Porcupine Newsletter

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CONTENTS

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NEWSLETTER. Lack of space has caused some of the reports from the February meeting in Menai Bridge and some other contributions to be held over until the next issue. We offer our apologies to the authors concerned.

PORCUPINE ADS. On p.179 we introduce a new, free advertising service for Members.

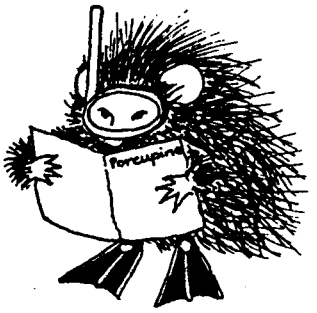
FAL ESTUARY. Our summer meeting this year will not be at the Fal Estuary as we had hoped. Roger Burrows will be delighted to have us in 1984, when there will be much better facilities including, we believe, a laboratory and accommodation in a former school. Instead, we are going to Eyemouth on the south-east coast of Scotland.

FUTURE MEETINGS. 1. There will be a joint field meeting with the Underwater Conservation Society at Eyemouth, Berwickshire, from Sunday 7 August to Saturday 13 August 1983. Details appear on p. 171.

2. There will be a meeting of PORCUPINE at the Hancock Museum, Newcastle-on-Tyne on Saturday 8 and Sunday 9 October 1983. The subject of the meeting will be "Marine Vertebrates". Further details will appear in the next PN. Contact address: Peter Davis, the Hancock Museum, Newcastle-on-Tyne, NE2 4PT.

3. The AGM in the spring of 1984 will be held at The Royal Scottish Museum, Edinburgh.

Frank Evans, Editor,
Dove Marine Laboratory, Cullercoats, North Shields NE30 4PZ,
England.



REPORTS OF THE MEETING IN READING (continued from Vol. 2, No. 6)

IN-SITU DESCRIPTION AND IDENTIFICATION OF BRYOZOA

John Rubin
The Polytechnic, Plymouth

Both taxonomic and gross morphological criteria are used in the description of bryozoans

Ctenostomes, cyclostomes and cheilostomes are the three main bryozoan taxa found in the shallow sublittoral and shape of colonies varies from branching chains through a crust to a variety of erect forms.

In-situ identification of species level is difficult since recognition of microscopic features is necessary. However, the two Linnean Society monographs has made the microscopic identification of cheilostomes very easy.

Encrusting species are most prolific on the undersides of flat stones or boulders which are propped up off the soft substratum beneath, while erect species occur on poorly illuminated vertical or overhanging rock surfaces. Larvae of bryozoans are skotopositive, enabling them to locate habitats.

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PORCUPINE/UCS WORKSHOP ON IDENTIFICATION OF SESSILE GROUPS: ASCIDIANS

B.E. Picton
The Ulster Museum, Belfast.

Ascidians are conspicuous and ecologically important animals in shallow water ecosystems. In the British Isles they have been studies since Victorian times but the emphasis in the literature has been on structural characters. Identification is usually based on Berrill (1950) or the recent Linnean Society synopsis (Millar, 1970). Characters used are mostly internal, the structure of the zooid, the stomach, the branchial sac, gonads, etc. These characters are not generally available to the field ecologist as they require dissection, usually under a microscope. In the U.C S. miniprint guide to Ascidians a field identification approach is being attempted. In most cases this has involved deriving field characters from photographs of ascidians and field observations, coupled with identification of specimens in the laboratory using traditional criteria. This has resulted in the discovery and testing of characters such as colour, markings, shape and texture, together with characters such as habitat, microhabitat, etc. The resulting guide will stress these features, together with a colour photograph of each species, and should complement the traditional literature. The commoner species will be dealt with in the first part of the guide, which should be completed in 1983.

A second part is envisaged when sufficient information has been collected on the more difficult species, such as the Didemnids and Molgulids.

References

Berrill, N.J., 1950. The Tunicata with an account of the British Species. Roy Soc., London.

Millar, R.H., 1970. British Ascidians. Linnean Society Synopses of the British Fauna No. 1, Academic Press.

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IDENTIFICATION FOR ALL

P.F.S. Cornelius
British Museum (Natural History), London.

Summary

Specialist taxonomists should distil from their experience the characters by which they instantly recognise familiar species, and should include these 'best' characters in identification keys. The easiest keys to use are visual and the hardest, verbal. Many taxonomists fail to popularise their identification skills. This is changing, but scholarly works still appear with turgid keys that even general biologists find hard to use. Identification clues in little known species are sometimes hard to derive. These points are illustrated where possible by reference to hydroids, and a field-guide approach to identification of that group is advocated.

Introduction

These notes are based on a half hour informal talk given to a joint meeting of Porcupine and the Underwater Conservation Society held in the Zoology Department of Reading University on 11-12 December 1982. The meeting considered identification problems of sessile organisms. Some points arose in discussion, and many are included here and gratefully acknowledged. Wherever possible the examples used are drawn from amongst the British hydroids.

Many hydroids can be identified easily in the field. The size range of the group suggests that this might be possible, and it is. In UK waters some 75 species can be identified without a microscope, and most without a hand lens either. But the skill is rare since the traditional guides are inadequate and do not give macroscopic characters or field marks. The identification problems in this group met by SCUBA divers are the same as those encountered by those sorting in the laboratory, collecting intertidally, or looking at benthic photographs.

Simplifying identification

Preparing an easy-to-use key is difficult, and many taxonomists do not meet the challenge completely. Dichotomous keys often include unfamiliar jargon and so are hard to use. Yet still they appear, and often there seems to be no genuine attempt to help others identify the group in question.

Probably the earliest attempt to highlight features of hydroids useful in identification was by Hincks (1868). He gave full descriptions and stressed the included diagnostic features by putting them in italics. Ray Williams tells me that this was not the general practice in Van Voorst guides (the 19th century equivalent of Collins' Field Guides); and Jim Chimonides that in Hincks' later work on Bryozoa (1880) key features were not italicized. I have used Hincks' book often and have always found the italics a great help. They take you straight to the best characters. I am surprised that the device has not been used more often. Several post-war field guides have used it in places, but none that I have seen has been so consistent as was Hincks (1868). The method is worth using since it is simple, effective and - some editors would say "above all" - it is cheap.

Simple identification became an art form with the appearance of Roger Tory Peterson's (1934) first field guide to North American birds. His other guides, including that to European birds (Peterson, Mountfort Hollom, 1954), were similarly laid out. Many groups of organisms were covered in the North American series, including such unlikely candidates as rocks and minerals, trees and shrubs, and animal tracks. His innovation - now nearly 50 years old - was the illustration of all similar looking species in the same posture and, where possible, on a single page. These arrangements often boldly cut across affinities, so that swifts and swallows appeared side by side and so on. In addition, best characters were helpfully indicated by arrows. Those who like me started bird-watching in the late 1950's will recall the tremendous boost given to field identification by Peterson's European guide. Its simple, visual layout helped one assimilate the necessary information much more easily than did more conventional bird guides. His approach brought 'difficult' groups well within the reach of teenage amaeurs. Some achievement!

But despite its success Peterson's revolutionary approach has spread only slowly to other groups. Several Collins' field guides have followed suit, but most authors of identification keys seem not to have adopted his style. Among coelenterate literature there is an important exception. Russell (1953) included a totally pictorial key to some 80 species of British hydromedusae. Obelia spp. alone were not keyed visually to species. I have used the key, and seen beginners use it, with great ease. Apart from being quick and accurate, it eliminates the need to plough through turgid dichotomous couplets.

Visual versus verbal

It seems hardly to need proof that visual clues are more easy to take in than verbal ones. 'A picture is worth a thousand words' as the saying goes. One example will do. At an early age we learn that green fruit is unripe, and that the more the green-ness has given way to a brighter colour the riper the fruit is likely to be. There are exceptions, but it is usually so. I wonder how

many share my continuing surprise that some modern varieties of eating apples are still green when ripe, and that greengages actually taste sweet? A label saying 'ripe' on a box of green fruit would seem odd, so strong is the visual clue. Translating a message into words can be unnecessary, and does not always make it clearer or more convincing.

We are programmed to accept visual clues, and even to rely on them: and often they are perfectly valid. They might also be very efficient in terms of thought processes. I think there is some value in the analogy, to use computer jargon, that visual clues are written in machine code while those in words are in a higher level language (BASIC is one). Information in words must be mentally translated into visual images before it can be used. I submit that this translation is slow and often inaccurate. So often we struggle to find the right word, and few authors could cope without their thesaurusses and dictionaries.

And styles change. The much-respected writings of Ellis (1755) and Hincks (e.g., 1868) are dated in style and their meanings can be obscure. Yet the accuracy of most of their beautiful illustrations can never be undermined. A picture is in a universal language and does not need translation into or from a foreign tongue. Words are much harder.

Field marks of hydroids

So far as I know field marks of hydroids have not been written about. In this context 'field' can mean underwater, on the shore, in a laboratory rough-sorting, sitting in an armchair looking at someone else's transparencies - in fact anywhere where the need is to identify easily from gross characters.

For some time I have been 'collecting' field marks or macroscopic characters of hydroids, but this has often meant deriving them from scratch. This is necessarily slow since one has to be sure that a gross character is valid before relying on it. Like the familiar land plants, hydroids vary phenotypically - that is, in response to environment. We do not know enough about them always to tell good characters from bad. This has hindered the professional taxonomist as much as the field naturalist. Hydroid specialists, for example, have been afraid of using colony shape as a species character. They have preferred touse microscopic characters which, with some truth, they think are less responsive to environmental change. But the practice has made harder the step from specialist work to field guide. Some large and common species familiar to the rubber-suited fraternity will serve as examples.

Nemertesia

The two large hydroids Nemertesia antennina and N. ramosa differ microscopically in having respectively two annuli and one between hydrothecae. But the number of annuli sometimes varies and isolated branches cannot confidently be identified from this character. It is said that N. antennina hardly ever branches,

unlike N. ramosa which is held always to be branched. During 1982 I saw live material of the two side by side at Roscoff, Hunstanton and Plymouth, and saw them also on N.A. Holme's accurately-coloured photographs of mid-Channel benthos. I saw that, in life, the stem of N. antennina is orange-buff while that of N. ramosa is yellow-buff. The colours are more distinct than I can easily put into words (!) but seem constant; and they are correlated with the branching pattern. Hence we can confidently use colony branching as a species character to separate these two at a glance. Detailed microscopic examination, although satisfying to some, will add nothing to the validity of the identification in this case. Indeed, since the microscopic characters of the two species are not totally reliable a close examination could even be confusing.

Hincks (1868) tells us that the Nemertesia debate was a century old when he wrote. He and Joshua Alder resolved it to their satisfaction. Rob Hughes - present at the Reading meeting - and I have discussed the two species several times. I stumbled across 'new' evidence, on stem colour, during the few months before the meeting in the course of other work. There are actually several other differences listed by Hincks, which I haven't mentioned.

Obelia and other Campanulariidae

In 1975 I lumped four British Obelia hydroid species under the oldest name, O. dichotoma. I relied on microscopic characters, and met no opposition from other Museum-based hydroid workers. But several SCUBA-diving biologists did have doubts about my conclusions. They are listed in the acknowledgements. They raised doubts since gross colony characters suggested that at least some of the species were valid. During 1982 I saw all the UK Obelia hydroids live, describing and photographing their polyps. One species - O. plicata - I saw live only as small specimens from 80 m off Roscoff. But Frances Dipper included large colonies amongst a collection from Loch Sween which she sent in for identification. We already had some material from that locality in the BMNH collection - accessed as O. dichotoma! Indeed, it is fair to say that confusion of the Obelia hydroids has been widespread. I concluded that I had, indeed, buried some valid species in the synonymy of O. dichotoma and I am grateful to those mentioned and to others for tempting me to look at the genus again. It seems that the species can be validly identified on colony characters. They will be redescribed elsewhere, but for the meeting I summarised their characters in a visual key and to save space I will leave it at that (Fig. 1).

My illustration includes all the common, bushy Campanulariidae known from the eastern North Atlantic between the latitude of Morocco and the Pole. I think it is a first attempt at a field guide approach to identifying hydroids to species level and I intend to develop it. The drawing could be improved in some details but I hope it shows that you can easily make identifications using pictures alone.

Conclusion

Wherever possible keys should make use of figures. This is well shown in the recent AIDGAP series of keys (e.g., Hiscock, 1979). Some species-groups will remain difficult. But many might be told

at-a-glance from visually presented clues, and those that remain can be taken below genus level in some other way. Indeed, it is often a help to get to genus quickly. I know that some of my colleagues at the BMNH are already committing themselves to

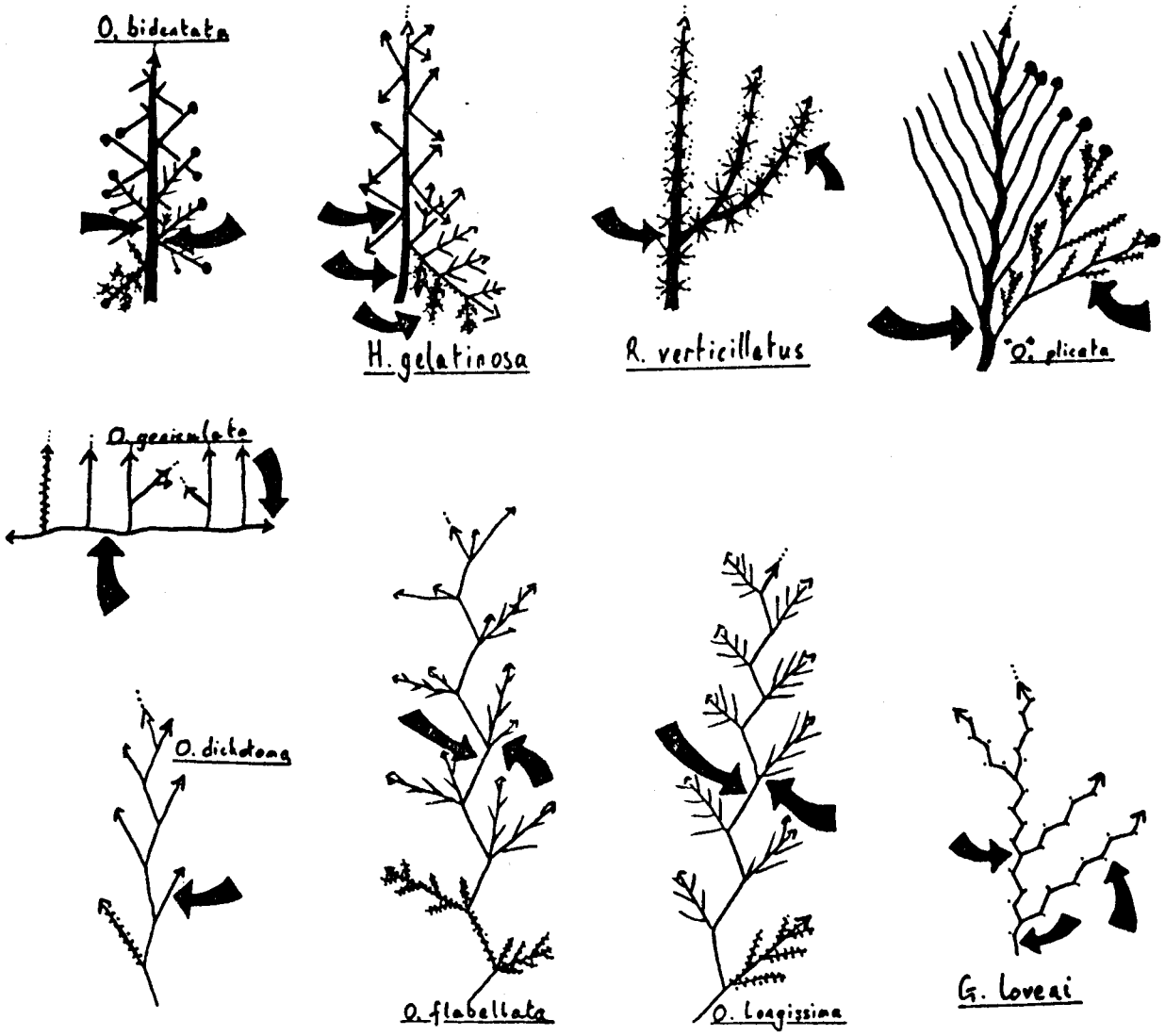


Fig. 1. Stylised silhouettes of NE Atlantic Campanulariidae having large colonies. Diagnostic features are arrowed. Not to scale.

visual keys. For example, I think that the visual keys to nematodes in the forthcoming Linnaean Society Synopses by Howard Platt and Richard Warwick will break new ground in the way that visual information is presented. Among the hydroids, I see little problem with the larger colonies - but you will still have to use a microscope for the tiny ones!

We are, I believe, building on the pioneer work on Peterson and the whole series of field guides which his work stimulated. It will be up to people such as UCS and 'Porcupine' members to judge our results and, hopefully, to suggest improvements.

Acknowledgements

I am grateful to Bob Earll, Margit Jenson, Zoologisk Museum, Copenhagen, and Gordon Paterson for kindly encouraging me at various stages, and to Simon Moore for discussion before the meeting about the species of Obelia. The following SCUBA-diving biologists commented about the species of Obelia to me, and I am particularly grateful to them: Mike Robins (Kings College, London University), Carla Morri (Pavia University, Italy), Shin Kubota (1981; Hokkaido University, Japan: the species seem cosmopolitan!) and Carina Ostman, Uppsala University - see Ostman, 1979, 1982). Simon Moore and Gordon Paterson kindly commented on the manuscript.

Discussion

Shelagh Smith said that in her experinence some people simply could not use pictorial keys and had to rely on keys in words. After the meeting Ken England told me that he had long been aware of this problem. He had tried both visual and verbal teaching aids with adult classes (though not in biology). The results suggested that there were as many verbal people as visual, and it would follow that verbal keys do have their use. I suspect that the sort of people who might use identification keys will usually be visually orientated. But it would still seem necessary to provide verbal keys for those who need them. The Peterson guides and the other Collins ones mostly include brief notes alongside the illustrations, and Russell (1953) included verbal keys in the text of his book.

Some other discussion points have been acknowledged already, and several people brought along transparencies of hydroids to be identified or discussed. Among them was Bernard Picton who showed a fine series of slides and told the meeting that he and Frances Dipper had recently been working on a field guide to British hydroids.

References

Cornelius, P.F.S., 1975. The hydroid species of Obelia (Coelenterata, Hydrozoa: Campanulariidae), with notes on the medusa stage. Bulletin of the British Museum (Natural History), Zoology Series 28: 249-293.

Ellis, J., 1755. An essay towards a natural history of the corallines... found on the coasts of Great Britain and Ireland. London.

Hincks, T., 1868. A history of the British hydroid zoophytes. 2 volumes. Van Voorst, London.

Hincks, T., 1880. A history of the British marine Polyzoa. 2 volumes. Van Voorst, London.

Hiscock, S., 1979. A field key to the British brown seaweeds (Phaeophyta). Field Studies 5(1): 1-44.

Kubota, S., 1981. Life-history and taxonomy of an Obelia species (Hydrozoa; Campanulariidae) in Hokkaido, Japan. Journal of the Faculty of Science of Hokkaido University, Series VI, Zoology 22: 379-399.

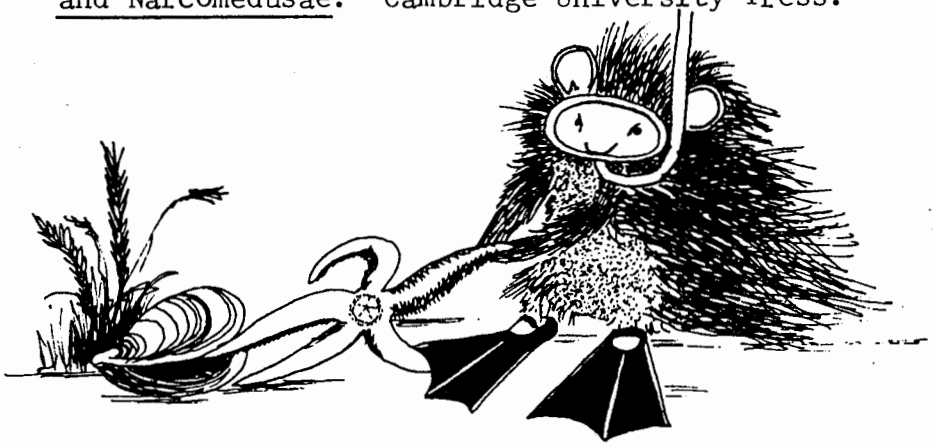
Ostman, C., 1979. Two types of nematocysts in Campanulariidae (Cnidaria, Hydrozoa) studied by light and scanning electron microscopy. Zoologica Scripta 8: 5-12.

Ostman, C., 1982. Isoenzymes and taxonomy in Scandinavian hydroids (Cnidaria, Campanulariidae). Zoologica Scripta 11: 155-163.

Peterson, R.T., 1934. A field guide to the birds. Giving field marks to all species found east of the Rockies. Houghton Mifflin Co., Boston.

Peterson, R.T., Mountfort, C., & Hollam, P.A.D., 1954. A field guide to the birds of Britain and Europe. Collins, London.

Russell, F.S., 1953. The medusae of the British Isles. Anthomedusae, Leptomedusae, Limnomedusae, Trachymedusae and Narcomedusae. Cambridge University Press.



REPORTS OF THE MEETING IN MENAI BRIDGE, 26 AND 27 FEBRUARY 1983

This meeting, on the theme of biogeographic boundaries in British seas, was attended by some 70 people.

CHANGES IN THE RELATIVE PROPORTIONS OF PATELLA DEPRESSA PENNANT AND PATELLA VULGATA L. SINCE THE 1950's.

S.J. Hawkins*, A J Southward** and D.J. Crisp***
*Dept. Zoology, University of Manchester, **Marine Biological Association, Plymouth and ***Marine Science Laboratories, Menai Bridge.

The distributions of Patella depressa Pennant (often called P. intermedia Jeffreys) and Patella vulgata L. overlap considerably. P. depressa is found from N. Africa to N. Wales, and P. vulgata from the Iberian Peninsula to Norway. In Britain, P. depressa is found on southern and western coasts from the Isle of Wight to Anglesey (excepting Ireland and the upper Bristol Channel). P. depressa forms its highest proportion out of the total limpet population between M.H.W.N. and M.T.L. One of us (S.J.H.), has recently (1980-1983) re-surveyed most of the sampling stations visited by the other two (D.J.C. and A.J.S.) during their classic biogeographical surveys of the 1950's. Comparable methods have been used to assess

changes in the relative abundance of P. depressa (southern species) to P. vulgata (northern species).

No change in range has been detected as the northern and eastern limits remain the same. There has been a general decline in relative abundance of P. depressa throughout its range in Britain. A possible exception is the region from Newquay to Duckpool on the North Cornish coast where P. depressa has remained abundant. The most marked changes have occurred in the Bristol Channel. P. depressa is now rare from Croyde to Lynmouth, where it was once much more common. Examination of sites with a good time series, indicates that this decline has been occurring for some 10 years or so. However there was recovery in the mid-1960's at sites affected by the severe winter of 1962/1963.

The decline of the more southerly P. depressa seems to reflect the general deterioration of climate since the1950's (see Southward, 1980 for review). The abundance of P. depressa has declined (both relative to P. vulgata and absolutely), but the range has not contracted. This suggests that in determining geographic distribution factors acting on the reproductive, larval and recruitment phases of life are more important than those acting on the adults on the shore. This idea was strongly suggested for other species by other speakers at the Porcupine meeting.

It is hoped to publish a fuller account of this work when it is completed later this year.

References

Southward, A.J., 1980. Nature, 285, 361-366.

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A MAPPING SCHEME FOR THE POLYCHAETES OF THE BRITISH ISLES

Lynda Warren
The Polytechnic of Central London, London W1.

Our understanding of the biogeography of plants and animals may be greatly assisted by a comprehensive recording and mapping scheme. Excellent examples of such schemes exist for British birds and for flowering plants, where hundreds, if not thousands, of people are involved in collecting data. For the less "popular" groups, however, progress has been much slower.

A particular problem for a polychaete mapping scheme is that polychaetes are often difficult to identify. However, by basing records on museum collections housed at the British Museum (Natural History) each spot on a map can be supported by one or more specimens so that identification can be verified at any time.

Unfortunately the museum collection is not really representative of the British fauna. Firstly there is a bias towards rarities - workers always assume that the museum will have no need for samples of common species. Secondly there is an uneven geographical spread. Because the collection is made up of many individual collections it is inevitable that some areas, particularly those near to marine laboratories, are over-represented.

The preparation of a series of Linnaen Society publications on the British polychaete fauna provides the ideal opportunity to build up the British Collection and expand the mapping scheme. If specimens are checked by the author(s) responsible for the appropriate family then identification will be reliable and will still be supported by the presence of the specimen in the collection.

It is hoped that authors will be able to collate data on their own groups, possibly including information on other collections, not housed at the museum.

The problem of choosing a mapping grid still remains. No system seems ideal for both terrestrial, and hence intertidal, records and continental shelf records. Of the various alternatives available it is suggested that a scheme using latitude/longitude grids is probably most suitable.

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BIOGEOGRAPHY IN NEARSHORE SUBLITTORAL AREAS OF SOUTH-WEST BRITAIN

Keith Hiscock
Field Studies Council Oil Pollution Research Unit,
Orielton Field Centre, Pembroke, Dyfed.

From 1977 to 1979, the Field Studies Council carried out a survey of nearshore sublittoral areas for North Pembrokeshire around to Cape Cornwall for the Nature Conservancy Council. Additional observations were made during the Underwater Conservation Society survey of South Cornwall West of Falmouth in 1981. The results of these surveys provided descriptions of the communities of conspicuous species in the main habitat and depth zones present at the sites surveyed.

The distribution and abundance of many species showed distinct regional differences within the areas studied. A marked reduction in the downward extent of the main depth zones and characterized by the algal communities present was recorded along the Bristol Channel. Here, the kelp forest extended to about 8 m below chart datum level on the open coast at Lundy and in West Wales but no kept forest was recorded east of Swansea Bay and Porlock Bay whilst foliose algae did not extend below chart datum level in the furthest east areas surveyed at St. Donats and Watchet. The numbers of conspicuous check-list species was reduced from about 165 at groups of sites at Lundy to less than 60 in the upper Bristol Channel. These changes are clearly related to the increasing water turbidity from west to east in the Bristol Channel (in the case of algal distribution) and to the generally more stressful condition of water quality (in its broadest sense) in the inner and upper Bristol Channel.

Changes related to water temperature, the effects of water currents in distributing larvae, and the proximity of oceanic water to the coast, were encountered. However, these factors, which are usually emphasised in relation to biogeographical distribution of species, appeared to be overriden by local environmental conditions.

Within the area studied, Lundy was outstanding on a site where large numbers of Mediterranean-Atlantic species were present in abundance. Only very small numbers of these species were encountered at sites studied in South Cornwall. Most of the coast of North Cornwall which we studied was greatly influenced by the large amounts of sand present adjacent to rocks and over rocks and by the generally very exposed nature of the coast; the rich communities of southern species at Lundy being found mainly in the sheltered east coast of the island. Even in the region of Padstow where sand is not a prevalent environmental factor, very few of the conspicuous Mediterranean-Atlantic species were found. Further north communities in West Wales, although providing northern records of several species, did not include those species in abundance.

Several areas of coastline showed distinct regional characteristics which included habitats or species not encountered in abundance elsewhere. These regions were usually separated from the area by large headlands, extensive sandy bays, or wide expanses of open sea. They included such habitats and communities as: Limestone rock characterised by boring bivalves, sabellid worms and phoronid worms with other species associated with empty holes; infralittoral rocks dominated by mussels thus excluding the presence of a wide variety of other species; areas considered under water quality stress and where sand was present in suspension; where species of the worms Sabellaria dominated; extensive areas of clean shell gravel characterised by the sea cucumber Neopentadactyla mixta and wave sheltered areas in the circalittoral characterised by large numbers of colourful Mediterranean-Atlantic species.

Further work will be carried out during 1983 in the Scilly Isles Survey, along the south coast of Cornwall and Devon. Some gap-filling in North Cornwall is clearly required before a reasonably complete picture of the distribution of nearshore sublittoral habitats and species in south west Britain can be obtained.

Reference

Hiscock, K., 1980. South-west Britain Sublittoral Survey. Final Report. Nature Conservancy Council, Huntingdon (Unpublished Report).

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IRISH SEA ZOOPLANKTON IN 1982

D.I. Williamson,
Department of Marine Biology (University of Liverpool), Port Erin, Isle of Man.

In most years, Sagitta setosa is restricted to Liverpool Bay and the North Wales coast in May and spreads rapidly in June. In late June 1982, however, samples on a transect from the Isle of Man to Liverpool contained very few specimens, and these were confined to the inner parts of Liverpool Bay. None were found 20 miles east of Douglas, I. of M., in early July, and only about 1% of

expected concentrations occurred to the east of the Isle of Man in early October. The only other unusual feature noted was the presence of Metridia lucens in all samples to the east of the Isle of Man in October. This copepod is normally resident in the deeper parts of the Irish Sea. The autumn spawning of herrings off the south-east of the Isle of Man was successful and occurred at about the usual time and place.

Surface salinities in the Irish Sea as a whole seem to have been rather below average. The tongue of higher salinity water from St. George's Channel tended to turn to the east of the Isle of Man and probably carried M. lucens with it. The shortage of S. setosa can not be attributed to a strong residual flow through the Irish Sea.

Low coastal temperatures in the early months of the year probably had an adverse effect on the population of S. setosa. It is suggested that the survival of postlarval herrings in their first winter may also be adversely affected by very low temperatures in coastal waters.

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SEABIRD DISTRIBUTION IN RELATION TO OCEANOGRAPHIC FEATURES IN THE IRISH SEA

E.I.S. Rees
Marine Science Laboratories, U.C.N.W., Menai Bridge, Gwynedd.

Although the broad features of seabird ranges have long been known, surprisingly little data exists on detailed distributions at sea. The official enquiry following the major wreck of seabirds in the Irish Sea in the autumn of 1969 failed to find the underlying cause because virtually nothing was known about distributions and ecology at sea after the end of the breeding season. This event and the rise of the offshore oil industry have prompted studies at sea but these have only received sporadic support. It is hardly surprising that the links between seabirds and the environment are so poorly understood when research councils classify organisms that spend nine tenths of their lives at sea as terrestrial.

The Seabird Group in conjunction with the N.C.C. Seabirds at Sea Team have evolved a recording scheme that permits quantitative data to be gathered on the abundance of cirds at sea. With only minor modifications to permit the use of line transect estimator formulae these methods have been used over the last two summers to study birds in the Irish Sea. Much of this has been done on an opportunistic basis so it has not been possible to systematically cover all parts of the sea. Nevertheless there is enough data to produce preliminary quantitative maps on a 6' x 12' grid. It was even possible to estimate the total population of guillemots at sea during the post-nuptial moult period when they are flightless. The estimate was in good agreement with colony census estimates.

The Western Irish Sea which is thermally stratified in summer has many more birds than the generally mixed waters of the Eastern Irish Sea. The change is particularly marked in the vicinity of the Western Irish Sea Front, where rafts of manx shearwaters congregate within a few kilometres of the warm side of the front. By contrast the main razorbill concentrations have been near the cold side of the front.

During the moult in late summer some guillemots go to inshore areas but the majority are found in or near the stratified water of the western basin. This strategy seems to depend on the relative availability of 0 group sprats in an area where the sprats grow fast by feeding on plankton concentrations associated with a shallow thermocline.

Off western Britain and in the part of the Pacific where moult season guillemot wrecks have also occurred there are boundary zones between seas dominated by pelagic fish with predetermined spawning seasons attuned to marked seasonal production cycles and more opportunistic serial spawning species such as sprat. The wrecks may result from a mismatch between the needs of a subarctic predator near the southern end of its range and a prey with a warm temperate type of spawning strategy. An abnormal frequency of easterly winds in early spring can affect the early part of the sprat spawnings. The serial spawning strategy of the sprats can compensate for this later but the birds are constrained to complete the moult before autumn gales break down the stratification.

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SOME LOCAL AND NATIONAL DISTRIBUTIONS OF SPONGES

R.G. Ackers
11 Heathrow, Gomshall, Guildford.

On a local level, I have been keeping records of sponges found in the West Sussex sublittoral since the mid seventies. Broadly speaking, habitats in this area can be categorised into - Shallow Reef; Shallow Wreck; Deep Wreck; Chalk Cliff; Clay Cliff; Flat, Scorred Reef; Deep Cobble/Crepidula; Shallow Cobble; Clay hedges and Boulders. The habitats are listed in sequence of sponge abundance, with more sponges being found on Shallow Reefs than on Clay hedges and Boulders. A list of the twenty-four sponges recorded are as follows:-

(61)	Dysidea fragilis	(7)	Suberites domuncula
(35)	Halichondria panicea	(6)	Pachymatisma johnstonia
(30)	Amphilectus fucorum	(5)	Levcosolenia botryoides
(18)	Scypha ciliata	(5)	Polymastia boletiforme
(18)	Tethya ausantium	(5)	Raspailia samosa
(14)	Scypha compressa	(5)	Haliclona oculata
(14)	Hemimycale columella	(2)	Oscarella lobularis
(13)	Hymeniacidon perleve	(2)	Cliona celata
(10)	Stelligera rigida	(2)	Myxilla incrustans
(10)	Haliclona E/H	(1)	Dercitus bucklandi
(9)	Polymastia mamillaris	(1)	Ciocalypta penicillus
(8)	Halichondria bowerbanki	(1)	Aplysilla rosea

The number in brackets is a crude indication of relative abundance, derived by "scoring" 1 for Present, 2 for Common and 3 for Abundant for each species recorded on a dive. The "scores" were then totalled for all the divers, which numbered over 60, during the period 1975-1982.

As can be seen, there is a striking fall-off in abundance. Dysidea fragilis is probably the commonest, large, sessile marine invertebrate in the area, whereas the last 6 species in the list resulted from single sightings on each of the dives in question.

From the habitat list, it can be seen that sponges prefer Shallow Reefs and Wrecks (infralittoral) to Deep Wrecks (circalittoral). Indeed, all 24 species occur in the infralittoral whereas only 14 have been found in the circalittoral. However, two species, Dysidea fragilis and Hemimycale columella 'typify' Deep Wreck sites which they colonise as readily as the shallower sites.

From the records, there is clear evidence that five species are virtually confined to depths of 12 metres b.c.d. and less. These are Halichondria panicea, Amphilectus fucorum, Hymeniacidon perleve, Stelligera rigida and Haliclona E/H. (Note: The name of the last species relates to the UCS Sponge Guide, where Haliclona entities are given letters. The species in question is referred to the entities Haliclona E. and Haliclona H, both almost certainly one species).

The total number of sponge species I have observed in West Sussex is around 30. (A couple of encrusting species and 3 or 4 other Haliclona species still require 'sorting out'). Allowing for species undiscovered, then the total West Sussex sponge fauna could number in the 30's. Thus, when compared with Devon (Plymouth Marine Fauna - 93 species) the West Sussex fauna is not particularly rich, but it does compare favourably with Dorset (Dorset Underwater Survey). Sponges listed in DUS, but not so far found in West Sussex, are Axinella polypoides, Stelletta grubii, Stelligera stuposa and Raspailia hispida. The first species has almost certainly reached its distribution limit in Dorset. This may be true of the other three species also, although they will be sought specifically during the coming season.

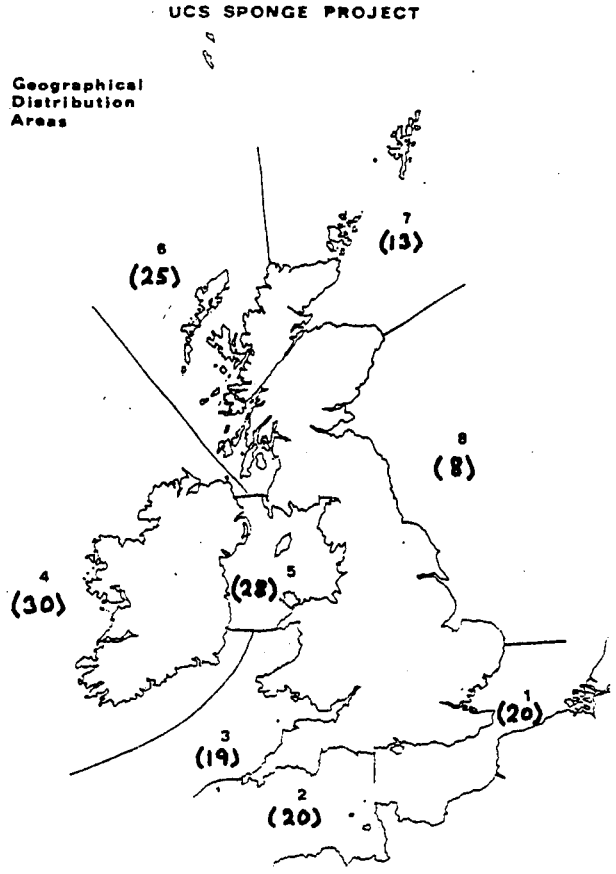
Five of the West Sussex species (Oscarella lobularis, Dercitus bucklandi, Halichondria bowerbanki, Haliclona E/H and Aplysilla rosea) are not in DUS, but are in the PMF. Thus, these and all the other West Sussex sponges probably have a continuous, if patchy, distribution along the Channel West from Shoreham.

It is tempting to suggest that some of the rarer West Sussex sponges do not occur to the East of Shoreham. However, there can be no basis for such an assumption until sublittoral areas of East Sussex and Kent are surveyed.

It is intended to continue observations on Sussex sponges during 1983, as part of the UCS South-East Branch "Sussex Guide" project.

Turning now to National sponge distributions, the UCS Sponge Project is currently running a "sub-project" to gather distribution records. Eight crude geographical regions have been defined, as shown on the map. The records of four people (G. Ackens, R. Earll,

D. Moss and B. Picton) are listed in the current UCS Sponge Guide and the plan is to encourage project participants to fill in the gaps. At present, only 33 more easily recognisable species are included.



Until more records are received, few conclusions can be drawn. However, some initial observations are -

1. The map shows the number of species (in brackets) in each area. Although the picture is very incomplete, the East coast seems to have a very poor sponge fauna.

2. Three species (Scypha ciliata, Polymastia boletiforme and Halichondria panicea) are found in all eight regions.

3. Five further species (Leucosolenia botryoides, Pachymatisma johnstonia, Suberites domuncula, Cliona celata and Amphilectus fucorum) are found in all areas except 8.

4. Axinella polypoides (areas 2, 3, 4 and 5) has a South-West distribution.

5. Axinella infundibuliformis (areas 2, 4, 5 and 6) has a Westerly distribution.

6. Five species have only been recorded from single areas - Leuconia barbata (3), Phakellia ventilabrum and Desmacidon fruticosum (4), Myxilla cf. rosacea (5) and Sycandra utriculus (7).

It is obvious from these comments that our records are very incomplete, and I would be most grateful for sponge distribution records from Porcupine members.

References

Brachi, R.A., Collins, K.J. and Roberts, C.D., 1977 Report of the First Dorset Underwater Survey, Pp ii, 62.

Dixon, I., Harrison, K., Hodder, J. and Roberts, C., 1978. Report of the Second Dorset Underwater Survey Pp. 90.

Dixon, I.M.T., Pears, G.R., Attfield, J.Y., and Carter, R.C., Report of the Third Dorset Underwater Survey Pp. 53.

Marine Biological Association, 1957, Plymouth Marine Fauna. Porifera pp. 26-36.

Moss, D. and Ackers, G. (Eds) 1982. The UCS Sponge Guide. Produced by R. Earll and published by the Underwater Conservation Society.

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THE DISTRIBUTION OF MARINE LIFE AROUND ANGLESEY

W. Eifion Jones
The Marine Science Laboratories, Menai Bridge, Gwynedd.

There are few places of similar size in the British Isles which offer the diversity of marine life to be found round Anglesey and none of such quality so readily accessible to major centres of population. The island's shores have been appreciated by marine biologists for many years and a number of them have been the site of important studies.

Anglesey's diversity results partly from the varied geology of the island and partly from the wide range of environmental conditions (aspect, shelter and exposure, tidal range and currents, etc.,) to be found along its coast.

The bands of contrasting rock which cross the island run mainly parallel to the Menai Strait. To the west and north the rocks are mostly of pre-cambrian age; those to the east are younger, with the eastern extremity formed by a mass of carboniforous limestone. On all the coasts, differential erosion has resulted in rocky headlands between which are sandy beaches, some of considerable extent. In the more sheltered places there are large deposits of mud, muddy sand and shell gavel.

The western coast of Anglesey is washed by clear water moving northwards up the Irish Sea; deep water comes close inshore at Holy

Island and round the north coast, shallowing into the sandy flats at either end of the Menai Strait. The east coast, from Penmon to Point Lynas, and to some extent westwards to Carmel Head, receives water from Liverpool Bay which is more turbid and richer in organic matter. The seasonal sea water temperature range is wider (in both directions) on the east coast and the tidal range is also 30% greater there than that on the west.

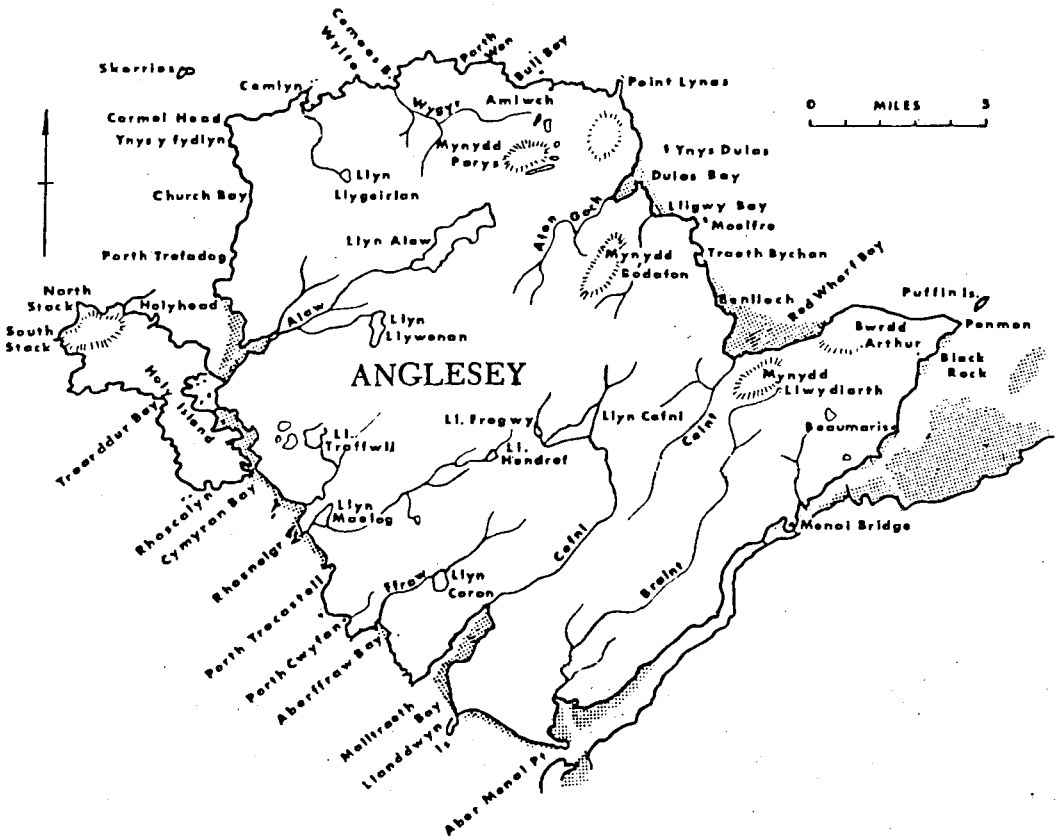
In fact, Anglesey presents a microcosm of Britain, its western shores representing the Atlantic coast and the eastern having features similar to those of shores facing the North Sea.

This pattern may be seen in the littoral and sub-littoral fauna and flora of Anglesey and also in the inshore plankton. The littoral data are the most complete and the main features have been described by Lewis (1953) and Crisp and Knight-Jones (1955). The latter pointed out that there were a number of species (e.g., Diogenes pugilator, Ascidia mentula, Aplysia punctata) which were common on the West Coast up to Carmel Head but absent or uncommon beyond that point. They suggested that this might be determined by the tidal current regime in which the residual currents flowed towards Carmel Head along both the west and north coasts, producing a seawards-moving stream at the headland and so reducing the chances of larval stages crossing the boundary. Since that time we have become aware of considerable temporal variation in these currents and some of the species they considered to be confined to the west have been found further east (e.g., Littorina neritoides is now known to be well established at Amlwch). The pattern is essentially similar, however; there are a number of species characteristic of clear water which are plentiful on the west coast and which fade out towards the north east coast. Thus Alaria esculenta occurs from Llanddwyn Island to Point Lynas, Himanthalia elongata from Porth Trecastell to Cemlyn and Laminaria hyperborea from Llanddwyn to Penmon. The continued accumulation of records also confirms the suggestion that organisms with a southern distribution approaching their northern limits are to be found on the west coast of Anglesey rather than the east, e.g., Cystoseira tammariscifolia, C. noddicaulis, found only from Porth Cwyfan to Trearddur Bay; Chthamalus montagui and C. stellatus found only SW of Carmel Head.

The Menai Strait, which has a central stretch of impressive tidal rapids (the Swillies), has a tidal current regime in which the residual flow is strongly from Penmon to Abermenai (NE to SW) so that the water is essentially that of Liverpool Bay. This water may be identified by the presence of plankton characteristic of Liverpool Bay of which the obvious example is Phaeocystis pouchetii. This colonial haptophyte has an annual bloom in early summer which adversely affects fishing for the duration of the bloom and is occasionally dense enough to cause patches of discoloured water. Phaeocystis numbers are very high near Penmon and remain high round Point Lynas, fading towards Carmel Head. In the Menai Strait its bloom is fully developed but the organism does not persist in the water leaving the SW end of the Strait for the open sea. The numbers fall off rapidly beyond Abermenai and the plant is scarce in the Irish Sea.

The distribution of sub-littoral organisms, which has become known only in recent years with the advent of SCUBA diving, (Smith, 1967; Hiscock, 1976) echoes the findings noted above. Thus several southern

forms, e.g., Palinurus vulgaris, Dictyoperis membranacea and Taonia elongata, once thought to be absent or very rare, have now been shown to be present, even locally plentiful, in some west coast sites, but absent on the east.



Map of Anglesey showing places on the coast mentioned in the text. The larger sandy areas are indicated by stippling.

Data collected by the Coastal Surveillance Unit since 1974 on a number of shores on Anglesey and the adjacent mainland (and presented in a series of annual reports) indicate considerable changes in the quantities of some species, including dominants, on some shores. This contrasts with relative stability on others. These observations do not affect the validity of the broad picture of distribution but serve to remind us of the unpredictability of recruitment and survival on the shore and that there is a temporal dimension to distribution as well as a spacial.

References

Hiscock, K., 1976. The influence of water movement on the ecology of bus-littoral rocky shores. Ph.D. thesis, University of Wales.

Knight-Jones, E.W.K. and Crisp, D.J., 1955. Discontinuities in the distribution of shore animals in North Wales. Rep. Bardsey Obs. 2, 29-34.

Lewis, J.R., 1953. The ecology of rocky shores around Anglesey. Proc. zool. Soc. Lond. 123, 481-549.

Smith, R.M., 1967. Sub-littoral ecology of marine algae on the North Wales coast. Helgolander wiss. Meeresunters. 15, 467-479.

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THE 1983 A.G.M.

Minutes of the Sixth Annual General Meeting of PORCUPINE held at the Marine Science Laboratories, Menai Bridge on Saturday, 26th February 1983 at 18.00 hours.

John Wilson was in the chair. 27 members were present. The Minutes of the Fifth Annual General Meeting (published in PORCUPINE Newsletter Vol 2, No. 4) were approved.

Reports of the Hon. Secretary, Hon. Treasurer and Hon. Editor were given and approved. The Hon. Records Convener did not have anything to report and suggested that the office was superfluous. There was discussion on this subject and the office stands.

Incumbent office bearers were re-elected:

Hon. Secretary	Shelagh Smith
Hon. Treasurer	David Heppell
Hon. Editor	Frank Evans
Hon. Records Convener	Bob Earll

John Gordon, Celia Pain and Eve Southward retired from Council, and five new Council Members were elected. The Council is now as follows:-

Roger Bamber	Norman Holme
Roger Brehaut	David McKay
Peter Davis	Ralph Robson
Bill Farnham	Dennis Seaward
Robin Harvey	John Wilson
	Fred Woodward

Members had great pleasure in electing a second Honorary Member, Sir Frederick Russell, to join Sir Maurice Yonge.

As Norman Holme has been elected to Council he could no longer be one of the Hon. Auditors. Morag MacKinnon has been elected in his place.

It was agreed by Members that in future a small Conference Fee (suggested £1 per head) should be charged to non-members to go towards any costs of organising meetings, this to be refunded if they joined PORCUPINE at the meeting concerned. Charges to cover costs of tea, coffee, etc., would remain the responsibility of meetings organisers but PORCUPINE would welcome any profits.

Frank Evans suggested that PORCUPINE should have Christmas cards (with a cartoon of a suitably festive porcupine). These would cost about £50 per 1000 to print and would retail at not more than 10p each. After discussion it was agreed worth a try.

ACCOUNTS FOR THE YEAR ENDING 30 NOVEMBER 1982

Income and Expenditure Account

Dr.		£ p		Cr.	£ p
To	Donations	13 - 00	By	Printing and Stationery ...	284 - 76
	Entrance Fees	19 - 00		Postage and Telephone calls ...	116 - 17
	Subscriptions for 1981 ...	4 - 00		Refund of Subsciption overpayment	1 - 00
	Subscriptions for 1982 ...	273 - 00		Excess of Income over Expenditure transferred to Balance Sheet ...	1 - 95
	Sale of Newsletters ...	2 - 00			
	Distribution of IOS leaflet	7 - 00			
	Interest from Deposit Account	85 - 88			
		£403 - 88			£403 - 88

Balance Sheet

Dr.		£ p		Cr.	£ p
To	Subscriptions paid in advance	22 - 00	By	Cash at bank (Deposit Account) ...	725 - 00
	Balance at 1 December 1981	786 - 94		Cash at bank (Current Account) ...	77 - 68
	Transferred from Income and Expenditure Account ...	1 - 95		Petty Cash in hand	8 - 21
		£810 - 89			£810 - 89

Charles Pettitt, Norman A. Holme
Hon. Auditors
March 1983

David Heppell
Hon. Treasurer
14 December 1982

HON. SECRETARY'S REPORT

Shelagh Smith

Membership has been increasing by about 7% per year since 1979 and at the end of 1982 was 138. Since PORCUPINE started there has been a considerable fluctuation of membership, about 20% turnover per year, a bit much. Most people either decide within a year that they aren't Porcupines or else stay with us. Each year there have been about 11 leaving and 15 joining, although as time goes on the numbers leaving are getting less and those joining getting more. Let's aim to reach at least 150 this year.

We have an image as a society for professional marine biologists rather than amateurs, but we must remember that in order to keep our wide base of interests we need to encourage people of all capacities from those whose interest in marine biology is just beginning to those who have many years' experience. We now have, or at least when you have voted we should have, three amateurs on our committee. Amateurs and students are welcome friends, and we ask that they be not put off coming to meetings and contributing their opinions, questions and observations both verbally and in the Newsletter.

In 1982 PORCUPINE had two very successful indoor meetings - in Glasgow in March on 'Biological Recording in the Marine Environment', (66 participants) which showed how much the approach to marine recording has changed over the last five years. There was general acceptance that BRC methods were not suitable for marine survey (algae excepted). As reported in the Newsletter, several methods of recording were shown to be extant. One of the joys of the meeting was that people are not arguing defensively about marine recording methods but getting on with the job producing results and not ashamed to admit failures.

In December there was a workshop meeting in Reading on the problems of 'Identification of Sessile Groups'. (45 people came). For some groups it seems that there is light at the end of this particular tunnel, for others as yet all is very empirical, there being problems, failures and cries for help. In addition there were two field meetings. A weekend shore course (mostly UCS) was held at St. Andrews (12 people came). Nearly half the people who came were members neither of PORCUPINE nor UCS (and still aren't) and had heard of the course through my personal efforts locally, even though these had been torpedoed by the Local Authority who failed to distribute the publicity provided. There was a week at Sherkin Island in August, 10 people attending. Diving was somewhat restricted by the weather but there was a lot of shore work and some dredging (see PORCUPINE Newsletter) and species new to Sherkin and SW Ireland were found.

The closer linkage of PORCUPINE and UCS, described by Bob Earll in PORCUPINE Newsletter 2(6), has had immediate affects; combined meetings, both indoor and outdoor; an extra encouragement to UCS to look beyond diving and to include other aspects of the marine environment in its interests. PORCUPINE is more interested in scientific research, UCS in conservation, but both are interested in recording the organisms of the marine environment, and educating people in the identification of organisms. Who does what doesn't matter so long as we get on with it and co-operate rather than overlap.

NOTICES

NOTICE 1. PORCUPINE SUMMER FIELD MEETING (7 - 13 August 1983)

There will be a field meeting based on EYEMOUTH, Berwickshire, run in conjunction with an Underwater Conservation Society diving meeting.

The UCS meeting is 30 July - 30 August with a possible continuation for a further week if there is demand. There are facilities (air) for PORCUPINE participants who wish to dive from the shore, (must make own arrangements separate from UCS), but we are invited to take an interest in the doings of UCS divers. The best tides are 8 - 13 August (N B low tide on 8 August is at about 9.0 a.m.) and during this week there will be opportunities for more extensive excursions to shores between Dunbar and Berwick-upon-Tweed. Possibly a trip to Lindisfarne, and if there is demand and it can be arranged, a dredging trip. Although Algae and Mollusca have been worked in fair detail (both are diverse) the whole shore fauna is not well recorded and more data would be appreciated especially from around St. Abbs.

PORCUPINE, like UCS, will be based at Barefoots Caravan Site, Eyemouth, and early booking is desirable. (Please make own arrangements for accommodation). Standard 6 berth caravans are £65 per week, full service vans (8 berth, loo, electricity, hot water, etc., are £110 per week) both £10 deposit.

For further details please contact Shelagh Smith, Royal Scottish Museum, Chambers Street, Edinburgh EH1 1JF (Tel: 031-225-7534, home 031-669-6722).

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NOTICE 2. ZOOLOGY DEPARTMENT, UNIVERSITY COLLEGE, CORK, IRELAND.

In 1982 University College, Cork, made a decision to erect a new Marine Laboratory in Lough Hyne, Co. Cork, Ireland's and, incidentally, Europe's first fully statutory marine nature reserve. The building will increase the potential for marine research in the Lough. The Zoology Department has been conducting marine research on the Lough since the early days of Professor L. Renouf in the 1930's and currently has several workers employed on various ecological aspects of the Lough, notably amphipod ecology. A bibliography of all works relating to Lough Hyne has recently been prepared.

Other aspects of marine research currently under investigation by members of the Zoology Department are amphipod taxonomy, rocky shore ecology (particularly gastropod biology), spatial and temporal dynamics of meiofauna, and a study of the blood cells and immune systems of bivalve molluscs, seafarmed and freshwater farmed salmonids.

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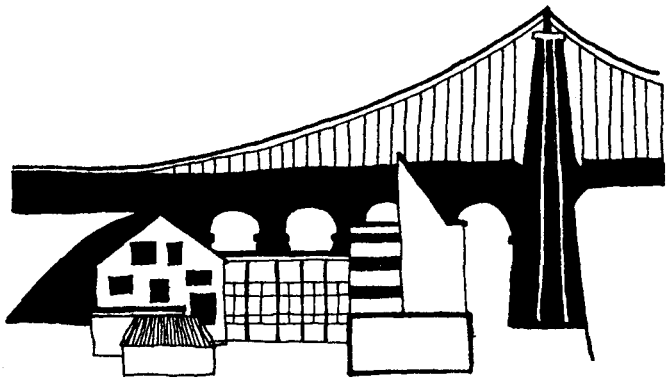
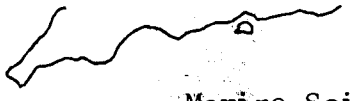


Around the Marine Laboratories.



Number 6.

Marine Science Laboratories, Menai Bridge

In Wales, unlike both England and Scotland, there are no permanently NERC funded Marine Biological or Oceanographic Institutes. Instead, the main concentrations of marine science activity are within the constituent colleges of the University of Wales. The founders of the Marine Biology Station on the Menai Straits originally envisaged that it should be a facility for the whole of the university. This particular intention never really materialised but a laboratory complex developed that has the peculiar distinction of being one of the largest in the university sector in Britain yet is attached to one of the smallest colleges.

After a gestation period in the late 1940's within the Bangor Zoology Department the emerging laboratory migrated across the Straits, settling first in an old house overlooking the pier. There the organism flourished and gradually colonised further old houses in spit of competition from dry rot fungus. Intermittently there was sufficient fallout from financial blooms for new structures to be erected. The nature of the sites and the erratic timing of growths has meant that the complex has never reached a state of ordered maturity.

With the creation of the Department of Physical Oceanography in the mid 1960's and the acquisition of a proper seagoing research vessel, scientific horizons widened. The old Marine Biology Station title was no longer appropriate and the organisation metamorphosed into the Marine Science Laboratories. This title reflects the very wide range of teaching and research interests that are encompassed by a permanent academic staff of about 18. In addition there are several research units sponsored by a variety of government and industrial organisations. The largest and longest running of these has been the NERC Unit of Marine Invertebrate Biology. This grew to a much larger size than is normal for personal research units. However, while it failed to reach the stage where it could become a permanent part of the NERC fabric it did grow to a point where its demise could seriously distort the development of the host it has occupied. Menai Bridge is probably not alone today in reflecting that the richest marine communities have diverse trophic pathways.

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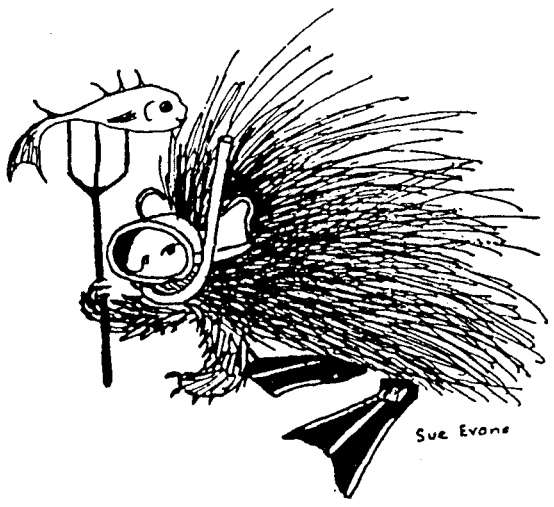
Porcupine Notes and News



ASTEROIDS GULES RAMPANT Member Michel Glémarec reports a large increase in starfish on the Brittany coast, notably in Douarnenez Bay. The species involved are Asterias rubens and Marthasterias glacialis. While seasonal density fluctuates, the underlying trend is upwards, from an estimated 5000 tonnes in this 270 km^2 bay in 1979 to more than 20,000 tonnes in 1982. Prof. Glémarec estimates that starfish may represent about 1% of the macrofauna of a soft sediment in normal equilibrium; he is now reporting figures close to 30%.

Following a long and widespread tradition, enranged fishermen in the Brest Roads and in the bays of Quiberon and Concarneau have been trying to exterminate the animals. A hopeless task, we opine.

**

YOU DON'T OFTEN come across jokes in biology text-books. Browsing through the arthropod section of Sedgwick's massive "Student's Text-book of Zoology" (1909) we were delighted, on p. 744 of volume 3, to see the following: "Ceratopogon is the midge which causes much annoyance in Scotland, where its presence in conjunction with that of the kilt is said to have given rise to the Highland Fling

**

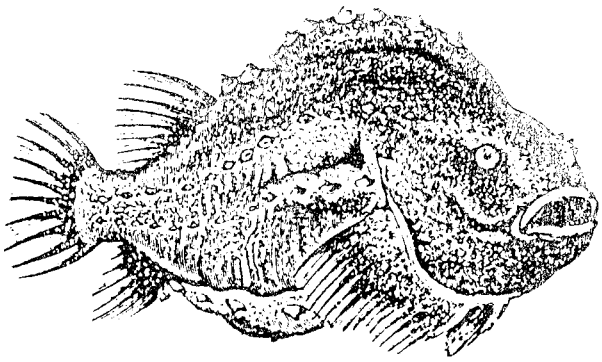
SHERKIN ISLAND MARINE STATION (Co. Cork, Ireland) continues to flourish and this year the director, Member Matt Murphy, is offering one-week courses in sea-shore ecology, snorkeling, wild flowers and seaweeds. Cost £70, including accommodation, meals and instruction. Those Porcupines who went to Sherkin last year will testify that it was a happy experience.

**

LONG LINING died on the English north-east coast because fisher wives got factory jobs and no longer had time to bait the hooks. But fishing over inshore rock continues to be tempting and 'cod nets' once set as curtain nets on sandy bottoms in deep water are now shot on hard shallow ground. They catch, as well as fish, Alcyonium digitatum, called locally 'dead men's thumbs'. This stuff gets on the fishermen's faces and in their eyes to such an extent that some have taken to wearing visors while clearing the nets. They regard it as a major pest.

**

FURTHER FAUNA. While on the subject of north-east coast fish, Member Peter Davis's fine listing of the fish of Northumberland and Durham, just issued (see PORCUPINE Ads, p.179) has, as a cover illustration, a beautiful pen, pencil and wash study of the Lumpsucker, done by Robert Bewick, son of the famous wood-engraver, Thomas. It was intended to be included in a joint "History of British Fishes" by father and son, which was never published. It must have been drawn about 1825. Here it is.



WHERE DO PLANKTONIC COPEPODS go in the winter? Planktonologists have recently been finding resting eggs of oceanic copepods in the bottom mud. Can it be that such homely calanoids as Temora longicornis owe their sudden appearance in the spring to the hatching of overwintering eggs?

**

R.R.S. "DISCOVERY" of the I.O.S. has not often been seen in British waters since the hospital workers' dispute spread to her salty decks. A calculated absence? It seems the trouble started when at the time of the dispute pop-up gear popped up from the sea bed and lo! no waiting "Discovery". She was in port. Queen Victoria was not amused.

**

MEMBER PAUL HORSMAN of the Marine Society is currently working as a marine biologist aboard the s.s. "Uganda", now serving as a troopship between Ascension and the Falklands. Bon voyage from "PORCUPINE", Paul.

**

WE HAVE TIRED of the taxonomic difficulties associated with Thalassiohystrix scuba and have turned the whole thing over to systematist Member David Heppell. He is preparing a weighty review of the problem. (See next issue.) Meanwhile, the animal itself seems totally unconcerned, unlike your Editor, who is confronted with endless wet footmarks all over the editorial office floor.

**

Porcupine Review

R.S.K. Barnes and R.N. Hughes, 1982. An Introduction to Marine Ecology. Blackwell.

Reviewer: M.A. Kendall, NERC Unit, Dove Marine Laboratory, Cullercoats.

While the major part of this book discusses major subsystems of the ocean Barnes and Hughes have rejected the simple descriptive approach, which tends to prevail in other introductory texts, in order to concentrate on the interactions between organism and environment which determine community structure and dynamics. Support is provided by chapters covering the ecology of life histories, speciation and biogeography. To attempt to present such an up to date overview of marine ecology in a form suitable for students encountering the subject for the first time must have been a daunting task for the authors and ones first reaction is that to do so within 340 pages must have led to the omission of a substantial amount of important material. This is certainly the case, but usually such omissions are covered by references provided in the highly selective bibliography. This is one section of the book where I feel that the diting has been unduly severe as although it includes many recent papers a number of potentially valuable review articles have been omitted.

By joint authorship, Barnes and Hughes have largely avoided the idiosyncrasies of content which might have stemmed from a purely personal view of their subject; in the preface they acknowledge that some still remain and although they do not detract from the value of the book their existence should be borne in mind by those who suggest student texts. While the contents, depth of coverage and emphasis may not meet the needs of the lecturer teaching about his own research interest, this must be set against the wide scope of the book and accepted as a necessary compromise. In general, the synthesis of information, from both sides of the Atlantic, is clear and concise and with the aid of profuse accurate illustrations it will acquaint the student with many of the most rapidly advancing areas of marine ecology. This is clearly an advantage over other texts which I expect will be reflected in the sales figures but in doing so I also wonder if Barnes and Hughes have also given themselves the problem of just when to start writing the next edition.

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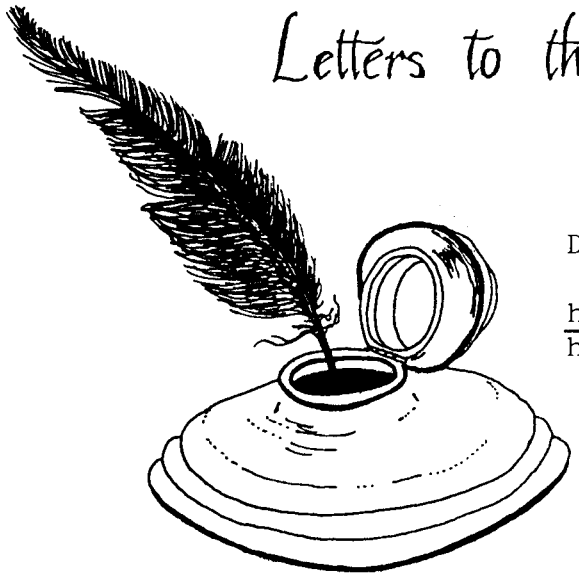
Letters to the Editor



From Member P.S. Davis, The Hancock Museum, Newcastle on Tyne.

Dear Editor,

Regarding a vernacular name for Thalassiohystrix scuba, 'tis really quite shrimple, your holotype must be called SQUILLA.

Hystrixically yours, P.S.D.

**

From Member D.R. Seaward, 3 Summerlands, Yeovil, Somerset.

Dear Editor,

I am flattered that Dr. Shelagh Smith should have reviewed my Atlas at such length (PORCUPINE Newsletter Vol. 2, No. 6, p. 137, December 1982), and I agree with much that she says, while over some points we have agreed to disagree. However, two of her comments are not, in my view, justified and since they reflect adversely upon the work, I should like to reply.

The Atlas includes all data to hand at the end of 1981 (Atlas, p.4), and was published in August, 1982. Eight months to publication hardly justifies Dr. Smith's criticism that the Atlas is "well and truly out of date".

An earlier publication of species lists for most of the Sea Areas (Seaward, 1979, Marine Molluscs of Britain and Ireland, NCC for Conch. Soc.) provided the stimulus and basis for the Atlas and Area Representatives were able to provide better cover, fill gaps, add many records and correct some anomalies. These improvements are regarded as "discrepancies" by Dr. Smith! The suggestion that "complete proof copies should have gone to each Area Representative" is a certain recipe for long delays. But as Dr. Smith implies, it would have given contributors the chance to correct errors present in their original submissions.

The indefatigable Smith and McKay team have been working towards their second Regional Atlas, this time for West Scotland, and Dr. Smith has already generously sent many more records which will be included in my forthcoming "Additions and Amendments" in the Journal of Conchology, by which means the Sea Area Atlas will from time to time be updated until a new Atlas is published, some years hence. I like to think that will be European in scope.

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From Mr. T. Wyatt, MAFF Fisheries Laboratory, Lowestoft, Suffolk.

Dear Editor,

May I comment on the letter from P.J.W. Olive in PN2, 4, about what constitutes a cold winter.

In temperate and boreal seas, cold winters can be defined in terms of abnormal cooling of the water, with or without the formation of ice, and with the possibility of deoxygenation of the bottom water. These conditions occur more readily in shallow regions distant from the buffering influence of deep water. How quickly such conditions develop, and whether they are prolonged, depend to a variable extent

on the circulation, as well as on the local atmospheric conditions. What we regard as a cold winter generally will also depend on our perspective. Few years in the present century would have been regarded as cold in the eighteenth century.

Some of the effects of unusually cold winters (by twentieth century standards) on the North Sea fauna were documented following those of 1928-29, 1939-42 and 1946-47. In the months of those winters when temperature anomalies were largest, many fish seem to have sought deeper water. Others died, possibly as a direct result of low temperatures, or perhaps from infections following a rise in morbidity induced by the cold. Invertebrates died too, especially intertidally, or burrowed deeper into the sediments. Intertidal organisms are of course subject to the vicissitudes of the atmosphere as well as those of the water.

It is worth recalling that extreme conditions then did not prevail over the whole North Sea. In 1929 for example, negative sea surface temperature anomalies reached 5 to 6° C off the Dutch, German and Danish coasts, but less than one degree off Northumberland.

P.J.W. Olive's observations show us a further possible response to cold conditions. It would be equally interesting to know whether maturation is merely retarded by somewhat less severe conditions, and whether it is advanced during relatively mild winters, and to establish the limits of such adaptation for different species over their geographical ranges.

**

From Member C. Mettam, Dept. of Zoology, University College, Cardiff.

Dear Editor,

I recently had an enquiry from David McGrath of the Zoology Department, U.C. Galway (and a PORCUPINE member) about the Tattersall collection of Crustacea from the west coast of Ireland which, he suspected, might be with us at U.C. Cardiff. A part of Tattersall's collection of specimens was deposited with the National Museum of Wales in the 1920's. A turnout of our own dusty m useum jars has revealed additional specimens of the Tattersall collection. I enclose a partial list of these, taken from the labels on the bottles. Although collected at the turn of the century, most are in a good state of preservation.

PORCUPINE members might like to know that this material has now been added to the collection held by the National Museum of Wales. Enquiries should be directed to PORCUPINE member Dr. P. Graham Oliver, Department of Zoology. The National Museum of Wales, Cathays Park, Cardiff CF1 3NP.

I think this story shows the value of PORCUPINE as a medium of communication.

Tattersall Collection: partial list of specimens

Leptostraca

Nebalia bipes

" typhlops

Peracarida

Tanaidacea

Apseudes grossimanus

" hibernicus

Leptochelia dubia

Tanais cavolini

Leptognathia breviremis

" longiremis

Tanaopsis laticaudata

Paratanais batei

Typhlotanais proctagon

" richardsi

" tenuicorni

Isopoda

Gnathia spp.

Aega arctica

" ventrosa

" crenulata

" stromi

Rocinela dumerili

" damnoniensis

Xenuraega ptilocera

Cirolana borealis

" hanseni

Conilera cylindracea

Limnoria lignorum

Idotea spp.

Astacilla longicornis

" intermedia

" granulata

Arcturus baffini v. intermedia

Arcturella dilatata

Euridice pulchra

" truncata

" grimaldi

" Spingera

Lanceola sayana

" aestiva

" serrata

Dynamenella ovalis

Isocladus tristensis

Paraisocladus stimpsoni

Paramunnopsis oceana

Munnopsis typica

Pseudomunnopsis beddardi

Ischnomusus bispinosus

Lipomera lamellata

Munnopsurus giganteus

" longipes

Eurycope cornuta

" latinostris

" megalura

" mutica

" phallangium

" producta

" murrayi

(missing label for additional spp)

Munna boecki

" krøyeri

" limicola

Paramunna bilobata

Metamunna typica

Pleurogonium inerme

" rubricundum

Assorted named Bopyridae

Mesidotea (Caspian Sea)

Mysids (2 bottles mixed named spp.)

Tattersall, W.M. 1906. The marine fauna of the coast of Ireland V, app. 11 for 1904. Scient. Invest. Fish Brch. Ire., 1906, 53-142.

Tattersall, W.M. & Tattersall, O.S. 1951. The British Mysidacea, London, Ray Society Publ. 136.

Porcupine Ads.

(Advertisements are published free to members. Replies should be addressed to PORCUPINE Newsletter at the Dove Marine Laboratory, Cullercoats, North Shields NE30 4PZ, England.)

PORCUPINE CHRISTMAS CARDS 1983. Featuring Thalassiohystrix scuba. Details and price in the next issue of PN Why not make a note to order some!

DEEP-SEA RESEARCH AND OCEANOGRAPHICAL LITERATURE REVIEW. Published by Pergamon Press. Vol. 1 (1953) to Vol. 28 (1981). Price £850, is believed to be less than a quarter of publisher's price for back numbers. Box 10.

MARINE FAUNA OF THE CULLERCOATS DISTRICT. Number 9 (1981): Polychaeta Errantia (with extensive illustrated keys) £11. Number 10 (1982): Polychaeta Sedentaria (with extensive illustrated keys) £15. Number 11 (1983): Pisces. Price on request. Box 11.

TEACHING FILMS AND VIDEOS for sale or hire from Newcastle University. Marine biology and oceanography at VI form and undergraduate level. "Ocean Waves". "Ocean Tides". "The Rocky Shore". "High-Oceanic Fish of the Atlantic". Contact the Resources Secretary, Audio-Visual Centre, The University, Newcastle on Tyne NE1 7RU, England.

(We gave our artist and typist a few flowers for Christmas in appreciation. Ed.)

DOVE MARINE LABORATORY
CULLERCOATS NORTH SHIELDS
TYNE & WEAR NE30 4PZ
ENGLAND

TELEPHONE WHITLEY BAY (0632) 524850

December, 1982.

Dear Porcupine,

Thank you very much for your beautiful Christmas gift of assorted plants. Long may you prosper.

Yours sincerely,

Audrey Twigell (Secretary).

TWO FINDS OF MODERN SHELLS OF THE COMMON MUSSEL (MYTILUS EDULIS) IN SPITSBERGEN

J.D. Peacock
The Institute of Geological Sciences, West Mains Road, Edinburgh.

Spitsbergen between 76° and 80° N lies at the northern termination of the North Atlantic Drift, which keeps the sea west of the islands free of ice for most of the year. Mytilus edulis is not part of the modern (arctic) marine fauna, though shells a few thousand years old can be found frequently where they have been washed out of older marine and beach deposits. These are often accompanied by fossil shells of boreal species such as Arctica islandica and Littorina littorea, none of which live in the area at present. However, fresh-looking Mytilus shells have been reported on one occasion from Vesle Raudfjorden on the north-west coast, and at a nearby locality, two specimens were found attached to the seaweed Ascophyllum nodosum, which is also foreign to the area (Feyling Hanssen 1955, Svendsen 1959). One possibly living animal attached to seaweed has been reported from Isfjorden on the west coast (Heintz 1926). During an excursion in late July 1982 on the west and north coast of Spitsbergen, I asked members of the party to keep a look out for Mytilus and the following two records of empty but certainly modern shells stem from their interest and enthusiasm.

1. At Grahuken (latitude 79° 50'N, longitude 14° 30'E), about 1 km south of the point, my wife Jane Peacock found a sandal filled with fresh attached paired valves of Mytilus edulis and Hiatella arctica together with goosebarnacles, hydroids and juvenile Balanus. The sandal (now in the collection of the Royal Scottish Museum, Edinburgh) was lying on the rapidly thawing ice foot (the fringe of ice at high tide level) and had probably been cast up the previous autumn as the sea ice had only just broken up before our arrival. The largest Mytilus is 2 cm. long.

2. At Biskayerhuken (latitude 79° 50'N, longitude 12° 25'E) about 1 km. west of the Cambridge hut, a plastic fish crate labelled 'T.D. Guild & Sons' was found on the storm beach by David Laughton. It contained a number of byssally attached paired empty valves of Mytilus edulis (a few of which are now in my collection) and juvenile Hiatella arctica, chiefly at the level of a former water line in the crate. The largest valve is 1.6 mm long.

These finds, which were made on a very limited examination of two small areas, suggest that modern Mytilus shells are probably frequently cast up on the coast of north-west Spitsbergen. Though all the specimens reported to date could have been carried from the shores of Norway or the southern coast of the Barents Sea it is also possible that Mytilus larvae could attach themselves to floating objects nearer the coast of Spitsbergen. Breeding of such floating Mytilus might take place in the relative warmth of the North Atlantic Drift, markedly increasing the range of viable larvae and would assist in any future recolonisation of the islands. A geological corollary is that sparse fossil paired valves of Mytilus and other byssus bearing bivalves in arctic raised beach deposits, which seems at first sight to be part of the indigenous fauna, could have been transported a considerable distance. They cannot therefore be relied upon as palaeoclimatic indicators without supporting evidence.

References

Heintz, A., 1926. Blaskjell pa Spitsbergen. Norsk Geol. Tidskr., 9, p. 74-76.

Feyling-Hanssen, R.W., 1955. Stratigraphy of the marine Late Pleistocene of Billefjorden, Vestspitsbergen. Norsk Polarinst. Skr. Nr. 107.

Svendsen, P., 1959. The algal vegetation of Spitsbergen. Norsk Polarinst. Skr. Nr. 116.

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MARINE MOLLUSCA OF WEST SCOTLAND, PROGRESS REPORT

Shelagh M. Smith and David W. McKay
The Royal Scottish Museum, Edinburgh.

We have reached the stage when we are thinking in terms of a first draft for the text of this work. Preparation of master maps has commenced. There are two aspects which concern us at the moment, the state of progress of recording and what we will put into the book.

Progress:

There are many shore records, with reasonable coverage of most areas, largely thanks to funding of shore surveys by the Nature Conservancy Council. For some groups (species inhabiting littoral algae) we have some knowledge of seasonality. We are also gaining information on species which are limited in their distribution by winter or summer temperatures and, more important, what does not come out on the maps, the fact that distribution patterns on the shore can be very different from those pertaining inshore for the same species.

Inshore records are tantalising the frustrating. The more we find out the more we realise there is to know! For some places X marks the spot where SMS has cajoled, nay nagged, divers to bring up extra material. By and large divers record or collect what they can see. Oh for some divers who would specialise in collecting infauna! Who would bring up handfuls of this and shovelfuls of that, discover what lurks beneath stones and generally make themselves unpopular with other divers by stirring up clouds of silt from the bottom. No need to hoover up the environment, just a little here and there to find out what lives below. Nudibranchs must be very common, aren't they, Bernard? But even more common are infaunal species - at least we think they are.

Offshore recent records are unfortunately rather sparse. The Institute of Geological Sciences is very kindly providing us with many (small) grab samples from which we are extracting data. These are providing a fair amount of valuable data on small species. Apart from this we are greatly lacking in offshore data. Our most exciting finds have come from dredge or trawl. If anybody has any data we would love to have it. Especially from sea lochs.

Because of the shape of west Scotland and the shape of A4 paper we do go to the shelf edge and beyond but haven't any data. Some would be nice.

Layout of book

Marine Mollusca of East Scotland was a trial run, for West Scotland we intend to do better, better, not just more. For this we need your help. We have received a number of suggestions (hang it up behind the privy door!) including one we intend to take up - expansion of the text to include more information on habitat. Nomenclature will be our own, with whys and wherefores as brief as possible, as in the previous book, but are more explanations required? Because we have few records outside the Clyde for the period 1900-1950 we are keeping to the same simple format of dots and circles. In the case of rare species distinction between an old record live or dead and a recent record of a dead shell will be made in the text, and of course there will be a comprehensive bibliography for those who wish to dig back into history.