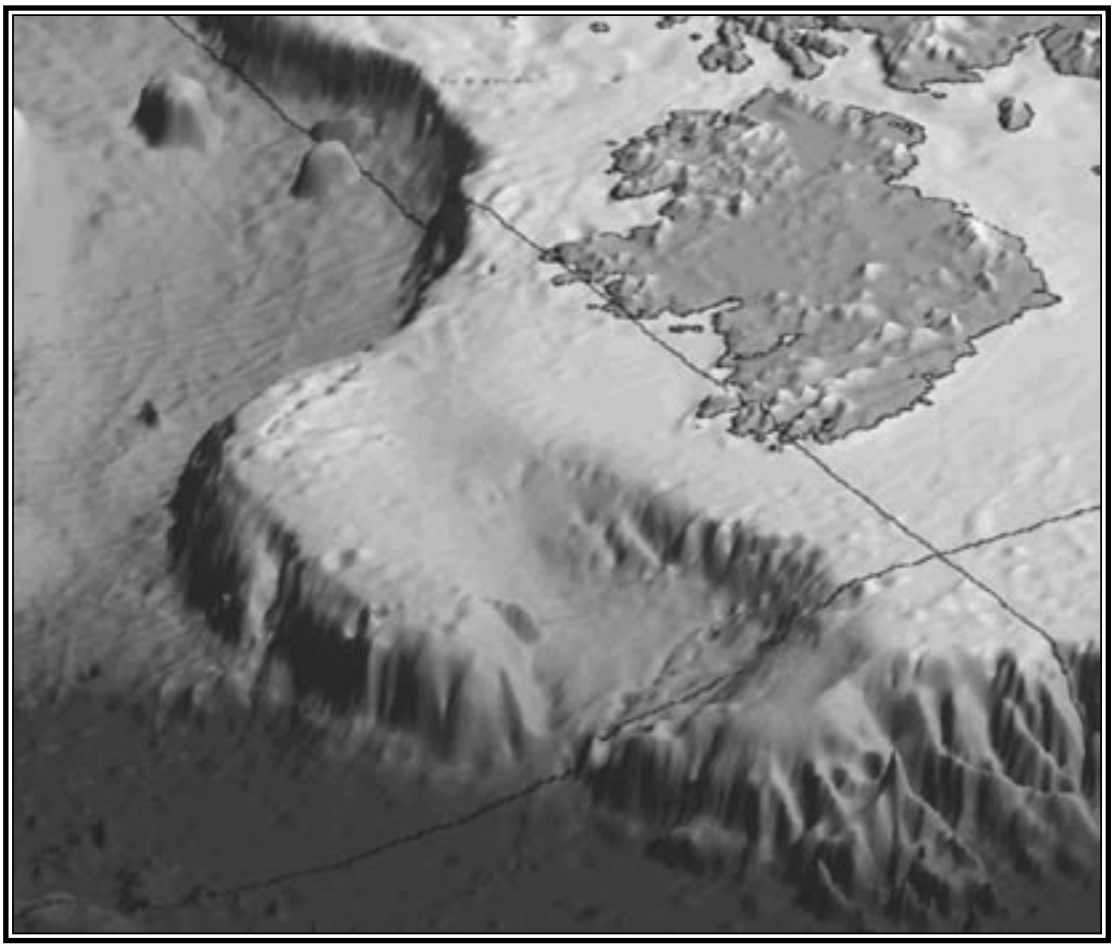
PORCUPINE MARINE NATURAL HISTORY SOCIETY

NEWSLETTER

November 2006 Number 21



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Porcupine Marine Natural History Society

Newsletter

No. 21 Nov 2006

Hon. Treasurer
Jon Moore
Ti Cara
Point Lane
Cosheston
Pembroke Dock
Pembrokeshire
SA72 4UN
01646 687946
jon@ticara.co.uk

Hon. Editors
Frances Dipper
The Black Bull
18 High Street
Landbeach
Cambridgeshire
CB4 8DT
01223 861836
fdipper@sustenergy.co.uk

Peter Tinsley
4 Elm Villas
North Street
Wareham
Dorset
BH20 4AE
01929 556653
ptinsley@dorsetwildlife.co.uk

Membership
Séamus Whyte
The Cottage
Back Lane
Ingoldsby
Lincolnshire
NG33 4EW
01476 585496
seamouse@ntlworld.com

Chairman
Julia Nunn
Cherry Cottage
11 Ballyhaft Rd
Newtonards
Co. Down BT 22 2AW
julia.nunn@magni.org.uk

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 3 newsletters a year which include proceedings from scientific meetings.

Individual £10 Student £5

www.pmnhs.co.uk

COUNCIL MEMBERS

Cover Image: This beautiful image of the Porcupine Bank was created by Bob Downie (Porcupine former council member Frank Evan's son-in-law) who is an oil sedimentologist

Contents

EDITORIAL

In this issue you will find two reports on Porcupine annual field trips: the 2005 Wash and North Norfolk trip (lagoons survey) and the more recent 2006 Isle of Wight trip. Both these trips collected very useful data that has been or will be entered in 'Marine Recorder'. The results from the saline lagoons survey have been passed to the regional Natural England (previously English Nature) office, who kindly organised permissions for our visits. The data from the Wash part of the 2005 field trip will be published in the February newsletter and this will be passed on to Eastern Sea Fisheries who generously provided their boat for two days of survey. In these days of tight financial restraints, government organisations cannot always finance as much fieldwork as they would like. It therefore makes sense that organisations such as Porcupine use their considerable expertise in carrying out surveys that are not only enjoyable and educational but also provide genuinely useful data. However, it is a sad fact that out of a total membership of over 200, only a handful of people ever take part in the field trips. You do NOT have to have a lot of expertise to take part. These trips are an ideal way to learn identification and survey techniques from your friends and colleagues – for free!

MARINE STAMPS

If you have friends and relatives in the Channel Islands, now is the time to get them to write to you! The Guernsey post office is issuing a new stamp set on November 2nd consisting of 12 stamps with photographic images of native anthozoans, taken by Sue Daly. The stamps are available from the Guernsey Philatelic Bureau, Envoy House, La Vrangue, St. Peter Port, Guernsey GY1 1AB, e-mail philatelic@guernseypost.com.

COPY DEADLINES

December 15th for the February issue; April 15th for the June issue

COUNCIL MINUTES

MINUTES OF THE COUNCIL MEETING

held on Saturday 14th October 2006 at the Natural History Museum, London

Present

Julia Nunn, Frances Dipper, Anne Bunker, Paul Brazier, Séamus Whyte, Roni Robbins, Roger Bamber, Sue Chambers, Tammy Horton, Peter Tinsley, Andy Mackie, Judy Foster-Smith (invited)

Apologies

Alison Shaw, Vicki Howe, Lin Baldock, Jon Moore, Peter Barfield

Minutes and Matters Arising

The Minutes of the last meeting were agreed. Julia Nunn reported that we now have two banners. The Society was advertised (banner, leaflets, newsletters) at the EMBS in Cork. Julia will keep one banner, whilst the other one is currently held by Séamus Whyte, who is also looking after 'Scubahystrix'.

Finances

The Hon. Treasurer Jon Moore was not present but provided the accounts up to October 12th 2006. The current account stands at £1549 and the deposit account at £5189. These accounts only include the cost of two PMNHS newsletters. The third is due out now. Various other small sums are also outstanding. The IOM conference collected £550 from registration fees etc (£612 less expenses still owed to Séamus Whyte). The IOW field trip boat hire only cost the society £60 as the remaining £240 was covered by the participants. In conclusion income from subscriptions is still more or less balancing outgoings and there is some money available for worthwhile projects. The Council recorded its thanks to Jon Moore.

Membership

Séamus Whyte reported that membership remains stable, and that currently there are 211 members, receiving the PMNHS newsletter (including libraries). Nine new members have joined since March, five of these were recruited at the IOM conference. Membership was discussed and it was agreed that whilst the income currently only just covered newsletter costs etc., we have reserves and the membership fee should not be raised. It was agreed that a new members package was not really needed as all new members are sent a welcome e-mail (or letter) giving details of the website, newsletter and conference together with the latest newsletter or the date of publication of the next newsletter.

Recording scheme

Roni Robbins reported that she has entered all the available data from the past 6 years field trips (back to 2000) onto Marine Recorder. She brought up a number of queries re. data which were answered by Council members. Marine Recorder is not very easy to use and some data such as notes on individual records, are difficult to include. The Council thanked her for all her hard work!

Web Site

Anne Bunker said that, as reported at the last council meeting she has been unable to devote much time to the web site. However, she has now received offers of help from Tammy Horton and Peter Tinsley to help re-vamp and run the site. After some discussion it was agreed that Anne would draw up a list of 'passive' and pro-active' items that need attention and she, Tammy and Peter will co-operate to re-design the site before the conference in March when it could be 're-launched'. It was also agreed that on a regular basis, Peter Tinsley will send the Contents of each newsletter to Anne and that Frances will send 'Porcupine problems and Information Requests' for publication on the website. It was also agreed that a web counter would be useful.

ACTION: Anne Bunker, Tammy Horton, Peter Tinsley, Frances Dipper

Other material for the web site was discussed. It was agreed that where the newsletter published an article or paper, but could not include colour photos even though these would have been desirable, then the web site would be an excellent place to put these photos and probably include reproduction of the whole article.

It was also agreed that an official

Web Site Officer post should be added to the Constitution. This will necessitate a formal change to the Constitution at the next AGM and appropriate notice in the newsletter and/or by e-mail.

ACTION: Julia Nunn, Frances Dipper

Newsletter

Frances Dipper reported the usual problem with copy for the newsletter. It was agreed that for the next conference, speakers will be informed that if they wish their paper published in the newsletter then it is strongly advised that they provide the copy before, at or shortly after the meeting. An abstract will be needed prior to the conference (date to be advised to speakers).

ACTION: Judy Foster-Smith, Frances Dipper

Peter Barfield was not present but had sent a message to say that he is continuing with the production of the CD archive of past newsletters and that it should be ready by March. However, he is now unable to do any work on it until after Christmas. He still needs some of the early electronic copies that were done by Frances in a different package. It was agreed that the cut off point for including newsletters on the CD would be the November issue in 2006 (i.e. the current issue due out soon). It was also agreed that the CD should be distributed free to members and launched at the 2007 conference (30th anniversary). There are sufficient funds available to cover this. The CDs should be produced with a title and the logo, plus a reference to the 30th anniversary on them and in plastic see through wallets. This can be relatively cheap and quick using a professional company. Frances Dipper has recently researched this for a Seasearch CD and it cost about £1 per CD. She will pass details to Peter Barfield if he needs them. It was also agreed that in future, each newsletter could be published on the web in pdf format one year (exact time to be agreed) after the newsletter had come out.

ACTION: Frances Dipper, Peter Barfield

Conference 2006

Seamus Whyte reported that 44 delegates in total attended the conference. A profit of around £550 was made due to the generosity of the Port Erin Marine Station and the IOM Tourist Board. There were no charges from the Marine Station for the venue apart from 50p per head for coffee/tea. Julia Nunn has written letters of thanks. The Council thanked Séamus Whyte and Peter Barfield for all their hard work.

Field trip 2006

The field trip to the Isle of Wight was very successful and enjoyable although only seven people took advantage of this great opportunity. An excellent dredging trip aboard the MV Callista and some really low low-tides, made up for some very early morning starts. The Medina Field Centre facilities were also excellent. The Council extended its sincere thanks to Jan Light and to Roger Herbert (Director of the Field Centre) for making this such an enjoyable trip.

AGM 2007

Some minor changes to the Constitution will be proposed (see Web Site above). As the Secretary currently has few duties, it was agreed that a separate Secretary's report at the AGM is unnecessary. A combined Chairman and Secretary's report will be given. Roger Bamber agreed to take the 2007 AGM minutes.

Conference 2007

Judy Foster-Smith had kindly agreed to attend this Council meeting to discuss the conference, which she will be organising. The dates are 16-18th March to coincide with reasonable low tide for the Sunday field trip (low tide 9am). She explained that the room available at the Dove Marine Lab would be a teaching lab holding at most 50 people. After some discussion it was agreed that a venue for the Friday and Saturday talks would be sought in Newcastle University. Alternative venues of the 'Centre for Life' and the assembly rooms were also suggested. The Sunday field trip will be based at the Dove Marine Lab. The cost of a lecture theatre in the University is around £220/day and the Marine Lab room is £120 per day (including microscope use etc). It was agreed that a fee of around £30 per delegate would cover these costs unless attendance is very low. Séamus Whyte will send Judy details of charges made at the IOM conference.

The theme for the conference was agreed as 'Signs of Change' in the marine environment. This is intended to be a wide remit and not just climate change. A list of potential speakers was drawn up and each Council member will try to find at least one speaker before 17th November.

ACTION: Judy Foster-Smith; Séamus Whyte (details of costs); all Council members

Field trip 2007

Julia Nunn reported that a joint field trip to the Burren (Galway Bay) with the Conchological Society may be organised for the last week in September 2007 from 26th to 30th - possibly preceded by two days diving from 24th-25th. The Conchological Society has some issues over insurance but if ultimately they decide to withdraw from the trip, she will still run it for Porcupine. The area is a SAC and permission to collect will be needed. We would have free use of the Finavarra marine station

ACTION: Julia Nunn

AOB

Frances Dipper offered to host the autumn council meeting in 2007 in Cambridge and to organise a social in the evening followed by a trip to somewhere of interest (e.g Woodwalton Fen) on the Sunday. This was agreed in principle; date to be decided.

Date of next meeting

At the conference in Newcastle on Friday 16th March 2007.

Council members paid homage to the giant squid at the NHM after the meeting

Notice of the Porcupine Marine Natural History Society Annual Conference 2007 & Call for papers

16-18th March 2007
Newcastle upon Tyne

SIGNS OF CHANGE IN THE MARINE ENVIRONMENT

The reality of climate change and its consequent effects on the marine environment is now widely accepted. But what changes are occurring and what is the evidence? What other factors have caused significant change to marine species and communities? What other causes of change are being masked by, or blamed on, climate change? How has our approach to the study of the marine environment been modified? What technological developments are altering our understanding of marine ecological processes, or enabling new insights? The theme of this conference will address these sorts of questions.

If you would like to contribute a presentation on any aspects of change in the marine environment, please contact Dr Judy Foster-Smith, School of Marine Science and Technology, Newcastle University NE1 7RU (judy.foster-smith@ncl.ac.uk) by **Friday 15th December 2006**. Later submissions will be considered but a slot cannot be guaranteed. Poster submissions can be accepted up to the end of February.

Papers presented at the Conference will be published in the subsequent edition of the Society Newsletter.

PORCUPINE NATURAL HISTORY SOCIETY

Field trip to 'the Burren', Ireland

(24th) 26th-30th September 2007

PMNHS is planning to run a field trip to the Burren (Galway Bay, Ireland), possibly with the Conchological Society, in the last week in September 2007, from 26th to 30th hopefully preceded by two days diving from 24th-25th. The area is a SAC and permission to collect will be organised. This is a wonderful area and an excellent opportunity to explore the rich shores of Galway Bay. Further details will be circulated in subsequent newsletters and by e-mail but please note the dates in your diary. Remember, you DO NOT have to be an expert to come on the field trip. In fact it is an excellent way to increase your expertise in various groups and habitats with like-minded people. For further details or to express interest contact: Julia Nunn on Julia.nunn@magni.org.uk

OTHER MEETINGS

MEETINGS

30 November 2006. Climate change and the marine environment.

The state of knowledge and our responses. SOAS, London. Contact Bob Earll: bob.earl@coastms.co.uk or www.coastms.co.uk

17-18 January 2007. Coastal Futures 2007.

Review and Future Trends. Contact Bob Earll: bob.earl@coastms.co.uk or www.coastms.co.uk

31st January- 1st February 2007. World Wetlands Day conference.

The World Wetlands Day (WWD) series of conferences have, over the last four years, developed into a respected and widely recognised meeting for people interested in a diverse range of themes relating to wetlands. WWD 2007 conference will be a two day conference of papers and discussions designed to enable a wide range of practitioners to showcase their work, covering a wide variety of wetland issues. Bob Earll: bob.earl@coastms.co.uk or www.coastms.co.uk

4-6 July 2007 Change in Aquatic Ecosystmes: Natural and Human Influences. Plymouth.

Contact: Dr Keith Hiscock khis@mba.ac.uk

USEFUL WEB SITE

CoastWeb. The unique, intelligent coastal and marine portal. This site was launched in June this year and looks as though it may be useful. www.coastweb.info This is what the site says about itself:

"For the first time, coastal and marine professionals will have an online, dynamic resource that not only stores information but intelligently links this to other internal sources and to external sites. Aimed at everyone with an interest in coastal and marine issues, the site promises to cut information searches from hours to minutes with the use of its innovative web technology."

PORCUPINE MARINE NATURAL HISTORY SOCIETY Field Trip to the Isle of Wight

Thursday 10th to Sunday 13th August 2006

Leaders: Jan Light/Roger Herbert

Jan Light
88 Peperharow Road, Godalming, Surrey, GU7 2PN.
jan@janlight.eu

The Porcupine annual field trip 2006 was based around the Medina Valley Field Centre in Newport where we enjoyed the convenience of comfortable accommodation and adjacent laboratory facilities. This was particularly beneficial as spring tides here occur early in the morning and early evening and thus in summer it is light enough at both ends of the day to work a tide. We only achieved this on one day! The Isle of Wight benefits from a spring tidal regime which allows some flexibility in working tides because there is an hour's difference in low water times between the west and east coasts. The tidal range improved towards Sunday.

We convened at the centre on Wednesday evening and repaired to the Folly Inn on the Medina estuary for supper. This was to become a regular haunt as Porcupines worked their way through the excellent menu. With the first programmed fixture starting at 1300hr on Thursday 10th there was ample time to set up, and with one's pot of stamina reasonably well topped up, some of us investigated the shore beneath the Centre at 0600 in the morning. We found the pulmonate snail, formerly known as *Ovatella myosotis* living under slabs at HWM. Recent revisions of the non-marine mollusc checklist for Britain and Ireland have resulted in two species being recognised in the genus *Myosotella* (Anderson 2005) and exhibiting ecological distinctions. I have identified the snails as *M. myosotis (*Draparnaud, 1801) and this has been confirmed by Anderson (pers. comm.). The second species is *M. denticulata* (Montagu, 1803) and this species is claimed to exhibit an ecological distinction in occupying more fully marine environments. To muddy the waters, Anderson notes the occurrence of intermediates, which he has seen on the west coast of Ireland (2005).

Porcupines prepare for a dawn raid on Zostera

Callista at East Cowes

After our early morning foray, we gathered on the quay at Cowes at the appointed time and as Roger Herbert, director of the Medina Valley Field Centre and his undergraduate students disembarked, we clambered aboard the RV Callista for 3 hours dredging. Unfortunately the weather and tidal flow were not propitious and restricted the areas in which we could work. The favoured west coast sites which I have noted to yield rich samples during work with CEFAS were out of bounds and we worked off Osborne Bay, Stanswood Bay and at the entrance to Southampton Water and Cowes. The Van Veen grab performed poorly but we managed to take good hauls with the oyster dredge, in particular a sample of mud that Sue Chambers and Jane Lewis had placed on their wish list. Later in the afternoon Sue, Chris and Paul Brazier worked the low tide at

Warden Ledge.

The next day, a rendezvous with the head gardener at Osborne House, scheduled for 0600hr, necessitated the setting of alarms in the middle of the night! At 0450hr I hauled myself out of bed to prepare for departure from the centre at 0530. Arriving at the car park the cycling gardener then escorted us to the (private) shore in our vehicles. The *Zostera* flats were already exposed and whilst Roger and the students wielded push nets and investigated the *Zostera,* culminating in a full shore transect, Porcupines sampled and sieved the associated sediments and collected algal samples from the sparse rocks colonised with small weed species. The *Zostera* at this site carried an abundant population of rissoid snails and *Lacuna vincta* and as you wade about bare-legged they get everywhere. Had I not observed this fact in the field, it would have been evident to me later in the morning when I took a bath to recharge my batteries. As I sank back into the warmth that I hoped

Seiving mud trawl sample

would revive me, a surge of bathwater carrying a stream of tiny snails swept up from the foot end to greet me.

We now had plenty of samples to work on and lest we end up with too much material and no time to work it, we stayed on at the Centre for the rest of the day to process as many of our samples as possible.

On Saturday some Porcupines departed, the remainder braving 2 shores that day. In the morning, we worked Hamstead Ledge on the west coast. Low tide was at 0630 and it was windy and spitting with rain. However this is a compact site where, at mid/low tide level, two ledges of Tertiary limestone about

Hunting for dog-whelks

20 m apart and running parallel in a north-westerly direction out to sea, become exposed. A sheltered lagoon exists between the two ledges. The eastern ledge is lower than the western, is exposed and is completely covered in kelp.

The western ledge is composed of large rocks at the shoreward end covered with fucoids. This ledge has a narrow longitudinal plateau with large rocks and shallow pools. The intercalated Tertiary clays provide the fine particles, which are in permanent suspension at this site. The undersides of the rocks are richly colonised with sponges but few ascidians were observed. The dominant motile organisms at this site are decapod crustaceans. I collected five samples at this site: rock-scrubbings, richly colonised pebbles and small cobbles, kelp holdfasts, small weeds and a *Cladophora* sample. Saving what I hoped would be treats for later, I worked on three

Lab at the Medina Valley Centre

samples before lunch but subsequently learned that you should never save the best till last. Placing two samples outside in buckets to await my attention, they were mistaken for

waste and jettisoned on the high tide and their contents will forever be a mystery.

For the evening tide a more inaccessible and less frequently worked site was chosen. A thirty-minute trek is required to reach the shore at Burntwood east of Newtown which is founded on the same lithologies as those occurring at Hamstead, but there are more ledges distributed along the shore towards Gurnard, which extend seawards as curved limbs of limestone and stable gravels with Tertiary clay flats in between. These are treacherous in places, similar to the famous 'Blue Slipper', the local name for the Gault Clay. The site is a shore-pickers delight. *Littorina littorea* is abundant, cockles are

Low tide at Osborne Bay

dispersed across the shore, and wild and free-living *Ostrea edulis* were being collected by the natives. These were marketable sized adults and we observed that they were deliberately leaving smaller, but nevertheless mature, individuals.

Sacks of oysters were left at the top of the shore whilst their harvesters moved to some limestone promontories further north. In the distance more figures could be seen working the shore and wading at thigh height.

Paul looking for dog-whelks

Porcupines in Queen Victoria's bathing hut

On Sunday the classic site at Bembridge was to be the final shore of the meeting. Here the extensive platform of ledges, sands, gravels, lagoons, pools, and rapids offers a very wide range of biotopes. Roger's new influx of students carried out transect work and biotope mapping. Leaving the main group I walked round towards Black Rock at the northern margin of Whitecliff Bay. This is a historical site for *Paludinella littorina*, the RDB/WCA Schedule 5 snail, first documented from the site by Forbes & Hanley (1853) and re-found there in 1992 in the habitat as described by those authors in Light (1992). A two-hour search, much of which involved attempting to trace out the correct horizon to search has established that the snail survives at the site.

It was clear that those Porcupines who attended this meeting enjoyed themselves. Evening sessions in the Folly Inn ensured that the social requirements of such events were met. Hearty thanks go to Roger for oiling the wheels by fixing the venue, arranging laboratory facilities and planning the dredging trip. The poor attendance for this field event, a phenomenon mirrored in sibling societies, could be accounted for by any number of reasons. Was the Isle of Wight not considered

sufficiently attractive a venue? Is August a bad month to fix a field meeting? Why not write in with your views. But as biological recording is one of the principal raisons d'être for PMNHS it is important that the Society continue to offer at least one annual field meeting. I thank Paul Brazier for the list below which was collated by Paul Brazier for **live** records from all sites visited by Susan Chambers, Chris Griffiths, Paul Brazier, Michael Weideli, Roger Herbert, Jan Light. Detailed records will be submitted to the Porcupine Recorder in due course.

References

Anderson, R. 2005. An annotated list of the non-marine Mollusca of Britain and Ireland. *Journal of Conchology*. **38** (6) 607-637

Forbes, E. & Hanley, S. 1853. *A history of the British marine testaceous Mollusca*. John van Voorst, London. 536pp.

Light, J.M. 1992. Recorder's Report: Marine Mollusca. *Journal of Conchology*. **34:** 252.

TaxonID	Name	Authority	Qualifier
	SPONGES		
C1	Porifera		Indet
C260	Leucosolenia complicata	(Montagu, 1818)	
C2210	Suberites ficus	(Linnaeus, 1767)	
C4840	Halichondria panicea	(Pallas, 1766)	
C5230	Hymeniacidon perleve	(Montagu, 1818)	
C8900	Dysidea fragilis	(Montagu, 1818)	
C9100	Halisarca dujardini	Johnston, 1842	
	CNIDARIANS		
D6480	Dynamena pumila	(Linnaeus, 1758)	
D5540	Aglaophenia pluma	(Linnaeus, 1758)	
D11510	Actinia equina	(Linnaeus, 1758)	
D11520	Actinia fragacea	Tugwell, 1856	
D11580	Anemonia viridis	(Forsskål, 1775)	
D12310	Sagartia elegans	(Dalyell, 1848)	
D12370	Cereus pedunculatus	(Pennant, 1777)	
D12480	Sagartiogeton undatus	(O F Müller, 1788)	
	RIBBON WORMS		
G780	Lineus longissimus	(Gunnerus, 1770)	
	SEGMENTED WORMS		
P250	Aphroditidae		Indet
P2770	Eulalia viridis	(Linnaeus, 1767)	
P12740	Polydora	Bosc, 1802	sp
P15760	Arenicola marina	(Linnaeus, 1758)	
P20310	Lanice conchilega	(Pallas, 1766)	
P22610	Sabella pavonina	Savigny, 1820	
P22720	Serpulidae		Indet
P23040	Pomatoceros triqueter	(Linnaeus, 1758)	
P24010	Spirorbis	Daudin, 1800	sp
P24070	Spirorbis tridentatus	Levinsen, 1883	
	PYCNOGONIDS		
Q18	Ammothella longipes	(Hodge 1864)	
Q15	Achelia echinata	Hodge, 1864	
Q34	Callipallene emaciata	(Dohrn, 1881)	

TaxonID	Name	Authority	Qualifier
	CRUSTACEANS		
R1200	Elminius modestus	Darwin, 1854	
R1080	Semibalanus balanoides	(Linnaeus, 1767)	
R1130	Balanus perforatus	Brugière, 1789	
S1670	Gammaridea		Indet
S4270	Urothoe	Dana, 1852	sp
S10760	Caprella linearis	(Linnaeus, 1767)	
S11010	Pseudoprotella phasma	(Montagu, 1804)	
S15630	Idotea granulosa	Rathke, 1843	
S21690	Caridea		Indet
S24650	Pagurus bernhardus	(Linnaeus, 1758)	
S24890	Galathea squamifera	Leach, 1814	
S25020	Pisidia longicornis	(Linnaeus, 1767)	
S25070	Porcellana platycheles	(Pennant, 1777)	
S25850	Macropodia rostrata	(Linnaeus, 1761)	
S25990	Pisa tetraodon	(Pennant, 1777)	
S26460	Cancer pagurus	Linnaeus, 1758	
S26720	Necora puber	(Linnaeus, 1767)	
S26900	Carcinus maenas	(Linnaeus, 1758)	
S27350	Pilumnus hirtellus	(Linnaeus, 1761)	
	INSECTS		
Insect	Anurida maritima		
	MOLLUSCS		
W740	Lepidochitona cinerea	(Linnaeus, 1767)	
W1890	Gibbula magus	(Linnaeus, 1758)	
W1930	Gibbula cineraria	(Linnaeus, 1758)	
W1950	Gibbula umbilicalis	(da Costa, 1778)	
W1260	Tectura virginea	(O F Müller, 1776)	
W1340	Patella vulgata	(Linnaeus, 1758)	
W1390	Helcion pellucidum	(Linnaeus, 1758)	
W2000	Calliostoma zizyphinum	(Linnaeus, 1758)	
W2310	Tricolia pullus	(Linnaeus, 1758)	
W2420	Lacuna crassior	(Montagu, 1803)	
W2390	Lacuna pallidula	(da Costa, 1778)	
W2400	Lacuna parva	(da Costa, 1778)	
W2440	Lacuna vincta	(Montagu, 1803)	
W2500	Littorina littorea	(Linnaeus, 1758)	
W2550	Littorina obtusata	(Linnaeus, 1758)	
W2600	Littorina saxatilis	(Olivi, 1792)	
W2800	Rissoa guerinii	Récluz, 1843	
W2840	Rissoa interrupta	(J Adams, 1800)	
W2860	Rissoa membranacea	(J Adams, 1800)	

TaxonID	Name	Authority	Qualifier
W2850	Rissoa parva	(da Costa, 1778)	
W3180	Alvania semistriata	(Montagu, 1808)	
W3260	Manzonia crassa	(Kanmacher in G Adams, 1798)	
W3380	Onoba aculeus	(Gould, 1841)	
W2720	Hydrobia ulvae	(Pennant, 1777)	
W3790	Paludinella littorina	(delle Chiaje, 1828)	
W7260	Crepidula fornicata	(Linnaeus, 1758)	
W7370	Trivia arctica	(Pulteney, 1799)	
W7380	Trivia monacha	(da Costa, 1778)	
W7490	Lamellaria perspicua	(Linnaeus, 1758)	
W4860	Cerithiopsis tubercularis	(Montagu, 1803)	
W8290	Ocenebra erinacea	(Linnaeus, 1758)	
W8170	Nucella lapillus	(Linnaeus, 1758)	
W8440	Buccinum undatum	Linnaeus, 1758	
W8890	Hinia reticulata	(Linnaeus, 1758)	
W8870	Hinia incrassata	(Ström, 1768)	
W4210	Rissoella diaphana	(Alder, 1848)	
W4050	Omalogyra atomus	(Philippi, 1841)	
W4090	Ammonicerina rota	(Forbes & Hanley, 1850)	
W5430	Odostomia plicata	(Montagu, 1803)	
W5450	Odostomia turrita	Hanley, 1844	
W5990	Turbonilla lactea	(Linnaeus, 1758)	
W10140	Retusa obtusa	(Montagu, 1803)	
W10090	Haminoea navicula	(da Costa, 1778)	
W13760	Thecacera pennigera	(Montagu, 1815)	
W15680	Myosotella myosotis	(Draparnaud, 1801)	
W16180	Nucula nitidosa	Winckworth, 1930	
W16190	Nucula nucleus	(Linnaeus, 1758)	
W16500	Mytilus edulis	(Linnaeus, 1758)	
W17690	Ostrea edulis	(Linnaeus, 1758)	
W18340	Loripes lucinalis	(Lamarck, 1818)	
W18420	Lucinoma borealis	(Linnaeus, 1758)	
W19750	Parvicardium exiguum	(Gmelin, 1791)	
W19910	Cerastoderma edule	(Linnaeus, 1758)	
W21020	Abra alba	(W Wood, 1802)	
W21040	Abra nitida	(Müller, 1776)	
W21060	Abra tenuis	(Montagu, 1803)	
W21970	Mercenaria mercenaria	(Linnaeus, 1758)	
W21710	Tapes decussatus	(Linnaeus, 1758)	
W21850	Venerupis senegalensis	(Gmelin, 1791)	
W22390	Corbula gibba	(Olivi, 1792)	
W22510	Hiatella arctica	(Linnaeus, 1758)	

TaxonID	Name	Authority	Qualifier
	BRYOZOANS		
Y1	Bryozoa		Indet
Y240	Crisia	Lamouroux, 1812	sp
Y1480	Flustrellidra hispida	(Fabricius, 1780)	
Y2420	Amathia lendigera	(Linnaeus, 1758)	
Y2530	Bowerbankia imbricata	(Adams, 1798)	
Y6640	Membranipora membranacea	(Linnaeus, 1767)	
Y6780	Electra pilosa	(Linnaeus, 1767)	
Y8750	Bugula plumosa	(Pallas, 1766)	
Y8360	Scrupocellaria	van Beneden, 1845	sp
	ECHINODERMS		
ZB3000	Amphipholis squamata	(Chiaje, 1829)	
	TUNICATES		
ZD680	Didemnidae		Indet
ZD1430	Ascidiella scabra	(O F Müller, 1776)	
ZD2090	Botryllus schlosseri	(Pallas, 1766)	
	FISH		
ZG6320	Lipophrys pholis	(Linnaeus, 1758)	
ZG7400	Pomatoschistus	Gill, 1864	sp
	'SEAWEEDS'		
ZM20	Rhodophyceae		Indet
ZM2160	Gelidium latifolium	(Greville) Bornet	
ZM2170	Gelidium pusillum	(Stackhouse) Le Jolis	
ZM2420	Palmaria palmata	(Linnaeus) Kuntze	
ZM1160	Rhodothamniella floridula	(Dillwyn) J Feldmann	
ZM5660	Ahnfeltia plicata	(Hudson) Fries	
ZM3790	Hildenbrandia rubra	(Sommerfelt) Meneghini	
ZM3840	Corallinaceae		Indet crust
ZM4040	Corallina officinalis	Linnaeus	
ZM4320	Jania rubens	(Linnaeus) Lamouroux	
ZM4720	Melobesia membranacea	(Esper) Lamouroux	
ZM3030	Grateloupia	C Agardh	turuturu
ZM3050	Grateloupia doryphora	(Montagne) Howe	
ZM3060	Grateloupia filicina	(Lamouroux) C Agardh	
ZM6820	Calliblepharis ciliata	(Hudson) Kützing	
ZM6880	Cystoclonium purpureum	(Hudson) Batters	
ZM2560	Dilsea carnosa	(Schmidel) Kuntze	
ZM2660	Dumontia contorta	(S Gmelin) Ruprecht	
ZM6430	Furcellaria lumbricalis	(Hudson) Lamouroux	
ZM6110	Chondrus crispus	Stackhouse	
ZM6180	Gigartina pistillata	(S Gmelin) Stackhouse	
ZM3230	Callophyllis laciniata	(Hudson) Kützing	

TaxonID	Name	Authority	Qualifier
ZM5780	Gymnogongrus griffithsiae	(Turner) Martius	
ZM6050	Mastocarpus stellatus	(Stackhouse) Guiry	
ZM5840	Phyllophora crispa	(Hudson) Dixon	
ZM5860	Phyllophora pseudoceranoides	(S Gmelin) Newroth et A R A Taylor	
ZM5940	Schottera nicaeensis	(Lamouroux ex Duby) Guiry et Hollenberg	
ZM5400	Schizymenia dubyi	(Chauvin ex Duby) J Agardh	
ZM5460	Gracilaria bursa-pastoris	(S Gmelin) P Silva	
ZM6310	Plocamium cartilagineum	(Linnaeus) Dixon	
ZM7450	Gastroclonium ovatum	(Hudson) Papenfuss	
ZM7520	Lomentaria clavellosa	(Turner) Gaillon	
ZM7190	Cordylecladia erecta	(Greville) J Agardh	
ZM7280	Rhodymenia pseudopalmata	(Lamouroux) P Silva	
ZM7570	CERAMIALES		Indet
ZM7760	Aglaothamnion	Feldmann-Mazoyer	sp
ZM7930	Aglaothamnion gallicum	(Nägeli) Halos ex Ardré	
ZM7950	Aglaothamnion hookeri	(Dillwyn) Maggs et Hommersand	
ZM8070	Ceramium	Roth	sp
ZM8230	Ceramium nodulosum	(Lightfoot) Ducluzeau	
ZM8440	Griffithsia corallinoides	(Linnaeus) Trevisan	
ZM8560	Halurus equisetifolius	(Lightfoot) Kützing	
ZM8460	Halurus flosculosus	(Ellis) Maggs et Hommersand	
ZM9170	Spermothamnion repens	(Dillwyn) Rosenvinge	
ZM9230	Sphondylothamnion multifidum	(Hudson) Nägeli	
ZM9350	Acrosorium venulosum	(Zanardini) Kylin	
ZM9500	Cryptopleura ramosa	(Hudson) Kylin ex Lily Newton	
ZM9850	Hypoglossum hypoglossoides	(Stackhouse) F Collins et Hervey	
ZM10580	Chondria capillaris	Hudson	
ZM10560	Chondria dasyphylla	(Woodward) C Agardh	
ZM10680	Halopithys incurvus	(Hudson) Batters	
ZM10780	Osmundea hybrida	(De Candolle) Nam	
ZM10800	Osmundea pinnatifida	(Hudson) Stackhouse	
ZM11010	Polysiphonia	Greville	sp
ZM11050	Polysiphonia elongata	(Hudson) Sprengel	
ZM11300	Polysiphonia stricta	(Dillwyn) Greville	
ZR01	Chromophycota		Indet crust
ZR290	Ectocarpus	Lyngbye	sp
ZR590	Hincksia sandriana	(Zanardini) P Silva	
ZR2490	Elachista fucicola	(Velley) Areschoug	
ZR6050	Colpomenia peregrina	(Sauvageau) G Hamel	
ZR6100	Petalonia	Derbès et Solier	sp?
ZR2810	Leathesia difformis	(Linnaeus) Areschoug	
ZR4390	Cladostephus spongiosus	(Hudson) C Agardh	

TaxonID	Name	Authority	Qualifier
ZR4330	Stypocaulon scoparia	(Linnaeus) Kützing	
ZR4570	Dictyota dichotoma	(Hudson) Lamouroux	
ZR4680	Padina pavonica	(Linnaeus) Thivy	
ZR4780	Taonia atomaria	(Woodward) J Agardh	
ZR6570	Undaria pinnatifida	(Harvey) Suringar	
ZR6250	Chorda filum	(Linnaeus) Stackhouse	
ZR6320	Laminaria digitata	(Hudson) Lamouroux	
ZR6360	Laminaria saccharina	(Linnaeus) Lamouroux	
ZR7160	Halidrys siliquosa	(Linnaeus) Lyngbye	
ZR6680	Fucus	Linnaeus	sporeling
ZR6740	Fucus serratus	Linnaeus	
ZR6750	Fucus spiralis	Linnaeus	
ZR6760	Fucus vesiculosus	Linnaeus	
ZR6870	Himanthalia elongata	(Linnaeus) S Gray	
ZR6940	Sargassum muticum	(Yendo) Fensholt	
ZS500	Ulothrix	Kützing	sp
ZS1270	Ochlochaete hystrix	Thwaites	
ZS2630	Blidingia minima	(Nägeli ex Kützing) Kylin	
ZS2110	Enteromorpha	Link	sp
ZS2270	Enteromorpha prolifera	(O F Müller) J Agardh	
ZS2450	Ulva lactuca	Linnaeus	
ZS2460	Ulva olivascens	P Dangeard	?
ZS3330	Chaetomorpha melagonium	(Weber et Mohr) Kützing	
ZS3380	Cladophora	Kützing	sp
ZS3470	Cladophora laetevirens	(Dillwyn) Kützing	
ZS3560	Cladophora rupestris	(Linnaeus) Kützing	
ZS4210	Codium fragile tomentosoides	(van Goor) P Silva	
	LICHENS		
lichen	Verrucaria maura		
	SEA GRASSES		
	Zostera marina		

Saline lagoons of North Norfolk. A report from the Porcupine Wash and North Norfolk field trip, July 2005.

Frances Dipper and Seamus Whyte

Introduction

Coastal brackish lagoons, commonly called saline lagoons, are a relatively scarce and important habitat in the UK. Under the European Union Habitats Directive they are a marine priority habitat type. Along the North Norfolk coast there are a number that are of considerable conservation interest. Saline lagoons in East Anglia were surveyed by Barnes in 1984 as part of the Nature Conservancy Council's national lagoon survey (Barnes 1985). These lagoons were re-surveyed for English Nature in 1996 by Roger Bamber as part of an assessment of saline lagoons within SACs (Bamber 1997). All easily available information on this resource in East Anglia is summarised in part 10 of a report produced by Frances Dipper for English Nature (Dipper 2003). As it had been nearly 10 years since the last survey it seemed a useful and interesting exercise to visit some of these lagoons. Abraham's Bosom and Salt's Hole were chosen for their proximity to each other, ease of access and well-documented history. These are considered saltmarsh relict lagoons. A detailed history of Salt's Hole is given in Hunt (1971). With only one day and limited expertise in this specialised field, a full survey was not intended. Instead a general survey was attempted to ascertain the condition of the lagoons and to record and identify as many species as possible.

Methods

Two saline lagoons Abraham's Bosom at Wells (TF912452) and Salt's Hole on the Holkham estate (TF886451) were visited on Saturday 9th July 2005. A further small lagoon, Half Moon Pond near Cley was briefly visited on Sunday 10th. This latter is part of a sequence of percolation lagoons along this stretch of coast. Abraham's Bosom was accessed on foot from the Beach car park at Wells. Salt's Hole required a walk of about half a kilometre from the car park at the end of Lady Ann's Drive, Holkham. Half Moon pond was easily accessed from the car park at the end of Beach Road, Cley.

As far as possible, recording was carried out at the same sampling points at each lagoon as those used by Roger Bamber (Bamber 1997) plus additional areas as time permitted. A GPS reading was taken at each sampling point. At each sample site, salinity and temperature were measured with a WSI 85 oxygen and salinity probe. General observations of bottom type and visible flora and fauna were made and then two mud samples collected using a 10cm diameter plastic coring tube to a depth of approximately 15 cm. Both samples were then sieved together through a 0.5mm sieve. The water column and sediment surface were sampled using hand nets and the latter were also used to collect samples of weed to look for animals living amongst the weed. As far as possible animals were identified in situ and then released. Some specimens were retained and preserved in formalin for later identification by Séamus Whyte. Time pressures precluded any quantitative or semi-quantitative sampling but general observations on abundance were made.

Results

Temperature and salinity data are given in Table 1. Species recorded visually and from all samples are listed in Table 2. Only incidental observations of plants, algae and seaweeds were made. Mud samples from Abraham's Bosom Site 3 have yet to be fully worked up. Mud samples from Abraham's Bosom Site 1 south end were taken at two distances; around 5m out and near to the shore, but species lists from both are combined in the table. Fauna in Half Moon Pond were not fully sampled and the species list is incomplete.

Abraham's Bosom

Salinity was fairly uniform throughout the lagoon ranging between 23.7 and 25 ‰. This is lower than the 34-36 ‰ recorded in Autumn 1996 (Bamber 1997) and the 28-29 ‰ recorded in 1985 (Barnes 1985) but similar to the 24.1 ‰ recorded in 1963 (see Hunt 1971).
At the south end of the lagoon (Site 1)

Abraham's Bosom Site 1: South end

backing onto the camping area, the substratum in the shallows was of firm muddy sand with a small 'beach' exposed. Patches of green algae were present on the sediment surface. The lugworm *Arenicola marina* was common and live cockles *Cerastoderma glaucum* were plentiful with various year classes. Common gobies *Pomatoschistus microps* were common darting about on the bottom. About 5 m out into the lagoon, the substratum changes to fluid black sandy mud with weed on the bottom (*Cladophora*? sp.). Amongst the weed, amphipods (*Gammarus* sp.) were common along with many juvenile cockles and the occasional stickleback (*Gasterosteus aculeatus*). Mysids were common in the water column.

Abraham's Bosom site 2: End of boardwalk

The second site (Site 2 End of boardwalk) at the south-west end is beyond the main body of the lagoon, near the landward exit, reached along a boardwalk over dense reed beds. The open water here consists of a narrow channel between the reeds. The substratum was sand overlain by about 5 cm of sandy mud with lots of leaf debris. Obvious fauna in the sieved mud sample consisted only of two baby cockles and a chironomid. The hand nets showed abundant mysids and some *Idotea*.

Abraham's Bosom Site 3: Mid west side

The mid west side of the lagoon (Site 3) was the most anoxic of the four sites sampled. The west side of the lagoon is fringed by an extensive area of reed bed and the site was again reached along a boardwalk. The substratum here was sandy mud overlain by 3 cm of anoxic, fluid sandy mud - black and smelly! Some patches of white *Beggiatoa*, a filamentous proteobacteria, were visible on the mud surface. *Beggiatoa* is an indicator of marine environments that have been subject to pollution, as for example, under farmed salmon cages. The only obvious fauna were a few live cockles, a few mysids and occasional *Capitella capitata*.

The north end of the lagoon is adjacent to the path that runs along the base of the pinewood and sand dunes and is contained by a wooden bund and low fence. The substratum here was relatively firm muddy sand topped by at least 5cm of fluid anoxic mud. Patches of *Beggiatoa* were present on the sediment surface, along with shell and plant debris. The water had scum on the surface. Gobies were visible on the bottom and abundant mysids in the water column. The hand nets caught a single stickleback, and an unidentified 'prawn'.

Salt's Hole

Salinity was uniform at both ends at 22.4‰. This is lower than the 28-31‰ measured in autumn of 1996 (Bamber 1997). The outlet at the south end was flowing strongly.

Salt's Hole Site 1: North end

The north end (Site 1) can be accessed directly from a stony track that runs through woodland from the car park at the end of Lady Ann's Drive (Holkham Gap). The substratum was sandy mud with abundant casts of *Arenicola marina*, gobies and plenty of cockles. Scattered small rocks in the shallows were colonised by anemones provisionally identified as a variety of *Sagartia troglodytes*. A bryozoan *Conopeum seurati* (identified by Peter Hayward) formed heavy encrustations on the submerged stems of reeds encroaching from the north-west side and was also found on scattered rocks.

Conopeum seurati, Salt's Hole

The reed root systems and detritus also supported *Littorina saxatilis* agg. Submerged vegetation was covered with *Hydrobia*. *Idotea* was present in sweep net samples.

Salt's Hole Site 2: South end

The south end (Site 2) can only be reached via the fields backing the lagoon or by clambering around the east side. East and west sides of the lagoon are both fringed by reed beds *(Phragmites*) especially in the NW corner. The substratum at the south end was similar to that at the north end consisting of muddy sand shallows with abundant *Arenicola* and scattered plants of *Ruppia* sp. (*maritima*?). Gobies and small *Hydrobia* were plentiful on the sediment surface. Fringing reeds again had stems encrusted with *Conopeum*. Where the water deepened, dense beds of a green wiry weed could be seen and samples of these were covered in tiny cockles. The outlet drain adjacent to this site was stony and smothered in *Conopeum* crusts.

Half Moon Pond

Half Moon pond lies parallel to the shore backed on its north side by shingle and on the south (landward) side by grazing marsh. It is very shallow throughout. During a brief visit, a dog was seen splashing through the shallows. Salinity was low varying between 10‰ at the east end and 17.4‰ at the edge in the middle section. The intention here was mainly to establish whether beds of the starlet anemone *Nematostella vectensis* were still present. A dense bed was found at the east end towards the middle (well within reach of disturbance by wading dogs and people). A single mud core taken on the middle of the south side was black muddy sand and on sieving revealed only frequent *Capitella* worms and common ragworms *Nereis diversicolor*. Weed brought up in hand nets at both ends of the lagoon supported abundant amphipods *Gammarus*

sp., isopods *Idotea* sp., tiny hydrobid snails and frequent green chironomids.

***Table 1**. Location, salinity and temperature readings July 9th 2005*

Sample site	GPS co-ordinates	Salinity %0	Temperature ºC
Abraham's Bosom			
Site 1. South end	52° 58.199' N 000 50.759' E	25	16
Site 2. End of Boardwalk	52° 58.289' N 000 50.642' E	23.7	16.7
Site 3. Mid west side	52° 58.279' N 000 50.715' E	24.9	16.9
Site 4. North End	52° 58.368' N 000 50.775' E	24.7	17.1
Salt's Hole			
Site 1. North end	52° 58.218' N 000 48.461' E	22.4	18.3
Site 2. South end	52° 58.179' N 000 48.397' E	22.4	18.5
Half Moon Pond			
Site 1. East end	52° 57.897' N 001 03.019 E	10.7	17.4
Site 2.	52° 57.897 N 001 02.993 E	No record	No record

Table 2. Species list recorded by Porcupine MNHS July 9th 2005
AB – Abraham's Bosom; SH – Holkham Salt's Hole; HMP – Half Moon C- common; P – present. Species in bold are 'new' records.

Species	AB 1	AB 2	AB 3	AB 4	SH 1	SH 2	HMP
Nematoda	P		P				
Nemertea indet.					P		
Lineus viridis	P						
Heterochaeta costata					P	P	
Tubificoides sp.	P			P	P	P	
Arenicola marina	C				C	C	
Nereis diversicolor					P	P	C (sp.)
Scoloplos armiger	P						
Capitella capitata agg.	P		P	P	P		C
Maldanidae sp.	P						
Actiniidae indet.	P						

Species	AB 1	AB 2	AB 3	AB 4	SH 1	SH 2	HMP
Sagartia troglodytes					C	P	
Nematostella vectensis							C
Microdeutopus gryllotalpa					P		
Gammarus sp.							C
Gammarus salinus	C						
Idotea balthica		P			C		
Idotea chelipes	P				P		
Ostracoda						P	
Mysids	C	C	P	C	C	C	
Praunus flexuosus	P						
chironomids	P	P	P		P	P	C
Hydrobia ulvae					C	C	C (sp.)
Hydrobid sp. (like Heliobia stagnorum)					P	P	
Littorina saxatilis agg.					P		
Retusa obtusa				P			
Cerastoderma glaucum	C	P	P	P	C	C	
Conopeum seurati					C	C	
Pomatoschistus microps	C			P	C	C	
Gasterosteus aculeatus	P			P			
Beggiatoa sp.			P	P			
Ruppia sp.						C	
Phragmites		C	C		C	C	
unidentified algae	P				P		

Discussion

(1) Salt's Hole

The fauna of Salt's Hole does not seem to have altered significantly since records began in the 1960s. The present survey found most of the species previously recorded (see Table 3) and in similar abundances but additionally found a number of 'new' species as described below. The condition of the lagoon appeared healthy although the adjacent reed beds may have encroached further since previous surveys (this was not measured).

The bryozoan *Conopeum seurati* was common on reed stems and stones. Specimens were identified by Dr Peter Hayward. As far as can be ascertained, this bryozoan has not previously been recorded from this lagoon. It is not included in species lists from this lagoon in Hunt (1971), Barnes (1985) or Bamber (1997). If this species has indeed recently made its way into the lagoon rather than simply been previously overlooked, then it is interesting to speculate as to how it might have arrived (see below). It is a brackish water species and has been recorded from saline lagoons and estuaries around south-east Britain but apparently not previously in any East Anglian lagoons (though an exhaustive search for

records has not been made). Hunt found a species of *Bowerbankia* in Salt's Hole in 1970, encrusting sunken logs.

As well as *Hydrobia ulvae*, a second hydrobid species was collected from Salt's Hole. Shelagh Smith has examined preserved specimens and concludes that this may possibly be *Heliobia stagnorum* (previously *Hydrobia stagnorum*). However, live specimens are needed to confirm this. *H.stagnorum* is a brackish water species.

The oligochaete worm *Heterochaeta costata* (synonym *Tubifex costatus*) was identified from sediment samples taken from both sites in Salt's Hole. This species does not appear to have been recorded previously from East Anglian lagoons. However, this small species could easily have been overlooked. The *Tubificoides* sp. collected is probably the same species as that recorded by Bamber (1997) but specimens are currently being verified.

An anemone provisionally identified as *Sagartia troglodytes* was common on stones in Salt's Hole. Pantin (in Hunt 1971) recorded *Sagartia troglodytes* var *ornata* from Salt's Hole in the 1960s. Barnes may have found it in 1985 but his survey report (Barnes 1985) gives only a general species list from all the 26 East Anglian lagoons he visited. He notes that his survey recorded: "17 of the 19 species of benthic and pelagic macrofauna described from Holkham Salts Hole by Pantin (Hunt 1971)." Recording forms and photographs for each of the lagoons he visited, originally held by the then Chief Scientist's Team of the Nature Conservancy Council, have been lost.

Pantin (in Hunt 1971) suggests that Salt's Hole lagoon has probably been cut off from the sea for at least 250 years (over 280 years now!), with the exception of rare flooding episodes such as the great storm of 1953. He reports that it is fed near the level of high water neap tide from a salt spring, from water contained in the nearby coastal sands and sand dunes. He also considered the fauna to be a relict marine fauna. Therefore the bryozoan *Conopeum seurati* has either been there all along but not spotted (seems unlikely), or its larvae have recently survived passage in the seawater through the sand (according to Ryland and Hayward 1977 it is tolerant of widely fluctuating salinities). It would be interesting to search for this species in nearby coastal areas. Another possibility is that it has been introduced in some other way by humans or birds.

(2) Abraham's Bosom

The faunal list for this survey from Abraham's bosom is also very similar to previous surveys. However, as with Salt's Hole, a few additional species were recorded: an as yet unidentified nematode, the polychaete worm *Scoloplos armiger*, a species of maldanid worm and the opisthobranch mollusc *Retusa obtusa*. *Scoloplus armiger* is found low on the shore and in the shallow sublittoral in fine muddy sand. *Retusa obtusa* is found all round British coasts in sheltered muddy shores and feeds on *Hydrobia ulvae*. Again, the question arises of how these species found their way into the lagoon.

The southern end of the lagoon appears to be the cleanest and most species- rich with the west and northern ends much more anoxic. This was also the situation described by Bamber (1997). However, the northern end supported plenty of gobies and mysids which Bamber reported as scarce here. Although there was some rubbish in the water where the caravan site abuts the lagoon, there were few signs of obvious pollution.

(3) Half Moon Pond

In 2004, the starlet anemone *Nematostella vectensis* was apparently absent from Half Moon pond (pers. comm. Peter Lambley, English Nature). A few months before our visit in July 2005, he had received reports from a contact living in Salthouse that the anemone was again abundant, possibly as a consequence of sea water pouring into the pond in April 2005. Our visit confirmed that the anemone was indeed abundant.

Table 3. Comparison of species recorded by different workers. AB-Abraham's Bosom; SH – Salt's Hole; HMP – Half Moon Pond; Note: Barnes' 1985 records cannot be included (see above)

Species	Hunt/Pantin 1962-1971	Bamber 1996	Porcupine 2005
Nematoda			AB
Lineus viridis		AB	
Lineus gesserensis	SH		
Nemertea indet.			SH
Heterochaeta costata			SH
Tubificoides pseudogaster		AB, SH, HMP	
Tubificoides benedii		AB, SH	
Tubificoides sp.			AB, SH
Clitellio arenarius	SH		
Arenicola marina	SH	AB, SH	AB, SH
Nereis diversicolor	SH	SH, HMP	HMP, SH
Scoloplus armiger			AB
Capitella capitata agg.	SH	AB	AB, SH, HMP
Pygospio elegans	SH		
Maldanidae			AB
Cordylophora sp.	SH		
Actinia equina		AB	
Actinid indet.			AB
Sagartia troglodytes	S H (S.troglodytes var ornata		SH
Nematostella vectensis		HMP	HMP
Acartia clausi	SH		
Mesochra liljeborgi	SH		
Corophium volutator	SH	AB	
Microdeutopus gryllotalpa	SH	SH (sp.)	SH
Gammarus salinus		AB	AB
Gammarus duebeni	SH	SH, HMP	
Sphaeroma sp.	SH (one only)		
Idotea balthica			AB, SH
Idotea chelipes	SH	SH	AB, SH
Ostracoda			SH
Cyprideis torosa		HMP	
mysids		AB, SH	AB, SH
Praunus flexuosus	SH	AB, SH	AB
Neomysis integer		SH	
Palaemonetes varians	SH	AB	
Chironomid larvae	SH	AB, SH, HMP	AB, SH

Species	Hunt/Pantin 1962-1971	Bamber 1996	Porcupine 2005
Hydrobia ulvae	SH	AB, SH	SH
Hydrobid sp. (like Heliobia stagnorum			SH
Rissoa membranacea		SH	
Littorina saxatilis agg.	SH	SH	SH
Retusa obtusa			AB
Cerastoderma glaucum	SH	AB, SH	AB, SH
Conopeum seurati			SH
Bowerbankia sp.	SH		
Pomatoschistus microps	SH	AB, SH	AB, SH
Gasterosteus aculeatus	SH		AB
Beggiatoa			AB
Ruppia sp.	SH (R.cirrhosa)	SH, HMP	SH
Phragmites	SH	AB, SH	AB, SH
Juncus maritimus	SH		
Ulva sp.		SH	
Chaetomorpha sp.	SH (C.linum)	SH	
Enteromorpha sp.	SH	SH	
Unidentified algae		AB, SH	AB, SH

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Acknowledgements

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UK Deep-Sea Research From History to Modern Day

Tammy Horton, Brian Bett, and Maria Baker

Introduction

The four cruises of HMS *Porcupine* (1869-70) played a pivotal role in the development of deep-sea biology and helped place Edinburgh at the heart of this new science. The story does not, however, begin with the voyage of the *Porcupine*, but rather with HMS *Beacon* (1841-42) and one Edward Forbes, later a Professor of Natural History at Edinburgh University. Among a great many other contributions to marine biology, Forbes carried out dredging studies in the Aegean Sea from the *Beacon*. From these observations Forbes developed the "Azoic Theory", stated simply a depth limit to the distribution of life in the sea. For this theory, Forbes is often painted as something of a bête noire in the preamble to works on deep-sea biology; however in Forbes' own words "…it is in the exploration of this vast deep-sea region that the finest field of submarine discoveries yet remains."

Although it is debatable whether Forbes believed the "Azoic Theory" to be literally true, and despite evidence to the contrary, this view of the deep sea as a lifeless zone was prevalent until the time of the *Porcupine* in 1869. In the preceding 40 years however there had been a gradual accumulation of evidence against the "Azoic Theory", beginning with the retrieval of a starfish from a deep sounding line in 1818 on the *Isabella*, and a number of similar occurrences around 1860 – in particular the discovery of animals attached to the Sardinia to Bona telegraph cable brought up for repair from 2184m (see Tony Rice's *British Oceanographic Vessels* 1800-1950, for a more complete description of the evidence).

Meanwhile, Charles Wyville Thomson, a student of Forbes' and also later a Professor of Natural History at Edinburgh University, had visited Michael Sars in Norway and seen a variety of animals dredged from 823m near the Lofoten Islands (by his son, George, Ossian Sars), including a crinoid resembling something previously known only from fossil records. Thomson, intrigued by this and earlier evidence and with the support of W.B. Carpenter (a member of the council of the Royal Society) successfully petitioned the Royal Society and the Admiralty for the funds and the means to carry out deep-sea dredging studies around Scotland and Ireland "*with a view to ascertain the existence and zoological relations of animals at great depths*". He was first given use of HMS *Lightning* (1868) and despite problems with the weather and the ship, the cruise of the *Lightning* was successful and Thomson was subsequently provided with the *Porcupine* (Fig.1).

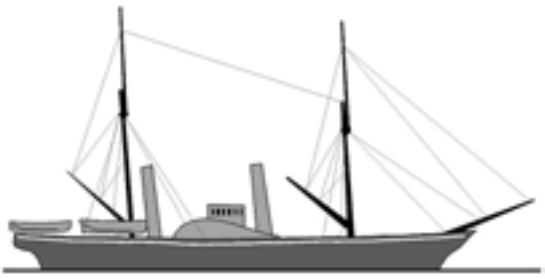


Figure 1. HMS *Porcupine*, a wooden two-masted brigantine rigged paddle gun-vessel, built in 1844.

The four cruises that followed were no less successful, laid the literal truth of the "Azoic Theory" to rest, began to reveal the great diversity of the deep-sea fauna, and opened up many other new avenues of oceanographic research. Armed with the results from the *Lightning* and *Porcupine*, Thomson proceeded to the organisation of the extraordinarily ambitious three and a half year global voyage of HMS *Challenger* (1872-76). It is the *Challenger* expedition that is most usually cited in the introduction to any text on deep-sea biology, but without the success of the *Porcupine* and the *Lightning* cruises it is doubtful whether that expedition would have taken place.

This contribution revisits the early oceanographic endeavours in the deep waters off Scotland and Ireland. These same areas are today the subject of considerable interest to the offshore Oil & Gas industry and have already been impacted by deep-sea trawler

fleets. Consequently there is a growing environmental concern and conservation interest in these areas, much of it sparked by the occurrence of deep-water coral. Indeed the coral *Lophelia pertusa* (Fig.2, then *Lophohelia prolifera*) was dredged from several locations during the *Porcupine* cruises.

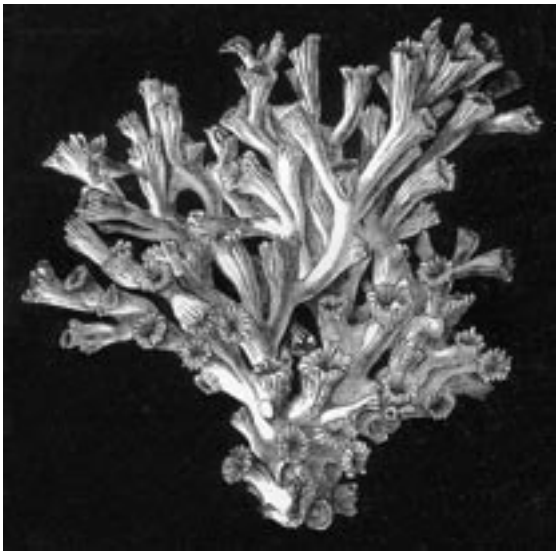


Figure 2. *Lophohelia prolifera* (*Lophelia pertusa*), adapted from Thomson, 1873.

Another biological habitat of potential conservation interest, and a major favourite of Charles Wyville Thomson himself, investigated by the *Porcupine* were "*Holtenia* grounds": mass occurrences of the hexactinellid sponge *Holtenia carpenteri* (Fig.3, now *Pheronema carpenteri*). Both *Lophelia* and *Pheronema* are inhabitants of "warm areas". The discovery of both warm and cold areas in the deep waters north and west of Scotland, and the influence that water temperature had on the distribution of species was a very significant advance in the science. Today we are better able to understand and map these warm and cold areas, but their critical importance to the distribution and biodiversity of Scotland's deep-sea fauna remains as determined by Charles Wyville Thomson and others aboard the HMS *Lightning* and *Porcupine* cruises of 1868-70.

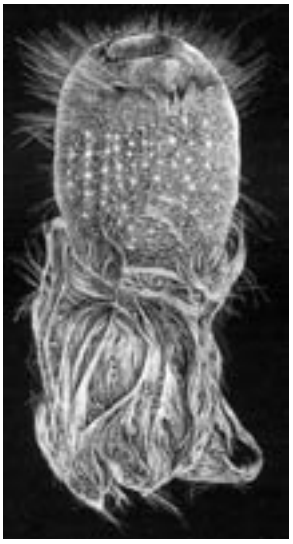


Figure 3. *Holtenia carpenteri* (*Pheronema carpenteri*), adapted from Thomson, 1873.

Early Voyages

The original *Lightning* cruise set out from Oban on the 8th August, 1868 to attempt deep-sea dredging studies. The vessel was beset by poor weather and initially only managed a few dredge hauls in 90-360m of water. Eventually the weather improved enough for dredge hauls at depths of 933m and 910m, with the greatest depth dredge being taken at 1189m towards the end of the cruise. Bottom temperatures were recorded throughout the cruise and produced rather surprising results, with very low temperatures of around 0˚C being recorded near the bottom, yet not very widely separated from much warmer bottom temperatures ~6-7˚C, with corresponding differences in the dredge catches.

The first cruise of the *Porcupine* (18 May-13 July, 1869; Fig.4) headed out west from Valentia to work the northern part of the Porcupine Seabight. The ship then crossed the shallowest part of Porcupine Bank, sampled in the deep Rockall Trough and worked back along the Malin Slope towards Donegal Bay. After coaling in Killibegs Bay, *Porcupine* made a return crossing of the Rockall Trough, working both in the Trough and on the eastern flank of Rockall Bank where she encountered "particularly great living masses of *Lophohelia prolifera*".

The second cruise of the *Porcupine* (17 July-4 August, 1869; Fig.4) headed out southwest from Queenstown to the Pendragon Escarpment area where she made her deepest dredge (2,435 fathoms: 4,454m) and encountered the enigmatic "*Bathybius*", a primitive life-form which T.H. Huxley had originally described from mud samples collected at depths down to 4300m, but which was later discovered (during Thomson's *Challenger* cruise) to be a precipitate

of calcium sulphate from the seawater when samples were preserved in alcohol. In the early 1980s, however, the discovery of seasonal deposition of phytodetritus to the deep-sea floor led to the suggestion that this was the source of the material described by Huxley rather than the inorganic explanation given earlier (Rice, 1983). The cruise continued with work on the Goban Spur and the southern rim of the Porcupine Seabight before returning to Queenstown.

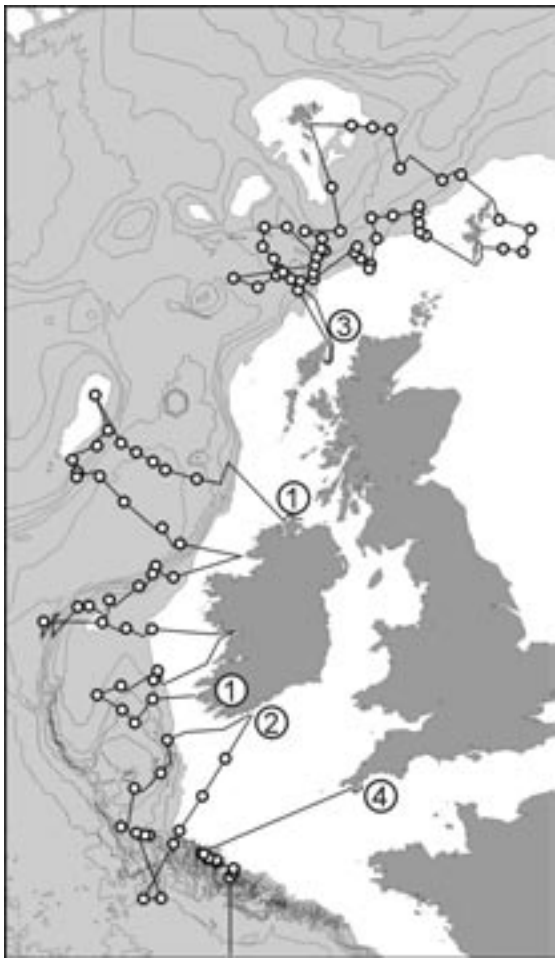


Figure 4. The cruises of HMS *Porcupine* (1-3 in 1869, 4 in 1870).

The third cruise of the *Porcupine* (15 August-15 September, 1869; Fig.4) left from Stornaway to follow-up and extend the observations made during the cruise of the *Lightning* (1868). She made first for the "*Holtenia* Ground", then crossed the Wyville Thomson Ridge to work the "cold area" in the Faroe Bank Channel before making for Thorshaven. Further "cold area" work followed on a transect across the Faroe-Shetland Channel ending with a visit to Lerwick. *Porcupine* then made back to the southwest working along the West Shetland Slope, re-crossing the Wyville Thomson Ridge, to finish the cruise with some "warm area" work in the northern Rockall Trough before returning to Stornaway.

The forth cruise of the *Porcupine* (4 July-October, 1870; Fig.4) left from Falmouth to investigate the Mediterranean. Thomson was unable to take part in the first leg from Falmouth to Gibraltar as planned. Thirty-nine dredging stations were worked on course to Gibraltar, at depths up to 1820m.

Modern-day exploration in UK waters.

The findings of the cruise of the *Lightening* and the third cruise of the *Porcupine* were particularly enlightening and will be compared to modern-day studies of the same area. Both of these cruises focussed on the area to the North and West of Shetland, an area now of considerable importance due to interests in oil and gas exploration. As such this area is now undoubtedly one of the most extensively studied deep-sea areas in the world. This is largely the result of work commissioned in the late 1990's by a consortium of industry companies, the Atlantic Frontier Environmental Network (AFEN). AFEN funded an intensive effort to survey the bottom-dwelling animals of northern UK deep waters, resulting in large-scale regional surveys of the North and West of Shetland and the Rockall Trough seabed environments.

In 1996, 20,000 square kilometres of seabed lying to the west of the Shetland Isles was mapped and sampled. A further survey was carried out in 1998. The 1996 survey covered an area the size of Wales and included all the acreage of the UK Atlantic Margin which had been licensed for oil and gas exploration before 1995. In 1998 a further 10,000 square kilometres of seabed covered by the 17th oil licensing round to the north and west of Scotland was surveyed. The same strategy was adopted for both surveys. In spite of the fascinating early results from the *Lightning* and *Porcupine* cruises the area had been comparatively poorly studied ecologically since that time.

From *Lophohelia prolifera* to *Lophelia pertusa*

Thomson describes the occurrence of *Lophelia pertusa* as being '*abundant at depths from 150-500 fathoms all along the west coasts of Scotland and Ireland at temperatures varying from 0 to10°C and in some places – as for example station 54 between Scotland and Færoe, and station 15 between the west coast of Ireland and the Porcupine Bank – there seem to be regular banks of it – the dredge coming up loaded with fragments, living and dead.*'

The occurrence of the coral frameworks of *Lophelia pertusa* has attracted much attention, including numerous rather erroneous reports of the occurrence of major 'coral reefs' in the British press. Information about the cold-water coral *Lophelia pertusa* can be sourced on **www.lophelia.org**, a website devoted to providing information about this animal. *Lophelia* has been reported along the continental shelf, on offshore seamounts and banks in UK waters. Many records are known from the Rockall Bank and a newly-mapped inshore reef complex has also been found, set in the entrance to the Sea of Hebrides. In the AFEN surveys north of the Wyville Thomson Ridge Lophelia pertusa was not frequently encountered, and the sidescan sonar survey clearly established that there were no large 'reefs' present. *Lophelia pertusa* is certainly widespread in the Rockall Trough (Wilson, 1979a), as it is elsewhere in the northeast Atlantic (see Rogers, 1999).

From *Holtenia carpenteri* to *Pheronema carpenteri*

Pheronema carpenteri (Thomson, 1869) was first described as the indicative organism of the '*Holtenia* ground', a region on the edge of the Hebridean Terrace from which both the *Lightning* and *Porcupine* cruises collected particularly rich benthic samples. Wyville Thomson's first description of *Holtenia carpenteri*, published in early August, 1869, was based upon four specimens collected by HMS *Lightning* at Station 12, east of the Butt of Lewis, Northern Scotland, from a depth of 520 fm (982m). By the time this account was in press additional material had been collected during the *Porcupine* cruises in 1869, both from close to the type locality and also from SW Ireland on the southern flank of the Goban Spur at 725 fathoms (1326m).

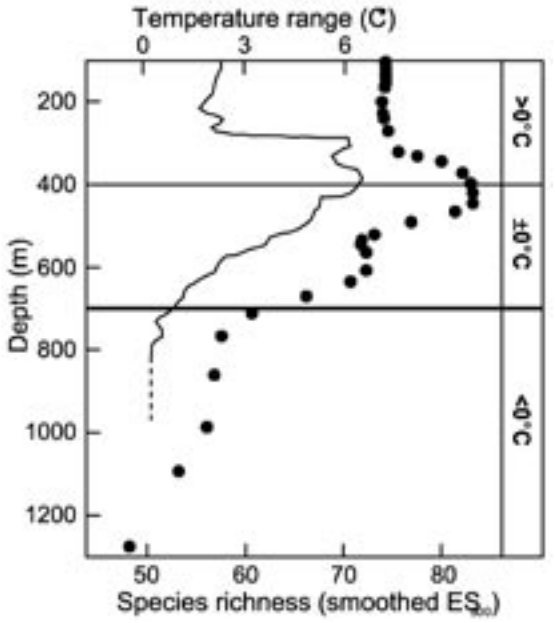
The '*Holtenia*' ground found in the Porcupine Seabight has since been extensively studied by Rice *et al* (1990), who note that the species has a peak in abundance at between 1000m-1400m on the Goban Spur and eastern and northern flanks of the Seabight but may be absent from the southerly parts of the Porcupine Bank (Rice et al, 1990).

Warm and Cold areas

The unique nature of the Faroe-Shetland Channel (FSC) was determined on the summer 1868 cruise of HMS *Lightning* (Thomson, 1873). Surprisingly, this pioneering work, together with that undertaken on the cruise of HMS *Porcupine* in the summer of 1869, produced an understanding of the hydrography of the FSC that is still useful today: "*Thus the entire mass of water in the channel is nearly equally divided into an upper and lower stratum, the lower being an Arctic stream of nearly 2,000 feet deep, flowing in a south-westerly direction, beneath an upper layer of comparatively warm water moving slowly towards the north-east; the lower half of the latter, however, having its temperature considerably modified by intermixing with the stratum over which it lies.*" (W.B. Carpenter, cited in Thomson, 1873).

The hydrography of the Faroe-Shetland Channel (FSC) has been the subject of scientific study for over 100 years, making it one of the most intensively studied oceanic areas in the world (Hansen, 1985, Turrell et al., 1999). It is clear that hydrography, particularly bottom-water temperature, is the key to understanding the large-scale distribution of the fauna in the FSC. While absolute temperature is undoubtedly a very significant environmental variable, it is variation in temperature range that is perhaps of greatest interest. Westerberg (1990) mapped temperature variations throughout much of the FSC. Within the west of Shetland survey area, Westerberg indicates the 0 °C isotherm ranging from 400-800 m and the 7 °C isotherm ranging from 300-500 m, which agrees closely with the data collected during the AFEN studies. Westerberg (1990) also assessed temperature range indicating maximal variance at depths between 500 and 600m west of Shetland. This is well reflected by the extreme temperature range (10°C) encountered by the current meter

deployed at 550 m west of Shetland during the AFEN studies. Temperature range has been shown to be one of the most significant variables affecting species diversity in the area



(see Figure 5).

Figure 5 – Plot showing the variation in species diversity alongside the variation in temperature range from the AFEN polychaete data set. (modified after Narayanaswamy *et al*. 2005).

Shallow water (<500 m) sites north and south of the Wyville Thomson Ridge are relatively similar in their faunal composition, presumably as a result of sharing a common water mass. Below 500 m, the physical barrier of the ridge separates the cold northern waters from the warmer southern waters, enabling two highly distinct deep-water faunas to co-exist in uniquely close proximity, a feature noted by Wyville Thomson, although at the time the existence of the ridge and consequent complexities of the hydrography were not known.

Data from the AFEN surveys have been published in CD-ROM form by Geotek Ltd, and have contributed significantly to knowledge of the benthos in the area. The surveys revealed an area of previously unknown, isolated smaller-scale habitats (100 m scale) which have been called the Darwin Mounds, comprising several hundred mounds in two main areas, which have now been designated the UK's first offshore Special Area of Conservation and given protection from bottom trawling. The AFEN regional scale approach was then adopted in 1999, 2000, and 2002 by the DTI with surveys of the Wyville Thomson Ridge, the central axis of the Faroe-Shetland Channel and northern channel and Norwegian Basin as part of their Strategic Environmental Assessment process. Strategic Environmental Assessment (SEA) is the process of appraisal through which environmental protection and sustainable development may be considered, and factored into national and local decisions regarding Government (and other) plans and programmes, such as oil and gas licensing rounds (for more information see: www.offshore-sea.org.uk).

Data from these surveys are still being generated and zoological samples lodged with the National Museums of Scotland. In addition to physical samples, these wide-area surveys have also provided us with numerous photographs of the deep seabed and illustrate the variety of habitats found in our own deep-sea territory. A new online resource: www.deepseascape.org, is giving access to these images of deep-sea habitats found in UK waters. The site also covers historical and modern-day exploration of UK deep waters, examples of the different habitat types and information on how deep-sea photographs are collected.

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Information Requests and Observations

Shore decline

The following comment was sent by Porcupine member Dr Dick Hammond to the Hon Editor, Frances Dipper in an e-mail. Your Hon Editor has also noticed a similar decline in the biodiversity of the shore at West Runton. This is the only rocky shore of any extent on this coastline and is heavily visited by the public and by school, college and university groups. We would both be very interested to hear from anyone with a similar story to tell:

"I had a prodigious disappointment on Saturday. Visiting one of my favourite shores (the Scaup at Hunstanton, running out NNW of the lighthouse) on the lowest tide in 25 years, I found hardly anything! The shore was quite bare, and overlain by a thin layer of silt, at least at the northern end of the Scaup, where I have had interesting things on previous occasions. It really was a complete waste of an afternoon, paralleling several of my most recent trips to West Runton, whose fauna has now declined to a fraction of what it used to be when I was young. Has anyone noticed a similar decline on formerly prolific shores in other parts of Britain and Ireland?"

The shore at West Runton : F Dipper

Rare Amberjack caught off Isle of Wight

Douglas Herdson
Information Officer, National Marine Aquarium, Rope Walk, Coxside
Plymouth, PL4 0LF, UK Telephone: (+44)01752 275216/01752 600301
Email: Douglas.Herdson@national-aquarium.co.uk

Amberjacks are a group of jacks or trevallies (family Carangidae), which are found in the warmer seas of the world. Four species of Amberjacks have been found in the North East Atlantic – Greater Amberjack *Seriola dumerili*, Guinea Amberjack *Seriola carpenteri*, Lesser Amberjack *Seriola fasciata* and Almaco Jack *Seriola rivoliana*.

A Greater Amberjack was found at Salcombe in Devon in September 1951 and an Almaco Jack caught in Torbay in August 1984. From the early nineteenth century until 1994, these were the only Amberjacks recorded from British waters. From 1994 to 2006 a further 22 have been caught. These were six Greater Amberjacks, seven Almaco jacks, seven Guinea Amberjacks and two that were not identified to species. However so far there have been no definitive records for Lesser Amberjacks in British waters.

Hence it was exciting when Geoff Blake caught a jack off the south coast of the Isle of Wight with the warm silvery red colour and orange stripe of an amberjack. The fish has a low dorsal fin and fairly large eye, which made Mr Blake and his brother-in-law Mr Chris "Meg" Mortimer suspect that it was a Lesser Amberjack and hence the first for Britain. It is 37 centimetres (14 inches) long and weighs 650 grammes (about a pound and a half).

It was sent to the National Marine Aquarium in Plymouth where Douglas Herdson, the Information Officer, called in Dr Paul Gainey, the Fish Recorder for Cornwall, to examine it with him. Between them Mr Herdson and Dr Gainey have identified ten of the British Amberjacks, and Mr Herdson had studied these fish in the tropics.

When examined in detail it was found that the fish was in fact, a Greater Amberjack

Seriola dumerili, as it had fifteen gill rakers - all the other European species have at least 19. Also the lobe of the second dorsal fin was too small for it to be a Guinea Amberjack or Almaco Jack. The supramaxilla bone (a small bone beneath the eye) was fairly broad and would be slender in a Lesser Amberjack; and although fairly large the eye was too small (18% of the head length) to be a Lesser Amberjack as their eye is 21 to 32% of the head length.

So this fish was the 24th amberjack found in British waters and the seventh ever Greater Amberjack. While still a rare animal these interesting fish are getting more frequent around our shores. However, this is only the second amberjack to be found to the east of Devon and the Channel islands. If they become commoner they would be a very tasty replacement for cod on our plates.

Rare fish do seem to be becoming more familiar in British and Irish waters with four Oceanic Pufferfish being found this summer (2006), as well as the second Yellowfin Tuna for Britain and the third Big-eye Tuna. On the same day as this amberjack was caught, what is probably the first Atlantic Tripletail *Lobotes surinamensis* for north west Europe was trapped in a net in the Bristol Channel near Newport.

Note from Hon Editor: I recently ran a fish identification course for 'Seasearch' (MCS) based at the National Marine Aquarium in Plymouth and Doug Herdson kindly showed us the frozen specimens of some of the species he mentions. Most of these fish were sent in by fishermen but keep your eyes open for any unusual fish whether diving, fishing, dredging or walking round fish markets. Doug would be glad to have your records and will send you a recording form if you contact him as above. FD

Red blennies and Red-mouthed gobies

Frances Dipper, *fdipper@sustenergy.co.uk*

The Red blenny or Portuguese blenny (*Parablennius ruber*) has only recently been identified in British and Irish waters. This is not because it is a recent immigrant but because it has always been confused with the Tompot blenny *Parablennius gattorugine* as it is very similar in size and was simply thought to be a colour variant. For a good photo visit www.habitas.org.uk/marinelife/pisces/parrubs.jpg. Paul Kay has collated records from his own photographs and those of others showing that this blenny occurs along the west coasts of Ireland and Scotland at least as far north as St Kilda and the Isle of Lewis. This little fish prefers exposed situations and has been spotted in the Aran Isles, Donegal, Islay, St Kilda, Gaskein (off W lewis), Muck and the Scilly Isles. Can it be found anywhere along the coasts of England and Wales? Check through your photos of topmpot blennies and maybe we can find the answer! Please look out for this little fish and I would be pleased to receive any records of this species.

The Red-mouthed or Red-mouth goby (*Gobius cruentatus*) has so far only been recorded from a few sites in southern Ireland (including Loch Hyne). However, a recent possible sighting in southern England (pers comm From Doug Herdson) suggests it may have a not altogether unexpected wider distribution. As long as you get close enough to see that it is a red-coloured goby and not a red-coloured blenny then identification should be easy. Again please look out for this fish – see my British Sea Fishes book for a great picture by Bernard Picton.

Protecting the world from harmful introduced species

The following press release may be of interest to Porcupine members. I visited the website and searched for introduced marine species in UK and it quickly came up with a list and details of 16 species. Hon Ed

People around the world can access information about harmful introduced species easier than ever thanks to the September 2006 launch of a new website for the Global Invasive Species Database (GISD). The world's premier source of free, authoritative information about introduced species that threaten native biodiversity and livelihoods now has improved content and functions.

While only a small proportion of the living organisms that are moved around the world with human activity and global trade actually cause harm, those that do can be devastating. Such "biological invasions" are now considered one of the biggest factors in biodiversity loss and extinctions. However, fighting back is possible provided communities and decision makers are aware of the threats and have access to information on what they can do about it.

"The Global Invasive Species Database alerts people to the causes and consequences of invasive species and provides practical information about effective prevention and management options. It helps protect natural resources and livelihoods," says Michael Browne from the Invasive Species Specialist Group of the Species Survival Commission of IUCN-The World Conservation Union.

The GISD, which has been on-line at www.issg.org/database since 2000 and mirrored by the National Biological Information Infrastructure (NBII) of the US Geological Survey at www.invasivespecies.net/database, currently receives more than 900 unique visitors per day (50,000 hits per day).

It is also available in CD-ROM format, allowing people to access up-to-date, comprehensive invasive species information where internet access is restricted or non-existent. In keeping with the philosophy that anyone should be able to access information that can help them protect their environment, access to the GISD is free.

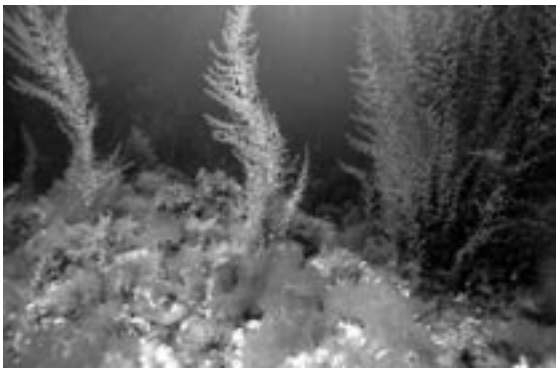
For more information, please contact Michael Browne at issg@auckland.ac.nz or phone +64 9 3737599 (x86814)

Examples of the harmful effects of some introduced species:

The brown tree snake has driven into extinction 9 out of 12 of Guam's native birds, effectively silencing their forests. http://www.issg.org/database/species/ecology.asp?si=54&fr=1&sts=sss

Crazy ants in the Australian Christmas Island National Park are killing millions of land crabs and changing the entire ecosystem. http://www.issg.org/database/species/distribution_detail.asp?si=110&di=16483&sts=

In South Africa's Lake St. Lucia Protected Area, the invasive introduced triffid weed changes the sex ratio of crocodiles. http://www.issg.org/database/species/impact_info.asp?si=47&fr=1&sts=



Sargassum muticum: P. Tinsley

How PMNHS council members became Marine Biologists

Frances Dipper

I suppose it was inevitable that I would be a biologist of some sort. I was brought up on a good imitation of 'Cold Comfort Farm' in deepest Warwickshire along with my four brothers until I was thirteen. Ice on the inside of the windows, wood fires, orchards, orphan lambs to bring up and fearsome geese. With no company (brothers don't count), no television, no computers and no shops I spent my time roaming the countryside, riding ponies (or cows), collecting eggs and falling into ponds. Once a week for a special treat I was allowed to visit my granny who lived in a chocolate box cottage opposite the farm, to watch the 'Lone Ranger' on her black and white telly. And there it all began because one week I missed the Lone Ranger and was allowed to watch another programme. It was Hans and Lotte Hass. I was going to be a marine biologist.

My father gave up farming and we moved to Sussex, his birth-place. A-level zoology, botany and chemistry taught badly but kindly by Anglican nuns served to fuel my interest in biology. Even dissections of the cranial nerves of dogfish didn't put me off though the formalin probably pickled parts of my brain – no gloves or masks in those days. University at Southampton studying Zoology was the next critical path. Anything and everything was interesting! My supervisor wanted me to go into endocrinology. He helped me publish my first paper in that field. But he should have stopped me going on the marine field trip to Guernsey….That was it. A whole week of grubbing around in rock pools, counting limpets, marking winkles with paint and even making baby sea urchins by chopping adults in half and mixing their gonads together!! I never looked back! University holidays gave me the chance to work in the bowels of the Natural History Museum, cataloguing marine fish and fossils and feeling incredibly important as I used my magic key to slip through the doors where the public aren't allowed! Years later when I was self-employed and doing contract work for the museum, I got a key again and the magic remained!

So having done precisely two weeks of marine biology at A-level and undergraduate level, I applied to all the marine stations I could think of and asked if I could do a PhD with them. And so it was I found myself in the Isle of Man in the early 1970's studying the naughty bits of wrasse. Joanna Jones was one of the very few other women there when I started, but then, I was used to that. Now I knew that very soon I would be swimming around underwater and 'goggling' just like Hans Hass! One home-made wetsuit later, I made my first dive under the careful supervision of Mike Bates complete with twin hose regulator, rubber weight belt and twin cylinders. It was winter. I saw a worm and a crab, couldn't clear my ears and was blissfully happy. A trip to Lundy to study red band fish with Roger Pullin and Jim Atkinson confirmed it –I was hooked on diving.

Port Erin, showing the Marine Station

My first (and only) job after completing my PhD was just too good to be true. The

Frances swimming with a shark: Liz Wood

Nature Conservancy Council was just starting to carry out marine surveys around the coast of UK. I was taken on to organise and lead surveys in conjunction with the (then) Underwater Conservation Society using amateur divers and to help with other 'in house' surveys. So for three years I did just that, organising trips mainly to the west coast of Scotland and especially to the Hebrides. It wasn't all easy going. There was the boss to contend with. There was no such thing as HSE for divers. Being tossed into the water on your own with a blob and picked up an hour later (if you were lucky) was character-building stuff. These were the years when I would say I became a 'real' marine biologist or perhaps a real 'marine naturalist' learning to identify and observe everything from seaweeds to fish in their natural habitat.

Ballan wrasse: Chris Wood

Meanwhile I had got married and there was the small problem of babies. Also a husband who worked for an oil company and got posted to Dubai in the mid 1980s. Still, there were compensations. 24 hours after arriving, I did my first Gulf dive. On returning to England 5 years and another Dipper-nipper later I decided to stay self –employed, something I had started before leaving UK. I've never regretted it.

BOOK REVIEWS

Sea Life in Focus. A Memoir.

Douglas P. Wilson. Cell Mead Press. 2002

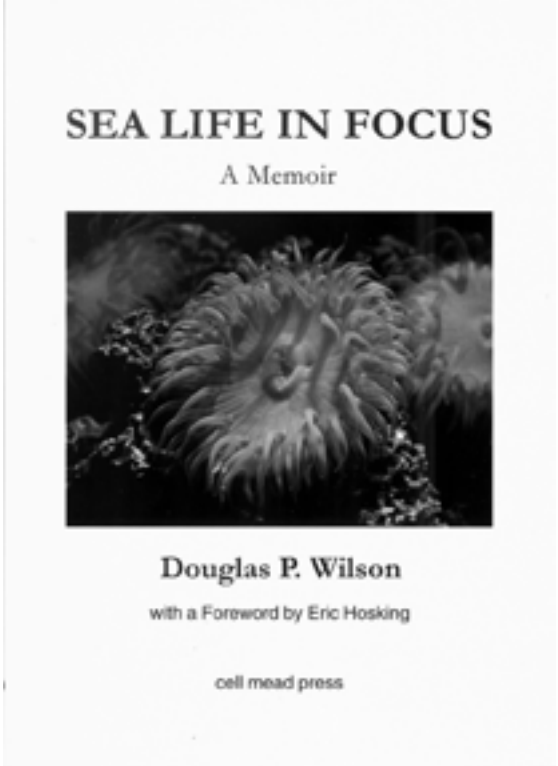
Reviewed by Graham Ackers

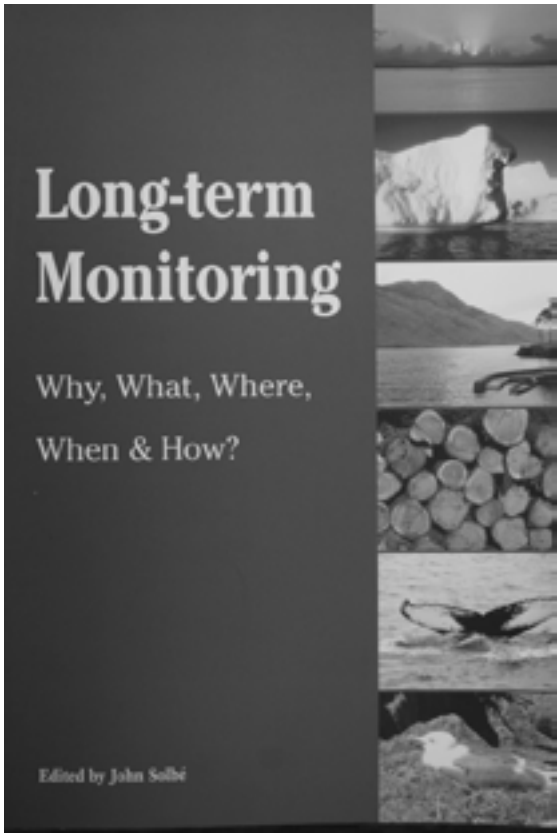
In the 1920s, the concept of taking photographs of marine life was, to say the very least, embryonic. Today we accept underwater photography as a valuable marine biological tool, and take for granted the availability of modern photographic equipment – SLRs, fast film, electronic flash, digital cameras, underwater housings and the like. Nothing of this sort existed then, and it was against this background that Douglas P. Wilson (1902-1991) pioneered marine life photography by inventing, building and using a variety of apparatus that would not seem out of place in the imagination of Heath Robinson! Nevertheless, they worked well, as shown by the fine images that have appeared in many journals and books, including classics such as C. M. Yonge's "The Sea Shore", Alister Hardy's two volume "The Open Sea", Russell & Yonge's "The Seas" (early editions in particular), as well as his own "Life of the Shore and Shallow Sea" and "They Live in the Sea".

As a scientist at the Marine Biological Association, Wilson continued to use photography to complement his professional career, but these activities were confined mainly to his (so called) leisure time. Sometime during his retirement, his friend the eminent bird photographer Eric Hosking persuaded him to write his memoirs. This he did, but was unable to find a publisher in 1987 and the typewritten manuscript lay dormant until it came to light in 2001, when his daughter Hester Davenport decided to publish. The result is this fine little book, being a high quality paperback of some 102 pages, lavishly illustrated with numerous black and white and 16 colour photographs.

Beautifully written and packed with fascinating observations and charming anecdotes, this book is unreservedly recommended to anyone interested in the history of both marine life photography and marine biology.

Available from – Cell Mead Press, 60 Church Road, Old Windsor, Berkshire, SL4 2PG, e-mail davenport@cellmead.freeserve.co.uk . The price is £6.99, or £7.75 including p&p.





Long-term monitoring. Why, What, Where, When & How?

Edited by John Solbé, a Sherkin Island Marine Station Publication, 2005

ISBN 1 870492 82 X

Reviewed by Frances Dipper

This excellent book is the proceedings of a workshop and conference "The Importance of the Long-term Monitoring of the Environment" held by Sherkin Island Marine Station from 14th-19th September 2003 on Sherkin Island, Co Cork, Ireland. The event drew together experts from the UK, Ireland, USA and Canada to discuss the need for and the value of long-term monitoring.

The first 33 pages of the book comprise the Workshop report and provide a very useful overview of what long-term monitoring is, creating a long-term monitoring programme and how to interpret the data collected. This mini-handbook sets the scene for the conference papers that comprise the remainder of the book. The 18 papers presented range in scope from the social value of long-term monitoring, through the role of the media, and of geology, to freshwater and marine fish and fisheries, birds, otters, sea lice, plankton, rocky shores, crustaceans and molluscs in Canada, red tides, cetaceans and finally to more general papers on environemental monitoring in Ireland and the importance of long term monitoring.

Whilst I have only dipped into this book, I found it easy to read and was quickly hooked reading it when I should have been doing other things! It is beautifully presented with clear text, diagrams and black and white photos. The addition of a photograph of each author at the beginning of their paper is a nice touch along with their contact details to allow readers easy access to experts in their field of interest.

In out present climate of worrying changes and trends caused by human interference, long-term monitoring is now proving its worth time and again. But it is important to get it right if full use is to be made from data that is often expensive to collect both in terms of time and money. This book should help to achieve this. Contact Matt Murphy, Sherkin Island Marine Station, Sherkin Island, Co Cork, Ireland.

€40 plus €5.50 postage (UK & Ireland) or €7 (rest of world)

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 guidelines. Please submit all material in electronic format if at all possible either by e-mail or disc/CD. Hard copy can also be accepted provided it is not too long!

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References

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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.

If all this is thoroughly off-putting, just send whatever you have got and we will do our best with it!!