

PORCUPINE MARINE NATURAL HISTORY SOCIETY

NEWSLETTER



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Porcupine Marine Natural History Society

Newsletter

No. 17 Jun 2005

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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 3 newsletters a year which include proceedings from scientific meetings.

Individual £10 Student £5

 www.pmnhs.co.uk

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EDITORIAL

This is the first newsletter since the November 2004 issue (No 16 posted out late in February). The decision was taken not to produce the February Issue as we had insufficient copy to make it worthwhile. Your Council would like to apologise for this shortcoming and hope that it won't happen again in the near future. Hopefully this, the present issue, which contains papers from the annual meeting held in March in London plus some fascinating contributions in 'Porcupine Pieces' will make up for any inconvenience.

Within this issue you will find the start of a new and revealing series that tells the story of how each of us, your Council, came to take up a career or interest in marine biology and what we ultimately ended up doing! We start in this issue with Peter Barfield and Viki Howe. With the untimely demise of Port Erin Marine Laboratory scheduled for 2006, it will be interesting to see how many of us have spent formative years there or in other similar establishments. Our own Annual meeting is scheduled to take place at Port Erin from 24th to 26th March 2006 (see Meetings page) and should be a fascinating event. Also in this issue you will find two sets of Council minutes plus the AGM Minutes. Maybe not fascinating reading but at least you can see what plans we are making and what is going on within the Society.

I hope you all have a wonderful summer with plenty of fieldwork and that we shall hear all about it in the next issue of the Newsletter!

WEBSITE

Please also remember to visit the website (www.pmnhs.co.uk) for up to date information. We would be very happy to receive new articles, photos and notes for the website. Use it to post requests for information or to tell others of interesting finds, observations and meetings etc.

SUBSCRIPTIONS

There are still some members who are not up to date with their subscriptions. Please check that you have paid yours! If you do not already do so, please consider paying by standing order. Details and forms on the home page of the website. Subscriptions are due on January 1st of each year.

INSTRUCTIONS TO AUTHORS

If you are submitting copy for the newsletter, please refer to the 'Instructions for Authors' (see Inside cover). Please note that you should NOT insert images into word documents as this makes it difficult for us. Please supply images as separate files.

Frances Dipper

COPY DEADLINES

September 15th for the October/November issue December 15th for February issue

MINUTES OF THE COUNCIL MEETING

Held on Saturday November 20th 2004 at Natural History Museum, London

Present: Peter Barfield, Julia Nunn, Frances Dipper, Paul Brazier, Anne Bunker, Lin Baldock, Vicki Howe, Jon Moore, Alison Shaw, Roni Robbins, Séamus Whyte

Apologies: Shelagh Smith, Peter Tinsley, Sue Chambers, Andy Mackie, Roger Bamber

Finances

A summary of the current financial position was presented by Jon Moore. Income this year from subscriptions is down, but this may improve once the new initiative to follow up unpaid back memberships is completed. The Bournemouth conference made a welcome surplus of £479, but the Lyme Bay field meeting had a £140 shortfall on boat hire. It was agreed that the organiser Lin Baldock should be reimbursed.

In conclusion, by the end of the year there may be a small deficit in funds, but we have very adequate reserves to cope with this. It was agreed that there was no need to increase the subscription at this stage.

Membership

The membership database is now held by Seamus Whyte who is updating it. 14 new members (including one library) joined in 2004. Full membership is 181, but of these only 126 have paid, so there is considerable chasing to do to rectify this. It was suggested that one of the problems is that those members not paying by Bankers Order are not sent a regular reminder of their subscription due date. It was agreed that this should be done in future. Seamus Whyte will e-mail all defaulters, and send them details of the Standing Order. It will be left to Seamus's discretion as to collection of past debts. ACTION: Seamus Whyte

Reminders will be posted in the October and February newsletters. ACTION: Frances Dipper

Website

Anne Bunker reported the site was up to date with the 2005 conference information and will be updated regularly. The new feature on *Leptosammia* from Robert Irving is not yet

on the site. A new arrival 2 days ago in his household has prevented preparation! Other suggestions for a new feature were discussed, including turtle strandings and jellyfish. It was agreed that *Verella* would be an interesting and topical subject. Paul Brazier will send information to Anne. Vicki Howe and Peter Barfield will collaborate over producing this. ACTION: Peter Barfield, Vicki Howe and Paul Brazier

Anne Bunker requested that anyone with suitable photographs for updating the site, to send them to her.

Newsletter

Frances Dipper reported that the Newsletter appears to be well received according to comments sent in. The main problem remains persuading speakers at the annual meeting to provide written papers. ACTION: Roni Robbins to ask speakers for 2005 to provide their papers at the meeting or very soon afterwards.

It was agreed that the rather specialised papers sometimes submitted for Porcupine Pieces were acceptable but only one should be included per issue. Cover and format should remain as it is. Instructions to authors have now been published in the recent Newsletter.

Electronic copies: Archiving of past volumes was discussed. Peter Barfield presented some scanned examples of the old series for which no electronic copies exist. To make these useful (e.g. searchable) would be time consuming. After some discussion, it was agreed that the way forward would be to incorporate the old series onto a CD plus the new series up to the 25th anniversary. The CD could also incorporate the proposed *History of Porcupine*. The aim would be to produce this for the 30th anniversary in 2007. This would require funding. The MBA might be interested in supporting such a project and it was agreed that Peter Barfield would talk to them. ACTION: Peter Barfield

The new series all exist in electronic format of one sort or another. The possibility of converting these to pdf format for possible

publication on the web site was discussed. ACTION: Jon Moore to talk to Peter Tinsley

The newsletter articles (including papers from the annual meeting) are currently sent to BIOSIS for consideration for inclusion in Zoological Record. Copies also go to the legal deposit libraries at British Library and Oxford Bodleian and other libraries. Frances Dipper was asked to put this in the next Newsletter to encourage more contributions to the Newsletter. ACTION: Frances Dipper

Ideas for copy for the Newsletter were discussed. It was agreed that Council members would each produce a short piece on 'Why I became a Marine Biologist'. These will be published over several issues. ACTION: All Council members

Recording scheme

Jon Moore reported that there had been no action or developments. See review of progress below.

Annual Meeting and AGM 2004

Lin Baldock reported that there had been 14 speakers – two had dropped out but were replaced. Some delegates only wanted to come for one day and the possibility of charging less was discussed. It was agreed this should be left open as each conference is different. The fee is already very low. Attendance by students and their integration into the social aspects of the conference was discussed. It was agreed that in the future, students should be welcomed specifically at the start of the meeting plus anyone attending for the first time. Council members should be available to act as runners/escorts(!). ACTION: all Council members

Field trip 2004

This was not well supported by Porcupine members. Only 3 attended plus a few divers on the Sunday. The subsequent loss on the boat hire for the Porcupine members day will be refunded to Lin Baldock (see Finances above). The species list has been made available to the Devon Wildlife Trust and was published in the last Newsletter (Issue 15). Lin was thanked for organising both the AGM **and** the field meeting.

Annual meeting and AGM 2005

Collections, Collectors and Collecting. Roni Robbins reported that the Natural History Museum is going to provide the Flett Theatre free of charge. This is a huge help as normal hire charges are way beyond Porcupine means. A member of staff will be available to run the AV side of things. Coffee will be outside the lecture theatre in a good sized room where posters can be viewed. Some speakers have agreed to give presentations. Other possible speakers were discussed and will be approached by Roni. Costs will be £30 (members) and £35 (non members). Concession fee for students and speakers is £10. Lunch is available outside the museum around South Kensington. Dinner arrangements will be finalised depending on interest but a deal with a restaurant for around £25-£30 per head is possible. For the Sunday work on the collections it will be necessary to know numbers and which groups people want to work on. Microscopes will be available but anyone with their own should bring it.

Julia will work out details of council members retirement and re election etc. It was agreed that the creation of an official post of Hon. Membership secretary should be put to the membership at the AGM as it requires a change in the Constitution. Notice of the AGM must also go in the February Newsletter to comply with the Constitution. ACTION: Julia Nunn and Frances Dipper

Field meeting 2005

Seamus Whyte reported that the Eastern Sea Fisheries boat is available for July 7-8th 2005. Further days for shore work to run on from this. The boat will take 6-7 people. Eastern Sea Fisheries are providing the boat for no charge except consumables. In return, data collected will be made available to them. It was agreed that a deposit should be taken from those wishing to reserve a boat space to avoid casual cancellation. The possibility of hiring/borrowing a room in Hunstanton (museum?) for looking at specimens will be investigated. Seamus Whyte and Frances Dipper will meet to discuss further details. ACTION: Seamus Whyte and Frances Dipper

Porcupine 2006

Seamus Whyte has talked to Port Erin marine station and they are agreeable to the idea of hosting Porcupine 2006. The date in March will need to be discussed possibly to co-incide with spring tides to allow for a field workday or days following the meeting. ACTION: Seamus Whyte and Frances Dipper

Review of Progress and future projects

Julia Nunn summarised the last few years 'history' in terms of the re-birth of Porcupine following its near closure, and her involvement as Executive Director for one year, and subsequently as Chairman. Porcupine is now 5 years on from her first election as Chairman (with thanks to Roger Bamber whose comments are paraphrased here):

- We appear to be stable in the successful realisation of a programme of one meeting + one field trip per year.
- Judging by the turnout, the indoor meetings are certainly a success.
- Field trips have never been well attended, but they remain productive, and a sensible application of the expertise of members.
- The Newsletter has improved greatly in presentation, although still has problems gaining copy.
- Membership has always been about 200. That we recruit successfully at meetings suggests that these meetings are doing OK.
- There has been a refreshing recruitment to the Council over recent years, an improvement on the historic reliance on those few people prepared to get things done – and of course a source of new ideas.
- We need to maintain the present service to the membership in keeping with the aims laid out in the Constitution. Future developments and improvements require ideas and discussion.

After discussion and agreement concerning these points, it was agreed that initially a feedback form to find out what the membership thought of the Conference, field trips etc. would be a good idea. ACTION: Alison Shaw

Vicki Howe wrote an excellent article about Porcupine that has been published in the MCS's Marine Conservation magazine. It was agreed that this article should be published in other

magazines/newsletters (e.g. Conchological Society) after being suitably modified. ACTION: Vicki Howe

The discussion revolved around a number of issues:- in qualitative terms, has Porcupine achieved its aims? What have we added to natural history? As time was limited it was only possible to discuss the Recording Scheme. Jon Moore has been unable to devote any time to promoting this aspect of Porcupine. The availability of other recording schemes was discussed. There are quite a few out there. (*Editor's note: These are listed in English Nature Report No. 556 Volunteer participation in marine surveys, Robert Irving 2003*). Any records received by Porcupine are fed into other relevant schemes and/or are published in the Newsletter. However, it was agreed that the scheme should be maintained, as it picks up casual and unstructured observations that can be very useful and do not always find their way into more formal schemes. Roni Robbins volunteered to take over the scheme and Vicki Howe will assist. Jon Moore will therefore officially step down as Hon. Records Convenor at the 2005 AGM, and Roni will be put forward as a candidate for this post. ACTION: Julia Nunn to include in AGM business

Other ideas for future projects were very briefly discussed. Possibilities included running taught field trips/days/ID courses; day visits to shores/aquaria for teaching.

Any Other Business

History of Porcupine: this will be combined with the project to put past issues of the newsletter on CD for the 30th anniversary. A good venue will therefore be needed for Porcupine 2007

Date of Next Meeting

At the Conference in the Natural History Museum London, Friday March 18th 2005

MINUTES OF THE COUNCIL MEETING

Held on Friday 18th March 2005 Natural History Museum, London

Present: Peter Barfield, Julia Nunn, Frances Dipper, Anne Bunker, Lin Baldock, Jon Moore, Alison Shaw, Roni Robbins, Séamus Whyte, Roger Bamber, Susan Chambers, Andy Mackie

Apologies: Vickie Howe, Paul Brazier, Peter Tinsley, Shelagh Smith

Minutes

The minutes of the last Council meeting have been circulated but not published. They will be included in the next Porcupine Newsletter (*Ed. See above*)

Matters arising

No matters arising.

Financial status

The annual accounts were tabled. There was a surplus due to the 2004 conference making a profit, and the February Newsletter not being published. Subscriptions are considered adequate, and it was recommended that they should not be increased. Outstanding subscriptions are to be chased. The accounts have been externally audited.

The Council approved the accounts.

Membership

Data from the membership has been put into the database. There are 15 new members at the time of the council meeting bringing the total to 188 members, 15 libraries, 10 students and 3 life members. The libraries need to be invoiced for their subscription. Thirty two members needed to be chased for three years of subscriptions, and there are 56 members who haven't paid for two years.

New members have been following up whether their membership had gone through as no acknowledgement had been received. It was agreed that Seamus would inform Frances of new members, who would then send them a copy of the Porcupine Newsletter. Seamus would also email the new member with the website link and would act as a point of contact.

Action: Seamus to inform Frances of new members; send new members a welcome email, which includes link to website, chase outstanding subscriptions and update membership website. Frances to send new members Porcupine Newsletter.

Newsletter

The February 2005 Newsletter has not been published due to there being insufficient copy. The next Newsletter (Number 17) will be in June 2005 after the annual conference. It was agreed that Frances would ask Vicki with help to get more copy. It was considered acceptable for the Newsletter to be sent out electronically when necessary.

The Committee thanked Frances for doing a very good job with the Newsletter.

Action: Frances to ask Vicki to help with copy

Website

There are no new feature pieces on the website. Vicki and Peter are working on an article. Anne requested that there be a call for items in the newsletter. All agreed.

Action: Frances to include a call for website items in the June Newsletter.

Recording scheme

Jon is officially stepping down as Records Convenor at the AGM. It was proposed that Roni would take over this position. Roni has been in touch with a Marine Biodiversity Liaison Officer in Wales, who has listed all recording schemes. They will add Porcupine to this list.

Action: Roni to liaise with Jon re role.

AGM business

It will be proposed at the AGM that the constitution be changed to add the Honorary Membership Secretary.

Election of Officers to Council. Two officers would step down. These are Shelagh Smith and Sue Chambers. Sue Chambers will stand for re-election. It was proposed that

Tammy Horton be asked to join the Council. The position would also be opened up to the floor. Frank Evans would be asked to thank Shelagh for all her efforts at the AGM.

It was agreed that an announcement would be made about the end of year party at the Isle of Man Marine Lab. This is being held 29-31 July 2006 (www.PEML.net).

Conference 2005 London Report

There are 67 delegates, 46 for dinner and 20 for the lab. The conference will make a profit. The Council thanked Roni and Roger for all their hard work in organising the successful conference.

Field trip Wash 2005 update

The boat has been confirmed for 7th and 8th July 2005. 9-11th July will be shore-based. Seamus and Frances have been in touch with UEA about their students. There have been three bookings for Day 1. An email will be sent to the members about the field trip. The experts need to be organised. Local wildlife groups will also be contacted. The field trip will be advertised in the newsletter. Material can be provided to museums if they would like it.

Action: Seamus and Frances to promote fieldtrip through email, newsletter and to local wildlife groups and students.

Conference 2006 Isle of Man

It was agreed that the conference would be held 24-26th March 2006. The theme would be *Marine Natural History: Past, Present and Future*. The marine lab will hold 100 delegates. The tides are satisfactory for field activities. Richard Cuthbert of the IoM tourism will put together a package.

Action: Organisers to target speakers

Field trip 2006

It was considered important to have one! To be discussed at the next Council meeting.

AOB

Julia suggested that Porcupine banners should be made up to hang at the annual meetings. Frances to investigate price in Malaysia. It was also noted that a new stock of posters was required, as they should be

available for advertising at all conferences.

Action: Julia and Frances to cost up the design and production of a Porcupine banner

MINUTES OF THE 28TH ANNUAL GENERAL MEETING OF PORCUPINE MARINE NATURAL HISTORY SOCIETY

Held at The Flett Lecture Theatre, The Natural History Museum, London, on Saturday, 19th
March 2005

Chairman: Julia Nunn

The chairman, Julia Nunn, thanked the members present for attending the 2005 AGM.

Apologies for absence

Apologies were received from Vickie Howe, Paul Brazier, Peter Tinsley, Shelagh Smith

Minutes of the last AGM

These were published in the June 2004 issue of Porcupine newsletter. The chairman asked the members to approve the minutes of the previous meeting. Proposed: Peter Barfield. Seconded: Andy Mackie. The minutes were approved.

Matters arising

There were no matters arising.

Change to constitution

The chairman outlined the proposed constitutional change to section 2, as given below:

2. This Society shall consist of Hon. Chairman, Hon. Secretary, Hon. Treasurer, Hon. Editor or Editors (not to exceed two persons), Hon. Records Convenor, an appropriate number (see Rules of Procedure, section 2) of Council members, in addition to ordinary members. No Council member may hold more than two office-bearing posts.

Amended to (addition underlined):

2. This Society shall consist of Hon. Chairman, Hon. Secretary, Hon. Membership Secretary, Hon. Treasurer, Hon Editor or Editors (not to exceed two persons), Hon. Records Convenor, an appropriate number (see Rules of Procedure, section 2) of Council members, in addition to ordinary members. No Council member may hold more than two office-bearing posts.

The change to the Constitution was approved.

Report from the Hon. Treasurer Jon Moore:

The financial report was presented to the AGM. Summary accounts will be published in the newsletter (*Note from Ed.: see this issue 17*)

Report from the Hon. Membership Secretary, Seamus White:

The Chairman notified the meeting that this was a new post that had until this year been combined with the post of Finance Officer. The post was ratified at the meeting according to the proposed constitutional change*. Seamus Whyte was formally proposed as Hon. Membership Secretary by Jon Moore and seconded by Vicki Howe. The Chairman thanked Jon Moore for the hard work he had put in dealing with the membership whilst it was combined with the Finance Officer's duties.

Report from the Hon. Record Convenor Roni Robbins:

Jon Moore is stepping down as Hon. Records Convenor. Roni Robbins was proposed as his replacement by Lin Baldock and seconded by Anne Bunker. Jon Moore reported that no records were submitted during the year. The chairman thanked Jon for convening the Porcupine records for so many years.

Report from the Hon. Editors Frances Dipper and Peter Tinsley (read by the chairman in the absence of both officers):

There have been only two issues of the Newsletter since the last AGM. The October/November issue was very late and only circulated in February for which the editors apologise. This was due to various technical problems. The February issue was not produced as there was insufficient copy to warrant publication. Again, apologies from the editors. However, the two issues produced were

AGM MINUTES

well received and contain some fascinating material. Six papers from the Bournemouth meeting were published plus six "Porcupine Pieces". The latter included a report from the Dorset field trip last March plus a wide variety of topics covering fish behaviour, worm feeding, sea slug natural history and Farne Islands species records. Short observations and requests for information are published under the "Porcupine Problem Page". This year we have heard of sperm whales stranded in Norfolk, records of rare fish including two species of jack or carangid, and requests for information on some unusual prawns and spionid worms. You can't say we don't give you variety! Papers can be peer-reviewed if requested; there is an example in the last issue (No.16). The Newsletter is scanned by BIOSIS for inclusion in Zoological Record so articles can be found by those interested. A long-term project is in hand to put all back issues into electronic format and possibly onto CD.

Report from the Hon. Chairman, Julia Nunn:

The chairman reported that it had been a quiet year for PMNHS with steady progress. A successful conference was held in Bournemouth with thanks to Lin Baldock for all her work to organise the event. There have been two Council meetings since the last AGM – on 20th November in London and 18th March in London where general society business was discussed. The 2004 field trip was also a success, although attendance by Porcupine members was disappointing. Thanks go again to Lin Baldock.

Report on web site from Anne Bunker:

Anne reminded members that there was a membership application form with bankers order form on the web site. There is also a recording form for records. The web site can be used for advertising other relevant meetings/events/lectures. Features, requests for information, interesting photographs and links to other sites can be added at any time. Please send information to abunker@marineseen.com

Election of Officers and Council

In accordance with the constitution, at

least two Council Members must retire each year but may make themselves available for immediate re-election. Retiring members this year are Shelagh Smith and Sue Chambers. Shelagh Smith has decided not to stand for re-election, but Sue Chambers is available for re-election. The chairman thanked Shelagh Smith for her time and commitment over the years and called on Frank Evans to say a few words on behalf of the society.

"Along with David Heppell, Shelagh Smith is a founder member of the society. If it had not been for Shelagh, there would be no Porcupine. Shelagh's reason for founding the society was to have marine natural history meetings away from London. Here we are, meeting in London for the first time, and no Shelagh! If she were not already a life member of Porcupine, this would be the occasion to bestow Shelagh with this honour. Since she is already a life member, we must simply record our thanks and very much hope to see her at the next meeting."

Roger Bamber proposed Tammy Horton to fill the vacancy left by Shelagh. Seconded: Roni Robins. The council members were unanimously elected en block.

Any Other Business

The chairman announced that the 2006 Conference will be on 24-26th March in the Isle of Man, with the theme being *Marine Natural History: Past, Present and Future*. The 2005 field trip will be to The Wash and North Norfolk coast with 7/8th July being boat work, and 9th-11th being on the shore. Offers of field trips for 2006 would be gladly received. Port Erin will be hosting a few days of 'celebration' at the end of June/beginning of July – details on www.peml.net.

The chairman hoped members had enjoyed the meeting and thanked all speakers for their excellent presentations. The chairman also thanked The Natural History Museum for hosting the event and all the staff for their help in making the Conference run so smoothly; and finally, Roger Bamber and Roni Robbins for organising the venue, speakers and all associated arrangements.

PORCUPINE MNHS

RECEIPTS AND PAYMENTS ACCOUNT

for the year ended 31 December 2004

Year to 31.12.03			Year to 31.12.04	
£	£		£	£
RECEIPTS				
40		2002	10	
1456		2003	30	
10		2004	1333	
0		2005	30	
<hr/>	1506		<hr/>	1403
	53	Bank Interest (net of tax)		28
	4	Sale of PN Back Number		0
<hr/>	1563	Total Receipts	<hr/>	1431
PAYMENTS				
1134		Newsletter- Printing	760	
431		Postage	233	
<hr/>	1565	Total Newsletter Costs	<hr/>	993
65		Chairman/Treasurer/Editor expenses (printing/postage)	28	
176		Poster preparation & printing	0	
0		Web site expenses	24	
181		Council meeting expenses (travel/catering)	0	
<hr/>	1987		<hr/>	1045
<hr/>	(424)	SURPLUS (DEFICIT) BEFORE MEETINGS	<hr/>	386
767		Annual Conference – Cardiff (2003)	0	
0		Annual Conference – Bournemouth (2004)	479	
(200)		Field Meeting – Northumberland (2003)	0	
0		Field Meeting – Lyme Bay (2004)	(25)	
<hr/>	143	SURPLUS (DEFICIT) FOR THE YEAR	<hr/>	840
4930		BALANCE BROUGHT FORWARD		5073
<hr/>		BALANCE CARRIED FORWARD	<hr/>	
53		Current Account	873	
5020		Deposit Account	5041	
<hr/>	<u>5073</u>		<hr/>	<u>5914</u>

Jon Moore, Hon Treasurer
28th February 2005

Nick Light, Hon Auditor
March 2005

MEETINGS

PORCUPINE MARINE NATURAL HISTORY SOCIETY ANNUAL MEETING 2006

**24-26th March 2006, Port Erin Marine
Laboratory, Isle of Man**

Marine Natural History: Past, Present and Future. The usual format will apply with 2 days of talks followed by a field day. Attendees may like to consider staying on for further fieldwork, diving or holiday after the meeting. The island has much to offer! Further details will be sent to members by e mail and will be published in the October Newsletter.

OTHER MEETINGS

**5th-7th September 2005. Estuarine & Coastal
Sciences Association Annual International
Symposium. ECSA39: Estuaries and Coasts:
'The Ecosystem Approach' - the role of
monitoring, modelling and management in
achieving the Ecosystem Approach.**

Heriot-Watt University, Riccarton Campus,
Edinburgh. Further details from <http://www.ecsa-coast.org>

Meetings advertised by CMS: www.coastms.co.uk

October 5, 2005 - Coastal Futures 2
- Marine Policy: Draft Marine Bill

October 12, 2005 - CIWEM Land-use and
Water Theme Soil

November 9, 2005 - CIWEM Water
Framework Directive, Hydro-morphology &
Flooding

November 30, 2005 - CIWEM OFWAT
Regulations

January 25th & 26th 2006 - Coastal Futures
2006

February 1st & 2nd, 2006 - CIWEM World
Wetland Day

SCOTTISH MARINE WILDLIFE WATCHING CODE

Scotland is going to have a code to help us behave well around our marine wildlife so that it stays wild, and stays here. The Code will apply to whales, dolphins, sharks, seals, otters, turtles, seabirds and shore birds, and will apply wherever they are, so that means beaches, cliffs estuaries and the sea.

The Code will apply to commercial wildlife operators, recreational boat owners, divers, dog walkers, anyone whose commercial or leisure activities involve the watching of marine wildlife. It could apply to you. We want your views now so that we can write a code that works. To find out why we are doing this, who we are, and how you can help, visit our website: www.marinecode.org



Why a code is needed



Notes on the ecto-parasite copepod, *Sabelliphilus elongatus* M.Sars, 1862, found on *Sabella pavonina* Savigny, 1820 in the Fal-Helford Special Area of Conservation, Cornwall.

Pamela E Tompsett PhD CBiol MIBiol, Awelon,
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Abstract

Examination of *Sabella pavonina* collected in the Fal-Helford Special Area of Conservation, Cornwall between 1995 and 2000 showed a 48% rate of infestation with the ecto-parasitic copepod *Sabelliphilus elongatus*.

Introduction

During the course of a study on the Peacock worm, *Sabella pavonina*, on the lower intertidal shores of the Fal and Helford estuary complex from 1995-2000 (Tompsett, 2003), the only parasite observed was the ecto-parasitic copepod *Sabelliphilus elongatus* M.Sars 1862.

Although widely distributed, being easily spread by water movement, it is an inconspicuous parasite and is probably under-recorded around the British Isles, NE Atlantic and the Mediterranean (Gotto, 1993). It attaches itself head downwards, to the radioles of the branchial crowns of *Sabella pavonina* and *Sabella spallanzanii* where the orientation of the parasite is closely related to the host structure and movement. Exceptionally powerful antennae with a crest of strong teeth and terminal claws grasp a single branchial filament to lock the copepod, which remains immobile, into position (Gotto, 1960). Maintenance of a secure location, aligned head

down facing the base of the filament offering minimum resistance, is important to ensure that the parasite is not dislodged when the host withdraws abruptly into its tube or in the face of strong water currents when the fan is expanded.



Observation

Fresh *Sabella pavonina* samples from the Helford study sites were examined microscopically for commensals or macro-parasites on extraction from their tubes. Following the discovery of the copepod ecto-parasite *Sabelliphilus elongatus* firmly attached, head down, to the radioles of the fan on *Sabella pavonina* from these locations, a detailed examination of preserved *ad hoc* samples from a wider range of sites, including the Fal, was undertaken to record the degree of infestation.

Sample collection was dependent on tidal conditions and took place in the months February, April, May, July, September, October, November and December.

Examination of 80 *Sabella pavonina* collected between 1995 and 2000 showed a 48% infestation rate. In each case only one parasite was found per radiole filament with just one exception where there were 4. There was an average of 2 parasites per worm, (range 1 to 5) and a total of 60 parasites were found altogether from the 80 worms

PORCUPINE PIECES

Table 1

Sites examined for *Sabella pavonina* with *Sabelliphilus elongatus* 1995-2000

	Location	OS Grid Ref.	Parasite presence (+) or absence (-)
Helford	Helford Passage Bar	SW 757 269	+
	Gillan inlet	SW 785 254	+
	Main channel E of Frenchman's Creek	SW 748 263	+
	Treath	SW 764 264	-
	E. Penarvon	SW 758 264	-
Fal	Restrouguet weir	SW 818 367	+
	Loe Beach	SW 826 381	-

examined. It was observed that the copepod was mainly found on the medium to large size worms and appeared to be located on top of a filament pigment band occasionally but not exclusively. Although this was *ad hoc* sampling of the mainly larger worms collected for other purposes, nevertheless some small worms were examined and none contained parasites (Tompsett, 2003).

Discussion

The presence of this ecto-parasite *Sabelliphilus elongatus* on the crowns of nearly half of the *Sabella pavonina* samples examined from both the Helford and Fal estuaries in SW Britain is interesting, as Gotto (1993) lists an essentially northerly, north-westerly and easterly distribution in Britain. Another host is the Mediterranean *Sabella spallanzanii* so presumably a wide range of water temperatures can be tolerated. It is possible that the species has been seriously under-recorded in the South-west peninsula.

There was no evidence of parasite damage to the host apart from slight abrasion from the antennal armature apparent in some cases and the method of feeding of the parasite is not entirely clear. Gotto (1960) suggested that, as the copepods were not positioned directly in line with a feeding current, they probably absorbed food material from the filament direct and were true parasites rather than commensals - when infested worms were denied food the copepods remained unaffected. He had found that *Sabelliphilus elongatus* was often attached to the filament on top of a pigment band, and this was observed occasionally but not exclusively in this current study. The pigment he found in the stomach contents was probably

extracted directly from the filament.

The local 48% infestation rate, seen during the current study, was lower than the 88% rate observed by Gotto (1960) in Strangford Lough, Co. Down in 1958 amongst his 26 worms obtained by an unknown sampling procedure.

The Fal-Helford observations were made when the numbers of *Sabella pavonina* had reached very high levels but these were significantly reduced during an algal bloom in August 2002 (Tompsett, 2003). It would be interesting to repeat the exercise when the population recovers in the future.

As an interesting footnote, Dr Rony Huys of the Natural History Museum, London, was pleased to receive a number of the Helford-Fal samples to use in his project on parasitic copepod gene sequencing. When complete, his huge data set will help to determine relationships between the Sabelliphilidae and other families in the Cyclopoida- Poecilostomatoida complex.

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Acknowledgements

I should like to acknowledge the interest of Dr Geoff Boxshall and Dr Rony Huys of the Natural History Museum, London. My thanks also to Dr Tegwyn Harris and Dr Loveday Jenkin and the University of Exeter and Camborne School of Mines for their help and use of facilities during the completion of my PhD thesis.

Propagation of Pink sea fan, *Eunicella verrucosa*

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In 2000, during a remote sensing and drop-down video survey of the Purbeck Marine Wildlife Reserve, a population of the pink sea fan, *Eunicella verrucosa*, was discovered on a small limestone reef near Worbarrow Tout. In 2003, with funding from English Nature, Dorset Wildlife Trust set up a study site on this reef in order to assess the health of these fans.

A display in the Trust's Marine Centre in Kimmeridge Bay includes specimens of *Eunicella* in a custom-built aquarium. The first fans were installed in 2001, but lost following a leak in the aquarium. These were replaced in 2004, at which time it was decided to try to propagate fans on the study site in order to ensure future supply of specimens for the aquarium without collecting more from the wild.

Method

Propagation of tropical gorgonians for the aquarium trade is a relatively straightforward procedure. The following technique is based on that described by Geothermal Aquaculture Research Foundation¹



Fig. 1 Seafan display in Dorset Wildlife Trust Marine Centre, Kimmeridge Bay

A single *Eunicella* was collected by divers from the reef outside of the study site. This was then cut with wire cutters into seven pieces. Each of these pieces was then treated as follows:

the coenenchyme was pared away from one end of the clipping using a scalpel, revealing approx 1cm of the twig-like central axis

a small hole was drilled in a piece of Portland limestone with a masonry drill cyanoacrylate glue (Superglue Gel) was placed in the hole

the bare end of the clipping was placed in the hole and held steady until the glue set - it can be placed back in water at this stage - the glue will set underwater.

The rocks and clippings were then returned to the seabed and placed by divers alongside the study site.



Fig.2 Clippings with coenenchyme removed

Results

A brief visit to the study site in May 2005 showed that all clippings were healthy and had successfully re-grown over the base. The images below show one of the clippings just after being placed on the seabed, and after approx 9 months.

The same technique was used to attach the larger fans to rocks for the aquarium display. Within a short time (days) the coenenchyme had regrown to cover the bare section and begun to spread over the surrounding rock. This created a natural-looking join producing a very attractive display.

The ease and simplicity of this procedure opens many possibilities, - "replanting" damaged seafan forests, creating stunning aquarium displays without the need for wild collecting and undertaking manipulative ecological experiments.

References

¹ Gorgonia propagation using super reef glue <http://www.garf.org/100/gorg/GORG1.html>



Fig. 3 Fixing clipping into rock

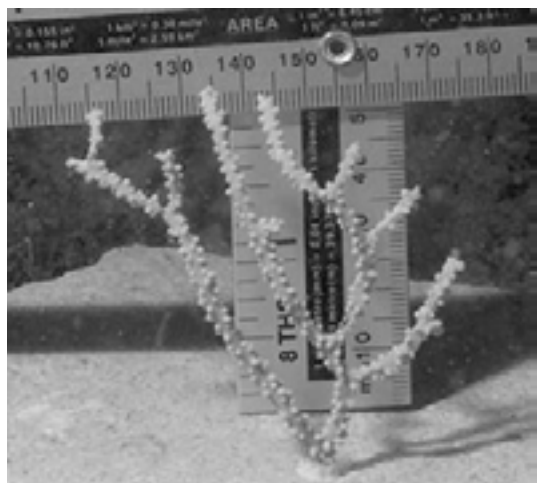


Fig. 4 (a) Clipping 6 on seabed - Aug 2004

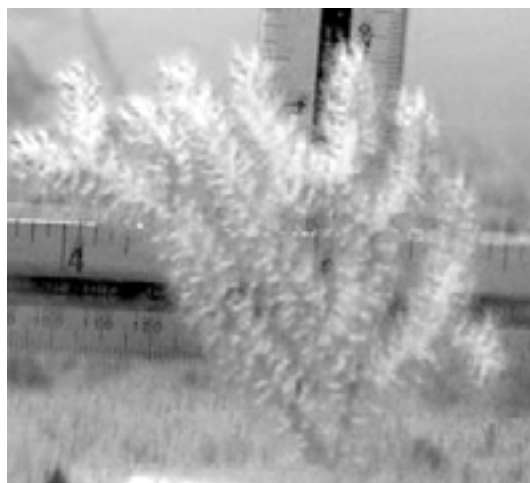


Fig. 4 (b) Clipping 6 on seabed - May 2005

How PMNHS council members became marine biologists



Why I became a marine biologist

Peter Barfield

I spent the best years of my childhood on the Isle of White surrounded by the sea. The first time I went fishing was from Ryde Pier with the heavy hollow clack and squealing wheels of the salty trains shuffling ferry passengers behind me. I was there with two mates, three hand-held lines with the obligatory fluorescent orange twine you could've hauled a porbeagle in on, and a small red sand-castle bucket holding a couple of condemned shore crabs. Living in the shadow of Ryde Pier in the 1970's with the tidal flush of Solent sea-water and sewage sloshing back and forth produced some truly fat mullet and I'm happy to recount here that we caught none of them. Watching the hovercraft slide noisily by on the straining bulge of its black

skirt helped pass the time. But something ate our crabs. Something which tugged hard on the line with a quick rugged strength and then was gone, leaving it limp and with the question mark of a clean hook at the end. Meanwhile back at home with Swap-Shop, the Clangers and the Wombles of Wimbledon there came the charismatic frenchman to reveal to us the wonders of the Undersea World. I knew Kevin Keegan played for Liverpool but I didn't care that Kevin played football. I cared about where Jacques-Yves Cousteau was going next on board the Calypso. The thin scuba-diving marine explorer and his band of adventurer's with the cool boat and inquisitive nature had my attention. I'd draw divers and whale sharks in a school-boy mix of 007 and natural history. From Johnny Morris to Jacques Cousteau it was an easy step to, 'The World About Us' and David Attenborough. But my first real engagement with the marine environment was more immediate and purely

physical because really it was swimming that supplied my introduction to the big sea. I learnt to swim in the open air pool on Ryde sea-front. I remember bright days and lots of shivering in the south coast sunshine but I took to the water like the piscine I am and obsessed about getting the next distance badge on the list. Swimming in the sea was a whole different kettle of fish and I loved it even more. Our family summers were filled with trips to the beach at White Cliff Bay tucked in behind Culver Down on the south east coast of the Island below Bembridge. If there is a beginning then this is the place. Looking back this is something of what I see, complete with boyhood exaggeration: I tumbled with the wave, which I'd swear was as big as our caravan and let it bounce me towards the shore, eyes screwed shut, legs and arms whirling for balance and the roar of it all filling me right up. My feet quickly found the cold sand and scooping the sea from my face, I watched as the churning water hit the shore with a heroic smack, as if it was going to push it back, and heard my brother choking and coughing on the water he'd gulped in the assault. This was just the best! I could see mum sitting on our warm, dark, beach blanket with her hand up shading her eyes like she was saluting us. I raised my arms above my head and shook them like Mohammed Ali, float like a butterfly, sting like a bee. Then I turned and jumped for the next wave which caught and pushed me backwards onto my side. But I kept my eyes open for the snapshot and saw the whole thing. My brother disappearing into the froth. The wave like a sabre curving into the distance. The towering chalk cliff, white and old. Sound like my head was in the mouth of some sea-water lion. Dad, unshaken, and smiling.

Getting into deep water

Vicki Howe



I never thought I would ever be in a position where anyone would ask me how I became a "Marine Biologist" but here I am writing about it. I guess that is what I am or what I do and it still gives me a thrill. As a child the thought of a career or really a vocation as a marine biologist seemed exciting and full of adventure but perhaps a little unobtainable. However by taking every opportunity, being single minded, enthusiastic and keen to have a go at anything marine has placed me in a position where marine biologist is a term I recently considered scribing on my new business card! So where did it start? Since a young child I was interested in nature; collecting shrimps and fish in rock pools, putting garden snails in pockets that ended up in the washing machine, and trying to save the odd mangled mouse caught by our efficient

hunter of the family, Tigger. You could then say that biology was a forgone conclusion but what about a passion for marine creatures? After successfully attaining three science "A" levels I took a year out and, like many a traveller on a gap year, I learnt to dive on the Great Barrier Reef. One reason for venturing so far from home age 19 was that I had decided that this was to be my baptism into the underwater realm and before you ask... yes this really is where it started.

I then decided upon a degree in Zoology and Psychology with an ambitious view to study dolphins....hmmm! Dolphins didn't really figure in my university life but I did become heavily involved with running the Uni sub-aqua club and through the club I worked my way up to become a dive instructor and gain rescue, first aid, boat handling and VHF qualifications. These were, in my mind, and perhaps correctly so, essential for offering future employers a wide skill base and an indication of just how keen I was to follow a career in marine ecology.

After graduating I was fortunate to be in the right place at the right time and was given a short term contract with a small marine environmental consultancy sorting and later identifying marine benthic samples. I can't even say I had relevant experience for the post but as I was flexible enough to start almost immediately and lived near by I "landed on my feet". I then went on to work for FSCRC (formally known as OPRU) and there made many friends who have had an influence on my career. Due to circumstances beyond my control I had to leave the FSCRC and Pembrokeshire - a devastating blow at the time but this actually opened up a different set of doors. I went on to study for a PhD at Cardiff University and within 5 days of submitting my thesis I found myself on a beach in southern Tanzania contemplating a year of rice and beans twice a day, warm beer and some superb diving on remote and isolated coral reefs. Wow - what more could a budding marine biologist want?...Besides cold beer? I actually stayed in Tanzania for over 18 months and became involved, not only with coral reef and mangrove surveying, but also with a local community education programme and I guess this was my first venture in teaching....a

humbling yet inspiring experience.

On my return to the UK I was again in a position of right time and right place and took on a part time post teaching marine ecology and conservation at Cardiff University. This was ideal. I had commitments in south Wales and so it was a location I wanted to stay in and I had thought that finding a job here could be more than a little challenging. Being part time meant I could continue to undertake some small consultancy jobs and also continue to work within areas not related to marine ecology but certainly something that I feel is important for personal development - leadership and communication.

And so where am I now? I currently work for myself undertaking consultancy work, I continue to teach at the university and am about to get more involved with Seasearch as a local co ordinator. How did I get there? Well right time, right place and luck would be one way of looking at it. Others may say that narrow mindedness, a stubborn streak and a relaxed attitude to a stable income would be another. On the whole I think that it is about taking opportunities even if they appear small, making the most out of your own personal skills, having plenty of enthusiasm and commitment, and finally, not giving up! So...who knows what is round the corner? I might still study dolphins one day!

Introducing the Marine Conservation Society

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The majority of Porcupine members may be familiar with the Marine Conservation Society (MCS), may have met MCS staff or attended conferences, and may already be supporters of what is now the well-established UK charity that champions the marine environment and its wildlife. But some angles of MCS' work may not be so familiar to everyone, and here follows a potted digest of what MCS is, and what we do.

A Potted History

The beginnings of MCS lie in the late 70's, when a large number of leading lights in the field of Scuba diving and marine research set up Underwater Conservation Year 1977. Many of the individuals involved continued to meet as the Underwater Conservation Society, running volunteer dive recording projects, workshops and field meetings. The present distinctive name was settled upon in 1983, when the charity we know today came into being with its research, education and conservation objectives set to achieve our mission of *seas fit for life*.

Biodiversity

The conservation of marine life and its environment (i.e. biodiversity) is what underpins MCS's work. MCS is joint lead partner under the UK Biodiversity Action Plan for a number species and habitats - seafans, fan shells (see a previous edition of this newsletter) basking sharks and turtles. Major steps have been taken in researching and protecting all of these species, but MCS has also continued to lobby for a concerted approach to management of the sea and its resources, a coherent network of marine protected areas and much, much more besides that will be of wide benefit to all that makes up our natural marine fabric.

MCS launched the Basking Shark Watch Project in 1987 to gather information about the sharks that visit UK waters every summer. The information gathered has provided evidence that conservation measures are needed to ensure the future of the basking shark population and strengthened the case for protection of the species in UK waters. It is now fully protected in UK law, but exploitation continues around the world, and MCS supported the successful listing of the basking shark under CITES and is now pushing for protection under the Convention

for Migratory Species.

Through Adopt-a-Turtle, MCS provides assistance to marine turtle research and conservation projects in the UK and abroad. This scheme has uniquely enabled MCS to actually put funds forward for conservation projects around the world, as well as to raise awareness of and protection for turtles in UK waters.

Seasearch

Our association with diving and research, particularly in UK waters, is still strong. Seasearch, set up by MCS, together with the precursor to the JNCC, in the 1980s, aims to map out the various types of sea bed found in the near-shore zone around the whole of the British Isles. The project is now run by a committee of the majority of organisations involved in UK marine research, diving and conservation, with an MCS staff member at the helm but a collaborative spirit that is entirely to the benefit of the project. Volunteer divers are always sought, with a basic minimum diving qualification and experience required, but no prior knowledge of survey techniques is necessary for entry-level "observer" recording, as training is provided.

Fisheries

Overfishing is widely acknowledged as the greatest single threat to marine wildlife and habitats and many fish stocks are widely reported to be in a state of serious decline. MCS has identified consumers as being a key to driving sustainability in fishing, by demanding that the fish we eat is from sustainably managed stocks and that the way in which it is caught or farmed causes minimum damage to the marine environment. The Marine Conservation Society FISHOnline website and free Pocket Good Fish Guide can help you identify which fish are from well managed sources and/or caught using methods

that minimise damage to marine wildlife and habitat.

Pollution

Visible pollution in the form of litter is the focus of MCS's *Beachwatch* annual beach clean and litter survey, involving thousands of volunteers who survey hundreds of UK beaches. The *Adopt-a-Beach* project builds on the success of *Beachwatch* and encourages communities across the UK to regularly monitor their local beaches for pollution and to become actively involved in protecting their coastal environment. The fact that litter levels have continued to rise over recent years is indicative of the lasting nature of the largely plastic components of the debris found on our shores and the fact that the anti-litter message isn't yet getting through.

The MCS Good Beach Guide to bathing water quality is a pollution success story that MCS is proud of. The water at many UK beaches is now less affected by untreated sewage than at any time in recent history, and many beaches are safer to bathe at due to the investment in sewage infrastructure that was instigated since MCS started highlighting the issue back in 1983.

Volunteer Ethos

Wending through the various projects and work areas described here, it is clear that, with a staff of around 20, our success must depend on a significant number of volunteers and supporters – by a multiple of hundreds, as it turns out! *Beachwatch* regularly attracts over 2,000 people on a September weekend, and the *Seasearch* and MCS Dives programmes are always oversubscribed. Through the goodwill of volunteers, research has been carried out that couldn't happen through an agency, university or consultancy. MCS Local Groups play a vital role in raising awareness about marine conservation issues at a local level, recruiting new members and raising funds for national campaigns.

Forward Steps

The sea is used and enjoyed by an increasing number of people, but protection remains piecemeal and incomplete. Responsibilities for different sectors lie between a number of government departments and legislative

instruments. To bring all the necessary pieces of the puzzle together, MCS together with allied organisations within Wildlife and Countryside Link and Scottish Environment Link, has called for comprehensive reform of marine legislation. The result should be the biggest piece of news for conservation in UK seas in the proposed Marine Bill, which the Government is presently drafting – as long as we keep the pressure on.

Reference is merited here for the aims and activities of Porcupine and what it stands for. Research avenues seem to be being “streamlined” at a rate of knots, with a number of marine laboratories closed or closing presently, and funding sources intermittent. Porcupine's recording and research aims, having always been key, are increasingly important in promoting understanding and raising awareness.

Are you an MCS member yet?

The Marine Conservation Society is the UK's national charity dedicated to the protection of the marine environment and its wildlife. It does not receive any direct government funding for its work at present, so the financial support of members is a vital component in raising the necessary funds to enable MCS to work on a very wide range of threats facing the marine environment and its wildlife.

By joining MCS, you will help us to
Protect endangered marine species and habitats.

Campaign for pollution-free seas
Tackle over-exploitation of marine resources

Inform and educate the public, government and industry

Involve people in projects and campaigns to make our seas fit for life
You benefit, too:

Members regularly receive our magazine covering current marine conservation issues in the UK and abroad, notice of marine life courses and national events, and the opportunity to take part in MCS-run projects

Take the plunge - please join the Marine Conservation Society.

PORCUPINE 2005. COLLECTIONS, COLLECTORS, COLLECTING

Papers from the PMNHS meeting held at the Natural History Museum 18-20 March 2005

Towards an Atlas of North Atlantic Planktonic Ostracods

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Introduction

Despite the lip service paid to the need to understand biodiversity and recognise change in natural communities, less and less attention is being given to improving standards of identification and ensuring uniformity in biological databases. This crisis is being accentuated because fewer taxonomists and systematists are being trained and even fewer employed in academia. So an urgent need is developing to improve the resources available to researchers who need to identify the material they collect, and capture the knowledge and experience of the ageing band of systematists before they cease to be active. As one of the handful of global experts in planktonic ostracods, I feel it is incumbent on me to make some attempt to remedy these inadequacies in my group. The first step was to develop an Atlas of Southern Ocean Planktonic ostracods with Dr Kasia Blachowiak-Samolyk (Polish Academy of Science, Sopot), which is now available on the web at <http://ocean.iopan.gda.pl/ostracoda>. The next step is to develop a similar Atlas for the Atlantic Ocean. I will describe the structure of the Southern Ocean website and outline some of its immediate benefits.

The Southern Ocean Atlas

On the home page the menu offers

1. Introduction: The site is described and its navigation explained.

2. What is an ostracod: The systematics of the group is outlined, and the main morphological characteristics of the halocyprids illustrated with pop-up drawings.

3. World species list: A listing of all the currently known species together with a guide to each species's vertical range (epipelagic, mesopelagic etc).

4. Southern Ocean list: A list of the 47 species that have been recorded from south of 52°S. How to define an Antarctic species varies between different researchers, we chose 52°N to limit the numbers of species we would have to deal, yet still include the areas of the main oceanic frontal systems in the Southern Ocean. If we had chosen 45°S as the limit, it would have doubled the number of species and at the time we did not have the resources to include so many species. On this page options are provided for downloading PDF files either of each individual species or the full list of

species (over 120 pages). By clicking on an individual name a page is opened on which there is an outline diagram of the species and three options for further progress. These options are: - a. Maps, b. Drawings, c. Species notes.

The maps include both a regional and a global map of each species showing the distribution of all published records and many unpublished records of my analyses of old *Discovery Investigation* samples that were sorted but never worked up. Table 1 summarised the numbers of species in each of the main zones between the main frontal systems in the Southern Ocean.

The drawings are standardised illustrations of the carapace (lateral and ventral aspects), the first and the second antennae of both male and female adults. The majority of these drawings are originals. For a few species, mostly those known from a very few specimens that we have not had access to, illustrations have been scanned from the original descriptions, and so are not standardised. The notes for each

species included comments on its taxonomy and, where known, the bathymetric range, together with tables of the sizes of adults and juveniles instars. These size data are mostly original.

5. Details of the authors – self explanatory.

6. Bibliography which includes >250 references and is almost a comprehensive listing of all publications dealing with the oceanic halocyprids.

7. Acknowledgements and Links

The value of the atlas

The majority of mesoplanktonic studies totally ignore the ostracods. At latitudes >50° they are usually absent from the upper 200m of the water column, but in the tropics they are very abundant in the epipelagic zone and even occur in the neuston. Even at all latitudes throughout the water column below the seasonal thermocline, the ostracods are usually second in abundance to copepods. So why are they so consistently ignored? The answer must partly lie in the reputed difficulties associated with their identification; difficulties that are aggravated both by their confused systematics and the lack of a comprehensive manual. The systematic confusion has transpired from the failure of many of the early taxonomists to follow the basic rules of nomenclature - their descriptions are far from comprehensive and sometimes full of errors, and they failed to designate type localities and type specimens. Furthermore many of the original descriptions are in abstruse publications, some of which are written in archaic German and some in Russian. The ostracods are particle feeders, feeding predominantly on detrital aggregates and so they probably play a significant, but totally overlooked role in detrital cycles. If their probable role in carbon cycling is ignored, only a partial picture of the dynamics of water column processes will emerge. The atlas will provide to anyone with access to the web all the information required to identify the majority of the species that will be encountered. The maps will show whether or not a species is likely to occur at a particular location, and the bibliography contains references to all the relevant literature if further follow up work is needed.

In the longer term the maps may prove useful in demonstrating any shifts in species distributions that may result from fluctuations in climate and the circulation patterns of oceanic water. The planktonic ostracods have considerable potential as indicators of water movements in mesoscale eddies and current flows, throughout the water column.

The site has also highlighted some probable inaccuracies in identifications, and large gaps in the zoogeographic ranges may either result from inadequate sampling or may imply that there are unrecognised cryptic species.

The content of the Atlantic atlas

The Atlantic species list includes >120 species, making the task of developing the site a far greater challenge. Some of these species are yet to be described. Most of these are *Bathychonchoecia* species from benthopelagic habits in very deep water. For example, in one haul collected twenty years ago from within 10-25m of the seabed at a depth of 4000m off the Northwest African coast there were 25 species all of which are new and most still await description. The specimens from such deep samples are often fragile and are often in a poor state because of the time taken to retrieve the nets, so their description is far from easy. However, since the immediate value of the site is to provide a unique resource for studying the more accessible species, the site will probably be launched before the coverage is complete.

A facility additional to the southern Ocean atlas that can be added are bathymetric profiles of the species that were caught in reasonable numbers in the transect from 0° to 60°N approximately along 20°W in the NE Atlantic by NIO/IOS in the 1970's (e.g. Angel and Fasham, 1975). Not all the data from this transect has been published. The day and night profiles clearly show which species (and instars) are diel migrants. Another possible facility is to add digital photographs of all the species for which we hold good specimens (probably 90%). Another possible facility that is to add a data base that will generate species list for 5 or 10° squares; the database exists but needs software development that is beyond my capabilities.

Creating the site

Much of the basic work to create the site has been completed. The global and regional species list is under constant review. The compilation of all published and verifiable unpublished data that can be geopositioned has been completed for the vast majority of species. Figure 1 shows an analysis of the numbers of records per species showing a skew towards high numbers of records that suggest that globally the halocyprids have been quite well sampled. In the Atlantic the coverage is fairly good, although more bathypelagic, abyssopelagic and bethopelagic samples are needed. Coverage of the Pacific, particularly the North Pacific is woefully inadequate, although data derived from the extensive sampling carried out by Russian research vessels are just beginning to be published. The databases developed for the site will be made available to OBIS, which has funded part of the development.

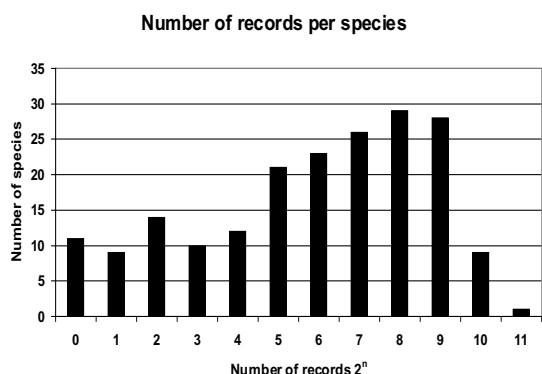


Figure 1. The total numbers of records for each of the known species of oceanic halocyprid. The x-axis scale is 2^n , and shows the numbers of records for the majority species lie between 2^5 (32-63) and 2^9 (512-1024).

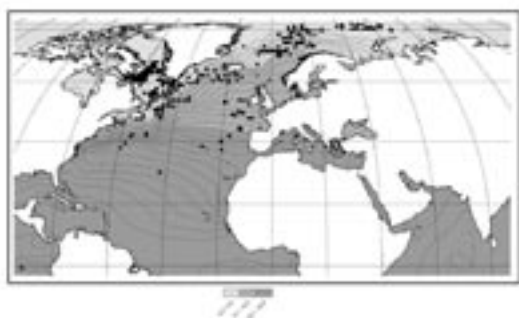


Figure 2. Distribution of *Obtusoecia obtusata* (Sars, G.O. 1866) in the North Atlantic based on

published records, unpublished data from personal records, and data provided by Dr Vladimir Chavtur (Vladivostok).

Figure 2 shows an example of the sort of maps that will be generated. This plot of the distribution of *Obtusoecia obtusata*, a species that was described by G.O.Sars will be published in a taxonomic treatment of the genus submitted to *Annales Zoologici*. This species was once considered to be bipolar, but quite recently the Southern Ocean subspecies was raised to full species status. It is a North Atlantic endemic, which is most abundant in the waters of the Icelandic Basin. However, the map shows that it is regularly encountered far to the north in the Arctic, whence it is advected by the inflow of Atlantic water. This illustrates how once enough distributional data are assembled, there is a potential for using some of the species as indicators of water movements. Our data for this species have been considerably supplemented with data from Russian sampling programmes made available by Dr V.G.Chavtur of Vladivostok, who will be a co-author of the site. The map in figure 2 also generates some questions. Was the identification of the specimen reported from around 20°N correct? Probably not, but since the specimens are no longer extant the record cannot be validated, an argument for the conservation of collections. Does the species really occur in the Mediterranean, and if it does is it a glacial relict? Once again I am dubious about these records, especially as when we sampled in the Alboran Sea we did not encounter it.

The drawings for about 80% of the species have been completed and the species notes have drafted for the majority of the species. It is worth noting that the size data alone is based on the measurement of $>10^5$ individual specimens. The size data for several species show regional variations that need to be investigated to see if there are cryptic species. There are several examples of similar sibling species that differ in length by a factor of $\sqrt[3]{2}$.

An important property of the site will be that it will be professionally designed by Vision Architects and will be 'content managed'. This facility enables whoever has

ownership of it quickly and easily to edit and update existing entries and to add new species as they are described. It also will mean that the building of the site does not have to be complete before it can be made available on the web. Since one important function of such a site is to be a resource available to anyone wishing to identify specimens, and the vast majority of these will be of the commoner and more abundant species, the sooner it is up the better.

Lessons from the site

The Southern Ocean site immediately generated numerous questions. It posed a number of taxonomic conundrums. For example *Boroecia antipoda* a Southern Ocean endemic has been reported in the Dana Reports as occurring in the tropics in the Indonesian Seas and in the Gulf of Panama. This material when borrowed from the Copenhagen Museum showed that the tropical specimens are not the same as *B. antipoda* and are novel. Dr Blachowiak-Samlyk and I have nearly completed drafting a revision of the genus *Boroecia*, which will include descriptions of two new species, and the clear demonstration that the two North Atlantic forms *B. boroecia* and *B. maxima* are indeed distinct species. This study has only been possible as a result of the availability of well-curated collections.

One disappointment is that the data are generally either inadequate or too inaccurate to demonstrate how the species can be used as indicators of water movements. For example it was hoped that the equatorward flow of deep water up the west coast of South America is not picked out by the distributions of bathypelagic species like *Conchoecissa symmetrica*. But there is one example that of a species that is not included in the Atlas that may be a good indicator. *Macroconchoecia caudata* is an unmistakable species because its rostra are developed into long spines and there is an equally long spine on the posterior dorsal corner of the left carapace valve; these spines effectively double the length of the animal and by analogy is probably an anti-predation device. This species is quite common in the Indian Ocean, but only occurs intermittently in the South Atlantic. It seems likely that it is an indicator of the eddies spawned from

the Agulhas Retroflection to the south of the Cape of Good Hope that pass into the South Atlantic.

In the longer term as these databases are extended, they will provide an important way of detecting changes in distributions resulting from changes in current patterns and water exchanges.

Acknowledgements

Exchange Fellowships awarded to the two authors of the Southern Ocean Atlas by the Royal Society and the Polish Academy of Sciences facilitated much of the work. A grant from OBIS will also contribute to the new Atlas.

Table 1. Numbers of species endemic to the Southern Ocean, and the numbers of species occurring in the regions between the major oceanic fronts of the Southern Ocean. These fronts do not appear to form important boundaries to the ranges of the various species, but using only presence data rather than abundance data may lead to the blurring of such boundaries.

Southern Ocean endemics	12
South of the Polar front	23
Polar front to Subantarctic Front	26
Subantarctic front to Subtropical Front	40
North of the Subtropical Front	40

The Irish marine Mollusca in the collections of the National Museum of Ireland, Dublin

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History of the Natural History Division

Natural History is one of the four divisions of the National Museum of Ireland (NMI). The origins of the museum lie with the Royal Dublin Society founded in 1731, which opened in 1733 a Museum to house agricultural implements. In 1792, a collection of mainly minerals was acquired, but it also included shells and botanical specimens. In 1795, all the collections were arranged and opened to students – thus establishing the Museum. In 1800, this museum was opened to the public. In 1813 a catalogue of the subjects of natural history in the museum of the Royal Dublin Society was published, which included 5000+ zoological specimens. After a variety of premises, all the collections were moved to Leinster House in 1815. Times don't change – in 1850 there were complaints about the cramped conditions of the Museum! Dr. Alexander Carte was elected the first full time Curator of the NMI in 1851, later 'Director'. Funds were raised to support the construction of a new building to house the natural history

collections in Merrion Street. The building was inaugurated in 1857, and was at that time, linked to Leinster House and the other collections.

In 1865, the government undertook the complete financial support of the Museum of Natural History. Two new assistant naturalists were appointed including A.G. More. The Museum expanded access by the public to 4 days a week in 1867. In 1877, the government finally took over responsibility for the buildings and collections. A.G. More became Curator of Natural History in 1881. A.C. Haddon was appointed as an assistant. R.F. Scharff became Curator in 1887, with the title changing to Keeper in 1890.

Albert Russell Nichols (1859-1933) came from England to Dublin in 1883 to take his place on the staff as Assistant in the Museum of Science and Art (now the National Museum). He had had a brilliant career at Cambridge, where he took his M.A. in mathematics. He was not a naturalist by nature - but, securing his post by competitive examination, he worked diligently at zoology throughout his forty-one years of service, eventually becoming Keeper of the Natural History Division. Nichols took part in the 'Lord Bandon' dredging expedition of 1886 with Haddon, sponsored by the Royal Irish Academy, and in the biological surveys of Lambay, Clare Island and Malahide. He compiled or revised lists of echinoderms, marine Mollusca (the last full checklist for Ireland) and birds of Ireland, issued by the Museum or by the Royal Irish Academy. In the Museum, he did much work in the classifying and arranging of the invertebrates (Praeger 1949).

In 1922 after the war of independence, the Museum was closed until 1924 when it re-opened, and continues in Merrion Street to this day. The Government moved into Leinster House next door, with the remaining collections moving to a new building in Kildare

Street.

The Irish marine Mollusca collections

When a donation to the NMI was received or a purchase made of material, an entry was hand-written into a Register (a foolscap book) outlining its details. A unique acquisition number was assigned to material acquired from 1877. This number took the form number.year of acquisition e.g. 90.1975.

The first entry for a mollusc in the Register was:

1835 11 February

The upper cover of an oyster

[donor] C.A. Braw (or Brew)

although it is not known if this was Irish or British, as the specimen cannot be traced.

There were only a handful of Register entries in 1840s. The first specimen that can be tracked in the collections is:

1853 05 September

A few marine shells from Miltown Malbay,

Co. Clare

[donor] Miss Janette Locke

The collections themselves comprise type material (table 1); species new to Ireland and

Britain (table 2); species new to Ireland (table 3) and a number of rare and interesting species e.g. *Donax variegatus* and *Galeodea rugosa*. Some of the type specimens are on public view in the Irish Room (ground floor) of the Natural History Museum.

The collections also comprise material from many 19th century cruises around Ireland, especially from deep water. In the late 1880's, the Royal Irish Academy sponsored three cruises off the south-west coast of Ireland with a view to furthering knowledge of the fauna between the coast and the 1000 fathom line. The tug steamer *Lord Bandon* was chartered with the Rev. W.S. Green in charge, dredging in August 1885 from 120f to around 1000f. A second expedition, using the same vessel, took place in July 1886, with both Nichols and Haddon participating. The third expedition using *Flying Falcon* (which was the *Lord Bandon* renamed!) took place in 1888, with specimens collected from as deep as 1270f. The Mollusca were variously reported on by Swanston (1886), Haddon (1886), Haddon & Green (1888) and Chaster (1898). Material from all three cruises is in the NMI collections.

Table 1: Type specimens

<i>Opisthoteuthis massyae</i> (Grimpe, 1920)	Holotype
<i>Todaropsis eblanae</i> (Ball, 1841)	Holotype
<i>Doto hystrix</i> Picton & Brown, 1978	Paratypes
<i>Rossia jacobi</i> Ball, 1842 [<i>Rossia macrosoma</i> (delle Chiaje, 1826)]	Holotype, now synonymised
<i>Rossia oweni</i> Ball, 1842 [<i>Rossia macrosoma</i> (delle Chiaje, 1826)]	Holotype, now synonymised
<i>Polypus profundicola</i> Massy, 1907 [<i>Benthoctopus ergasticus</i> (Fischer, 1892)]	Holotype, now synonymised

Table 2: Species new to Ireland & Britain

<i>Claviscala richardi</i> (Dautzenberg & Boury, 1897)
<i>Volutomitra groenlandica</i> (Moller, 1842)
<i>Laevidentalium caudani</i> (Locard, 1886)
<i>Siphonodentalium teres</i> Jeffreys, 1882
<i>Benthoctopus ergasticus</i> (Fischer, 1892)

Table 3: Species new to Ireland

<i>Calliotropis otto</i> (Philippi, 1844)
<i>Charonia lampas</i> (L., 1758)
<i>Taranis moerchi</i> (Malm, 1861)
<i>Bathyarca glacialis</i> (J.E. Gray, 1824)
<i>Lutraria angustior</i> Philippi, 1844

The most famous Irish naturalist, Robert Lloyd Praeger (1865-1953), also participated in the 1886 expedition. He is not usually regarded as a conchologist, but he produced a number of publications including 'The marine shells of the north of Ireland' (Praeger 1889). Part of his collection of shells including fossils, is in the NMI. He took an active part in the Field Clubs and in collective field-work since the age of eleven, organizing team-work such as the Lambay and Clare Island Surveys.

Other 19th century cruises included those sponsored by the Royal Dublin Society (RDS) in 1890 and 1891 to survey the fishing grounds of the whole west coast of Ireland. Holt (1892) lists the bycatch including Mollusca. E.W. Holt (1864-1922) was Assistant Naturalist for the RDS, but was only permanently in Ireland when he took charge of the floating marine laboratory (the dismasted brigantine *Saturn*) begun by the RDS in 1898 in Ballynakill Harbour (Co. Galway), and then within Fisheries Branch of the Department of Agriculture and Technical Instruction. This was the first marine lab in Ireland. Later he worked for the Fisheries Branch of the Department of Agriculture & Technical Instruction for Ireland where he was involved with the Fisheries cruises from 1899-1914. Various ships were used including *Helga* and *Granuaile*. These were replaced in 1908 by the *Helga II*, built by the department, with a laboratory. This was the first custom built Irish marine research ship. Important material from all these cruises is held in the collections of the NMI.

Helga II also participated in the original Clare Island Survey, dredging in surrounding waters to depths up to 90m. Clare Island lies at the entrance to Clew Bay in County Mayo, some 5km from the west coast of the Irish mainland. From 1909 to 1911, the most ambitious natural history project ever undertaken in Ireland, the Clare Island Survey, was carried out through the Royal Irish Academy - the first major biological survey of a specific area carried out in the world. More than 100 scientists from many parts of Europe collected data that represented the most comprehensive inventory of nature in a single geographical location during the early part of this century. More than 8480 animal and plant species were recorded, of which 120 were new to science,

and 67 reports were published. During 1909 and 1910, this Survey studied the marine molluscan fauna of the south/eastern shores of the Island and part of Clew Bay, and results were published by Colgan (1911) and Southern (1915). Voucher and cited material from this Survey, and the new Clare Island Survey again organised by the Royal Irish Academy from 1991-1995 (Myers 2002; Nunn 2002) are held in the NMI collections.

Much of the material in the NMI collections is from other leading local conchologists and marine biologists, examples being:

1857-1859 Dredgings were carried out about Belfast and Strangford Loughs by the Belfast Dredging Committee (G.C. Hyndman, George Dickie, E. Waller and J.G. Jeffreys) in 1857-1859, under grants from the British Association. They were published in the Reports of the Association for those years (Hyndman 1858, 1859, 1860). One the participants was Edward Waller (1803-1873), a barrister from Co. Tipperary, with a summer home in Co. Tyrone. Although he published very little, he left a substantial collection in NMI.

1892 Miss Amelia Elizabeth Mary Warren (~1840-1932), the younger sister of the naturalist Robert Warren, lived Ballina, Co. Sligo. She studied Mollusca and published several important papers with distributional lists including rarities from 1892-1896 (e.g. Warren 1892, 1893), mainly Killala Bay and Bundoran. Her collection was left to a friend who presented it to the NMI.

1896-1897 Dredgings were carried out by G.W. Chaster, L.E. Adams, J.R. Hardy, R. Standen and R. Welch around Rathlin Island in 1896-1897, and published in the *Irish Naturalist* (Chaster, 1897a, b, c). Although born and living all his life in England, George W. Chaster (1863-1910), in his later years, spent holidays mostly in Ireland, collecting and dredging.

- Praeger (1949) considered that Irish conchology owed much to his work.
- 1905-1914 Nathaniel Colgan (1851-1919) was born and lived in Dublin, working as a clerk in the Dublin Metropolitan Police Court. Originally a botanist, he later worked on the marine Mollusca of Dublin in particular (Colgan 1907, 1914, 1930 (posthumous)). His substantial collection was donated to the NMI by his family after his death.
- 1903-1930 Miss Anne Letitia Massy (-1931) worked for 25 years in a 'temporary' post in Irish Fisheries (Dublin) as conchologist. She became a skilled and experienced conchologist, producing a series of valuable monographic papers on the molluscan fauna of the Irish coasts (Praeger 1949). Her best work includes:
- 1909 *The Pteropoda and Heteropoda of the coasts of Ireland* A full listing of all known records, and full descriptions of each species.
- 1917 *The gymnosomatous Pteropoda of the coasts of Ireland* Several new species, some still valid, were described. A full listing of all known records, and full descriptions of each species.
- 1928 *The Cephalopoda of the Irish coast* A listing of all known species with discussion of distribution.
- 1930 *Mollusca of the Irish Atlantic Slope* A monumental work listing all records for 313 species of Pelecypoda, Scaphopoda, Gastropoda, Opisthobranchia from the cruises of the Fisheries Branch of the Department of Agriculture from 1901-1914 using the *Helga*; together with all previously known records. The results included 11 new living (one was synonymised) and 9 new shell only British/Irish records, and 19 further new living Irish records. Much of this material is in the NMI, but also in the collections of the Natural History Museum, London.
- 1926-1950's Nora Fisher McMillan (-2003) spent 10 years shore-collecting at Greenisland, Co. Antrim in 1930's (McMillan, 1944a). She published many papers, first as Fisher, then as Fisher-McMillan. Voucher material from her survey of Lough Foyle with R. MacDonald (1951) is in the collections of the NMI.
- 1946-1986 Biologists led by Prof. J.A. Kitching & Prof. F.J. Ebling published a series of papers on the ecology of Lough Hyne, Co. Cork, currently the only statutory Marine Nature Reserve in the Republic of Ireland. Many of the species found there are represented in the NMI collections. Detailed notebooks are also kept at the NMI.
- 1967-1985 C.E O'Riordan published a useful series of papers referring to material currently or recently acquired by the National Museums of Ireland, which included molluscs. Much of this material was donated by Michael Long (d. 1980). Long corresponded with the NMI for 27 years. Most of his mollusc collection from the Dingle Bay area was donated to NMI Museum in 1966, with the other part of collection in Ballyferriter Museum, Dingle Peninsula. Long was the first to record *Charonia lampas*, *Ranella olearium*, *Lutraria angustior*, and the exotic traveller *Brachydontes exustus* from Ireland (O'Riordan 1978).
- 1969- Dan Minchin studies on ecology, biogeography and aquaculture of molluscs: in particular *Pecten maximus*, *Lutraria angustior*, *Limaria hians*, *Nucella lapillus*, *Crepidula fornicata*, *Calyptrea chinensis* and aliens. He has donated many specimens to the NMI collections.

There is material from extensive modern surveys such as a full voucher collection from the BioMar survey of the sublittoral (and littoral) in the Republic of Ireland from 1993-1996.

The complete collection of about 9000 lots is stored in Dublin, either at the Natural History Division building, Merrion Street, or a large facility at Beggars Bush, Haddington Road.

A catalogue of the Irish and British marine Mollusca

For more than 70 years (since 1924 when A.R. Nichols retired as keeper), little curatorial work had been carried out on the Irish and British marine molluscan collections of the National Museum of Ireland, apart from a systematic list of the material stored in alcohol prepared by Holmes in 1981. In 1995, a collaborative project between the Ulster Museum (Belfast) and the National Museum of Ireland (Dublin) was begun to catalogue the collections, and to make this information available to all through publication. With the limited time available (16 days per annum), documentation was largely complete by 2000. In subsequent years, this information was transferred to a suitable electronic format.

A website will be the end product, shortly to be published as one of a suite of sites at www.habitas.org.uk. A short history of the collections will be provided, together with relevant entries into the Museum Register and a list of references to cited material. An archive of the specimen data allows a search of all specimen entries. The database currently comprises 7055 specimen entries.

Each specimen entry includes the taxon (Family, Genus, Species); number of specimens;

identification status; storage medium; record details, where available from label (may include location; date; name of collector/determiner; habitat; method of collection; name of survey ship; published reference; comments); collection name; registration number; donor.

Please note that this site is currently under development – it should be available from May 2005. As yet, not all specimen details have been recorded electronically – these will be entered into the search archive as time allows.

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Taxonomists unaware of history are doomed to repeat it: the history of *Paramphinome jeffreysii* (McIntosh, 1868).

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The Order Amphinomida (Annelida: Polychaeta) includes predominantly motile carnivore taxa that possess hollow, brittle calcareous chaetae. Members of the order have been collected from the marine environment at intertidal to abyssal depths, as well as in driftwood and as commensals on barnacles. The ecological breadth of the group highlights the adaptive success of these forms. Some 160 nominal taxa from 21 genera in three families are currently recognized, but the basic concept of the Amphinomida can be traced to Savigny in Lamarck (1818) and has been a relatively stable group throughout its history. Nevertheless, the enigmatic taxa *Spinther* Johnston, 1845 was, for a time, included in the group. It is the unique features and ubiquity of the Amphinomida that has led to a long history of collecting and their presence in museum collections throughout the world.

These, oft termed, “fire-worms” have been the focus of several reviews (e.g. Gustafson, 1930; Hartman, 1959; Fauchald, 1977) attempting to catalogue the diversity and to systematically group them according to differing hypotheses of relatedness; however, a phylogeny for the group which includes both relationships within the order and its place in the larger context of the Class Polychaeta has remained elusive. Faced with its substantial diversity and long taxonomic history, there are cases in which this history is more a hindrance than help. A short discussion of *Paramphinome jeffreysii* (McIntosh, 1868) from the perspective of collectors and collections will illustrate this paradox.

During the summer dredging expedition of 1867 organized by J. G. Jeffreys, two small polychaete specimens were collected from

ca.180m depth outside of St. Magnus Bay, Shetlands and provided to W. C. McIntosh. The new species name, *Hipponoe jeffreysii*, was introduced by the author at the Meeting of the British Association at Norwich (August 20, 1868) and was so noted in the Annals and Magazine of Natural History (1868): “I have described some of the supposed new forms elsewhere, and therefore shall merely name them; others have not yet been noticed. They are as follows:—*Hipponoe jeffreysii*, n. sp., a small Amphinomacean.” He subsequently supplied a brief description for *H. jeffreysii* (McIntosh, 1869). However, the manner in which the name was introduced, the nature of the description, as well as several statements qualifying his conclusions have combined to cause confusion as to the identity of this taxon from its creation.

Examples of this confusion include the description lacking mention of retractile, curved notochaetal hooks characteristic of the genus *Hipponoa*, the current spelling of the variant *Hipponoe*. The placement of these specimens in the genus is only an implication that the hooks are present. He further complicates the description by adding a discussion of another specimen collected from the Channel Islands which appears not to be the same as the Shetland specimens with the following aside: “...indeed, I was at one time disposed to regard the animal as specifically different” (McIntosh, 1869: p. 407). Continuing with caution he writes, “I had provisionally termed the two minute eyeless specimens from the Shetlands *Hipponoe jeffreysii*, but I think they may more correctly be grouped with the example last described.” These points may be a result of the novelty of the group in the British Isles and the paucity of descriptions for members of the family at the time, but the result is a species described by conflicting statements that have only perpetuated confusion for taxonomist and collectors that have followed.

Moving on from the original description of *Hipponoe jeffreysii* we come to the second source of confusion, *Paramphinome pulchella* M. Sars, 1869. This genus was erected to accommodate specimens collected from Norway that possess recurved, notochaetal hooks on the first chaetiger only. This differs from the

genus *Hipponoe*, which has hooks on numerous segments, as well as other distinguishing characters. Further collecting provided records throughout Norway and the Arctic seas until McIntosh produced his Monograph of the British Annelids (1900) wherein an apparent synonymy was reported. *H. jeffreysii* was newly combined with *Paramphinome* and became a junior synonym of *P. pulchella*. The precedence of the former was not taken into account and this status persisted through intervening works; in fact, the taxon *jeffreysii* is not even mentioned in Hartman's (1959) Catalogue of the Polychaetous Annelids of the World. It was not until Fauchald (1977) that the situation was resolved accurately showing the author of the genus *Paramphinome* to be Sars and the type for that genus as *H. jeffreysii*. This has led to the use of both names, which are still common in current and museum collections.

A consequence clear from this example is that the records for *Paramphinome jeffreysii* and *P. pulchella* imply an Amphiatlantic distribution. In other words, specimens identified from Florida (Gulf of Mexico and Atlantic coasts), the Northwest Atlantic, around the United Kingdom and Ireland, as well as from Scandinavia represent the same species. So, the work that can be conducted on material from museum collections, as well as that of current and future collectors, is limited by both the original description and the history of the species. This shows the need for revision of museum material in conjunction with current collecting in order to resolve taxonomic, ecological and biological questions. The final lesson, I feel, to take from the story of *Paramphinome jeffreysii* is that we cannot ask for more from taxonomists than to be as thorough as possible and to write descriptions keeping in mind those collectors and collections that are to come.

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Marine life in the intertidal around Wales -An overview of CCW's Phase 1 intertidal survey

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In the autumn 2004, the Countryside Council for Wales (CCW)'s intertidal survey team finally completed the fieldwork for an ambitious project – to map the biological communities around the entire coastline of Wales. The project started in 1996 with two surveyors who were given a year to complete the task. It soon became apparent that this was an unrealistic goal so the team expanded and the fieldwork continued for a total of nine years. During that time, surveyors walked, snorkelled, boated and even hovercrafted their way around 1,600 km of coast collecting data on many aspects of intertidal life.

The project was set up in response to the implementation of the EC Habitats Directive to provide information to support the designation of intertidal Sites of Special Scientific Interest (SSSI) which underpin Special Areas of Conservation (SAC).

Maps were created using a biotope classification system devised by the Marine Nature Conservation Review (MNCR)¹ to categorise different biological communities known as biotopes. These are made up of the physical habitat along with the flora (usually algae) and fauna that live there, similar to the botanical National Vegetation Classification (NVC). Other data collected included detailed species lists for specialised biotopes e.g. rockpools and overhangs (Fig. 1), Nationally important biotopes e.g. piddock communities, presence of rare, scarce and non-native species e.g. *Sargassum muticum* (Fig. 2), artificial substrata, coastal activities and a site description.

Maps are drawn over specially flown aerial photographs taken at low water spring tide along with various field notes and species lists. Digital maps are created using MapInfo

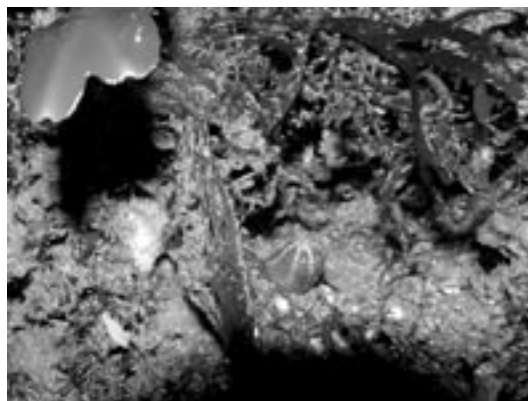


Fig. 1 Overhang dominated by red algae and sponges with *Aulactinia verrucosa*

GIS package and all information is entered into a specially designed Access database. More information can be gained from an article by Paul Brazier in PMNHS newsletter no 12, May 2003 and CCW website: www.ccw.gov.uk

The project is due to be completed by March 2006. Work for the final year includes: completing digital maps, producing final survey reports, developing the database to carry out detailed queries e.g. map distribution of specified biotopes, catalogue photographs (we have 1000's!), update the Phase 1 intertidal handbook² and carry out monitoring work within the SACs including: distribution and quality of *Sabellaria alveolata* reefs, *Zostera* beds (Fig. 3) and muddy gravel biotopes.

Wales has a wide variety of habitats from the large estuary systems of Severn (Fig. 4) and Dee, sandy and muddy shores, sheltered and exposed rock, mixed shores, wide bedrock platforms and numerous offshore islands such as The Skerries (Fig. 5). This diversity of shore types creates many different niches for numerous biological communities.

Throughout the survey, many interesting biotopes and species were also found. Some of the highlights included:

- Large amounts of free-living fucoids *Fucus vesiculosus* and *Ascophyllum nodosum* ecad. *scorpioides* (Fig. 6, verified by Harry Powell) were found living in the narrow channel between Holy Island and Anglesey. This had not been encountered around Wales before.

- The high turbidity of the water within the Severn estuary allowed species more typical of the circalittoral zone to extend up



Fig. 2 *Sargassum muticum*

the shore into the intertidal such as *Haliclona oculata* with *Balanus crenatus* on lower shore cobbles and patches of *Tubularia indivisa*.

- Extensive areas of *Zostera noltii* and *Z. marina* beds within the Severn estuary, Bury inlet, Inland Sea and the Foryd.

- More extensive areas of *Sabellaria alveolata* reef than previously thought, particularly in Cardigan Bay and along the Glamorgan coast.

- Unusual species such as *Thia scutellata* in the Dee estuary, *Convolvata roscoffensis* in Glamorgan and *Ostrea edulis* in the Milford Haven, and around the Gower.

- Non-native species: *Sargassum muticum* has spread from Pembrokeshire to Anglesey in last five years. Other non-natives recorded included *Styela clava*, *Crepidula fornicata*, *Colpomenia peregrina*, *Codium fragile* subsp. *tomentosoides*, *Mya arenaria* and *Elminius modestus*.

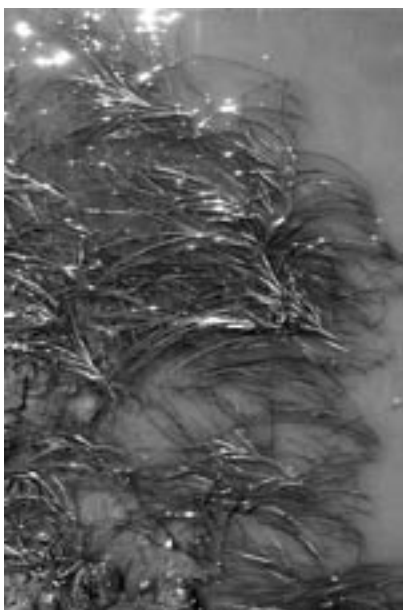


Fig. 3 *Zostera marina*



Fig 4 Sandbank, Severn estuary



Fig. 5 The Skerries, Anglesey

- Unusual species assemblages: an area of exposed bedrock around the outfall to Wylfa power station, Anglesey had the fucoids (found on the surrounding rocks) replaced by a mixture of red algae, dominated by *Corallina officinalis* and *Halurus equisetifolius* with large amount of *Codium fragile* subsp. *tomentosoides* (usually found in rockpools).

Finally, this is just a flavour of the data that has been collected. All the data held by CCW is public data, available for you to use so have a look. For more information, contact CCW intertidal team on the address above.

References:

¹ Connor, D. W., Brazier, D. P., Hill, T. O., & Northern, K. O. 1997 Nature Conservation Review: marine biotope classification for Britain and Ireland. Volume 1. Littoral biotopes. Version 97.06

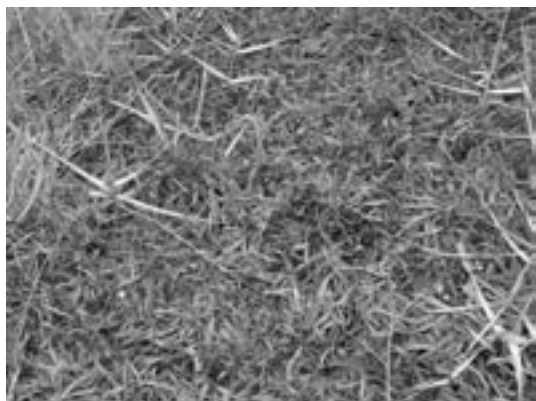


Fig. 6 Ascophyllum nodosum ecad. scorpioides



Fig. 7 Haliclona oculata with Balanus crenatus

² Wyn, G., Brazier, D. P., & McMath, A. 2000. CCW Handbook for marine intertidal phase 1 survey and mapping, CCW marine Science Report: 00/06/01

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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.

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