pallas, 1766)
<i>Homaxinella subdola</i>	(Bowerbank, 1866)	<i>Cerianthus lloydii</i>	Gosse, 1859
<i>Stelligera stuposa</i>	(Ellis & Solander, 1786)	<i>Epizoanthus couchii</i>	(Johnston, in Couch, 1844)
<i>Raspailia hispida</i>	(Montagu, 1818)	<i>Parazoanthus axinellae</i>	(Schmidt, 1862)
<i>Raspailia ramosa</i>	(Montagu, 1818)	<i>Parazoanthus anguicomus</i>	(Norman, 1868)
<i>Eurypon</i> sp	J E Gray, 1867	<i>Isozoanthus sulcatus</i>	(Gosse, 1859)
<i>Ciocalypta penicillus</i>	Bowerbank, 1864	<i>Actinia equina</i>	(Linnaeus, 1758)
<i>Esperiopsis fucorum</i>	(Esper, 1794)	<i>Anemonia viridis</i>	(Forsskål, 1775)
<i>Desmacidon fruticosum</i>	(Montagu, 1818)	<i>Urticina felina</i>	(Linnaeus, 1761)
<i>Myxilla incrustans</i>	(Johnston, 1842)	<i>Aulactinia verrucosa</i>	(Pennant, 1777)
<i>Phorbas fictitius</i>	(Bowerbank, 1866)	<i>Anthopleura ballii</i>	(Cocks, 1850)
<i>Hemimyscale columella</i>	(Bowerbank, 1874)	<i>Anthopleura thallia</i>	(Gosse, 1854)
<i>Haliclona</i> sp	Grant, 1835	<i>Aiptasia mutabilis</i>	(Gravenhorst, 1831)
<i>Haliclona viscosa</i>	(Topsent, 1888)	<i>Metridium senile</i>	(Linnaeus, 1761)
<i>Dysidea fragilis</i>	(Montagu, 1818)	<i>Sagartia elegans</i>	(Dalyell, 1848)
<i>Hexadella racovitzae</i>	Topsent, 1896	<i>Sagartia elegans</i> var. <i>nivea</i>	(Dalyell, 1848)
<b>Cnidaria</b>		<i>Sagartia elegans</i> var. <i>rosea</i>	(Dalyell, 1848)
<i>Haliclystus auricula</i>	(Rathke, 1806)	<i>Sagartia elegans</i> var. <i>venusta</i>	(Dalyell, 1848)
<i>Lucernaria quadricornis</i>	O F Müller, 1776	<i>Cereus pedunculatus</i>	(Pennant, 1777)
<i>Lucernariopsis cruxmelitensis</i>	Corbin, 1978	<i>Actinothoe sphyrrodetta</i>	(Gosse, 1858)
<i>Tubularia</i> sp	Linnaeus, 1758	<i>Sagartiogeton laceratus</i>	(Dalyell, 1848)
<i>Tubularia indivisa</i>	Linnaeus, 1758	<i>Adamsia carciniopados</i>	(Otto, 1823)
<i>Tubularia larynx</i>	Ellis & Solander, 1786	<i>Amphianthus dohrnii</i>	(von Koch, 1878)
<i>Halecium beanii</i>	(Johnston, 1838)	<i>Mesacmaea mitchelli</i>	Gosse 1853
<i>Halecium halecinum</i>	(Linnaeus, 1758)	<i>Peachia cylindrica</i>	(Reid, 1848)
<i>Aglaophenia</i> sp	Lamouroux, 1812	<i>Edwardsia claparedii</i>	(Panceri, 1869)
<i>Aglaophenia pluma</i>	(Linnaeus, 1758)	<i>Corynactis viridis</i>	Allman, 1846
		<i>Caryophyllia smithii</i>	Stokes & Broderip, 1828

Species Name	Authority	Species Name	Authority
<i>Balanophyllia regia</i>	Gosse, 1853	<i>Helcion pellucidum</i>	(Linnaeus, 1758)
<i>Leptopsammia pruvoti</i>	Lacaze-Duthiers, 1897	<i>Gibbula</i> sp	Risso, 1826
<i>Prostheceraeus vittatus</i>	(Montagu, 1813)	<i>Gibbula cineraria</i>	(Linnaeus, 1758)
Worms		<i>Calliostoma zizyphinum</i>	(Linnaeus, 1758)
<i>Tubulanus annulatus</i>	(Montagu, 1804)	<i>Tricolia pullus</i>	(Linnaeus, 1758)
<i>Chaetopterus</i> sp	Cuvier, 1827	<i>Lacuna vincta</i>	(Montagu, 1803)
<i>Chaetopterus variopedatus</i>	(Renier, 1804)	<i>Rissoa interrupta</i>	(J Adams, 1800)
<i>Arenicola marina</i>	(Linnaeus, 1758)	<i>Rissoa parva</i>	(da Costa, 1778)
<i>Eupolymnia nebulosa</i>	(Montagu, 1819)	<i>Alvania punctura</i>	(Montagu, 1803)
<i>Lanice conchilega</i>	(Pallas, 1766)	<i>Simnia</i> sp	Risso, 1826
<i>Bispira</i> sp	Krøyer, 1856	<i>Simnia patula</i>	(Pennant, 1777)
<i>Bispira volutacornis</i>	(Montagu, 1804)	<i>Trivia</i> sp	J E Gray in Broderip, 1837
<i>Sabella discifera</i>	Grube, 1874	<i>Trivia arctica</i>	(Pulteney, 1799)
<i>Sabella flabellata</i>	Savigny, 1820	<i>Trivia monacha</i>	(da Costa, 1778)
<i>Pomatoceros</i> sp	Philippi, 1844	<i>Ocenebra</i> sp	J E Gray, 1847
<i>Pomatoceros triqueter</i>	(Linnaeus, 1758)	<i>Hinia reticulata</i>	(Linnaeus, 1758)
<i>Serpula</i> sp	Linnaeus, 1767	<i>Aplysia</i> sp	Linnaeus, 1767
<i>Serpula vermicularis</i>	Linnaeus, 1767	<i>Aplysia punctata</i>	(Cuvier, 1803)
<i>Filograna</i> sp	Oken, 1815 in McIntosh, 1923	<i>Tritonia nilsodhneri</i>	(Marcus, 1983)
<i>Filograna implexa</i>	Berkeley, 1827 in Sars, 1851	<i>Doto fragilis</i>	(Forbes, 1838)
<i>Protula tubularia</i>	(Montagu, 1803)	<i>Doto millbayana</i>	Lemche, 1976
Crustaceans		<i>Acanthodoris pilosa</i>	(Abildgaard in O F Müller, 1789)
<i>Balanus crenatus</i>	Brugière, 1789	<i>Diaphorodoris luteocincta</i>	(M Sars, 1870)
<i>Megatrema anglicum</i>	(Sowerby, 1823)	<i>Polycera faeroensis</i>	Lemche, 1929
Amphipoda		<i>Polycera quadrilineata</i>	(O F Müller, 1776)
<i>Caprella</i> sp	Lamarck, 1801	<i>Cadlina laevis</i>	(Linnaeus, 1767)
<i>Palaemon serratus</i>	(Pennant, 1777)	<i>Doris sticta</i>	(Iredale & O'Donoghue, 1923)
<i>Homarus gammarus</i>	(Linnaeus, 1758)	<i>Archidoris pseudoargus</i>	(Rapp, 1827)
<i>Palinurus elephas</i>	(Fabricius, 1787)	<i>Janolus cristatus</i>	(delle Chiaje, 1841)
Paguridae		<i>Flabellina pedata</i>	(Montagu, 1815)
<i>Pagurus prideaux</i>	Leach, 1815	<i>Favorinus branchialis</i>	(Rathke, 1806)
<i>Galathea nexa</i>	Embleton, 1834	<i>Modiolarca tumida</i>	(Hanley, 1843)
<i>Galathea strigosa</i>	(Linnaeus, 1767)	<i>Heteranomia squamula</i>	(Linnaeus, 1758)
<i>Pisidia longicornis</i>	(Linnaeus, 1767)	<i>Ensis</i> sp	Schumacher, 1817
<i>Maja squinado</i>	(Herbst, 1788)	<i>Hiatella arctica</i>	(Linnaeus, 1767)
<i>Inachus phalangium</i>	(Fabricius, 1775)	<i>Pholas dactylus</i>	Linnaeus, 1758
<i>Cancer pagurus</i>	Linnaeus, 1758	Bryozoans	
<i>Necora puber</i>	(Linnaeus, 1767)	Encrusting bryozoan	
<i>Pilumnus hirtellus</i>	(Linnaeus, 1761)	Encrusting orange bryozoan	
Mollusc		Crisiidae	Johnston, 1838
Polyplacophora		<i>Crisia</i> sp	Lamouroux, 1812
		<i>Alcyonidium diaphanum</i>	(Hudson, 1762)
		<i>Alcyonidium gelatinosum</i>	(Linnaeus, 1761)

Species Name	Authority	Species Name	Authority
<i>Pentapora fascialis foliacea</i>	(Ellis & Sollander, 1786)	Fish	
<i>Turbicellepora magnicostata</i>	(Barroso, 1919)	<i>Scyliorhinus canicula</i>	(Linnaeus, 1758)
<i>Omalosecosa ramulosa</i>	(Linnaeus, 1767)	<i>Scyliorhinus stellaris</i>	(Linnaeus, 1758)
<i>Membranipora membranacea</i>	(Linnaeus, 1767)	<i>Pollachius pollachius</i>	(Linnaeus, 1758)
<i>Electra pilosa</i>	(Linnaeus, 1767)	<i>Pollachius virens</i>	(Linnaeus, 1758)
<i>Cellaria</i> sp	Ellis & Solander, 1786	<i>Trisopterus indet</i>	(Linnaeus, 1758)
<i>Cellaria fistulosa</i>	(Linnaeus, 1758)	<i>Trisopterus luscus</i>	(Linnaeus, 1758)
<i>Cellaria sinuosa</i>	(Hassall, 1840)	<i>Trisopterus minutus</i>	(Linnaeus, 1758)
<i>Scrupocellaria</i> sp	van Beneden, 1845	<i>Capros aper</i>	(Linnaeus, 1758)
<i>Bugula</i> sp	Oken, 1815	<i>Spinachia spinachia</i>	(Linnaeus, 1758)
<i>Bugula plumosa</i>	(Pallas, 1766)	<i>Taurulus bubalis</i>	(Euphrasen, 1786)
<i>Bugula turbinata</i>	Alder, 1857	<i>Centrolabrus exoletus</i>	(Linnaeus, 1758)
Echinoderms		<i>Symphodus (Crenilabrus)</i>	
<i>Antedon bifida</i>	(Pennant, 1777)	<i>melops</i>	(Linnaeus, 1758)
<i>Astropecten irregularis</i>	(Pennant, 1777)	<i>Ctenolabrus rupestris</i>	(Linnaeus, 1758)
<i>Luidia</i> sp	Forbes, 1839	<i>Labrus bergylta</i>	Ascanius, 1767
<i>Luidia</i> sp (larvae)	Forbes, 1839	<i>Labrus mixtus</i>	Linnaeus, 1758
<i>Luidia ciliaris</i>	(Philippi, 1837)	<i>Ammodytes</i> sp	Linnaeus, 1758
<i>Henricia</i> sp	J E Gray, 1840	<i>Callionymus</i> sp	Linnaeus, 1758
<i>Asterias rubens</i>	Linnaeus, 1758	<i>Callionymus lyra</i>	Linnaeus, 1758
<i>Marthasterias glacialis</i>	(Linnaeus, 1758)	<i>Gobiusculus flavescens</i>	(Fabricius, 1779)
<i>Ophiura albida</i>	Forbes, 1839	<i>Pomatoschistus</i> sp	Gill, 1864
<i>Echinus esculentus</i>	Linnaeus, 1758	<i>Thorogobius ephippiatus</i>	(Lowe, 1839)
<i>Holothuria forskali</i>	Chiaje, 1841	<i>Phrynorhombus norvegicus</i>	(Gunther, 1862)
<i>Pawsonia saxicola</i>	(Brady & Robertson, 1871)	<i>Zeugopterus punctatus</i>	(Bloch, 1787)
Sea squirts		Mammals	
Ascidacea (solitary)		<i>Halichoerus grypus</i>	(Fabricius, 1791)
<i>Clavelina lepadiformis</i>	(O F Müller, 1776)	Higher plants	
<i>Morchellium argus</i>	(Milne-Edwards, 1841)	<i>Zostera marina</i>	G O Sars, 1919
<i>Sidnyum elegans</i>	(Giard, 1872)	Red algae	
Didemnidae		<i>Scinaia</i> sp	Bivona-Bernardi
<i>Diplosoma</i> sp	MacDonald, 1859	<i>Scinaia furcellata</i>	(Turner) J Agardh
<i>Diplosoma spongiforme</i>	(Giard, 1872)	<i>Asparagopsis armata</i>	Harvey
<i>Ciona intestinalis</i>	(Linnaeus, 1767)	<i>Bonnemaisonia</i>	C Agardh
<i>Diazona violacea</i>	Savigny, 1816	<i>Gelidium latifolium</i>	(Greville) Bornet
<i>Corella parallelogramma</i>	(O F Müller, 1776)	<i>Dilsea carnosa</i>	(Schmidel) Kuntze
<i>Ascidella</i> sp	Roule, 1884	<i>Callophyllis laciniata</i>	(Hudson) Kützing
<i>Ascidella aspersa</i>	(O F Müller, 1776)	<i>Kallymenia reniformis</i>	(Turner) J Agardh
<i>Ascidella scabra</i>	(O F Müller, 1776)	Corallinaceae	
<i>Ascidia mentula</i>	O F Müller, 1776	<i>Corallina officinalis</i>	Linnaeus
<i>Phallusia mammillata</i>	(Cuvier, 1815)	<i>Lithothamnion</i> sp	Heydrich
<i>Dendrodoa grossularia</i>	(van Beneden, 1846)	<i>Phymatolithon laevigatum</i>	(Foslie) Foslie
<i>Botryllus schlosseri</i>	(Pallas, 1766)	<i>Schizymenia</i> sp	J Agardh
		<i>Gracilaria</i> sp	Greville

Species Name	Authority
<i>Ahnfeltia plicata</i>	(Hudson) Fries
<i>Gymnogongrus crenulatus</i>	(Turner) J Agårdh
<i>Stenogramme interrupta</i>	(C Agardh) Montagne ex Harvey
<i>Chondrus crispus</i>	Stackhouse
<i>Polyides rotundus</i>	(Hudson) Greville
<i>Plocamium cartilagineum</i>	(Linnaeus) Dixon
<i>Sphaerococcus coronopifolius</i>	Stackhouse
<i>Furcellaria lumbricalis</i>	(Hudson) Lamouroux
<i>Calliblepharis ciliata</i>	(Hudson) Kützting
<i>Chylocladia verticillata</i>	(Lightfoot) Bliding
<i>Gastroclonium ovatum</i>	(Hudson) Papenfuss
<i>Lomentaria articulata</i>	(Hudson) Lyngbye
<i>Aglaothamnion pseudobyssoides</i>	(P Crouan et H Crouan) Halos
<i>Ceramium secundatum</i>	Lyngbye
<i>Halurus flosculosus</i>	(Ellis) Maggs et Hommersand
<i>Ptilota gunneri</i>	P Silva, Maggs et L Irvine
<i>Sphondylothamnion multifidum</i>	(Hudson) Nägeli
<i>Apoglossum ruscifolium</i>	(Turner) J Agardh
<i>Cryptopleura ramosa</i>	(Hudson) Kylin ex Lily Newton
<i>Delesseria sanguinea</i>	(Hudson) Lamouroux
<i>Drachiella spectabilis</i>	Ernst et J Feldmann
<i>Heterosiphonia plumosa</i>	(Ellis) Batters
<i>Chondria dasyphylla</i>	(Woodward) C Agardh
<i>Osmundea osmunda</i>	(S Gmelin) Maggs et Hommersand
<i>Polysiphonia fibrillosa</i>	(Dillwyn) Sprengel
Brown algae	
<i>Pseudolithoderma extensum</i>	(P Crouan et H Crouan) S Lund
<i>Cutleria multifida</i>	(Turner) Greville, 1830
<i>Sphacelaria</i> sp	Lyngbye
<i>Halopteris</i> sp	Kützting
<i>Halopteris filicina</i>	(Grateloup) Kützting
<i>Dictyopteris membranacea</i>	(Stackhouse) Batters
<i>Dictyota dichotoma</i>	(Hudson) Lamouroux
<i>Carpomitra costata</i>	(Stackhouse) Batters
<i>Desmarestia</i> sp	Lamouroux
<i>Desmarestia aculeata</i>	(Linnaeus) Lamouroux
<i>Colpomenia peregrina</i>	(Sauvageau) G Hamel
<i>Chorda filum</i>	(Linnaeus) Stackhouse
<i>Laminaria digitata</i>	(Hudson) Lamouroux

Species Name	Authority
<i>Laminaria hyperborea</i>	(Gunnerus) Foslie
<i>Laminaria ochroleuca</i>	De la Pylaie
<i>Polyschides latissima</i>	(Linnaeus) Lamouroux
<i>Saccorhiza polyschides</i>	(Lightfoot) Batters
<i>Sargassum muticum</i>	(Yendo) Fensholt
<i>Cystoseira baccata</i>	(S Gmelin) P Silva
<i>Cystoseira nodicaulis</i>	(Withering) M Roberts
<i>Halidrys siliquosa</i>	(Linnaeus) Lyngbye
Green algae	
<i>Ulva linza</i>	Linnaeus
<i>Ulva lactuca</i>	Linnaeus
<i>Cladophora pellucida</i>	(Hudson) Kützting
<i>Bryopsis hypnoides</i>	Lamouroux
<i>Bryopsis plumosa</i>	(Hudson) C Agardh
<i>Codium tomentosum</i>	Stackhouse



## Census of Sunset Corals, *Leptopsammia Pruvoti*, at Gap Point, Isles of Scilly, September 2010

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### Introduction

In 1984, the Field Studies Council was commissioned by the Nature Conservancy Council to establish monitoring programmes that would reflect some of the features of highest interest for their marine natural heritage importance in the Isles of Scilly. One of the locations surveyed ('Site 1': Hiscock, 1985) was north of Gap Point on the east side of St Mary's and included a vertical area of rock approximately 1.3 m x 1.5 m in area at about 20 to 22 m below chart datum (BCD). The area was selected for its population of scattered sunset corals *Leptopsammia pruvoti* and was noted as having a large population of the Devonshire cup coral *Caryophyllia smithii*, and some extensive encrusting sponges as well as holding the carpet coral *Hoplania durotrix*, very small pink sea fingers, *Parerythropodium hibernicum* (as *P. corallioides*) and some red sea fingers *Alcyonium glomeratum*. The area was photographed and re-photographed in 1985, 1986, 1987, 1988 and 1991. Results of monitoring were summarized in Fowler & Pilley (1992) and no further work was undertaken.

The field trip to the Isles of Scilly by the Porcupine Marine Natural History Society in September 2010 provided the opportunity to re-visit the cup coral monitoring site at Gap Point.

### Methods

The site location transits sketched in 1984 were used to place a shot at 49° 55.43'N, 6° 16.47'W and the diving search for the site was undertaken from there. When the monitoring site was found, it still had a length of blue rope attached in one corner although it was detached from all but one rusty piton. The attachment of the rope was checked and came away from the fixture. The site was photographed using a Nikon 300s camera in a Sea & Sea housing with Sea & Sea YS90 and YS30 flashguns. The image size was 4288 x 2848 pixels. Images were flat-on to the rock face with each image approximately 50 cm high. No framer was used but images were overlapped so that a mosaic could be assembled. The images were matched as closely as possible into a mosaic on a Microsoft PowerPoint slide although counts of corals were undertaken on the original images. Taking account of the comment in Fowler & Pilley (1992) that "the central section of the photo mosaic, which was most consistently covered by high standard of photography ..." and the sketches and images in Fowler & Pilley (1992), a position which would have been approximately where they compared numbers of corals in a 40 x 40 cm area was established. Images were cropped to approximately an area which would have been 40 x 40 cm and the number of corals (*Leptopsammia pruvoti*) were counted first in the area thought to be close to that censused by Fowler & Pilley (1992) and then in other areas of the same size. The 40 cm dimension was estimated from the height of the rock face and the scale provided by the rope (which had been detached and retained). The original images were reviewed on a high resolution screen including enlarging images to search for previously reported species.

Following the work to compare 2010 images with the report in Fowler & Pilley (1991), the original 35 mm slides were inspected at the offices of Natural England in Peterborough. The 1985 set of large quadrat images was identified as the most useful for comparison with those taken in 2010 and the images were scanned into digital copies for later use. The images from 1985 and 2010 were matched as closely as possible and apparent differences noted but as descriptive information rather than any

attempt at precision.

## Results

The shot had been placed on an algal covered reef at c. 16 m BCD. The search for the site was noted as "east and north". The site was a vertical rock face about 1.5 m high terminating in a mud bottom at 23 m BCD. The images taken were successfully made into a mosaic in PowerPoint but that was mainly for illustrative purposes and counts of corals were from separate original images.

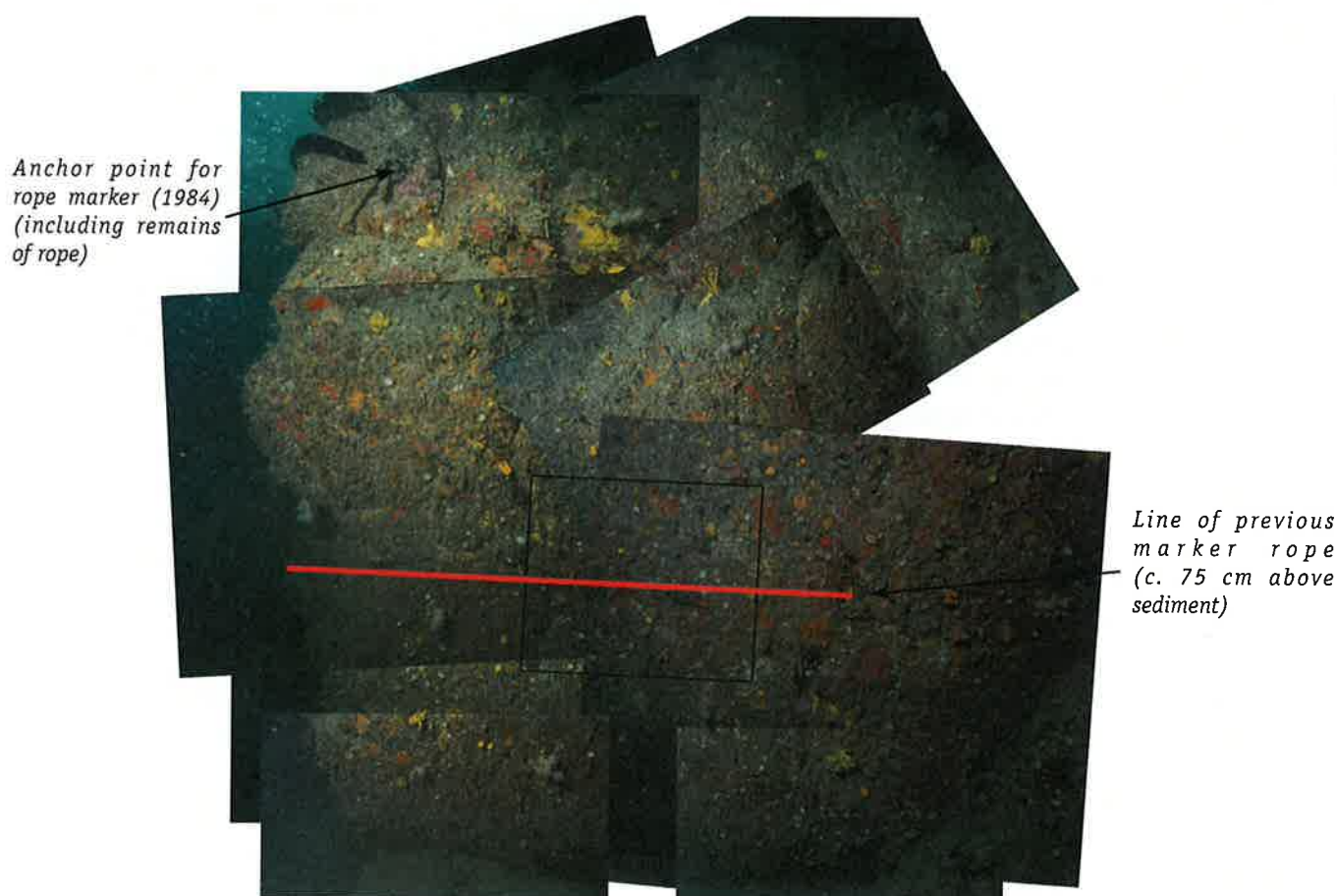
The count of *Leptopsammia pruvoti* in the approximate area of previous comparisons was 15 individuals. The corals included very small (2-3mm across the corallum) individuals. Five areas of approximately 40 x 40 cm were censused and the counts of *Leptopsammia* were 15, 8, 7, 10 and 10: an average of ten per 40 x 40 cm.

Further inspection of all of the images enlarged to be about life size found no *Parerythropodium hibernicum* but possibly one

cluster of *Hoplangia durotrix* in approximately the centre of the photographed area. A variety of encrusting sponges and high density of *Caryophyllia smithii* visually characterized the rock face with scattered small *Alcyonium glomeratum*, a few branching sponges and about two small colonies of *Parazoanthus axinellae*.

Comparison of 2010 images with those taken in 1985 was successful, mainly by matching topographical features (cracks, holes, protuberances) to compare the same locations. However, differing image angles and changes in overgrowth and siltation made comparison sometimes difficult. Several similarities/changes were apparent although it must be emphasized that the results are indicative rather than definitive:

1. encrusting sponges seemed to be similar in extent and location;
2. two *Suberites ficus*, present in 1985 were absent in 2010;



**Plate 1.** Illustrative photo-mosaic for 'Site 1' at Gap Point on 11 September 2010. The matches are not exact and original images were used for counts]

3. one branching axinellid sponge present in 1985 was absent in 2010;
4. there appeared to be less *Cliona celata* in 2010
5. several more *Axinella damicornis* were present in 2010 compared to 1985;
6. there were fewer colonies of *Alcyonium glomeratum* and colonies were smaller in 2010 than 1985;
7. there were three colonies of *Alcyonium digitatum* in the comparable area in 1985 but none in 2010;
8. there appeared to be less *Caryophyllia smithii* in 2010;
9. two 'new' and large *Leptopsammia pruvoti* were present in one image taken in 2010.

### Discussion

The analysis of images undertaken by Fowler and Pilley (1992) revealed 30 *Leptopsammia pruvoti* in the 40 x 40 cm area in 1984 and 25 in 1991, a reduction in quantity of five individuals over seven years. The count of 15 individuals (maximum and in the most likely location to compare) in 2010 suggests that numbers of *Leptopsammia pruvoti* have continued to fall at the Gap Point site and, taking account of the average counts of density, the quantity of corals appears to be one half to one third of what it was in 1984, 26 years previously. The reasons for reduction in numbers are unclear but mortality without replacement is likely. However, several of the corals were very small suggesting that recruitment occurs. Mortality at Lundy (Irving & Hiscock, 2010) seems to be greatly to do with erosion of the skeleton by boring organisms and subsequent detachment, perhaps by foraging fish. An inspection of the mud below the Gap Point monitoring site might reveal evidence of skeletons.

A similar programme of monitoring of cup coral populations has taken place at Lundy starting with the establishment of survey sites in 1984. Further sites were established in some subsequent years and, for the period 1984 to 2007, Irving & Hiscock (2010) concluded, for *Leptopsammia pruvoti*, "These comparisons show dramatic declines in numbers in some

areas but increases in others". One location, censused from images in 1984 and 2009, showed a maximum reduction of 78% of corals. The decline in the quantity of *Leptopsammia pruvoti* at the Gap Point monitoring site is therefore similar to that observed at Lundy although it is not possible to say if there have been increases elsewhere. *Leptopsammia pruvoti* is a warm water species abundant in the Mediterranean and at the northern limits of its distribution in south-west England. Whilst temperature may be an important consideration in ensuring reproduction, other factors such as supply of food, perhaps also encouraging reproduction and growth, might fluctuate on long time scales. Indeed, temperature may not be of fundamental importance to survival and reproduction as the Isles of Scilly experience lower summer temperatures than other parts of south-west England.

The observations of (mainly) decline in other species at the Gap Point monitoring site are reminiscent of the decline in south-western species of anthozoans in particular at Lundy (Hiscock, 2000).

More work could be done to compare what is present at the Gap Point monitoring sites now compared to the late 1980's and that work would help understand the persistence or lack of persistence in species as well as growth rates in some. All too often, what were intended to be long-term studies are replaced by whatever is fashionable survey and they become abandoned or left to hobby-monitoring.

### Acknowledgements

Angie Gall organised the Porcupine field meeting and is thanked for all her hard work. Tim Allsop is thanked for taking us to and positioning the shot at the Gap Point site using 'difficult' transit marks. Jason Hall-Spencer was my 'patient' dive buddy during the dive. Ian Sanderson (NE) arranged for the retrieval of the original slides from TNT Archive Services and Sue Wenlock (JNCC) gave me use of the slide scanner.

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## Sponge Fauna of the Isles of Scilly

Claire Goodwin



Fig. 1 Sponge 'Garden' with Axinellid sponges.

Sponges are a poorly known Phylum; it is estimated that under half of extant species have been scientifically described (Hooper & Lévi, 1994). Identification of species can be difficult as inter-species differences are often small and subtle; this problem is compounded by a lack of identification resources. Circalittoral encrusting species are a particular problem, even in well studied areas such as the UK, as they have not been adequately sampled by the dredging methods used in the past. However, a recent study on Rathlin Island has shown that diving surveys are an effective way of sampling these

habitats (Picton & Goodwin, 2007). This study discovered 29 sponge species new to science and, using underwater photography, was able to record *in situ* appearance which for many species was previously unknown. The current three year 'Sponge Biodiversity of the UK' project aims to sample other areas using the Rathlin methodology and improve knowledge of the UK sponge fauna. This included two weeks sampling in the Isles of Scilly as part of the Isles of Scilly Wildlife Trust's Marine Biodiversity Project.

In total, 20 survey dives were undertaken around the islands and 383 sponge samples collected. Each sponge was photographed *in situ* using a housed digital SLR camera, a small piece of sponge was then removed with a knife and placed in a numbered zip-locked bag. Specimens were preserved in ethanol and on return to the laboratory, tissue sections and spicule preparations were microscopically examined to confirm identification.

The Isles of Scilly, as the southernmost outpost of the UK, have a warmer water sponge fauna than many other UK areas. Sponges appeared to be most abundant at sites of intermediate exposure: whilst strong currents are beneficial to sponge feeding, high wave exposure tends to result in lower diversity. Sites of particular note were the heavily silted 'Ridges' which have a dense, strikingly beautiful, cover of Axinellid sponges and hydroids (including the rare species *Polyplumaria flabellata*). This habitat is likely to represent a previously undescribed hydroid/sponge biotope and is of high conservation importance (Figure 1).

The samples collected are still being examined but some species of note are mentioned below.

### *Axinella flustra*



This species was originally described by Topsent in 1892 from Northern Spain and the Azores, it was subsequently recorded from the Cape Verde Islands by Topsent (1928), in Brittany by Cabioch (1968) and on Guernsey in the Channel Islands (UM records) so is very rare. The only records for Britain and Ireland are from limestone bedrock at 40 m depth at the Aran Islands, County Galway and the Kerry Head shoals, Co. Kerry (Bernard Picton, (unpublished data). Seven specimens were collected in the Isles of Scilly, this represents a new record for the UK.

#### ***Endectyon delaubenfelsi***



Originally described from Plymouth (Burton, 1930). Rarely recorded in the UK, this species has a southern distribution with records from Plymouth (type locality), the Channel Islands and France. Specimens were collected from Tonkin's Ledge, St Martin's, Isles of Scilly.

#### ***Tedania* species**



Two species of *Tedania* were recorded from the Isles of Scilly. Both were thinly encrusting.

There are currently no species in this genus on the British list. One species is similar to *Trachytedania ferrolensis*, recently described by Cristobo & Urgorri (2001). The type specimen needs to be examined to see if this identification is correct. It has so far only been recorded from Galicia in NW Spain. The other species does not have the abundant acanthostyles typical of *T. ferrolensis* and possibly belongs to a distinct sub-genus. Other unidentified *Tedania* species have recently been recorded from Pembrokeshire, Lundy Island and Dorset.

#### **Acknowledgements**

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Images: Photographer for all Claire Goodwin.

## **Resurvey of an Underboulder Monitoring Site at English Island Point, Isles of Scilly, September 2010**

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### **Introduction**

In 1983 (30<sup>th</sup> March), the Field Studies Council was commissioned by the Nature Conservancy Council to undertake surveys of rocky shores in the Isles of Scilly (Hiscock, 1984). Underboulder communities at six sites, including at English Island Point on St Martin's, were censused and the abundance

of taxa recorded. The number of separate boulders inspected was not recorded. In the following year, an underboulder monitoring site was established at English Island Point (Hiscock, 1985) and species listed for each of five boulders although without any indication of abundance. The underboulder sites were not surveyed subsequently.

The field trip to the Isles of Scilly by the Porcupine Marine Natural History Society in September 2010 provided the opportunity to re-visit the boulder area at English Island Point.

### **Methods**

The area that had been investigated on 26<sup>th</sup> September 1984 was re-located from photocopies of boulder location photographs in the report of the work (Hiscock, 1985) although it was not possible to identify the exact boulders censused in 1984. Six boulders were surveyed on 10<sup>th</sup> September 2010 and their positions were recorded on photographs

*Plate 1. The boulder field at English Island Point with location of boulders surveyed. The position of boulder 5 is approximate. For re-location of each boulder, separate images are available.*



that should enable re-location. Species present were noted *in situ* and images were taken of many of the species. Only animals were systematically recorded. Approximate abundances were noted according to the SACFOR scale (Connor & Hiscock, 1996) but not systematically and, as noted in the 1983 survey, the scale is not designed to work on small areas. As a part of preparing this report, images were inspected and additional species to those noted during shore work were recorded.

## Results

Table 1 lists the taxa recorded in 1983, 1984 and 2010. Images are retained by the author and are also stored in Marine Life Information Network (MarLIN) files at the Marine Biological Association.



Plate 2. Species under Boulder 6. Most conspicuous are the sea anemone *Actinia equina*, spirorbis worms, the scale worm *Alentia gelatinosa*, the encrusting bryozoan *Turbicellepora magnicostata*, the cushion star, *Asterina gibbosa*, the spiny starfish *Marthasterias glacialis*, the brittle star *Ophiothrix fragilis* and the green sea urchin *Psammechinus miliaris*.

*Spirorbis tridentatus*, *Turbicellepora magnicostata*, encrusting sponges, polyclinid tunicates, didemnid tunicates and several species of unidentified encrusting bryozoans were the most consistently present species under boulders but some species including amphipods, porcelain crabs, *Cancer pagurus* and *Xantho incisus* that might have been expected to be consistently present were not.

Forty-four taxa were recorded in 1983 and 1984 whilst 58 were recorded in 2010, but it appears that fish living under boulders (there were four in 2010) may not have been reported in 1983/84. The 1983 survey was

the most thorough for identification of taxa as 'difficult' species were clearly brought back for identification. Species that were found under one boulder but not others were of similar status in the 1980's and 2010.

The similarity in abundance and frequency of occurrence under separate boulders of species between 1983/4 and 2010 is high and it is notable that, most likely, differences are due to fluctuations in occurrence of particular species or the patchy occurrence of particular species on different boulders. It is felt that the higher number of taxa recorded in 2010 is the result of a larger team of sharp eyes on the seashore than in 1983 and 1984.

Notably, *Scrupocellaria* sp(p) was not reported in 1983/4 but was conspicuous in 2010 whilst *Dynamena pumila* was reported in 1983 but not in 1984 or 2010.

In addition to animals recorded, the overhanging surfaces often had patches of encrusting Corallinacea (pink crusts) with tufts of *Corallina* sp. and the edges of shaded areas were fringed with *Chondrus crispus*.

The shore was remarkable for the high abundance of the anemones *Anthopleura ballii* and for significant numbers of *Aulactinia verrucosa*. *Anemonia viridis* was 'everywhere' near to low water.

There were no non-native species recorded, but *Corella eumyota*, a non-native ascidian, was recorded for the first time in Scilly under boulders in St Mary's Harbour in 2009 by the author and may occur at English Island Point in the future.

**Table 1. (opposite)** Taxa recorded from under boulders at English Island Point in March 1983 (overall abundance SACFOR), September 1984 (Present, 5 boulders) and September 2010 (SACFOR, boulders 1 - 5).

Taxon	1983	1984	2010						Notes #
			1	2 (over- hang)	3* (over- hang)	4 **	5 ****	6	
<i>Grantia compressa</i>				0	0				
<i>Leuconia (Leucandria) nivea</i>				F	F		F		
<i>Halichondria ?bowerbankii</i>				F	0				
? <i>Hymedesmia</i> sp.						P	P		
<i>Myxilla incrustans</i>						Patch			
<i>Terpios fugax</i>								Small patch	
Porifera indet. (orange encr.)	0	+					x1		
Porifera indet. (yellow encr. slimy)		+					P		
<i>Dynamena pumila</i>	F								
<i>Corynactis viridis</i>					C				
<i>Cereus pedunculatus</i>									Present elsewhere
<i>Actinia equina</i>		+	x2	x1	0			x1	
<i>Aulactinia (Bunodactis) verrucosa</i>		+							Present elsewhere
<i>Urticina felina</i>	R			x 1					
<i>Anthopleura ballii</i>						x2	x1		
<i>Sabellaria spinulosa</i>	R								
<i>Spirorbis tridentatus</i>			C	P		A	A	A	
Spirorbinidae indet	A	+							
<i>Hydroides norvegica</i>	R								
<i>Pomatoceros triqueter</i>	R	+				0		x2	
Aphroditidae indet		+				x1	x1	P	
<i>Alentia gelatinosa</i>						x1	x1	x1	
<i>Eulimnogammarus obtusatus</i>	P								
Amphipoda indet	P	+					R		
<i>Verruca stroemia</i>								x1	
Paguridae indet								P	
<i>Galathea squamifera</i>	C	+	x 1	x1		P	0	x2	
<i>Idotea</i> sp.							x1		
<i>Cymodoce truncata</i>	A								
Sphaeromatidae indet							x1		
<i>Necora puber</i>		+			x1		x1	x1	
<i>Cancer pagurus</i>	0							x2	
<i>Xantho incisus</i>								x3	
<i>Porcellana platycheles</i>	F	+					F		
<i>Pisidia longicornis</i>	C	+					0		
<i>Nymphon gracile</i>								x1	
<i>Trivia monacha</i>	R					x1			
<i>Trivia arctica</i>		+			x1				
<i>Calliostoma zizyphinum</i>	F	+	x 1	x1				x1	
<i>Gibbula cineraria</i>	C	+	x1	x1		P	x5	F	
? <i>Rissoa</i> sp.			P				F		In images
<i>Nassarius (Hinia) incrassatus</i>	0	+							
Rissoidae indet		+	P						
? <i>Berthella plumula</i> (small)									Present elsewhere
<i>Archidoris pseudoargus</i>	R								Present elsewhere
<i>Aeolidea papillosa</i>	R								
? <i>Chlamys</i> sp.		+							
<i>Hiatella arctica</i>	R								
<i>Modiolus modiolus</i> (juv.)	0								
<i>Rostranga rubra</i>	R								
<i>Turricellepora magnicostata</i>	C	+		F	F	C	P	0	
<i>Umbonula littoralis</i>	F								
<i>Scrupocellaria</i> sp(p)			F	A	C	R			
Bryozoa indet. encr	A	+	S	0	C	F	C		2 spp under 1
<i>Ophiothrix fragilis</i>	F	+				x1	P	0	
<i>Ophiocomina nigra</i> (juv.)							P		
<i>Asterias rubens</i>	R								
<i>Asterina gibbosa</i>								x2	
<i>Luidea ciliaris</i>	R								
<i>Marthasterias glacialis</i>		+		x1	x1	x1		x1	
<i>Psammechinus miliaris</i>	0					x1	x1	x3	
<i>Clavelina lepadiformis</i>					x1			One group	

Taxon	1983	1984	2010						Notes #
			1	2 (over- hang)	3* (over- hang)	4 **	5 ***	6	
<i>Botryllus schlosseri</i>	F	+	x1	x1	0	x1			
<i>Botrylloides leachi</i>			F				x1	F	
<i>Lissoclinum perforatum</i>								P	
<i>Didemnidae</i> indet.	C	+	F	0		F	F	F	
<i>Polyclinidae</i> indet. (red)			F	F	F			x1	Identified to species in '84
? <i>Aplidium pallidum</i>		+	P	0					
<i>Morchellium argus</i>	P								
<i>Sidnyum turbinatum</i>	P								
<i>Ascidia</i> ? <i>scabra</i>						x1		x2	
<i>Nerophis ophidon</i> (worm pipe fish)									Present elsewhere
<i>Pholis gunnellus</i> (rock gunnel)									Present elsewhere
<i>Ciliata mustela</i> (five bearded rockling)									Present elsewhere
<i>Lotidae</i> indet. (rockling)								x1	Present elsewhere

# "present elsewhere" refers to other underboulders

\* Seaward of Boulder 2

\*\* circa. 4 m east of boulder 3. Location image is taken from B3

\*\*\* at extreme low water (+0.3 m predicted)

### Acknowledgements

The boulder shore at English Island Point was surveyed by, apart from the author, Kathryn Birch, Ben Cowburn, Mark Hubble, Paula Lightfoot, Judith Oakley, Rebecca Oliver and Victoria Whitehouse. Thanks to Dr John Bishop for identification of some of the species from images.

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## Information Requests and Observations



### Zulus at 28m!

Jason saw them, I photo'd them. There were six of them. We were diving at a location east of St Mary's in the Isles of Scilly during the Porcupine field trip. *Capros aper* (most commonly called boarfish) normally occur deeper than about 40m. They seem to be becoming more common in the NE Atlantic and spawning aggregations off SW Ireland are now a targeted fishery – for fishmeal. The Irish fleet landed 600 t in 2004 and 21,584 t in 2008. Individuals live for up to 26 years and become sexually mature at just over five years.

So, why 'Zulus'? – I asked the MBA's Laboratory Steward– the answer "it's what the fishermen call them because there are f'n millions of them". Well, perhaps not for much longer.

For more information, see:

White, E., Minto, C., Nolan, C.P., Mullins, E. & Clarke, M. 2011. First estimates of age, growth and maturity of boarfish (*Capros aper*): a species newly exploited in the Northeast Atlantic. *ICES Journal of Marine Science*, **68**, 61-66.

Keith Hiscock

### Porcupine on Facebook

It might not be everyone's cup of tea but online social networking is most certainly becoming more than just a useful way of staying in touch with friends and colleagues. It can be used to pass on information, market new ideas and businesses and share experiences.

Recently Hugh's Fish Fight, a campaign aiming to diversify fish eating habits and rewrite the Common Fisheries Policy, included a series of programmes on Channel 4. It has a comprehensive web site with links to

various conversation organisations such as MCS (Marine Conservation Society) and WWF (World Wildlife Fund) and detailed information on how to lobby your MP. The web site also promotes followship of the campaign by using Facebook and Twitter. It is a great way of keeping the campaign alive within the population of Facebook and Twitter users and can also help to spread the word to non users as more individuals talk about what they are reading and connecting to when online.

MCS is also very active on Facebook providing updates on their activities, highlighting relevant news snippets, promoting voting on their "Your seas your Voice" campaign and advertising when and where the next beach clean up is planned.

Porcupine also has its own Facebook group and is used by members to announce up and coming events such as the conference in March, discuss articles and other snippets of info that members might find interesting or useful and even post photos of previous Porcupine field trips. So perhaps when you are next online you could take a minute to check out the Porcupine website (<http://www.pmnhs.co.uk/>) and if you are a Facebook user come and join the group!

Vicki Howe

### Porcupine Newsletter Prize

A prize will be awarded to the best article published in the newsletter by a student or amateur enthusiast (i.e., not professionally employed in the marine field), as judged by a subcommittee of the Council. The prize will be awarded once a year and consist of £50, plus 1 year's membership.

There are no exclusive themes. An article could be on a project or thesis you are working on; a visit or field trip you have made to a shore or dive site; a particular marine organism you are interested in and have been researching (in the field or desktop) etc. There are many examples you can draw on for inspiration in past newsletters.

To be considered for the prize, please make

your status clear on submission of your article to the Honorary Editor – Vicki Howe, [viks@sun-fish.co.uk](mailto:viks@sun-fish.co.uk)

For Instructions to Authors please see <http://www.pmnhs.co.uk/files/instructionstoauthors.pdf>

The PMNHS looks forward to your contributions.

We are grateful to Frank Evans for his suggestion that a prize be created.

### Let's talk about the weather!

While I write this, we are once again in a cold snap. December proved to be the coldest on record in many places, with inland temperatures dropping to -20°C. Of course, our coasts do not experience the full chill owing to the warming effect of the surrounding sea (4° - 9°C). Nevertheless, all the invertebrates and algae of the intertidal zone have experienced numerous consecutive hits of down to -4°C on each low tide during the frosty spells. In sheltered bays, small amounts of ice on the shore will have scraped at the rock and sediment surfaces, dislodging as they go. The winter of 1962/63 has always been the benchmark for cold winters in modern times (1946/47 being another one, but most of us don't remember that one!). Despite the extreme temperature records being broken this winter, the 1962/63 winter saw extensive and continual freezing conditions that resulted in ice floes on the Menai Strait. So, will we see the death of masses of worms and bivalves from the lower shore and shallow seas, and the geographic 'retreat' of southerly distributed animals and plants, such as the toothed top shell *Osilinus lineatus* as a result of this winter's conditions? Annual surveys of the intertidal fauna and flora by the Marine Biological Association should provide us with the evidence of the changing distribution of sensitive species. Other, one-off observations of stranded bivalve shells and other organisms can be valuable in recording mortalities in our near shore waters, so send in your casual observations to Porcupine (you will find contact details on the web [www.pmnhs.org.uk](http://www.pmnhs.org.uk)). Of course, we can rarely confirm the

causes and effects in the marine environment, with so many variables in environmental conditions but the more information available, then the better our understanding. The ecology of our marine species is not simple and the feedback processes and consequences of a cold winter are likely to vary between species as well as between locations. Whilst the cold temperatures may be lethal to some species, the same cold permits other creatures to over-winter better, by reducing the metabolism and therefore the demand for food in a period of low food supply.

Paul Brazier

### The Big Seaweed Search

Unlike flowering plants, seaweeds have never attracted a large amateur following, but is this about to change? The Big Seaweed Search, a UK-wide public-participation survey is inviting everyone to take a closer look at this rather unloved group of organisms. The Big Seaweed Search not only aims to get more people interested in seaweeds but will also gather data on a wide scale to find out what is happening to some of the UK's most conspicuous species. Why not give it a go yourself?

The Big Seaweed Search has been developed by the Natural History Museum and British Phycological Society as part of OPAL, a Big Lottery Fund initiative that aims to get everybody involved in exploring, studying and enjoying their local environment ([www.OPALexplorenature.org](http://www.OPALexplorenature.org)).

#### How does the survey work?

First you need to get hold of a survey guide, either by downloading one from our website or requesting a splash-proof copy from us (details at the bottom of this page). The survey asks people to go for a walk along their chosen seashore at any time of the year and to record 12 kinds of seaweed. These include:

- the intertidal brown seaweeds: *Pelvetia canaliculata*, *F. spiralis*, *F. vesiculosus*, *F. serratus*, *Ascophyllum nodosum* and *Himanthalia elongata*,
- species which may be decreasing or at the edge of their range: *Bifurcaria bifurcata*

(southern), *Alaria esculenta* (northern) and *Saccharina latissima*,

- a non-native: *Sargassum muticum*,
- *Corallina* species, of interest in relation to ocean acidification, and
- *Ulva* species, much in the news recently because of huge quantities washed up on some beaches and releasing hydrogen sulphide during their decomposition.
- Participants are also asked to count the number of limpets they can find in 1 minute. There is evidence that some of the large brown algae may be disappearing from our shores and that this might be related to warmer winters and the overwintering of grazers, preventing the establishment of algal sporelings.



Searching for seaweed at the Mothecombe BioBlitz in June 2010, ©OPAL

Participants can enter their results online, or post them in. All data that are received will be added to a live online map and regular updates on the findings are given on the website.

The Big Seaweed Search results so far have focused mainly on the south west of England and Wales. We are keen to get more people taking part across the country to help gather data from around the whole of the UK – the more people that take part, the more we can learn.

### Get to know your seaweeds

Until recently, a major problem for the identification of seaweeds was the lack of common names for the majority of species, making it harder for beginners to get involved. This problem has now been tackled by the publishing of a new book, the Seasearch Guide

to Seaweeds of Britain and Ireland by Francis Bunker, Juliet Brodie, Christine Maggs and Anne Bunker, which includes common names for over 200 species. The widespread use of common names will make a huge difference to people's perceptions of seaweeds and their eagerness to get involved. So now, two resources are available to those interested in this group – the Big Seaweed Search as an easy introduction to the group, then the Seasearch Guide for those that want to take their interest a little further.

### Take part!

The Big Seaweed Search is designed to be simple to carry out and is suitable for a wide range of ages and abilities. Find out more about the project and see the results so far on the Natural History Museum's website, [www.nhm.ac.uk/seaweeds](http://www.nhm.ac.uk/seaweeds). For more information or to **request free survey guides**, please email [seaweeds@nhm.ac.uk](mailto:seaweeds@nhm.ac.uk).

## Barnacles by A. J. Southward (2008)

*Synopses of the British Fauna (New Series) No. 57, 140 pp., Fields Studies Council, ISBN 978 1 85153 270 4. £29.50*

*Book review by Frank Evans*

*frankevans@zooplankton.co.uk*

*Synopses of the British Fauna (New Series)  
Edited by J. H. Crothers and P. J. Hayward*

No. 57

### Barnacles

A. J. Southward



*Published for  
The Linnean Society of London  
and  
The Estuarine and Coastal Sciences Association  
by  
Field Studies Council*

Shortly before his death in 2007 Alan Southward completed the manuscript of his "Barnacles" for the well-known Linnaean Society and Estuarine and Coastal Science Association series. In a newspaper obituary for him the booklet was described as the definitive book on the subject. While there may be some truth in this, barnacles are a heavily studied group and there are many authoritative publications on the several aspects of their lives. If there should be a claim to be the definitive barnacle book it must surely be the two masterly volumes by one C. Darwin, published in 1851 and 1854.

Nevertheless, this is an authoritative work. There are many handbooks that include descriptions of the barnacles of our shores and

shallow seas but this is a more than adequate addition, undoubtedly the best for general identification of British barnacles that there is. It is the first to bring together comprehensive keys and drawings of individual British species combined with accompanying photographs, together with colour pictures of their tergo-scutal flaps, a useful feature for species recognition. Representation of flap colours first appeared in 1963 in a somewhat obscure document of Southward and Crisp on marine fouling and, being now long out of print, it leaves a space for the present account.

In Southward's booklet, reference is usefully made to an exhaustive list of original publications, those of Darwin and of Pilsbury (1916) being, of course, among the classical prints. The booklet opens with an introduction, followed by two dozen pages describing sampling methods, the morphology and physiology of the animals, feeding, life history, outlines of the commoner nauplii and a word on fouling. This is a most useful section, well constructed and well illustrated with drawings and photomicrographs, although readers wishing even more detail should turn to D. T. Anderson's account within hard covers, his "Barnacles: Structure, Function, Development and Evolution" (1994). Additionally, the booklet ends with an informative glossary.

In presenting the species list of British barnacles which occupies the major part of the work, Southward notes that worldwide there are 203 extant genera of Cirripedia (comprising the Thoracica, or "barnacles" to us, the Acrothoracica, those boring into shells, and the Rhizocephala, parasitic on other crustaceans). Of these worldwide genera, 42, comprising 66 species, are British.

Some are, in truth, only British by default, including those found on whales and turtles. Among the Lepadids perhaps only the floating *Dosima fascicularis* breeds locally although drifting currents quite frequently bring species of *Lepas* to our shores. Southward notes that at 20°C *Lepas anatifera* requires over two months to reach the cypris stage and so must find our summers uncongenially chilly. On the other hand in the tropics, with a sea temperature of 25°C, I have recorded this species settling on a ship's hull and bearing

advanced embryos within thirty days. On the same hull sessile *Amphibalanus amphitrite* from a tropical harbour settlement quickly died at sea and were replaced by pedunculates. I am not certain what the best conditions for immigrant sessile barnacles on ships' bottoms may be. Clearly, they do sometimes survive challenging sea passages and we have seen tropical and subtropical barnacles, for instance *Amphibalanus amphitrite* itself, introduced by ship fouling to our shores. This species once flourished in the warm waters of British power station cooling ponds. It was said that during the period that the Shoreham power station was discharging cooling water into Shoreham docks the young would settle on the Brighton piers each summer only to die off in the winter, while the core population survived in the heated Shoreham enclosure.

A more difficult puzzle concerns *Elminius modestus*. This is an Australasian temperate water barnacle whose arrival and spread in British waters has been well recorded. It was first noted in Chichester Harbour in 1945 but had probably arrived between 1940 and 1943. Southward suggests that the institution of convoys may have facilitated its arrival here but it is hard to see how this may have been. Convoys were of necessity always slower than all except the slowest ship in the group and they spent much time assembling. Convoys from Australia did not travel directly to the UK but paused to regroup at, for instance, Aden and Suez. Naval ships were more likely to be implicated, travelling faster and in small numbers. On the other hand it has been ingeniously suggested that flying boats may have been the responsible vector, an intriguing idea. However, there is also a difficulty here, as around 1940 the journey was not normally made by a single plane, a transfer from a BOAC flying boat to an Australian Qantas craft being made in Singapore. On the other hand the home port for flying boats was Southampton, close to Chichester. The matter remains open.

Once arrived, *Elminius* found the surroundings to its liking and has spread almost all the way round Britain leaving a gap of indefinite extent around Aberdeen. It has quietly displaced its native counterparts, mostly modestly, mostly on the upper shore. It is one of the

least damaging immigrants to arrive in this country.

Our intertidal is still largely dominated by *Semibalanus balanoides* and *Chthamalus* spp. Southward does not offer the synonym *Balanus balanoides* for the former species and there is no indication of the passionate debate that raged over this name thirty years ago. In a letter to me in 1980 the late Dennis Crisp wrote that he was glad that in my publications I had kept to the well known generic name of *Balanus* as used by Darwin and had not fallen for *Chirona*, *Solidobalanus*, *Semibalanus* and the like, employed by the modern genus generators. Nevertheless the new genera have been supported by Southward in this booklet and are now largely accepted.

More importantly, older marine biologists, having believed that there was but one British species of the shore barnacle *Chthamalus*, must now learn to distinguish between two. It is to the eternal credit of Alan Southward that the species he named in 1976 *Chthamalus montagui* had been overlooked for a great many years by a great many experts before he distinguished it from *Chthamalus stellatus*. It must be said, however, that the differences are not easily perceived and some practice is required for an assured identification. But here as elsewhere the present booklet is of very great help.

Southward merely lists the parasitic Rhizocephala together with their hosts, but gives full treatment to our two Acrothoracicans, the boring barnacles. They belong to a group which is particularly associated with Darwin. Darwin brought home a member of this order from his great voyage and puzzled long over it. The story is well told by Rebecca Stott in her "Darwin and the Barnacle" (2003). At the same time Albany Hancock in Newcastle was puzzling over the related British species *Trypetesa* (= *Alcippe*) *lampas*. Darwin and Hancock corresponded, particularly over the presence of a dwarf male in each species, but it was not until 1905 that the group was correctly classified by Gruvel and named the Acrothoracica. Earlier in the booklet Southward reproduces Darwin's drawing of the pedunculate *Scalpellum scalpellum*, our other

indigenous species bearing dwarf males.

To be sure of correctly naming the commonest British barnacles as well as to identify some of the more obscure ones Southward's booklet is of the greatest value to the marine naturalist and is warmly recommended.

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## Sea Spiders (Pycnogonida) of the north-east Atlantic: Keys and notes for the identification of the species

Roger N. Bamber (2010)

*Synopses of the British Fauna (New Series) No. 5 (Second Edition), 249 pp. Field Studies Council, Shrewsbury. ISBN 978 1 85153 273 5. £37.50*

*Book review by Andy Mackie*

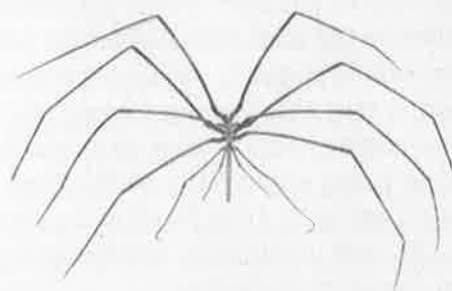
This new edition of synopsis 5 is a substantial update and expansion of P.E. King's *British Sea Spiders*, published by Academic Press in 1974. That first edition contained 68 pages

Synopses of the British Fauna (New Series)  
Edited by J. H. Crothers and P. J. Hayward

No. 5  
Second Edition

## Sea-Spiders (Pycnogonida) of the north-east Atlantic

Roger N. Bamber



Published for  
The Linnean Society of London  
by  
Field Studies Council



and covered 6 families, 7 genera and 21 species in British and Irish waters. It was a very useful publication and an essential reference work for any benthic laboratory. However, as pointed out in a critical review by R.N. Bamber (1980), the publication was of limited scope – comprising only those species “likely to be found in the littoral and near-littoral” and the distribution maps were suspiciously representative of the distribution of British marine laboratories.

So, how does the critic's own contribution weigh up? Very well indeed, though the volume has expanded rather more than the “dozen or so extra pages” thought necessary (in 1980) to include all pycnogonid species reported from British waters! To be fair, the depth range and geographical coverage of the new work are both greatly expanded in the second edition: “all depths from the north-east Atlantic, east of the Mid-Atlantic Ridge, south of the Wyville Thompson Ridge, and north of the Azores Fracture Zone and of the entrance to the Mediterranean (thus >38°N).” This is

a good thing. The inclusion of species from nearby sea areas and deeper waters may seem odd for a guide to the 'British Fauna', but this will aid its longevity and usefulness. Some of these species will undoubtedly turn up in British continental shelf investigations, or during research studies or commercial surveys in continental slope and deep-sea areas. In addition, note that the author lists (p. 232) a further 36 species from neighbouring NE Atlantic areas.

The synopsis now includes 11 families, 23 genera and 84 species. The most recent species (*Sericosura conta* and *Anoplodactylus amora*) were described within a year of this publication (Bamber, 2009, Mackie *et al.*, 2009; Bamber & Costa, 2009). It is therefore a very up-to-date and expert guide to this fascinating group of arthropods. The text usefully points out the depths in which the species may be found, and gives notice of the 52 species not yet recorded from British shelf waters.

The first thing the user notices, apart from the volume's greatly increased thickness compared with the original, are the plentiful drawings. Each species is illustrated with drawings of the whole body (dorsal view), at least one leg, and proboscis, chelifore/chela, palp, oviger, distal leg article (propodus) as appropriate for identification purposes. Lateral whole body, or anterior, views are provided in a number of cases, as are figures demonstrating features unique to one sex. Arrows are sometimes added to highlight particular important features. One small thing I noticed was that the figures are a little inconsistent, occasionally so on the same page. This is probably because drawings have been inked at different times, and scaling, line thicknesses and styles have differed. In a few cases some fine details of setae and spines on certain leg articles have merged together and appear blurred.

The synopsis follows the usual style for the series. The introductory sections provide thorough overviews of morphology and terminology, biology, ecology, zoogeography and classification. Each species spans two pages; the description occupies the left page, with the figures on the right. The sectioned layout of the descriptions (body, proboscis, ...

distribution, depth range) makes them easy to read and use in comparison. Three categories of identification key are provided: 1. A key to families, 2. A key to British species from depths shallower than 200 m, and 3. Separate keys to the species of each family. The first two follow the classification checklist. Keys of the third category are placed throughout the synopsis, immediately following each family diagnosis.

Having relatively limited experience with the identification of pycnogonids, I tested the keys with 6 shelf species (identified by Bamber) from the collections in National Museum Wales. All keys worked very well; the thumbnail drawings that accompanied the keys helped keep me on the right track. Perhaps unsurprisingly, I found the key to the shelf species the most efficient to use for the test specimens. There was more scope for error using the initial family key followed by an appropriate species key; simply because the latter had more species and more couplets in which to make errors. That said, the mistakes I made with two species were down to my own misinterpretations of specimen morphology (e.g., miscounting palp articles), rather than inadequacies in the keys. As all taxonomists and identifiers know, it is wise to double-check one's initial interpretations of morphological features.

The new edition is rather more expensive than the first (which was £1.75) but is, in my opinion, worth every 'penny'. My criticisms are minor when considered alongside its overall excellence as a taxonomic guide. This **is** certainly an essential reference book for all North-East Atlantic marine laboratories or, in truth, anyone interested in identifying sea-spiders.

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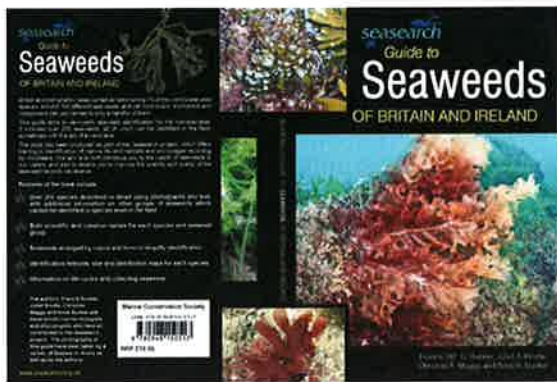
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### Seasearch Guide to Seaweeds of Britain and Ireland by Francis Bunker, Juliet Brodie, Christine Maggs and Anne Bunker.

2010. Marine Conservation Society, Ross on Wye. £16.95 (discounted to £14.50 by the MCS and Seasearch!)

Book Review by Paul Brazier



This new addition to the series of Seasearch Guides to Marine Life, once again, hits the mark and breaks new ground in the endeavour to observe, record and identify successfully marine species. The seaweeds (marine macroalgae) have too often been considered "that wavy brown red and green stuff that gets in the way". Well not any more, the combined efforts of Bunker (x2), Brodie and Maggs have provided us with a magnificent guide that includes new and exciting common names, precise text, distribution map and colour photographs to well over 200 seaweeds. As usual, the boundaries are not strictly to diving ranges (i.e. subtidal), nor to Britain

and Ireland, with some examples of seaweeds that are well placed on the Iberian Peninsula and French coasts.

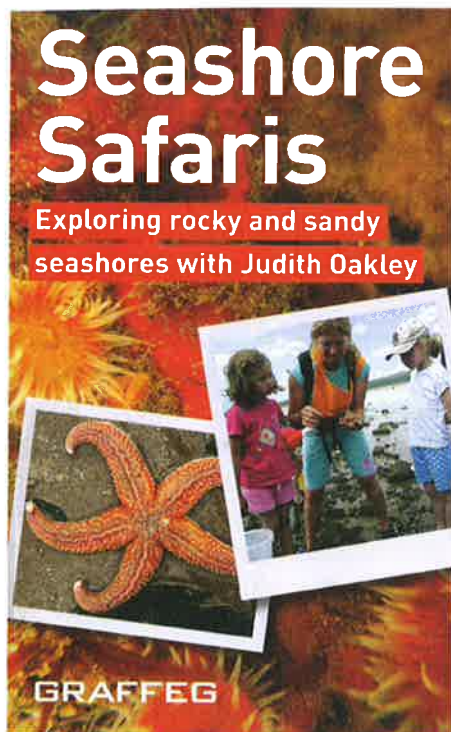
The guide has some useful opening chapters explaining the guide layout, terminology that is largely specific to algae that are used in the text and seaweeds life histories. The text strives to be jargon free and therefore easily digested, but where necessary, certain terms are explained well, to provide clarity, when describing features of the different species of seaweed. The guide is partitioned into the main divisions, namely the red, brown and green seaweeds. Within each of these, the seaweeds are sub-divided into meaningful groups such as 'chalky reds', 'flat reds with veins', 'slippery reds', 'brown jelly weeds', 'hairy browns', 'feathery greens' and so on. Up-to-date naming runs throughout the guide, taking scientifically accepted scientific names, whilst drawing upon some ancient and more recent texts to assign common names. Some common names have been derived from the full interpretation of the scientific name, such as *Griffithsia devoniensis* – Mrs Griffiths's Devon Weed, others from their character such as *Nemalion helminthoides* – Noodle weed and others from names in popular usage such as Laver – *Porphyra* spp. What really brings this guide into its own, are the quality of well-chosen images that depict the seaweed in its natural setting, whilst illustrating the key features. I must stop now; I feel the need to visit some lower shore rockpools for a spot of weed-watching!

## Seashore Safaris: Exploring Rocky and Sandy Seashores with Judith Oakley.

GRAFFEG 2010 ISBN: 9781905582334

£9.99

*Book review by Frances Dipper*



I like this little book. It's colourful, informative and accurate and definitely the right size to put in your beach bag or rucksack. Just the sort of book to encourage beach visitors, their children and friends to take an interest in the amazing habitat they are walking over, lying on or crossing over to get into the sea! This is not just a spotter's guide but aims to get people **exploring** the seashore, looking in the right places for the right things: the green glint of breadcrumb sponge under overhangs or flapping squat lobsters under boulders (and yes she does tell us to turn the rocks back). It is not an all-inclusive field guide but is just right for the non-specialist and has some useful reminders and tips even for well-matured Porcupiners!

All the main groups of animals and seaweeds are covered with simple, clear text introducing each group or habitat and the main players. Photographs of the seashore residents in their natural habitats are Judith's passion, as I came

to realise on the Porcupine field trip to the Isles of Scilly in September last year. Here Judith could be seen upright (occasionally) or flat out (frequently) photographing and documenting the rich marine life of these shores. In the book, her photographs have been used imaginatively with one photograph forming the background to each spread and close ups overlaid in the appropriate places, making it very easy for a beginner to know where to look for particular finds. I especially liked "Who laid these eggs?" with the corresponding culprits shown on the next page. The section on Conservation provides a nice balance of the downside (problems) and the upside (interesting things you can actually DO to help).

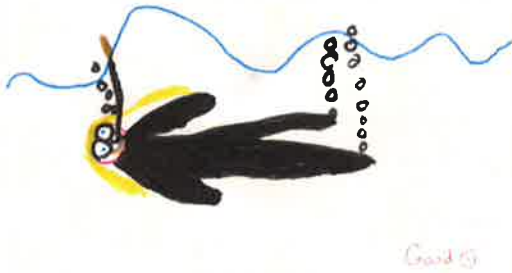
There are of course a few minor niggles – no book is perfect! Judith obviously has the same problem with her spell checker as I do; it always uses 'barbells' instead of 'barbels' even when set on English not American! I would have liked to see more warnings about confusion between species. For example the sand goby entry has no reference to other extremely similar gobies that occur on the seashore and the shore rockling could have been mentioned with the five-bearded rockling (yes I know text space is tight!).

I will definitely be using this book when I take Seasearch and other groups out onto the shore. Hopefully it will also find its way into many coastal nooks and crannies such as National Trust shops, RSPB and Wildlife centres and Porcupine pockets or their children's and grand children's pockets.

## How I became a marine biologist

Angie Gall

tomorrow the future  
when I grow up I'm going  
to be a marine biologist



As a child my life followed the same pattern each year – endless summers spent camping in the Isles of Scilly and then seemingly endless school term times spent longing to get back to the islands. All the years merge into one, as each year we always visited St Martin's, camped in the same spot, ran around with the same children and entertained ourselves in the same way. St Martin's campsite is right next to the beach and I have some very early memories of running over the soft white sand and down to the shore. St Martin's flats are a huge area of intertidal sand flats stretching right out to Guthers Island on a big low tide and they are a fascinating area to explore, they are a SSSI (not that I knew that at the time!). So turning over rocks and poking about with nets was a major summer pastime for me. I liked to follow my parents when they were shrimping on the flats and look at all the other creatures that got caught in the net. One warm, idyllic summer's day we caught an enormous sea hare in the net, I needed two hands to hold it, I had no idea what it was. By a stroke of luck there was a group of marine biology university students out on the shore and I was able to rush up and show them the sea hare. From that point on, I knew what a marine biologist was and I had no intention of growing up into anything else!

My dad has always been a keen diver and encouraged me by getting me a tiny drysuit

at the age of 13 (which I never actually grew out of!) and holding my hand as I took my first ever dip in Tean Sound in Scilly. At first I was nervous and distracted by clearing my ears but on my second dive out by the Eastern Isles a playful silvery juvenile grey seal came to play with me for the entire dive – with that kind of welcome to the underwater world I became completely hooked. The next year I did a BSAC course and started to get some qualifications. Before long I was applying to universities to study marine biology and to find out what it was really all about. I went to Newcastle University which I loved so much that I ended up staying there to do a Masters as well. We had lab and field sessions out on the coast at the Dove Marine Lab at Cullercoats and we got a chance to go on the University's research vessel, the *Bernicia*. As well as that there was great diving within striking distance at the Farne Islands and St Abbs. Our memorable field trip was to Millport Field Station in Scotland where I designed an experiment that involved watching shore crabs for hours – just what I'd always wanted to do.



During my Masters year I had the chance to study juvenile fish in seagrass in Belize as

part of a larger project looking at fish nursery habitats on the Mesoamerican Barrier Reef and its atolls. Belize is a fantastic country to work in and the reef is the second longest in the world. Soon after university I was back there and I stayed out there for another two years working in marine conservation. My main interest was manatees (which of course eat seagrass) and I got involved in a long term study of the manatees of Belize which involved satellite and radio tracking as well as twice yearly 'captures' when we caught and released wild manatees to give us a chance to take all sorts of data about their health and to attach the tags. It takes about 20 strong people to catch a wild manatee in a lagoon so it was a very exciting project to be involved in. I also worked on the goliath grouper, a fish that can grow to 2.5 metres in length and has been so overfished that it is now Critically Endangered worldwide. We were looking at their use of mangroves as nursery areas and using our information to push for better protection of the fish and their key habitats.

My next job was also in the tropics, this time working for the Cousteau Society in the Red Sea. This job involved surveying the reefs of Sudan and diving areas that may never have been dived before. My role in the team was interpretation; I wrote a blog and made little films for the web as well as participating in some of the surveys. There was a war raging in the South of Sudan (Darfur) but it is the largest country in Africa and we saw no sign of this trouble at the coast. The people we met were mainly fishermen from local tribes who collected sea cucumbers and shark fins for the Asian markets. It was sad to see this and difficult to know what alternatives people have in such an impoverished area. My highlight of this job was a trip to the north of Sudan to Dungenab bay where we tagged and snorkelled with dozens of enormous manta rays. But my other highlight was when Jacques Cousteau's youngest son Pierre-Yves came out to Sudan to be my assistant for 2 weeks, I did consider marrying him for his surname but that didn't work out! The Cousteau Society continues to research elasmobranchs in Sudan and to use the information to influence the government there to improve protection for these species and their habitats.



I discovered the Porcupine Marine Natural History Society on returning to the UK as I looked for jobs. I went to the conference in Bangor knowing no one and planning to sleep in a tent on what turned out to be a very cold and wet few days. I came away with loads of new friends, encouragement and having had a roof over my head all weekend. Of course I got a fantastic impression of the society and I have wanted to be involved ever since. Then I was lucky enough to start working for the Wildlife Trust's, first Cornwall, then Hampshire and Isle of Wight and then the job that I'd been preparing for all my life – Marine Biodiversity Officer for the Isles of Scilly Wildlife Trust!

## Instructions to authors

Although we can deal with most methods and styles of presentation, it would make our editorial lives easier if those wishing to contribute to the Newsletter could follow these simple guidelines. Please submit all material in electronic format if at all possible either by e-mail or disc/CD.

### Text

Please submit your paper, article, request for information etc. as a Word document.

General text: "Normal" style - Times New Roman 12 point, single spacing.

Title: "Heading 1" style - Times New Roman bold 16 point

Subtitles and section headers: "Heading 2" style - Times New Roman bold 14 point.

Insert placeholders to indicate where illustrations, photos, etc should be placed e.g. Insert Fig.1 here, and attach the illustrations, photos, etc separately rather than within the text.

Spaces between paragraphs, page numbers, headers and footers are not necessary.

### Illustrations (Figures and Plates)

Photographic images should be supplied as greyscale or colour (RGB) JPGs with a resolution of 300 pixels per inch and width of 7 cm. Save at high quality.

Line drawings, particularly maps, are best supplied as WMF files. If it is a detailed map which will need the full page width, save it with a width of 15 cm. Maps with complicated colouring schemes will not reproduce well in black and white (although most of the newsletter is now printed in colour) – please consider supplying a greyscale version for the printed Newsletter (we can publish colour maps and diagrams in the pdf version of the Newsletter).

Graphs, histograms, etc. are best supplied as Excel files – save each graph as a separate sheet.

We can scan good quality photographs, transparencies and hard copies of drawings, where necessary.

For each illustration, photo etc. submitted, please provide the following information:

Filename, Caption, Photographer (if appropriate) and please be aware of any copyright issues.

### References

Do not leave a line space between references. Please follow the examples below for format. Journal titles should be cited in full.

Citations are as follows ....Brown & Lamare (1994)... or.... (Brown & Lamare, 1994)..., Dipper (2001)... or ...(Dipper, 2001).

Brown, M. T. and Lamare, M. D. 1994. The distribution of *Undaria pinnatifida* (Harvey) Suringar within Timaru Harbour, New Zealand. *Japanese Journal of Phycology* **42**: 63-70.

Dipper, F. A. 2001. *Extraordinary Fish*. BBC Worldwide Ltd. 96pp.

That said, we will do our best with whatever you send.



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