

# Porcupine Newsletter

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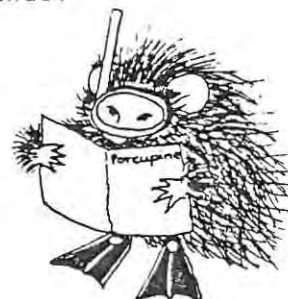
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At the risk of being a little late, seasonal greetings are extended to all our readers. Enclosed is the 1986 membership list, apropos of which an anonymous ex-editor with a failing memory wishes to apologize for its late arrival, and point out that no blame is owed to the Secretary. We hope that not too many people have missed out on Christmas cards as a result. Would Members please check their listing and send any corrections to the Hon.Sec. Shelagh Smith (see membership list!).

Further apologies are in order over the delay in AGM announcement, but rearrangements were forced upon us owing to the results of subversive political activity, and thanks are due to Martin Sheader for his short-notice organisation of our new venue (see pp.126,127 for announcement and agenda). If you wish to express your opinion to Bill Farnham, you can apparently send him your mouldy weed! (see p.130).

From the volume of copy received, I gather most members do not take summer holidays in the marine environment (re. previous editorial). Still, many thanks to those who contributed, and attention is drawn in particular to Notice No.2 (p.117), since Dennis has been missing some Christmas cards. Note also our missed name change for Squilla (non-Thalassiohystris), and the complete (to date) listing of the Cullercoats Marine Faunas.

Roger Bamber, Editor  
Marine Biology Unit, C.E.G.B., Fawley,  
Southampton SO4 1TW



## SHRIMP AND PRAWN POPULATIONS AT HINKLEY POINT, NORTH SOMERSET

by P.A.Henderson & R.H.A.Holmes

### Introduction

There is still little information on the long-term changes in abundance of inshore marine animals, due primarily to the costs incurred by regular sampling. Power stations act as huge pump samplers, collecting large numbers of animals on their filter screens. They therefore offer the opportunity to study population dynamics using few resources. We have now obtained 5 years data from the filter screens at Hinkley Point Power Station, north Somerset, on all species of fish and crustaceans caught. The information on prawn abundance is presented in this paper. No previous study has reported an analysis of temporal changes in prawn populations within the Bristol Channel, and information from other areas is very poor. Boyden *et al* (1977) present a summary of the known intertidal invertebrates for the Bristol Channel; this study has added two prawn species to their list. A summary of all the species caught at Hinkley Point is given by Henderson *et al* (1984), a detailed account of the population biology of *Crangon crangon* by Henderson & Holmes (1985a), and a quantitative analysis of fish numbers by Henderson & Holmes (1985b).

A map of the Bristol Channel showing the position of Hinkley Point is given as Figure 1. The power station site holds 2 nuclear stations. The 'A' station has an output of 430 MWe and a cooling water capacity of  $44.2 \text{ m}^3 \text{ s}^{-1}$ : it has band screens of 10mm mesh; the 'B' station has an output of 1040 MWe and a cooling water capacity of  $30 \text{ m}^3 \text{ s}^{-1}$ , with drum screens of 10 mm mesh. The stations stand on a rocky outcrop on the south shore of Bridgewater Bay. To the west the shore is predominantly shingle and rock, to the east are the extensive Stert mud flats and the River Parret Estuary. The intakes for both stations are at the base of a tower standing in 2 m of water at low tide, about 200 m off the rocky point. The tidal range is 13 m and the tidal streams reach  $1.45 \text{ m.s}^{-1}$ , carrying up to  $2 \text{ g.l}^{-1}$  of suspended solids. The sublittoral seabed is sandy mud. Sea temperatures range from 3 to  $23^\circ\text{C}$  and salinities from 22 to 28‰.

### Methods

#### a. Collection of samples.

Regular, monthly, quantitative sampling at Hinkley commenced in January 1981 and is continuing. For 1 day each month 6 consecutive hourly samples covering the period from high to low water were taken from the 'B' station screens. Each sampling date was chosen to cover a similar tidal range, half way between the spring maximum and the neap minimum. Material washed off the fine filter screens was collected, immediately sorted, and all Caridea placed in 70% alcohol for future examination. Subsequently, all the animals were identified to species and counted.

Non-quantitative plankton samples (0.7 mm mesh) were also collected from the intake water each month.

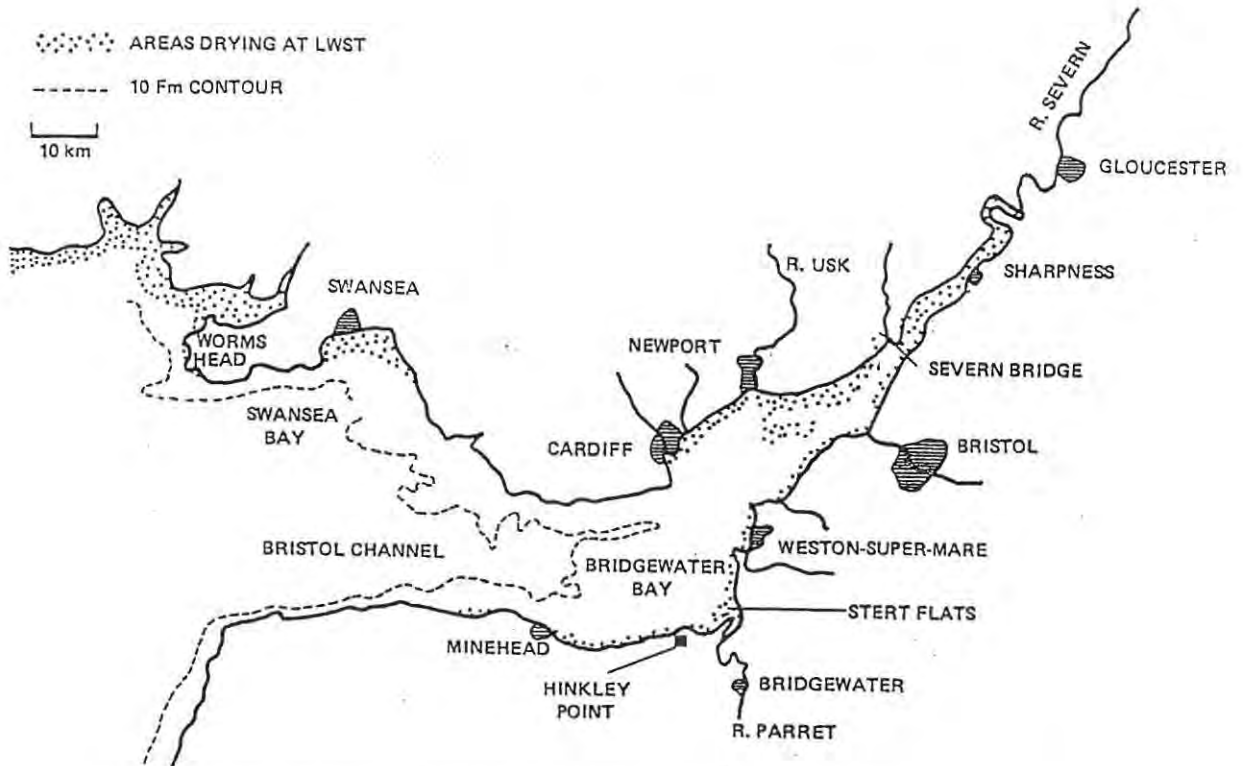


FIG.1. Map of the Bristol Channel, showing Hinkley Point and environs.

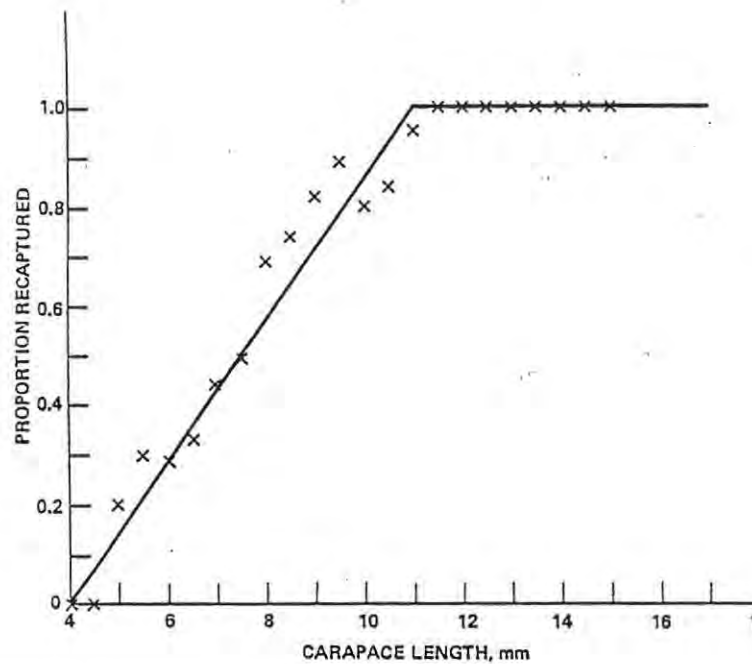


FIG.2. Relationship between carapace length and the proportion of Crangon recaptured on the screens of Hinkley Point 'B' Power Station.



b. Assessment of sampling bias.

There are a number of factors which may act to make a sample unrepresentative of the population in the vicinity of the intakes. For the present analysis the most important is the loss of smaller individuals due to mesh penetration. The proportion of different size classes lost was estimated by introducing marked animals of known length into the intake system and finding the number retained on the filters. The results obtained from the release of 532 dead C. crangon stained with commassie blue G250 is shown in Figure 2. Individuals with a carapace length less than 4mm were not sampled. From 4 to 11 mm in length there was a linear increase in the proportion recaptured, and above 11 mm there was complete retention on the filters. For Caridea in general, sampling efficiency is above 0 for all size classes for which the largest inflexible part of the carapace exceeds 4 mm in its greatest dimension, and about 1 above 10 mm. Smaller animals are only captured when they become entangled in weed and other debris blocking the filters.

c. Analysis

For each species a monthly abundance estimate was obtained by summing the 6 hourly samples, multiplying by 4 to give the daily total, and finally by the number of days in the month.

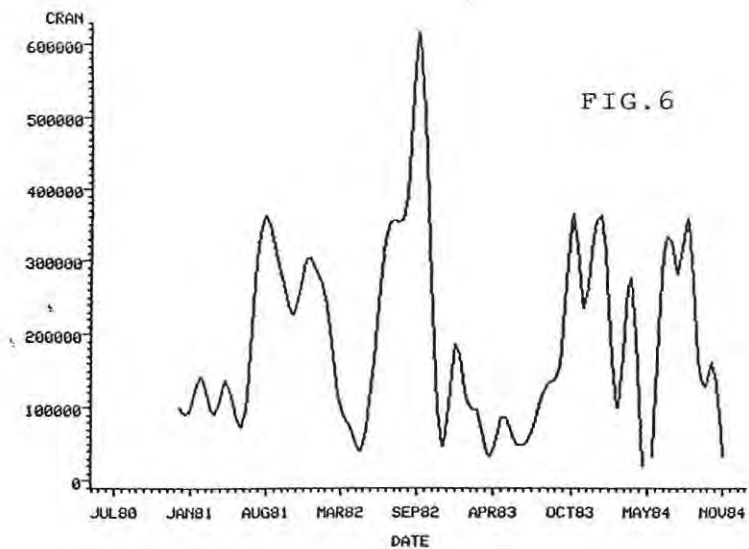
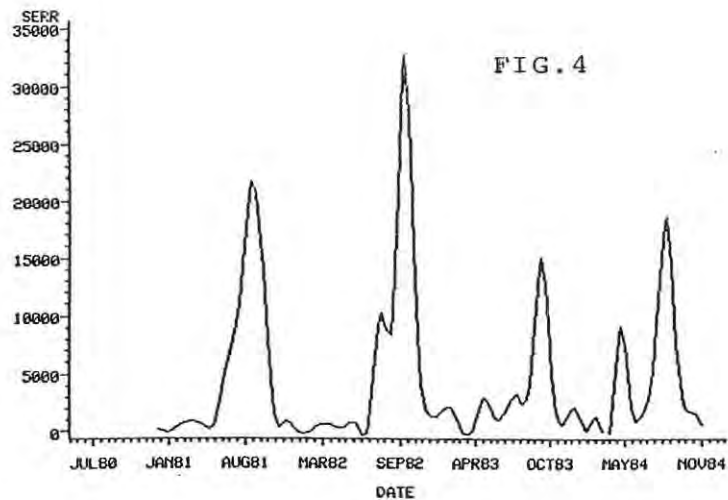
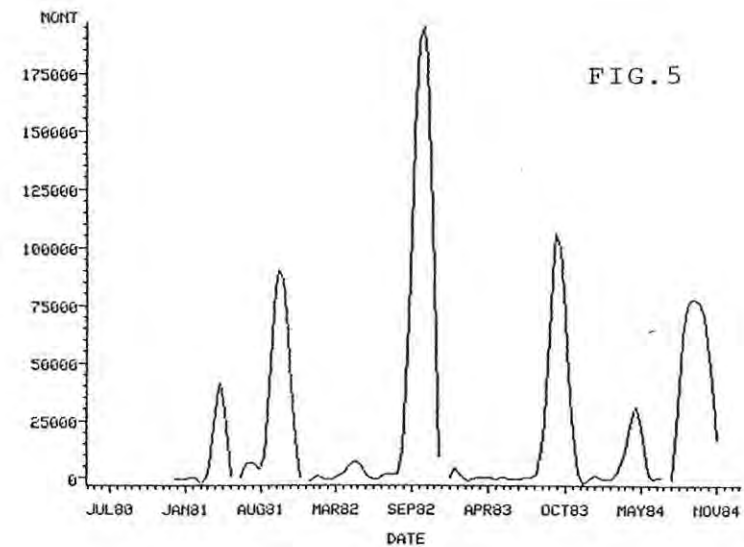
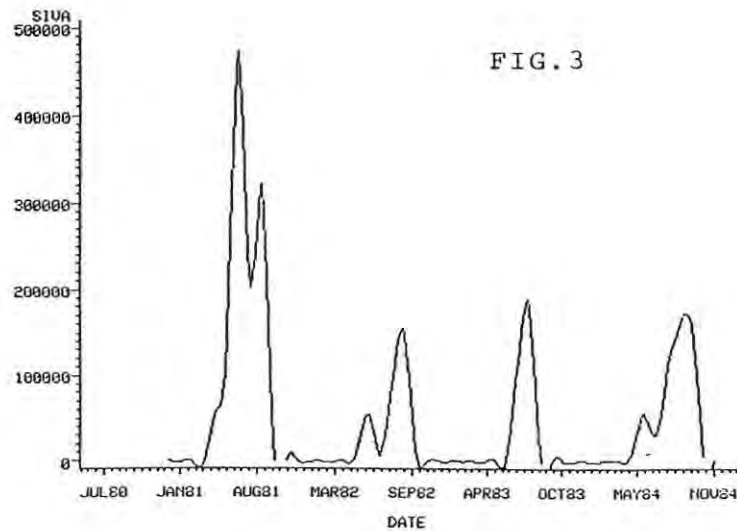
Time series analysis was undertaken on the commoner species to look for trends and patterns in their abundance. Data for the 'complete' years 1981 - 1984 inclusive were used, except in the case of C. crangon where 1985 data to August is included. Abundance estimates were first fitted to a linear regression model to look for any underlying trends in abundance. Analysis for periodic patterns was then undertaken using spectral analysis. If a linear trend was detected, the analysis was carried out on detrended values. Spectral analysis was carried out on logged values using a Bartlett window and a 0.1 taper. The best band width was chosen by examining the results obtained while gradually closing the window.

Results

The Caridea recorded at Hinkley, with brief notes on their occurrence are presented in Table 1. The catch is dominated by 4 species: Pasiphaea sivado, Palaemon serratus, Pandalus montagu and Crangon crangon, and the abundance of these was analysed in more detail.

P. sivado was, with rare exceptions, collected during the summer (Fig. 3). Linear regression showed no underlying trend in abundance. Spectral analysis revealed only a single major peak with a frequency of 1 cycle per year (Fig. 7a). It was only found on the filter screens during the high tide period possibly because it prefers deeper waters. However, it has been captured in the lower intertidal zone on Stert Flats. Berried females are common in May.

Palaemon serratus showed a marked seasonality, but has been found in all months of the year (Fig. 4). Maximum numbers occurred between late July and early November. There was no linear trend in numbers. Spectral analysis revealed two major peaks with frequencies of 1 and 2 cycles per year (Fig. 7c). These were formed by the increased capture of individuals in the spring and



Figures 3 to 6: Monthly screen catches for the four commonest Caridea: 3 - Pasiphaea sivado; 4 - Palaemon serratus; 5 - Pandalus montagui; 6 - Crangon crangon.

the arrival of new recruits in the late summer and autumn. Berried females were common.

TABLE 1. Caridean species recorded from Hinkley Point.

- |   |   |
|---|---|
| 1. <u>Pasiphaea sivado</u> (Risso)        | Abundant on the screens, summer only. Rare at other times of year. Peak numbers at H.W.                     |
| 2. <u>Palaemon serratus</u> (Pennant)     | Abundant on the screens all year, peaking with recruitment in autumn. Peak numbers at L.W.                  |
| 3. <u>P. longirostris</u> H.Milne-Edwards | Single specimens only on the screens in June 1982 & November 1983.  |
| 4. <u>Eualus pusiolus</u> (Kroyer)        | Single specimen in plankton sample, August 1982   |
| 5. <u>Processa canaliculata</u> Leach     | Two specimens from the screens, November 1980.  |
| 6. <u>P. edulis</u> (Risso)               | Single specimen from the screens April, 1984.   |
| 7. <u>Pandalina brevirostris</u> (Rathke) | Single specimen, Nov. 1981.   |
| 8. <u>Pandalus montagu</u> i Leach        | Abundant on the screens in the Autumn, rare or absent at other times; peak numbers at L.W..                 |
| 9. <u>Crangon crangon</u> (L.)            | Very abundant all year round, peak numbers around L.W.; the most numerous animal on the screens at Hinkley. |
| 10. <u>C. allmani</u> Kinahan             | Common on screens in early winter only.   |

Pandalus montagui resembled Palaemon serratus in having a seasonal peak in abundance during late summer-autumn (Fig.5), though the maximum autumnal abundance occurs 1 month later than that of P.serratus. No significant underlying trend in abundance was detected. Spectral analysis revealed a number of cycles within the data of which the largest had frequencies of 1 and 2 cycles per year (Fig.7b); there were peaks in abundance during April-May in addition to the autumnal peaks. This species was particularly rare during January-February.

Crangon crangon was by far the most abundant Caridean at Hinkley, and was common all year (Fig.6). No linear trend in abundance has been detected. The spectral analysis showed a pair of peaks with low frequencies and a second pair at high frequency (Fig.8). The major low-frequency peak is at 1 cycle per year with

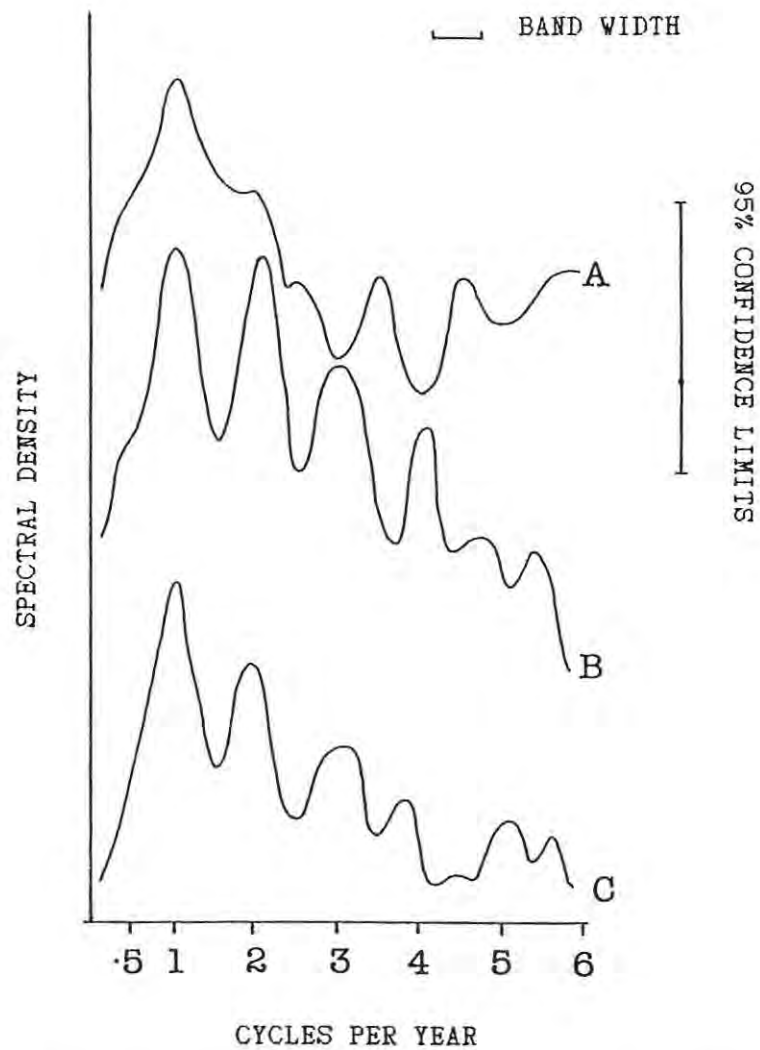


FIG.7. Spectra for the 3 common prawns at Hinkley Point, calculated for 4 years data 1981-1984; A- P.sivado, B - P.montagui, C - P.serratus.

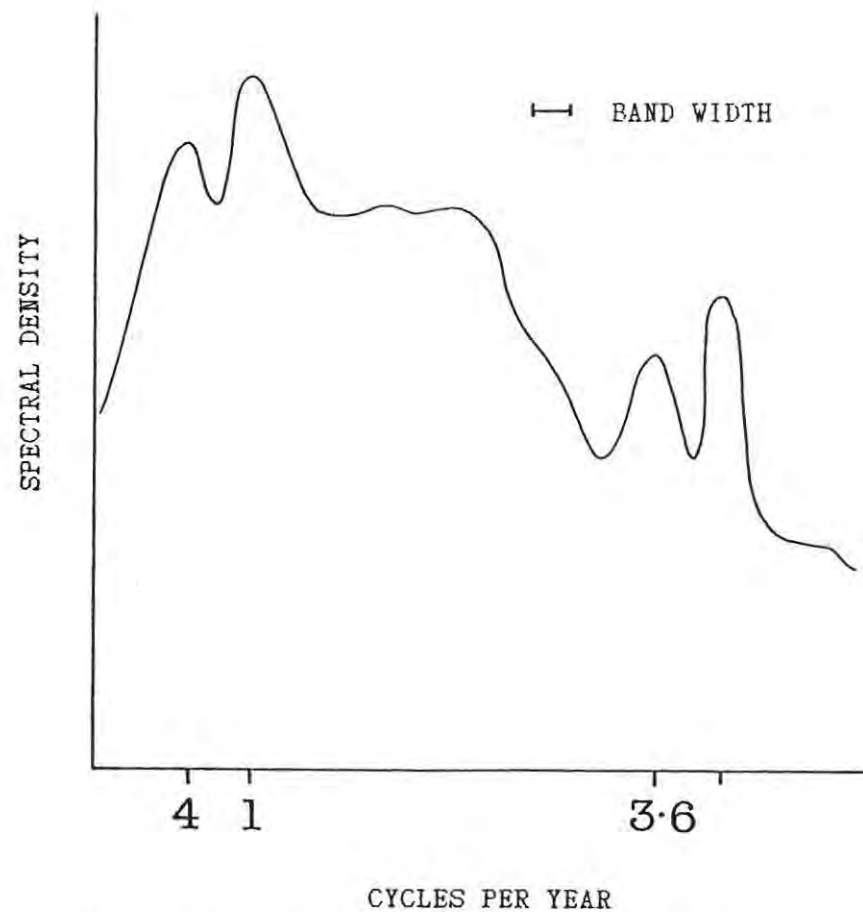


FIG.8 Spectrum for the shrimp, C.crangon, derived from data from Hinkley Point for the years 1981-1985.

a weaker peak at .4 cycles per year. The former was due to the annual recruitment which produces an autumnal peak in abundance followed by a decline in numbers due to mortality. The major high frequency peak is at 4.56 cycles per year with a weaker peak at 3.6 cycles per year. These are attributable to the onshore-offshore migrations by berried females during the winter and spring spawnings.

#### Discussion

Of the ten species recorded from Hinkley, two, Pandalina brevirostris and Crangon allmani, are not recorded in Boyden *et al* (1977) for the Bristol Channel. As only a single specimen of P.brevirostris has been found it was probably a rare migrant and not from a local population. C. allmani occurred in appreciable numbers during the early part of the winter. This species is normally found in waters of more than 20 m deep and is known to undertake seasonal inshore-offshore migrations (Allen, 1960). It seems likely that the intakes at Hinkley are sampling from the edge of a population which is centered in the deeper waters of the Bristol Channel.

Judging by abundance, of the other 8 species, only 4, P.sivado, P.serratus, P.montagui and C.crangon have local populations. The two most striking features about the population dynamics of these species are their short-term periodicity and the lack of any long-term trend in numbers. The data show that each population is remarkably stable and presumably held within an upper bound by the environment. The maximum abundance certainly varies considerably from year to year but always returns to a similar level, suggesting a very responsive density-dependent mortality. In the case of C. crangon the population is so great (estimated at 2.65.m.. in November 1983; Henderson & Holmes, 1985a) that habitat crowding may limit growth. It is difficult to see how predation could produce such control. The principal predators are fish which generally have longer life histories than the shrimp and would therefore tend to produce a delayed density-dependence. However, it seems quite possible that animals excluded from suitable areas due to crowding fall victim to predators.

The periodic components show a number of cycles related to migration within the estuary. C. crangon has been shown to undertake regular seasonal migrations to avoid low salinity waters (Henderson & Holmes, 1985a) and an offshore spawning migration. The other species are also moving within the estuary, but the factors which dictate or influence these movements are unknown. Most species show an annual periodicity in number because breeding is limited to a short season resulting in a peak in abundance.

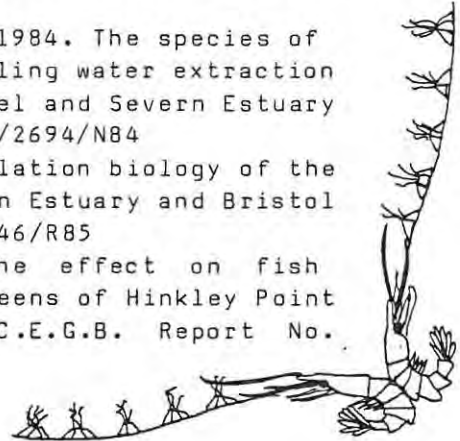
The high stability and predictability of the Caridean populations is the major conclusion of this study. It is commonly held that short lived animals will tend to have unstable population sizes (r-selected), highly responsive to environmental variability. At least within the near shore environment this appears not to be the case.



This work was carried out at the Central Electricity Research Laboratories, and the paper is published by permission of the Central Electricity Generating Board.

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- Henderson P.A. & Holmes R.H.A., 1985a. Population biology of the shrimp Crangon crangon (L) in the Severn Estuary and Bristol Channel. C.E.G.B. Report No. TPRD/L/2846/R85
- Henderson P.A. & Holmes R.H.A. 1985b. The effect on fish populations of impingement on the screens of Hinkley Point 'A' and 'B' cooling water intakes. C.E.G.B. Report No. TPRD/L/2911/N85



## NOTICES

### TAXONOMIC WORKSHOP ON MOLLUSCA EBSA - Scottish Marine Biological Association

The 1986 EBSA-organised taxonomic workshop will take place 28 April - 2 May 1986 at the Dunstaffnage Marine Laboratory of the SMBA, Oban. The workshop, on the identification of Mollusca, will be led by Shelagh Smith (Royal Museum of Scotland), Bernard Picton (Ulster Museum) and Julia Nunn (Conchological Society of Great Britain and Ireland).

The workshop will be of interest to those doing research or recording or monitoring surveys on estuarine and marine communities.

Those interested should contact:

Dr. Brian Barnett, AWA Marine Laboratory  
Elsham Treatment Works, Elsham Wolds, Nr Brigg  
South Humberside DN20 0NU  
(Tel: 0652 680271)

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2.

Apropos last issue, Dennis Seaward is no longer residing at the address given in PN 3 (4), p.102, and would greatly appreciate the readership noting that, since early 1984, his address has been:

Barn Court Hamlet, Chetnole, Sherborne, Dorset DT9 6NY

Sorry, Dennis, no fault of the editor!

DAVID LANDSBOROUGH, FATHER AND SON

by Fred Woodward

The death on 22 November 1912 of the Reverend David Landsborough Junior (b.1826) of Kilmarnock terminated over a century of family influence upon the study of the natural history and antiquities of Ayrshire.

This association commenced in 1811 with the appointment of his father, the Reverend David Landsborough (1779-1854), by the Church of Scotland to the position of minister at Stevenston. At this time Stevenston Parish had a population of 3000. He remained there until 1847 when as a result of the Disruption he joined the Free Kirk and was appointed as minister at Saltcoats. Soon after his appointment to Stevenston in 1811 he visited Edinburgh where he met the Reverend Dr John Fleming (1785-1857), one of the foremost naturalists of his time; Fleming is perhaps best known for his pioneering work, The History of Philosophy, published in two volumes in Edinburgh in 1822, and A History of British Animals published in 1828. This later work was the first which endeavoured to include all species of animals found in the British Isles.

The chance meeting between these two men of the cloth was to have a profound effect on David Landsborough Sr, and is recalled by David Jr in a memoir of his father published in 1875. On their meeting, the Doctor asked whether his new parish had any sea coast, and on hearing there were indeed five miles of it, asked whether David Sr could obtain for him "some new crabs". David Sr, amused at the association, would on relating the incident remark "I did afterwards get crabs for the Doctor, which, if not absolutely new, were at least very rare."

So were sown the seeds of interest which Fleming continued to nurture, and which were to lead to David Sr being fondly referred to as "The Gilbert White of Ayrshire". His chief interests lay in the natural history of his parish and the Isle of Arran, with particular emphasis on the marine fauna and flora of the Clyde. However, he was also an enthusiastic geologist and antiquarian, and in 1837 wrote a section on his parish for "The Second Statistical Account for Scotland". In 1844, in a letter dated 8th July, Dr George Johnson (1797-1855), the celebrated naturalist of Berwick on Tweed, wrote to Landsborough "I am delighted to hear you talk of a Parish Natural History, after the manner of White, for no-one can do it better, and you could make it very popular and attractive. I hope you will not allow the plan to remain a plan."

This work, unfortunately, never materialised, but Landsborough's inimitable style can be seen in his Excursion to Arran, first published in 1847, A Popular History of British Seaweeds (1849), and A Popular History of British Zoophytes (1852). From these and his other scientific papers David Sr built up an international reputation, while his home at Saltcoats provided a Mecca for all enthusiasts of Marine Zoology.

It was in this stimulating atmosphere that David Jr developed his talents. He was born on 19 December 1826, a 4th son

and 5th child, and studied for the church at Glasgow University and in Edinburgh. Here he came into contact with his father's friend the Reverend John Fleming, who had been appointed at the Inverness assembly of 1845 to the newly formed chair of natural history at New College, Edinburgh.

An insight into this formative period of David Jr's life is afforded by the following letter from his father to Fleming dated 27 April 1848:

My Dear Sir,

I return you many thanks for all the trouble you had with the catalogue. I mean to have it interleaved for additions as to times and seasons and sites. I have already Schizonema helminthosum and Lynqbya Carmichaeli to be added as found at Saltcoats.

I shall enclose a specimen to puzzle you. It has already ouzzled Dr Harvey and Dr Allmain, Dublin. Dr A thinks that it is a zoophyte in the neighbourhood of Alcyonium; what think you? It is a mares nest. It is not the first time that you have been amused with the conjectures of the Savants.

It was found on the shore by Miss McLeish and drowned in freshwater with some algae before I saw it. I afterwards found a bittock [a bit - Scots] but I gave it to Major Martin who was along with. [sic] I was very sorry afterwards that I had not put it in sea-water to see whether any polyps would float out of the striated ridges which covered one side of it. I never saw it before and may not see it again.

Many thanks to you for your continued kind attention to David. With my kind wish for you and Mrs Fleming.

I am My Dear Sir

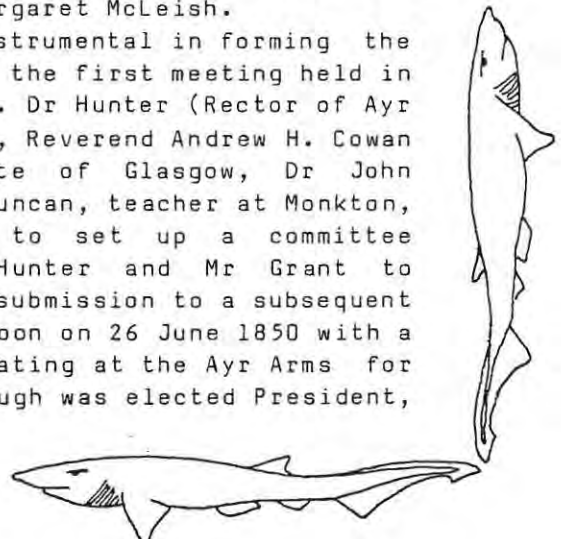
Yours very truly

D.Landsborough

Dr Allmain in the letter presumably refers to Dr J George Allman (1812-1898), Professor of Botany at Dublin, who became Professor of Natural History in Edinburgh in 1856, as successor to Edward Forbes, and is perhaps best known for his "British Freshwater Polyzoa" published by the Ray Society in 1856.

Dr Harvey refers to William H. Harvey (1811-1866), Professor of Botany, Trinity College, Dublin. Miss McLeish presumably refers to Landsborough's sister-in-law or niece, his wife, whom he married in 1817, being Margaret McLeish.

In 1850 David Landsborough was instrumental in forming the Ayrshire Naturalists Club. He convened the first meeting held in the Ayr Arms Inn, Ayr, on 13 May 1850. Dr Hunter (Rector of Ayr Academy), Reverend William Grant of Ayr, Reverend Andrew H. Cowan of Troon, Reverend James McKinlay, late of Glasgow, Dr John Mitchell Mauchline and Mr John P. Duncan, teacher at Monkton, were also present; it was decided to set up a committee consisting of Dr Landsborough, Dr Hunter and Mr Grant to formulate a constitution and rules for submission to a subsequent meeting. This meeting was held at Troon on 26 June 1850 with a field excursion along the sands, terminating at the Ayr Arms for dinner. At this meeting Dr Landsborough was elected President,



Major Martin and Reverend Mure Macreadie Vice Presidents, Mr McFarlane interim secretary and Mr Cowan interim custodean of specimens.

The last meeting of the club was held at Cumbrae in August 1854, Dr Landsborough being present as he had been at every meeting over the 4 years of the Club's existence. A month later he was dead, and with his death the Club ceased to exist excepting for an abortive attempt to ressurect the society in 1860.

His death was announced to the Natural History Society of Glasgow by the President, J.P. Fraser, on 3 October 1854:

"Gentlemen, before we proceed to the proper business of the evening, it becomes my painful duty to notice the loss, by death, of one of our corresponding members, well known for his scientific attainments, who was a highly valued friend with many of us, and whose name was familiar to all of us.

"The amiable disposition and unaffected piety of Dr Landsborough secured him the love and admiration of all who knew him. Few men have ever gained the respect and affection of a large circle, both of private and scientific friends, to so great an extent as Dr Landsborough. His life was spent in the simple and earnest search of knowledge among God's works, and the equally simple and earnest teaching of his Word to those among whom he dwelt, as their pastor, for the long period of forty years."

In conclusion it will be apparent that it was no accident which resulted in David Landsborough being such a prominent leader in the community, bu a combination of his earlt instruction in religion and science, first by his father and subsequently by the leading scientists and theologians of the mid nineteenth century who knew him both professionally and as a family friend.

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MERRY CHRISTMAS TO ALL OUR  
READERS





## "MEIOSQUILLA" SUPPLEMENTARY

RE Stomatopods: Further again to the article by Paul Clark in our last issue (PN 3 (4), 90-93), it behoves me to apologise to the readership for a slight slip-up in our normal high standards of up-to-date taxonomy (insofar as one can keep up). Meiosquilla desmaresti is now Rissoides desmaresti (Risso), and Members are referred to Manning R.B. & Lewinsohn C. (1982; Proc. Biol. Soc. Wash., 95 (2), 352-353) for their erection of the new genus for the 5 east Atlantic species formerly assigned to Meiosquilla. The latter genus is now restricted to the 8 American species.

Nevertheless we are proud to demonstrate the productive response that articles in the NEWSLETTER can generate: as a result of the aforementioned, Paul Clark has received information of more Rissoides records, and has kindly agreed to their publication herein to supplement his previous data. The feedback comes from J.B. Hawthorn, and is in reference to data published in the Proceedings of the Dorset Natural History and Archaeological Society, as follows:

1 specimen found swimming slowly at the surface  
in Lulworth Cove in the summer. --- 1961, Vol 83.  
A preserved specimen, brought to the [Dorchester]  
museum for identification, taken in a prawn pot  
at Osmington Mills. --- ibid  
"Squilla" - several on cast up algae, from  
Weymouth Beach. --- 1977, Vol 98.

In addition should be mentioned an abdominal exuvium, taken in a trawl sample, Stanswood Bay, January 1985.

Both the Editor and Paul Clark would be delighted to hear of any more records hidden away in notebooks, local journals, etc..

## NOTICES



### 3. SHORE WALK AT CLACHAN SOUND Marine Conservation Society - EBSA

There will be a shore walk through Clachan Sound on Sunday 27 April 1986. Clachan sound is about 25 km south of Oban (NGR 17/ 785197). The main theme of the walk will be Mollusca and their habitats. Ad lib collecting and disturbance of the shore will be discouraged but samples of microhabitat (algae, gravel, etc.) will be taken for investigation during the EBSA Workshop on Mollusca [see above, Notice 1].

For further details, please write to Shelagh Smith, Royal Museum of Scotland, Chambers Street, Edinburgh, EH1 1JF.

#### 4. UNDERWATER ASSOCIATION ANNUAL SYMPOSIUM 1986

The theme of the 1986 Symposium will be "Man Underwater" with particular reference to the medical, physiological and psychological aspects of diving and living underwater and under pressure. There will also be a half day devoted to a general session.

If you are interested in contributing a paper (or an exhibit) would you please contact John W.P. Leach at the DPRU, Fylde College, University of Lancaster, Lancaster LA1 4YF. Tel: 0524 65201 X 4167 (Home number 0756 61824). Contributors to the meeting will have the opportunity to publish their papers in *Progress in Underwater Science* (Report of the Underwater Association). If you wish to submit a paper or exhibit on either the topic of "Man Underwater", or for the general session, would you please contact John Leach as soon as possible with a title and a brief abstract.

The Symposium will be held on Friday and Saturday 14 and 15 March 1986, at the Natural History Museum in London.

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## Porcupine Ads.

### THE MARINE FAUNA OF THE CULLERCOATS DISTRICT

Reports of the Dove Marine Laboratory,  
3rd series.

The area treated is roughly from Redcar to Berwick (54.37'N to 54.47'N) and extending seawards nominally to the Greenwich Meridian, although almost all records are from within 15 miles of the coast.

Note: Parts 1-5 are printed. Later parts are copied on A4 paper and spirally bound, with protective covers.

1. Porifera. H.O.Bull. 22pp. 1963. £1

2a. Arthropoda: Diplopoda; Chilopoda. H.O.Bull.

2b. Arthropoda: Insecta; Apterigota. H.O.Bull.

2c. Arthropoda: Crustacea; Euphausiacea. J.Bossanyi.

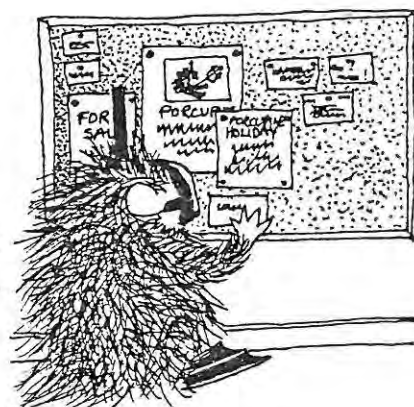
2d. Chordata: Mammalia; Cetacea. W.Stephenson & H.O.Bull.  
32pp. 1964. £1

3a. Entoprocta. D.Eggleston & H.O.Bull.

3b. Priapulida, Echiurida, Sipunculida. H.O.Bull.

3c. Chaetognatha. H.O.Bull.

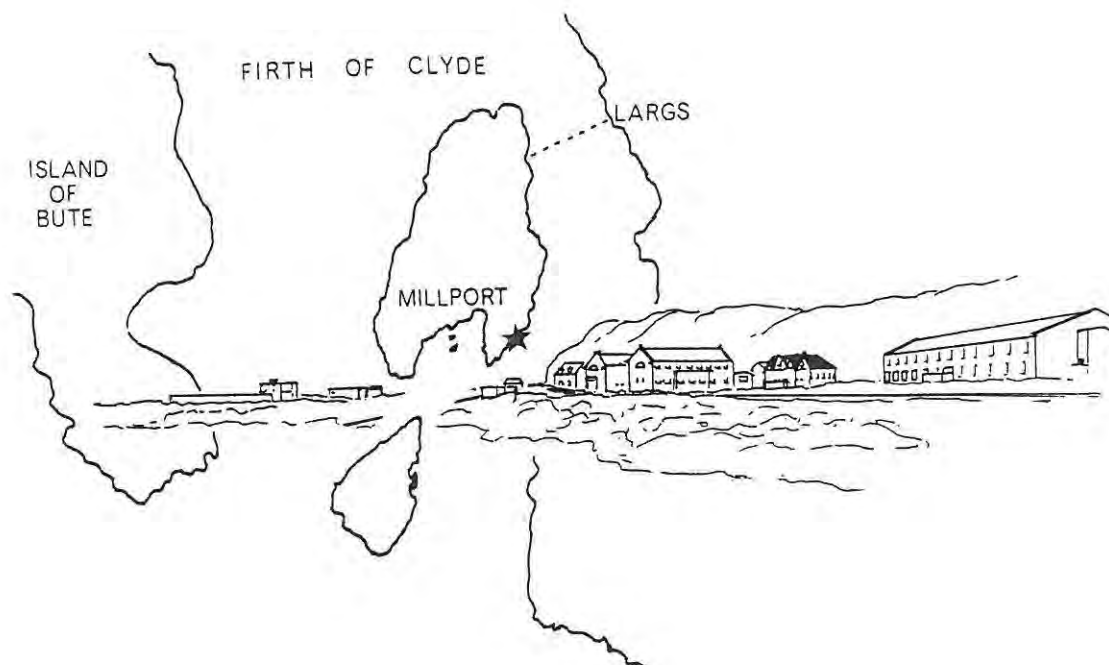
3d. Echinodermata. J.B.Buchanan  
39pp. 1966. £1



- 3A. Ectoprocta. D.Eggleston. 30pp. 1975. £1
- 4a. Arthropoda: Insecta; Pterygota. H.O.Bull.
- 4b. Arthropoda: Crustacea; Branchiopoda. J.Bossanyi.
- 4c. Arthropoda: Crustacea; Ostracoda. J.Bossanyi  
67pp. 1967. £1
5. Arthropoda: Crustacea; Copepoda. J.Bossanyi & H.O.Bull.  
59pp. 1971. £1
6. Coelenterata. F.Evans. 165pp. 1978. £7
7. Cirripedia. F.Evans. 23pp. 1980. £2
8. Mollusca: Bivalvia. P.F.Kingston. 110pp. 1980. £5
9. Polychaeta: Errantia (with keys). P.R.Garwood.  
192pp. 1981. £10
10. Polychaeta: Sedentaria (with keys). P.R.Garwood.  
273pp. 1982. £15
11. Fishes. P.R.Davis. 238pp. 1983. £13.50.
12. Pycnogonida. R.N.Bamber. 24pp. 1983. £2
13. Amphipoda. M.Sheader. 187pp. 1983. £10
14. Literature on the Marine Fauna of the Cullercoats District,  
1933-1984, incorporating a reprint of H.O.Bull's (1933)  
'Classified Index to the Literature of the Cullercoats Marine  
Fauna and Flora 1832-1932'. J.Foster-Smith  
63+22pp. 1984. £4.
15. Acari. R.N.Bamber. 50pp. 1985. £2
16. Zooplankton. F.Evans. 113pp. 1985. £7.50.
17. Flora: Seaweeds. F.G.Hardy. 1985. £4
18. Mollusca: Gastropoda. J.Foster-Smith. (Early 1986).

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AROUND THE MARINE LABORATORIES

Number 13

UNIVERSITY MARINE BIOLOGICAL STATION MILLPORT

The Isle of Cumbræ is hallowed ground in the history of marine science in Scotland and in Britain generally. Sir John Murray, the Scientific Director of the 'Challenger' Expedition (1873-1876) - the first world-wide study of the oceans - and the Editor-in-Chief, in Edinburgh, of the famous 'Challenger' Reports which laid the foundations of marine science, established the first home-based marine laboratory in Britain, the 'Ark', a barge which was originally moored in a flooded quarry at Granton near Edinburgh early in 1884. David Robertson, the Cumbræ naturalist, however, soon convinced Murray of the incomparably better situation for marine studies of the west coast of Scotland with its rich and varied inshore flora and fauna and direct access to the offshore oceanic waters of the Western Isles. The 'Ark' was therefore moved to Millport in the spring of 1885.

In 1896 a small land-based laboratory was built near to the moored 'Ark' and this remains part of the present Station. It became the home of the Scottish Marine Biological Association (SMBA) and which, in partnership with the Marine Biological Association of the United Kingdom at Plymouth, Devon, was instrumental in setting up the governmentally controlled fisheries laboratories of the United Kingdom.

In 1970 the SMBA funded by the Natural Environment Research Council (NERC) left Millport for expanded and better equipped laboratories at Dunstaffnage, Oban. The Universities of London and Glasgow in an imaginatively conceived new venture and with the encouragement and support of the SMBA and NERC decided to take over the Millport laboratories in order to preserve and foster university teaching and research in marine science and to



ensure the supply of teaching and research material - the sources of which had become increasingly at risk - for universities and other educational institutions.

The history of the marine station since 1970 has been an outstanding success bearing in mind its small size and the financial restrictions placed on the parent universities in their support of it. A few facts and figures may perhaps indicate the scale and progress of its activities.

Although the station has at no time had more than four permanent members on its academic staff, more than 10,000 undergraduates have attended its courses. This has meant that in the last eight years classes have visited every month and that in each year from early March to mid-November there has been almost continuous occupancy. These have included 24 full-time postgraduate students each of three years' residence and more than three times as many part-time postgraduate students from the parent and other universities. Since 1975 more than 130 research papers based on studies carried out at the Station have been published.

In support of research, teaching, specimen supply and SCUBA training, more than 8000 research dives have been carried out, and in the last five years the two research vessels of the Station have spent more than 2000 working days at sea.

The supply of fresh and preserved material to universities, schools and polytechnics, always an important part of the Station's functions, has been greatly extended. Up to 1400 orders for teaching and research material are dispatched every year not only throughout Britain but also to very many countries overseas. Most, if not all, biology students in this country will have benefitted from specimens collected by Station Staff.

Collaboration with industry has been progressively developed through formal contracts and informal consultations. New relationships are continuously sought.

#### MILLPORT CENTENARY APPEAL

(from a letter from Professor John Allen, with permission)

The Committee of Management of the Marine Biological Station Millport has decided to launch a centenary appeal to mark 100 years of scientific study of the sea at Millport. Its purpose is to ensure and enhance the work of the Station in the service of research and education. The Appeal launched in 1984 is made with the full approbation of the parent universities and is intended to provide the Station with additional resources to enable it to help meet the educational requirements of universities and other educational establishments in marine science and to develop courses in specialised research needed for the service of science and industry.

The needs particularly in mind will require between

£200,000 and £500,000 additional capital, aimed to be used for two primary purposes:

- (a) the construction of a lecture theatre.
- (b) to promote research into environmental studies of the sea and the condition of health and deterioration of the organisms that live within it.

To the Station's great honour and delight, Her Majesty Queen Elizabeth the Queen Mother, who in 1979 visited the Station, has most generously given her support to the Appeal.

It is hoped that you will agree that the Station is an important National and International asset and that there is a continuing and expanding need for its work, and that you will be able to support generously. Please help.

For further information and donations write to  
The Director, University Marine Biological Station,  
Millport, Isle of Cumbrae, Scotland KA28 OEG.



#### PORCUPINE SPRING MEETING AND ANNUAL GENERAL MEETING

Apologies for lateness of notification, but arrangements to hold the meeting at Portsmouth Polytechnic fell through. Happily, Martin Sheader came to the rescue.

The next meeting incorporating the AGM will be held on 19-20 April 1986 at Southampton University in the Oceanography Department. The theme of the meeting will be devoted to LAGOONS. Various speakers have been invited who will report on recent surveys of this specialised habitat around the British Isles. However, offers of papers on this or other (not necessarily related) topics are welcomed. If there is sufficient interest, a field trip on the Sunday afternoon to local lagoons will be arranged. Further details of accommodation and the programme will be available after Christmas.

A small conference fee will be charged. For further information please contact Bill Farnham, Marine Laboratory, Ferry Road, Hayling Island, PO11 0DG.

Telephone Number - Hayling Island (0705) 463231 (day) or (0705) 466293 (home).

ANNUAL GENERAL MEETING

The ninth Annual General Meeting of PORCUPINE will be held at Southampton University on Sunday 20 April 1986 at 9.30 a.m.

AGENDA

1. Minutes of the Annual General Meeting held in Manchester on 24 February 1985.
2. Matters arising
3. Hon. Secretary's report
4. Hon. Treasurer's report
5. Hon. Editor's report
6. Election of Office Bearers and Council Members

In connection with the election of Office Bearers, Council Members and Auditors, attention is drawn to the relevant Rules of Procedure. Candidates for Office, for Council and posts of Auditor may be nominated, with their written consent, at any time prior to the AGM, or, if they are present, during the AGM. Voting is by a show of hands at the AGM.

By coincidence, the Hon. Secretary, Treasurer and Editor wish to retire. The office of Hon. Records Co-ordinator is in abeyance.

The following candidates have consented to stand for election:

Hon. Secretary	Martin Sheader
Hon. Treasurer	John Wilson
Hon. Editor	Roger Bamber
(co-opted, but requires formal vote)	

The present Council Members are:

Roger Bamber	Ivor Rees
Roger Brehaut	Ralph Robson
Peter Davis	Dennis Seaward
Robin Harvey	Martin Sheader
Norman Holme	John Wilson

Roger Brehaut wishes to retire. As it is likely that Roger Bamber, Martin Sheader and John Wilson will become Office Bearers, additional Council Members are required. Retiring Office Bearers are eligible for election to Council, should they so wish, but additional candidates should be nominated. Nominations (in writing) to the Hon. Sec. prior to the AGM are welcome. Nominations from the floor during the AGM are also in order.

7. Future meetings
8. Any Other Business.

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ARTHROPODS ASSOCIATED WITH CORALLINA OFFICINALIS FROM CRACKINGTON  
HAVEN, CORNWALL.

by Roger Bamber & Martin Sheader

Discerning readers will recall a previous note in PN (Bamber & Henderson, 1983) illustrating the diversity of Arthropods associated with the common littoral alga Corallina officinalis when compared to other substrates. Why this seaweed should be so attractive to a range of animals is not obvious, though it certainly offers a large surface area for microscopic algal growth (a potential food source) and a complexity of crevices within the branches. A cursory glance at available literature revealed no arthropods which have been recorded as obligately feeding on Corallina. Nevertheless, collecting a sample of this weed is invariably a rewarding and convenient way of sampling a range of the local fauna at any rocky shore site, and the apparently ubiquitous distribution of the weed suggests it as a valuable source for representative and semi-quantitative data for zoogeographic studies, or researches associated with seasonality of faunas or pollution monitoring.

The following data comprise records of the arthropods collected from a small (0.5 litre) sample of Corallina accumulated from rock pools near LWST to the south side of Crackington Haven, Cornwall, September 1985. Unfortunately, the sample was accidentally sieved, which presumably accounts for the lack of ostracods and the few mites.

ACARI, Halacaridae

Rhomboognathides seahami (Hodge) (3 no.)

PYCNOGONIDA

Achelia longipes (Hodge) 2 adults

Anoplodactylus pygmaeus (Hodge) 1 juvenile

PERACARIDA, Isopoda

Dynamene bidentata (Adams) common, females and juveniles.

Idotea baltica (Pallas) common, with brooding females

Idotea granulosa Rathke ----- ditto -----

Idotea sp. juveniles very numerous; if the colour means anything, the majority are I. baltica

PERACARIDA, Amphipoda

Dexamine spinosa (Montagu) common

Gammarellus angulosus (Rathke) 1 no.

Apherusa jurinei (Milne-Edwards) common

Melita hergensis Reid common

Jassa falcata (Montagu) common

Amphilocheus neapolitanus Della Valle common

Stenothoe monoculoides (Montagu) common

Amphithoe rubricata (Montagu) frequent

Caprella aequilibrata Say 1 no.



Reference

Bamber R.N. & Henderson P.A. 1983. Epifaunal arthropods from the tide pools at Rhosneigr. PORCUPINE NEWSLETTER, 2 (8), 190.



## Letters to the Editor

From M.V. Angel, Institute of  
Oceanographic Sciences, Brook Road,  
Wormley, Godalming, Surrey GU8 5UB.

Dear Editor,

Browsing through Newsletter 3 (3) I realised that I had overlooked making a timely response to the profile of IOS Wormley. The major item of interest to PORCUPINE members that was omitted is the location of the 'Discovery' Collections here at Wormley. The collections were begun with the early work in Antarctica and have been maintained ever since. They now include extensive collections of both pelagic and benthic samples from the N.E. Atlantic, much of it worked up and organised into large and comprehensive taxonomic collections. However, data are banked so the complete contents of samples can be reconstituted. In most cases there are hydrographic data to supplement the biological. Large collections of benthic material have been collected in the Porcupine Seabight.

Material is available on loan to bona fide researchers and application should be made to the curator, Miss K.C. Chidgey at IOS.

Yours sincerely



"PHYCOMYCOLOGY" - UNDERWATER PUFFBALL ON SEAWEED

by Bill Farnham,

Marine Laboratory, Ferry Road, Hayling Island, Hants PO11 0DG

Various marine fungi are known, and some of these occur on or in algae. I have recently collected material of the common red alga Dilsea carnosa from the sub-littoral fringe which has clearly been infected by a fungus causing circular necrotic lesions on the blades. These lesions are easily observed in the field (1-2 cm in diameter) and are characterised by having a greenish zone of algal tissue surrounding a whitish inner region. The central area of this is usually torn away forming an irregular hole. The fungal lesions are easily distinguishable from the frequent perforations in the Dilsea frond caused by grazing molluscs. These holes are not associated with any unhealthy-looking algal tissue, and the exposed inner region (medulla) of the Dilsea frond is quickly recovered by cortex.

Dr David Porter (on sabbatical leave at Portsmouth Polytechnic from the University of Georgia) has been investigating the fungus and has shown the presence of dolipore septa in the hyphae. These are diagnostic of a basidiomycete fungus. The fruiting bodies are small, hemispherical structures, occurring on the surface of the whitish zone of the lesion. Although their general appearance is similar to an ascomycete perithecium, distinctive basidiospores, produced by a hymenial layer of basidia and extruded through a central ostiole, have been demonstrated. Thus, this fungus is an underwater version of the common puffballs on land and is only the fourth marine homobasidiomycete known.

What seems to be the same species, involving the same host with identical pathology, was described by Maire & Chemin in 1922 from France and was called Mycaureola dilseae. If this is the case then they misinterpreted the reproductive structures and classified the fungus as an ascomycete. M. dilseae has not to our knowledge been reported since its original description over 60 years ago. It has now been found on both sides of the Channel occurring at least during summer and autumn.

We would be grateful for any further observations on Mycaureola to resolve the following questions. Does its distribution correspond with that of its host? Does it occur throughout the year? How common is it, and what effect does it have on its host?

We would be grateful to receive any "grotty" plants of Dilsea with suspected fungal lesions. These can be fixed in 5% formalin S.W.. Perhaps those with access to herbaria collections would also look through any Dilsea collections, although no sign of M. dilseae was seen in over 200 Dilsea specimens at the British Museum, presumably because phycologists choose to press nice healthy specimens.

A RE-EXAMINATION OF SOME OF BRADY'S MICROSCOPE SLIDES

by Roger Bamber

Due to the sterling efforts of member Peter Davis, the extensive collection of microscope slides of G.S.Brady is now largely catalogued and readily accessible at the Hancock Museum. The importance of the material from such a pre-eminent biologist, working (at the turn of the century) at such an exciting time for marine biology in the north-east of England, cannot be overstated.

In the course of gathering data for volumes of the Marine Fauna of the Cullercoats District (see elsewhere in this issue), certain of Brady's slides were re-examined at the Hancock. Despite his expertise, Brady was as subject then as we are today to the limitations of available information, published errors, and the difficulties of interpreting limited material from descriptive texts. Even so, of the four slides discussed below, which would at least have represented unusual records for the area had their original identification been correct, two are marked with queries, presumably by Brady, who clearly recognised the problems or improbability of identification.

MYSIDACEA

Slide No. 2.55.45. "Paraerythroptus robusta Smith"

This would be the only E. Atlantic record! Specimen is damaged, comprising carapace with eyes and some legs, one antennal scale (detached), and a pair of uropods (detached). From the smooth outer margin of the antennal scale, its apex produced by about twice the length of the terminal spine, and the lateral spines on the carapace, this is not Meterythroptus robusta Smith, but most likely Erythroptus erythroptus (Goes).

TANAIDACEA

Slide No. 2.31.13. "Leptognathia filiformis Lilljeborg"

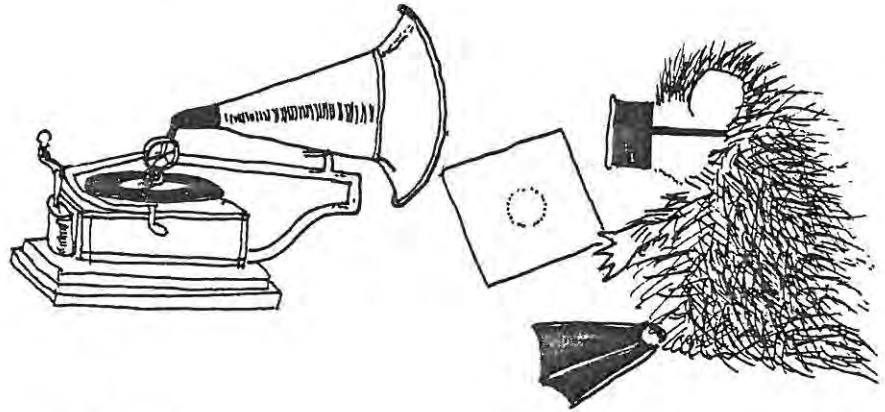
The only other British records (than those of Brady) are from 140m in the northern North Sea. This specimen is from "off Souter Point". It is fragmented, missing the definitive uropods. With body segments wider than long, and the structure of the right chela fingers (not very clear), it is not L.filiformis, but probably Tanaopsis graciloides (Lillj.). There are two "??" in pencil on the label - most shrewd.

2.31.24 "Leptognathia longiremis" var. with '5-jointed antenna'. There is historical confusion between L.longiremis Lillj. and L.gracilis (Krøyer), due somewhat to Sars' figuring the latter under the name of the former. This specimen is in two halves, contracted, with obstructing air bubbles, etc.; it is, however, L.gracilis. See Holdich & Jones 1983 (Linn. Soc. Synopsis - Tanaids), fig. 24G for the apparent extra suture on the antenna of this species.

2.31.26. "Leptognathia longiremis" (see notes above)

This specimen, also fragmented, is again L.gracilis

new  
records



ECHINODERMATA - ECHINOIDEA

Strongylocentrotus pallidus (Sars)

The editor has received a cryptic communication from one Ronnie Gallagher from Shetland, where he found a specimen of the above (q.v. Toxopneustes pallidus G.O.Sars) while mapping S.drobachiensis (O.F.Muller). This would be a first record for Britain. Mortensen appears to synonymize these two species, so further information from echino-minded Members would be appreciated. I have attempted to contact R.G. via the phone number he left, but to no avail so far: if you are out there Ronnie, please get in touch.

ARTHROPODA - PYCNOGONIDA

Callipallene brevirostris producta (Sars).

1 specimen, Carrigmore Rocks, Clear Island; 20 m in Nemertesia holdfast, 18 August 1981. National Museum of Wales Accession No. Z-1981-094-20 (part).

1 specimen, Trefusis Cliffs, Fal Estuary, 1985; ex Dale Rostron, Oil Pollution Research Unit.

This distinctive form of C.brevirostris is not mentioned in the Linn. Soc. Synopsis, though moves are afoot to raise it to separate specific rank. The only other records in litt for British waters are 2 specimens from the R.Tyne, as in Bamber, 1983 (Cullercoats Marine Fauna No.12, see elsewhere in this issue). Elsewhere it is recorded from Western Norway, the Black Sea (?) and the Lagoon of Venice (Stock, 1952; Beaufortia, 13, p.6).

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While not wishing to start an angling column, our mention in the last issue of the rather large Porbeagle shark (Lamna nasus) caught in the Solent would seem to have inspired the local fishermen. We subsequently hear of one Michael Sayers catching a 36.5 pound cod off the Needles in November, only two days after a Michael Young 'sampled' a 17lb 6oz sting ray in the Solent. Well cod has now been recorded at Fawley Power Station Screens [see next issue] ; we await the other with some trepidation!