Porcupine Newsletter

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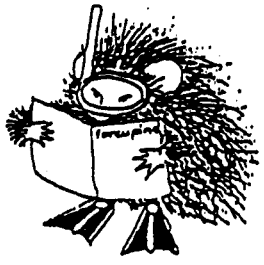

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PORCUPINE

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EDITORIAL

With apologies for being somewhat late with Christmas greetings this year, happy new year to all our readers anyway. And I hope that all MEMBERS remembered that their subscriptions were due on 1st January, at the new and still bargain rate of £8.00. New banker's order forms may be obtained from the Hon. Treasurer (though all MEMBERS should have received a copy). Would those using these forms please send (or take) them to their own bank; your Council may be wonderful, but we cannot divine your local branch (some things are not held on the Membership List)!

On the subject of MEMBERS, I am sure I speak for us all in welcoming Frances Dipper back to our shores (and sublittorally of course) from her sojourn in Araby, having left with a personalised farewell graphic in PN 3 (3) (March 1985).

The Nature Conservancy Council has published the Discussion Document and supporting leaflets on the proposal for a Marine Nature Reserve at Loch Sween in Argyll. This Loch has been mentioned a few times at recent PORCUPINE meetings, and is very diverse for a sea-loch, with habitats including *Zostera* and maerl beds, rapids and (of course) brackish lagoonal environments. Copies of the various relevant documents are available from the NCC, South West Regional Office, The Castle, Balloch Castle Country Park, Balloch, Dumbartonshire G83 8LX. PORCUPINE looks forward to the success of this application.

Without wishing to promote unduly potential competition, Chris Mettam's Polychaete Research Newsletter has emerged from some recent morphological changes with an ISSN (but no acronym - see Chris's current editorial), while Matt Murphy continues the remarkable volume of productions from Sherkin Island (see p.240). And from Guido Rappé in Belgium your Hon. Ed. receives exchange copies of De Strandvlo, the organ of the Belgian Strandwerkgroep - largely in Belgian (what else?).

Finally, apropos the AGM, I would remind MEMBERS that they are welcome to nominate candidates for Office-Bearing and ex-officio posts on the Council. And they are equally welcome to submit articles to the Newsletter - I wait with (not too-) baited breath and poised word-processor.

Roger Bamber, Hon. Ed.

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POSTSCRIPT TO PORCUPINE MEETING, MARCH 1990

by Shelagh Smith, Jan Light & Ian Killeen

Woodleigh, Townhead, Hayton, Carlisle CA4 9JH; 88 Peperharow Road, Godalming GU7 2PN & 163, High Road West, Felixstowe IP11 9BD respectively

On Sunday 4 March 1990 we visited the shore at Easthaven, about 20 km ENE of Dundee. Instead of this only being a jolly little trip to find molluscs, we decided, in the light of the discussions at the meeting on Marine Recording, to provide some additional information.

Site	Easthaven, Tayside		56°31·1'N 02°39·3'W
Date	4 March 1990		
Time Started	13.10	Time Finished	14.55
Time of low tide	13.10	Height at low water	1·8
Weather	Wind force 6, gusting 7 or 8, bright and sunny		
Nature of Shore	Upper Old Red Sandstone reefs dipping at about 10° out to sea, extending to the water line. Shallow pools and shore-facing overhangs (up to 1 m). Extensive cover of short winter *Fucus serratus* on the rocks and new growth of algae in the pools. Sand and pebble beach on the upper shore, backed by low dune vegetation. Sewage pipe (not checked to see if functional). Bad smell (as of dead sheep, not from pipe but opposite direction).		
Distance from HWM to tide edge	100 - 250 m.		
What we did on the shore	General survey for molluscs, on the rocks, in pools, under overhangs and under boulders in pools. Collection of algae (about 3 litres, loosely packed, of the species available). Collection of shell sand from the strandline (about 0·5 litres).		

Time spent on subsequent work:

Weed washing and investigation of contents thereof	3 hours
Examination of shell sand	5 hours
Time spent on writing up	5 hours

LIST OF SPECIES

Nomenclature, even for molluscs, as in the Species Directory (Howson, 1987). Note that species other than molluscs were only noted in passing, as it were, and the list is restricted to those species which could be easily identified without recourse to the literature. Amphipods and isopods from the weed washings have been sent to Martin Sheader, and pycnogonids to Roger Bamber.

PORIFERA

C 484	*Halichondria panicea*	Common on sides of larger boulders in pools and under overhangs.

Other sponges also present

CNIDARIA

D 17	*Haliclystis auricula*	One specimen amongst *Cladophora*
D 1151	*Actinia equina*	Common in pools in shade and under boulders.

No other Cnidarian seen.

POLYCHAETA

P 106	*Harmothoe imbricata*	Frequent, large, under boulders in pools.
P 133	*Lepidonotus squamatus*	2 small, amongst "roots" of *Corallina officinalis*.
P 1484	*Flabelligera affinis*	One small, in weed washings.

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P 2000	Terebellidae	Small specimens frequent under boulders.
P 2031	*Lanice conchilega*	Frequent in sandy gravel crevices at bottoms of pools.
P 2302	*Pomatoceros* sp.	Common under boulders in pools.
P 2401	*Spirorbis* spp.	Common under boulders in pools.
P 2402	*Spirorbis corallinae*	Sparse on *Corallina officinalis*.
P 2406	*Spirorbis spirorbis*	Common on skeletons of last year's *Fucus serratus* in pools.

No other Polychaeta seen; note no *Nereis pelagica*.

CRUSTACEA

R 64	*Verruca stroemi*	Frequent under boulders in pools
R 108	*Balanus balanoides*	Common around boulders in pools
S 1560	*Idotea balthica*	One specimen in weed washings
S 1563	*Idotea granulosa*	Abundant in weed washings
S 2465	*Pagurus bernhardus*	Small specimens common in winkle shells
S 2504	*Pisidia longicornis*	Common under boulders, lower pools
S 2646	*Cancer pagurus*	Several <2 cm carapace width under boulders in pools
S 2690	*Carcinus maenas*	Several <2 cm carapace width under boulders in pools

Other small crustaceans in weed washings.

MOLLUSCA

W 75	*Lepidochitona cinereus*	Frequent under boulders in pools, up to 1·6 cm.
W 125	*Tectura testudinalis*	Frequent/common on and under boulders and on bedrock in pools. A white specimen found.
W 134	*Patella vulgata*	Common on bedrock at all tide levels, 0·5 to 4 cm.
W 193	*Gibbula cineraria*	Common in pools, large, up to 2 cm across the base and 1·4 cm high.
W 239	*Lacuna pallidula*	Common in weed washings, mostly female, several egg masses on *Laminaria digitata*.
W 250	*Littorina littorea*	Common/abundant at all tide levels, juveniles to 3 cm high; one red specimen found.
W 254	*Littorina mariae*	Several small specimens in weed washings, none obvious from shore survey.
W 255	*Littorina obtusata*	Common on bedrock and amongst *Fucus serratus* at all levels.
W 258	*Littorina neglecta*	Probably common amongst upper level algae; several in weed washings.
W 260	*Littorina saxatilis*	Fairly common on the upper half of the rocks, less common than expected.
W 284	*Rissoa interrupta*	Abundant in weed washings (>1000 from sample).
W 340	*Onoba semicostata*	Several in weed washings and under boulders in pools.
W 400	*Skeneopsis planorbis*	Abundant in weed washings (>300 from sample).
W 817	*Nucella lapillus*	Common on bedrock at all levels, juveniles to 3·5 cm high, no egg masses.
W 844	*Buccinum undatum*	Three specimens, up to 1·7 cm, and several egg masses with "pre-hatchlings" under boulders in pools.
W 1083	*Limapontia senestra*	One specimen in weed washings.
W 1274	*Doto coronata*	One specimen in weed washings.
W 1332	*Onchidoris bilamellata*	Two specimens copulating under boulder in pool.

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W 1335	*Onchidoris muricata*	One specimen on *Laminaria digitata*.
W 1382	*Cadlina laevis*	One specimen under boulder in low pool.
W 1403	*Archidoris pseudargus*	One juvenile specimen under boulder in pool (surprisingly rare).
W 1650	*Mytilus edulis*	None seen on shore survey; spat abundant in weed washings (>100 from sample).
W 1822	*Pododesmus squamula*	Common under boulders in pools.
W 1885	*Kellia suborbicularis*	One specimen under boulder, lower pool.

Species expected but not found include *Patella ulyssiponensis*, *Margarites helicinus*, *Lacuna vincta* and *Odostomia turrita*.

DEAD SHELLS FOUND IN SHELL SAND.

These were restricted to a few species, most of them local to the shore. Compared with weed washings, *Mytilus edulis* spat were tenfold commoner, *Rissoa interrupta* rare and *Skeneopsis planorbis* less common.

W 134	*Patella vulgata*	Frequent.
W 239	*Lacuna pallidula*	Frequent.
W 244	*Lacuna vincta*	Frequent.
W 250	*Littorina littorea*	Common.
W 254	*Littorina mariae*	Several.
W 255	*Littorina obtusata*	Common.
W 258	*Littorina neglecta*	Several.
W 260	*Littorina saxatilis*	Common.
W 284	*Rissoa interrupta*	Several.
W 340	*Onoba semicostata*	Several.
W 400	*Skeneopsis planorbis*	Common.
W 442	*Turritella communis*	One.
W 736	*Trivia* sp.	One fragment.
W 817	*Nucella lapillus*	Common.
W 887	*Hinia incrassata*	Several, worn.
W 931	*Oenopota turricula*	One, worn.
W 984	*Philine punctata*	Several.
W 1650	*Mytilus edulis*	Spat abundant.
W 1796	*Chlamys distorta*	Two juvenile valves.
W 1822	*Pododesmus squamula*	Abundant.
W 1885	*Kellia suborbicularis*	Two fresh.
W 1905	*Mysella bidentata*	Several with soft remains, also valves.
W 1911	*Tellimya ferruginosa*	Several valves.
W 2005	*Spisula solida*	Several juvenile valves.
W 2011	*Lutraria lutraria*	One fragment, juvenile.
W 2046	*Amgulus tenuis*	Several valves.
W 2057	*Fabulina fabula*	Several valves.
W 2102	*Abra alba*	One fresh.
W 2227	*Mya truncata*	Several juvenile valves.
W 2251	*Hiatella arctica*	Common, fresh.
W 2351	*Thracia phaseolina*	Fragments rare.

BRYOZOA

Y 301	*Umbonula littoralis*	Sparse under boulders in pools.

No other Bryozoa seen.

ECHINODERMATA

ZB 190	*Asterias rubens*	Several about 8 cm and several about 0·5 cm across under boulders in pools.
ZB 235	*Ophiothrix fragilis*	Two large under boulders, lower pools.
ZB 300	*Amphipholis squamata*	Several in weed washings.

No other Echinodermata seen, note no *Psammechinus miliaris*.

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TUNICATA

ZD 194	*Dendrodoa grossularia*	One only under boulder, low pool.
ZD 209	*Botryllus schlosseri*	Small colonies common under boulders in pools.

No other Tunicata seen.

ALGAE

ZM 265	*Dumontia contorta*	Less than 10 cm long, just starting to grow.
ZM 404	*Corallina officinalis*	Abundant in pools.
ZM 461	*Lithothamnion glaciale*	Patchy on boulders and rock in pools.

Encrusting corallines on *Mastocarpus stellatus*

ZM 566	*Ahnfeltia plicata*	One plant in low pool.
ZM 605	*Mastocarpus stellatus*	Common in lower pools.
ZM 807	*Ceramium* sp.	Common in lower pools.
ZM 834	?*Compsothamnion thuyoides*	Common amongst the algae collected for washing. Species not recorded from this area in Maggs, 1986.
ZM 990	*Membranoptera alata*	Frequent in lower pools.
ZM1080	*Laurencia pinnatifida*	Frequent in lower pools.
ZM1115	*Polysiphonia lanosa*	Common on *Halidrys siliquosa*.
ZR 439	*Cladostephus spongiosus*	Fragments found amongst algae collected for washing.
ZR 632	*Laminaria digitata*	Small plants (<1 m) in pools.
ZR 636	*Laminaria saccharina*	Two plants, tatty, 15 cm.
ZR 674	*Fucus serratus*	Winter plants, <20 cm, abundant on top of the rock reefs, larger fresher plants in pools sparse.
ZR 716	*Halidrys siliquosa*	Common in pools, up to 50 cm.
ZS 245	*Ulva lactuca*	Small plants (10 cm) common in pools.
ZS 338	*Cladophora* sp.	Abundant in pools, especially the higher ones.

Other algae present.

REFERENCES

Howson, C.M. 1987. Species Directory to British Marine Fauna and Flora. Marine Conservation Society, Ross-on-Wye.

Maggs, C.A. 1986. Scottish Marine Algae: a Distributional Checklist, Biogeographical Analysis and Literature Abstract. Nature Conservancy Council CSD Report No. 635.

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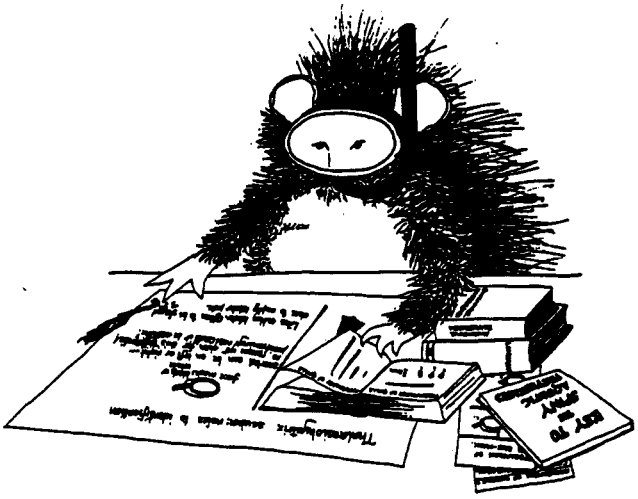
APPENDIX

by Roger Bamber

'Weed-washings', supplied generally unsorted in specimen jars from the Easthaven collections, were sorted and examined for eight-legged beasts. Estimated time for the sieving, the microscopic examination, and the returning of the samples to their jars - 30 min. No pycnogonids were found!



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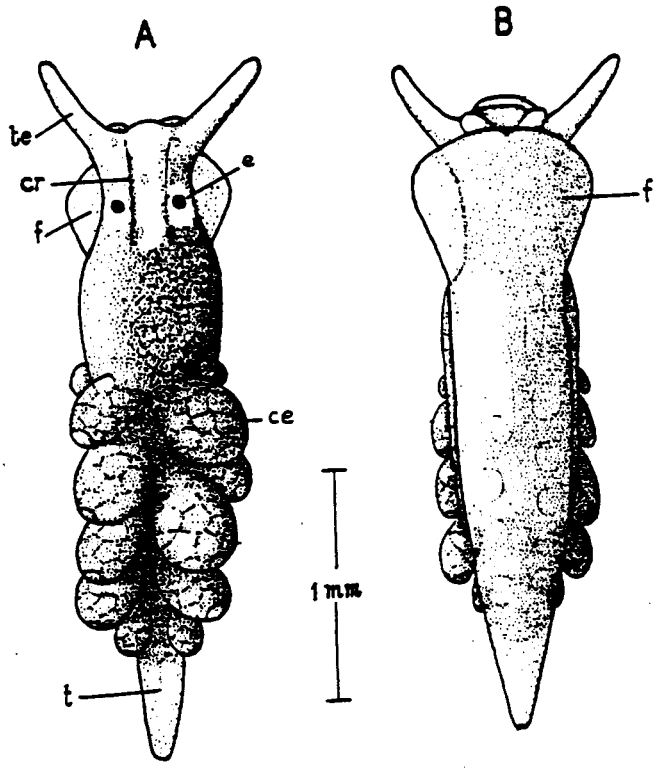
AN APOLOGY FOR A MISTAKEN IDENTIFICATION

by Tom Gascoigne
16A York Grove, Peckham, London SE15 2NY

"I thoroughly enjoyed the A.G.M. of Porcupine in March 1990. I was proud to be made an Honorary Member of such a fine Society. Thank you PORCUPINE. I especially wanted to see Chris Todd but was told that he was away in Australia: one or two Members informed me that Chris had stated that I had wrongly identified a specimen in a paper written some time ago. The exact reference to that paper is - Gascoigne, T. and Todd, C.D., 1977. A description of a specimen of *Calliopaea bellula* D'Orbigny, 1837 found in Robin Hood's Bay, North Yorkshire. Journal of Molluscan Studies, Malacological Society , London, 6pp. 4 text figures.



A - dorsal view and B - ventral view of the specimen identified wrongly as Calliopaea bellula. Note its small size. te - tentacle or rhinophore; cr - corner of foot; t - tail; f - foot; e - eye; ce - bulbous cerata.

When I returned to London I reread the paper. I still think the dissections and drawings that I made of the radula, reproductive system and central nervous system are sound and good. But, alas, the specimen cannot be called *C. bellula*. As senior author I take full responsibility for this mistake and apologize too for the error.

But what, you may ask, is the real name. It is certainly an Ascoglossan but I am not certain of its name yet. It could turn out to be a new species of a new family.

However I would be more certain if someone made a complete copulation study of the sea-slug in question. How about it, Chris?"

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THE DISTRIBUTION OF PELAGIC BIOMASS IN THE NORTH ATLANTIC

by Martin V. Angel

Institute of Oceanographic Sciences Deacon Laboratory, Wormley, Godalming, Surrey GU8 5UB

Over the last two decades biologists at IOSDL have been systematically sampling the oceanic water columns to depths well in excess of 1000 m using the RTM1+8M net system. This acoustically controlled opening/closing net system enables three pairs of macroplankton and micronekton samples to be collected consecutively from depths of our choice and from known volumes of water. By standardising the data from each sample to 1000 m^3 of filtered water, it has been possible not only to produce comparable qualitative and quantitative day and night profiles for individual taxa at each station, but also to derive integrated biomass estimates for macroplankton and micronekton over the total water column to depths of 1000 m. The method of biomass estimation has been by total sample displacement volume; this method is non-destructive and, while lacking precision, has been found to be of sufficient acxcuracy for such comparisons.

Comparison of the day and night data gives estimates of total water column standing crop which rarely differ by more than 20%. Night data, almost without exception, exceeds the day-time estimates; this is partly a result of reduced net avoidance at night, but also in the case of micronekton there is some vertical migration from below 1000 m at some localities. Avoidance is mostly by euphausiids and rather surprisingly is less of a problem with decapod crustaceans and fish. It ceases to be a serious source of error in taxa caught below 600-700 m. Occasionally, in the more productive regions, large swarms were encountered which generated "aberrant" results whereby there would appear to be large reverse migrations out of the surface 100 m at night.

The ratios between the macroplankton and micronekton standing crops ranged from 1 to 5 and tended to be higher in oligotrophic regions. This ratio increased during the spring bloom at higher latitudes because the macroplankton responded more rapidly to the increased availability of food.

The main feature of the biomass distribution was the marked increase (approximately 5-fold) which occurred as the sampling moved north of 40°N and also close to the upwelling regions associated with the North-West African coast and the Equatorial region. The signal was less ambiguous in the micronekton data than in the macroplankton data. This change coincides with the sharp increases in surface chlorophyll concentrations seen seasonally in remotely-sensed images, with marked changes in model estimates of the availability of nitrate, and with boundaries of zoogeographic provinces determined from the analysis of the ranges of individual species. Detailed examination of an individual group of organisms (planktonic ostracods) shows that across this 40°N boundary the number of species taken within 100 m strata throughout the water column decreases by 50% moving polewards across this boundary. There are similar shifts in dominance within these assemblages as shown by the diversity index H'. It was suggested that this boundary is sensitive to climatic variation. The CLIMAP experiment showed that during the last ice age (18,000 b.p.) the boundary occurred some 5° of latitude further south. Hence, this boundary offers considerable potential for monitoring in the long-term the extent to which future climate change may be influencing oceanic ecology and hence its contribution to the regulation of atmospheric gases through the biological pump.

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EGGS, INCUBATION STRATEGIES AND DISTRIBUTIONS OF PLANKTONIC CRUSTACEA

by J. Alastair Lindley

Plymouth Marine Laboratory, Prospect Place, West Hoe, Plymouth PL1 3DH

There is a variety of characteristics of eggs of marine planktonic and micronektonic Crustacea and of their fates during embryonic development. The differences between species in the characteristics and treatments of the eggs may constitute enabling or restricting factors influencing the distributions.

The euphausiids include both species which carry their eggs and free-spawners. Carrying of eggs in a sac is a characteristic of the genera *Nematoscelis*, *Nematobrachion*, *Nyctiphanes*, *Pseudophausia*, *Stylocheiron* and *Tessarobrachion*. Two of these genera, *Nyctiphanes* and *Pseudophausia* are neritic while the others are oceanic.

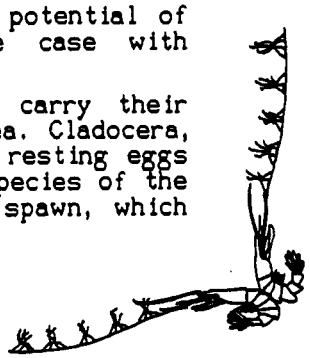
The eggs of free-spawning euphausiids have a transparent zone, the perivitelline space (PVS), outside the vitelline membrane within which embryonic development occurs. In some species, for example *Thysanoessa inermis*, *T. raschi*, *Meganyctiphanes norvegica*, *Euphausia crystallorophias* and *E. lucens* the PVS occupies more than half of the total volume of the egg, and these eggs are neutrally buoyant or sink only slowly, thus remaining near the surface layers throughout embryonic development. These species can maintain populations over the continental shelf. Other species, including *Euphausia superba*, *Thysanoessa longicaudata* and *T. macrura* produce eggs with much smaller PVSs and these eggs sink to a depth of several hundred metres before hatching. These species have oceanic distributions.

The fact that species maintaining populations over the shelf have characteristics which keep the eggs clear of the sediment suggests that euphausiid eggs do not survive in contact with the sediment. Carrying eggs or production of eggs with a large PVS enables species to persist in shelf waters, while production of eggs with a small PVS restricts species to oceanic habitats.

Many species of marine calanoid copepod produce eggs which are able to survive in sea bed sediments. These species are referred to the families Acartiidae, Centropagidae, Pontellidae, Temoridae and Tortanidae. Recent classification of the calanoids includes all these families within the superfamily Centropagoidea, which also includes the Diaptomidae, Parapontellidae, Pseudodiaptomidae and Sulcanidae. This superfamily includes the majority of calanoids with neritic marine distributions (87·5% of those so classified from the results of the continuous plankton recorder survey) as well as nearly all the calanoid fauna of estuaries and inland waters. It appears that the centropagoids have the capability of protecting their eggs with a more robust chorion (outer embryonic membrane) than that produced by other calanoids. It is suggested that this enables centropagoid eggs to survive in the sediment and possibly also to withstand greater osmotic and chemical stress than those of other calanoids.

Copepod eggs are denser than sea-water, so permanent populations of free-spawning calanoids of other superfamilies (e.g. *Calanus* spp., *Metridia* spp.) may be restricted to waters of sufficient depth to allow completion of embryonic development before the eggs sink to the sea bed. Calanoids which carry their eggs are not restricted in their distributions by their reproductive biology and have the potential of maintaining populations in inshore waters, as is the case with *Pseudocalanus* spp.

Most other planktonic and micronektonic Crustacea carry their eggs. Two exceptions are the Cladocera and the Penaeidea. Cladocera, which are common in neritic habitats, produce thick-walled resting eggs which can survive in the sediment. Inshore and estuarine species of the free-spawning penaeid prawns migrate to deep water to spawn, which suggests that their eggs do not survive in the sediment.



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ON THE ZOOPLANKTON OF THE FORTH ESTUARY

by C.J.L. Taylor

Environmental Policy and Assessment, Nuclear Electric plc, Barnett Way, Barnwood, Gloucester GL4 7RS

Over a period of one-and-a-half years, monthly samples were collected at seven stations over the length of the Forth Estuary ranging from fresh water through to fully marine conditions. A Loch Ewe net to DAFS design was used, having nested 250 µm and 68 µm mesh nets; longitudinal samples were collected at mid depth. Upper estuary stations were re-established according to salinity each month while the locations of those in the lower estuary were fixed.

The estuary was found to be dominated by an assemblage of calanoid copepods, reaching their peak in abundance and biomass in the middle reaches (*c* 18 to 25%) in late summer. The upper estuary community was characterized by *Eurytemora affinis* in association with the mysid *Neomysis integer*. The middle estuarine reaches were characterized by a congeneric association of *Acartia*, with *A. tonsa*, *A. bifilosa* var. *inermis*, *A. discaudata*, *A. longiremis* and *A. clausi* (possibly *lefevreae*) all present. *A. bifilosa* var. *inermis* was the single dominant species through to midsummer, *A. tonsa* becoming co-dominant into the autumn. The tardiness of the latter's seasonal response was attributed to its reliance on overwintering resting eggs.

The lower estuary and Firth data suggested incursions of neritic species such as *Calanus*, *Pseudocalanus* and *Temora*, especially during the summer months. Chaetognaths, tomopterids and euphausiids were present. A notable seasonal event was the dominance by gelatinous forms such as *Pleurobrachia*, *Beroe*, *Bolinopsis*, *Aurelia* and *Phialidium*, resulting in the complete loss of the adult copepod populations and, apparently, a development of populations of *Podon* and *Evadne*.

The full data set was subjected to similarity and DCA analysis and significant correlations were established between environmental variables and the DCA scores. When plotted graphically a relationship could be illustrated between the spatially and seasonally distinctive populations and salinity, temperature and chlorophyll levels.

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ROYAL IRISH ACADEMY PRAEGER COMMITTEE FOR FIELD NATURAL HISTORY Grant Information. Grants, not normally exceeding IR£300 in any one year, are available for field work relevant to the natural history of Ireland. Grantees need not be based in Ireland. Applications are particularly welcomed from amateur natural historians but awards cannot be made in support of undergraduate or postgraduate student projects. Preference will be given to projects which concern sites of special scientific interest and/or endangered species.

It is preferred that publication of results should be in the Irish Naturalists Journal, Irish Birds or, if appropriate, the Academy's Proceedings.

A representative set of any material collected must be deposited in the National Museum, Dublin, the National Herbarium, Dublin, or the Ulster Museum, Belfast, or any other recognised institution in Ireland.

Application forms - which must be returned by 15th February - are now available from:

PRAEGER COMMITTEE SECRETARY,
ROYAL IRISH ACADEMY,
19 DAWSON STREET, DUBLIN 2.

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NOTICE OF ANNUAL GENERAL MEETING

The 14th Annual General Meeting of PORCUPINE will be held at Swansea University on Sunday 7th April 1991 at 09.30 a.m.

The Agenda will include:

1. Minutes of the 13th Annual General Meeting (Published in PORCUPINE NEWSLETTER, Vol.4 No.8)

2. Hon. Secretary's Report

3. Hon. Treasurer's Report

4. Hon. Editor's Report

5. Hon. Records Coordinator's Report

6. Election of Office Bearers and Council

In connection with Item 6, attention is drawn to the relevant Rules of Procedure:

(2) The maximum and minimum numbers of Members on the Council shall be left open.

(4) The office bearers retire annually and are normally available for immediate re-election.

(5) Council members shall at present serve for three years, at least two retiring each year, who are not normally available for immediate re-election.

(6) Voting shall take place at the AGM and shall be restricted to Members present.

(7) Names of persons seeking election to the Council (as chosen by the Council) will appear in a notice prior to the AGM together with an intimation that proposals from ordinary Members of additional candidates are welcome. Candidates must give their assent in person or in writing before voting takes place.

The present Office Bearers are as follows:

Hon. Secretary	Martin Sheader
Hon. Treasurer	Antony Jensen
Hon. Editor	Roger Bamber
Hon. Records Coordinator	Jonathan Moore

The present Council Members are:

Iain Dixon	Jan Light
Frank Evans	Ivor Rees
Bill Farnham	Ralph Robson
Willie Fowler	Dennis Seaward
Robin Harvey	Shelagh Smith
Christine Howson	Brenda Thompson
David Lampard	Fred Woodward

Proposals from the floor are welcome.

7. Election of Auditors.

The present Auditor is Nick Light.

8. Future Meetings

9. Any Other Business.

If Members have a point which they wish to have discussed, particularly if they are unable to attend the AGM, please will they contact the Hon. Sec., Martin Sheader.

* * * * *

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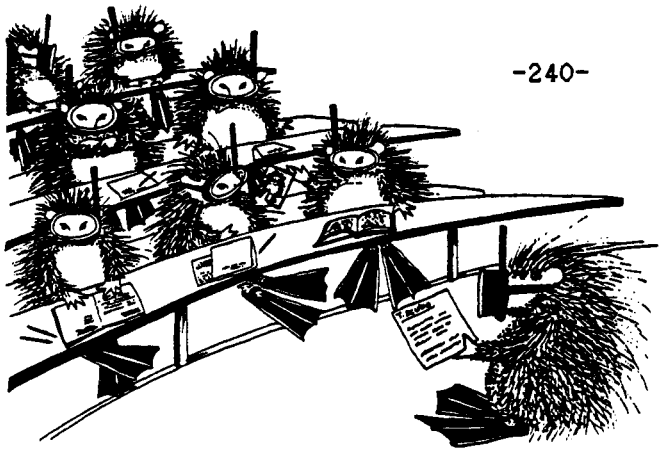

PORCUPINE AND COELENTERATE GROUP JOINT MEETING

5th to 7th April 1991
at University College, Swansea
on CHANGE AND ADAPTATION

The Meeting will be hosted by Professor J.S.Ryland. Presentation sessions will be on the morning and afternoon of Saturday 6th and the morning of Sunday 7th. Dr P. Spencer Davies will give a Biological Council Lecture on Saturday morning entitled "Adaptive Responses to Environmental Change in Reef Corals".

Campus accomodation can be booked, at approximately £17 for bed and breakfast: booking forms will be sent with a second announcement in February, for return with payment in advance by 8th March. There will be a small charge for refreshments, etc., taken during the day.

Those wishing to receive the second announcement should contact the Hon. Sec. Dr Martin Sheader, Dept. of Oceanography, The University, Southampton SO9 5NH, preferably by 11th January 1991, and if possible by using the tear-off slip sent with the first circular.

NOTICES

ISSUE NO 5 OF SHERKIN COMMENT, the environmental quarterly of Sherkin Island Marine Station, has just appeared, and can be obtained from Matt Murphy, Sherkin Island Marine Station, Sherkin Island, Co. Cork, Ireland (subscriptions arrangeable). Also available is the Red Tide Newsletter (Vol.3 No.3 was issued in July 1990); annual subscription is £10 Sterling or $16.00 US (air mail); again write to Matt, from whom an extensive list of the Marine Station's other publications may be obtained.

THOSE MEMBERS WHO COLLECT NAME CHANGES of old and familiar friends will be delighted (?) to hear of Fitzhugh's recent paper in Sarsia (1990 vol. 75, pp.1-16), wherein *Fabricia sabella* has become a junior synonym of *F. stellaris* Müller!

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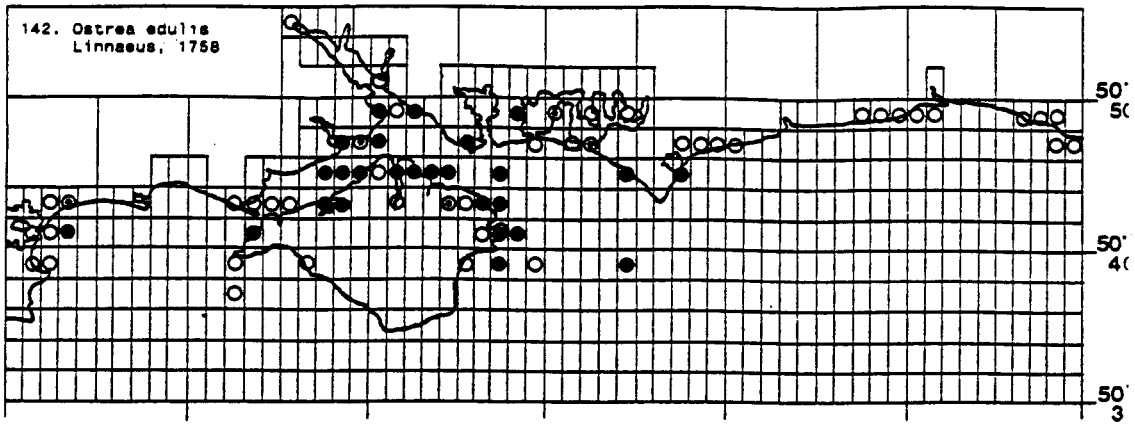
THE MARINE MOLLUSCA OF WIGHT (SEA AREA 15) - A PROVISIONAL ATLAS has been produced by Jan Light, incorporating 219 maps for the species so far recorded both living and dead, post-1980 in the Wight Sea Area (that bounded by 0° to 2°W and 50°30' to 51°N and including all of Poole Harbour). In addition there is a number of additional spare maps in the Atlas for the convenient addition of new records, and the offer of a future updating service!

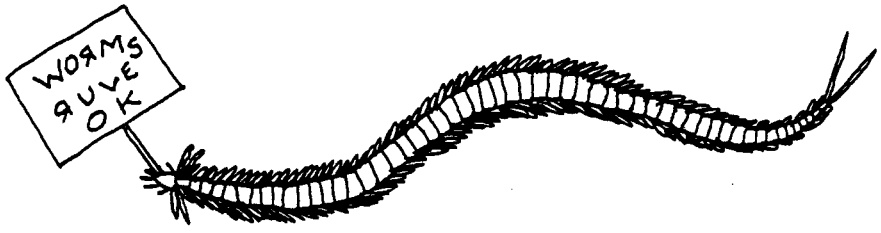


The Atlas has been published privately, and copies may be obtained from Jan Light, 88 Peperharow Road, Godalming, Surrey GU7 2PN, at a postage-paid cost of £3.50. Those Members who attended the Dundee PORCUPINE Meeting, part of the inspiration for this publication, will I am sure be the first to respond, especially to a PN postcode!

THE SHORE FAUNA OF BRIGHTON, EAST SUSSEX by David Ventham has also been recently produced. This is Volume 1, on the Cnidaria, Annelida, Chelicerata, Crustacea and Uniramia, and is based principally on monitoring in this area between 1981 and 1986. A limited number of copies are available to those particularly interested, and may be obtained, at cost of postage, from David Ventham, 48 Arundel Street, Brighton, East Sussex BN2 5TH.

FURTHER TO THE SCILLY ISLES SPECIES mentioned in the last issue by Sarah Fowler (p.211), additional information on some of the polychaetes is given in *Polychaete Research Newsletter* No.12 (p.2) by Dale Rostron, who collected and holds the specimens.

THE POLYCHAETE COLLOQUIUM is being held on 11-12 April 1991 at The National Museums of Scotland, Queen Street, Edinburgh, supported by the Systematics Association. The aim of the meeting is to provide the first forum for researchers on polychaetes in and around the U.K. to discuss and exchange information and ideas.



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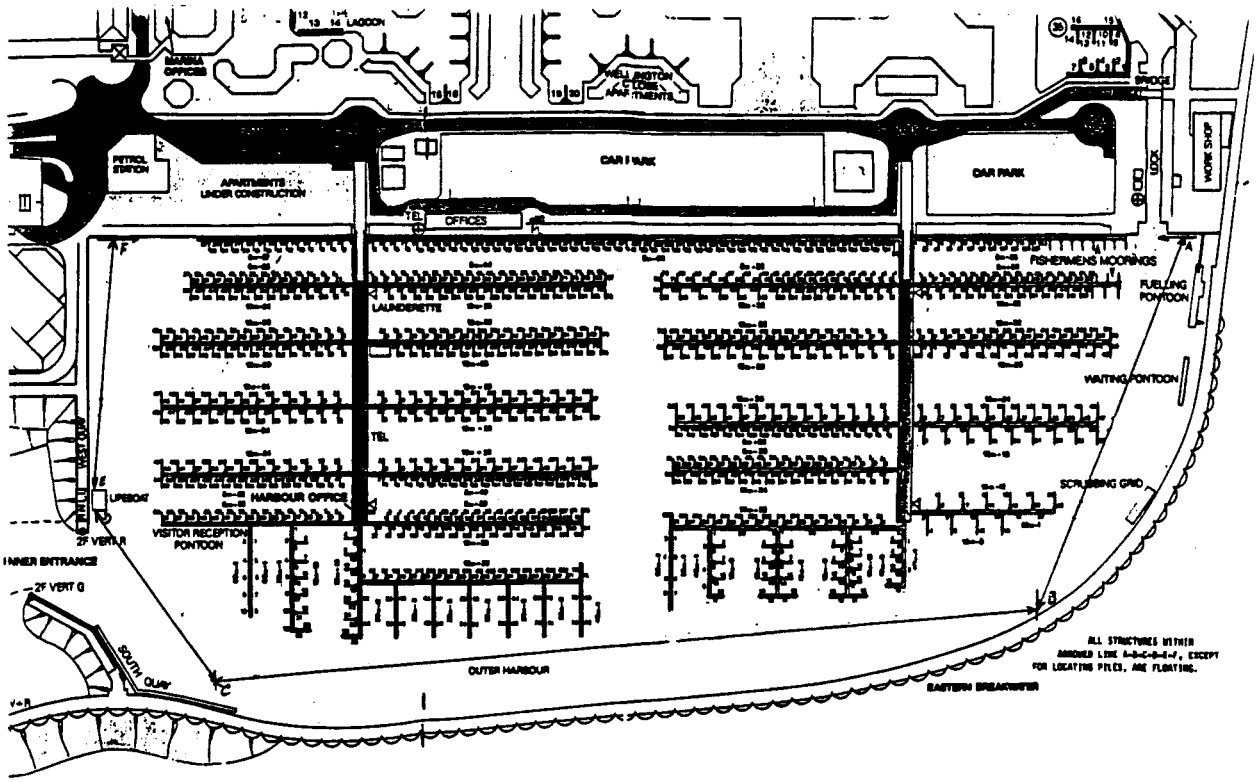
THE BRIGHTON MARINA SURVEY

by Brian E. Jenkins

Natural Science Services, Brighton Marina, East Sussex BN2 5UF

Brighton Marina, opened in 1978, is the largest in Britain both in area (126 acres) and in number of moorings (about 1500). It was constructed, somewhat controversially, on the Black Rock ledge, whose wave-cut platform and gullies formed an interesting habitat with a fairly high diversity of species.

The Brighton Marina Survey is being carried out by Natural Science Services on behalf of the Nature Conservancy Council using volunteer Marine Conservation Society divers. Its primary objective is qualitative, to record the species of marine life occurring there and, where possible, to examine population variation and to attempt to relate it to the more obvously differing physical factors such as light (North & South, East & West facing, etc.), salinity and pH.



Because many of the Marina structures float, they offer the chance to view easily, at or near the surface, organisms which would normally occur at depths of 10 m or so, below the low water mark. Comparisons can be made with the populations on the fixed walls and piling locating the pontoons. The Marina bottom is fairly mobile and silty and supports a

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limited population: it is difficult to examine because divers all too easily create obscuring clouds of sediment, but some success has been had using a small ROV, mainly at night, and recording the results.

Apart from the totally salt-water Outer Harbour, the Marina has a locked Inner Harbour: this receives run-off from the chalk cliffs to the north and is kept topped-up with sea-water from the locks. The area is thus somewhat brackish and appears initially to support a smaller range of species than the Outer Harbour.

A series of dives was carried out between May and October. Wherever possible, identification was carried out *in situ* but unidentified species were preserved and worked on later at Brighton's Booth Museum. Photographs were taken which will hopefully provide additional data. Plankton sweeps have been carried out from an inflatable boat by towing hand-haulable nets of 60 and 120 meshes per inch; again, the samples were preserved and have been worked on at the Booth Museum.

Results so far, although not finalized, have been encouraging, with enough species recorded to date (about 150) to dispel the idea that this marina at least is a barren waste as a result of heavily polluted water and restricted circulation. Apart from the sessile species observed, a large number of free-swimming organisms have been recorded. This includes both larval and adult fish: there is evidence to suggest that the Marina functions as a nursery for larval and juvenile fish, and these in turn provide a food source for adults such as mackerel which have been observed feeding in large numbers within the Marina confines.

Initial comparisons with species lists made during studies in pre-Marina days and on the areas outside do indicate a lower number of species within the Marina itself, for example half the number of polychaete species and one quarter the number of crustaceans (22 and 36 respectively). Conversely, there are to date some sixteen species of ascideans, including large numbers of *Clavelina* sp., *Styela*, *Botryllus schlosseri*, *Ascidiella* and *Ciona* and thirty-seven assorted fish species, which compare favourably with outside. There are also remarkable numbers of large *Metridium senile*, of pink and white forms, and *Urticina felina*. A dozen or so species of Porifera occur, but the molluscs are not very well represented, with again about a dozen species, including *Sepia officinalis* and *Sepiola atlantica*. Final judgement will have to be made when all the figures are in, but it is worth remembering that the structures within the Marina, including the Outer and Inner walls , were virgin territory some twelve years ago, and certain well-populated structures in the Outer Harbour were only put in place five years ago.

Although diversity may appear to be comparatively low, abundance is not. The combination of sheltered water with a fairly high organic content, slightly higher temperature than outside and fairly good circulation gives conditions for an almost explosive growth rate even late in the year. The banning of TBT on yachts has almost certainly had a beneficial effect on marine life, especially algae: vessels which sit for three to four weeks need to have their propellers scrubbed clean before moving or risk severe loss of speed. Areas on pontoon floats which were cleaned in mid-October were supporting a heavy algal growth three weeks later, together with specimens of *Clavelina* sp. and as yet unidentified juvenile anemones.

The final report will contain the findings of the diving teams together with recorded physical data and also look at bacterial and heavy metal concentrations, especially TBT. It will atempt to identify potential areas of bias in the survey and also look at earlier and current records of the surrounding areas to make comparison with species diversity. It is hoped that the final report will provide a basis for an ongoing study and a base-line for additional studies.

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A FLEETING VISIT ON 14 NOVEMBER 1990

by Roger Bamber*, Nigel Bridgwater* and Sonia Batten†

* Fawley etc. and † Southampton University, Oceanography Dept.

On the pleasantly sunny Wednesday of November 14th (squeezed in between days of depressing inclemence) we wandered down to deepest Dorset, there to indulge in large-lagoon research with Dennis Seaward - yes, discerning Readers will have noticed a recent absence of the Chesil Fleet from the pages of **PN** - hereby remedied.

We were initially interested in water quality conditions, partly to try out some field analysis kits, particularly to compare the water emanating from the springs in the shingle of Chesil Bank to that in the Fleet and the outside sea-water, and in the light of yet another conspicuously dry summer/autumn. In the event, the strong winds prevented our rowing across the Upper Fleet, and we had to content ourselves with water from a spring at the Ferrybridge end of the Bank (accessible on foot in less than half a day!).

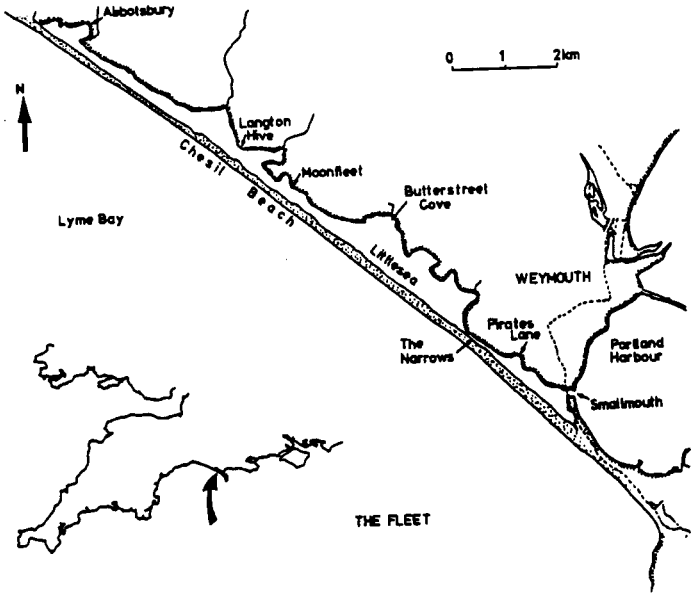
Salinity was measured with a Reichert refractometer, pH with a field pH 'stick', oxygen and phosphate with Aquamerk™ field testing kits, and temperature with something called a 'mercury thermometer' (except when it became mislaid). In addition we retained a sample sieved by Dennis from the gravel of the spring, and returned it to the Fawley laboratory for live faunistic analysis.

WATER CHARACTERISTICS:

Site	Salinity	Temperature	pH	O_2 mg/l	PO_4 mg/l
Langton Hive Point	25‰	13·5°C	8·14	10·1	0·5
Chickerell Hive Point	32‰	13·5	8·09	9·7	0·3
Ferrybridge	34‰	13·0	8·14	8·6	0·3
Shingle Spring Water	34·5‰	-	8·07	9·1	0·3
Sea off Chesil Bank	35‰	-	7·99	10+ *	0·3

* sample from surf; O_2 supersaturated.

It is both interesting and reassuring to record spring water values intermediate between those of the Fleet water and of the sea in Chesil Bay (collected from the raging surf at great risk by NB). These sparse data support the contention that water progresses from the Bay



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into the Fleet (though one might expect the pH to drop in that direction, not rise as here!). Higher pH in the Upper Fleet reflects photosynthetic activity with reduced flushing; salinity levels reflect low rainfall.

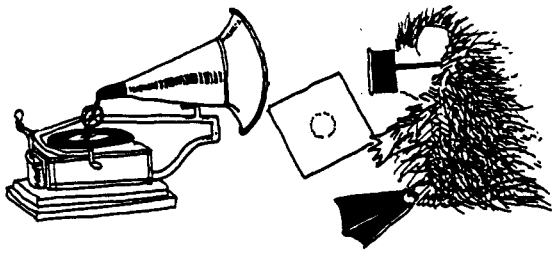
FAUNA FROM THE FERRYBRIDGE SHINGLE SPRING (1, + frequent, ++ common):

Foraminifera:
Nonion germanicum ++
Elphidium williamsoni +
Nematoda:
Nematodes indet ++
Nemerteans:
Cephalothrix linearis 1
cf. *Prosorhochmus claparedii* 1
Sipuncula:
Golfingia elongata ++
Annelida:
Enchytraid indet 1
Pomatoceros lamarcki ++
Janua pagenstecheri ++
Circeis armoricana ++
Mollusca:
Leucophytia bidentata ++
Lasaea rubra ++
Cingula cingillus ++
Onoba semicostata ++
(Gibbula umbilicalis) 1 ‡
Arthropoda:
Acari:
Thalassarachna baltica 1
Agaue cf. chevreuxi + **
Crustacea:
Ostracod indet (Bairdiacea) 1 **
Carcinus maenas 1
Chaetogammarus stoerensis + **

** significant new records - see below.
‡ undoubtedly a specimen "fallen into" the sample from elsewhere.

This fauna list is a brief supplement to those from the Porcupine field meeting of September 1986 (PN, 3 (8); 215-217), but does include some notable

new records



The ostracod, of the family Bairdiacae, is remarkably hairy, has entertainingly purple limbs when alive, and is possibly a new species; no ostracod of this family has been recorded previously from the Fleet (John Whittaker, pers. comm.; see also PN 3 (6); 135-139). Only one specimen was collected. This clean gravel habitat would at first seem inappropriate for such an ostracod.

Three deutonymphs of a mite of the genus *Agaue* were collected; they appear to be of *A. chevreuxi* (Trouessart, 1889) as described in André, 1946 (Faune de France, No.46) and recorded from the northern French coast; this genus has not previously been recorded in the U.K. (Miranda MacQuitty, pers. comm.).

We were fortunate to obtain these meiofaunal specimens from macrofaunal sampling; a repeat visit to the site is planned early next year with the intention of some 75 µm seiving to collect further material of both of these species, if possible.

The amphipod *Chaetogammarus stoerensis* is normally associated with freshwater runoff on clean gravel shores; it has not been recorded previously from this area. The two specimens collected agree closely with Lincoln's (1979; British Marine Amphipoda: Gammaridea) description, though having more dorsal urosome spines; the outer ramus of uropod 3 is devoid of setae.

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A KEY FOR THE COASTAL AND ESTUARINE OLIGOCHAETA OF THE FORTH, SCOTLAND

by C.J.L. Taylor

Nuclear Electric plc, Barnett Way, Barnwood, Gloucester GL4 7RS

This key was evolved over a period of five years while working with the Estuary Survey Section of the Forth River Purification Board. The initial prompt for the work was the first ECSA workshop on oligochaetes. The mixture of species resolved for the Forth was confirmed during the second workshop by Brinkhurst. The key was circulated in draft for comment to a number of workers in 1988: the replies have prompted its publication, in Porcupine Newsletter. Although the key was not intended initially for use outside the Forth, its use may provoke (through constructive frustration?) the construction of something more comprehensive.

Before using this key, you are advised to acquaint yourself with the following:

(a) Convention: position on the specimen is given by post-prostomial segment rather than aetiger number. The earliest segment to have setae is normally II.

(b) The appearance of the range of structures involved, notably those required in specific description. In this key priority has been given to those characteristics which are used in the literature to define the species. This should enable you to cope with new species when they occur. Thus you should be able to discern cuticular penis sheaths, true penes and pseudopenes, vas deferens, male funnels and spermathecae, and you must know where these structures are likely to be found on the body. You should be able to discriminate between the various setal types: the differences in setal form between species may be very slight, but they are also conservative and consistent. Papillation may be highly variable within species, despite suggestions in the literature, but setal form and reproductive structures are not.

(c) The literature; there are other species around.

(d) Be able to dissect an oligochaete. It is the only way to be certain if you come across anything not covered by this key.

KEY

1. Setae variable. all bifid or with hair setae dorsally or hair setae in all bundles. Cuticle thin. Spermathecae in testes segment, or several pairs of unicellular spermathecae in anterior of body..... 2

   Setae robust, usually a few in each bundle (or absent), straight or sigmoid, simply pointed. Cuticle thick. Spermathecae paired in segment V. Testes in XI, ovaries and male pores in XII.
   ..... **Enchytraeidae** 4

2. Move using a ciliated prostomium, septa absent. Hair setae in dorsal and ventral bundles, with simple pointed, smooth or toothed sigmoid setae in some posterior bundles, often only ventrally, or absent, or all setae absent (free-living forms). Spermathecae unicellular, several pairs anteriorly. Ovaries single, mid body; testes several pairs in front of and behind ovary. Very small worms, less than 4 mm. ..... **Aelosomatidae** ..... see literature

   Move by contractions of muscular, segmented, septate body. Hair setae dorsally or absent. Spermathecae paired or single, multicellular, in testicular segment preceding ovarian segment which contains male duct. Gonads paired 3

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3. Male pores in ovarian segment (one of the segments between V and VIII), spermathecae in segment immediately anterior to that (testicular segment). Pectinate setae rarely present. No dorsal setae on II (at least). Asexual reproduction forming a chain of zooids. 'Eyes' sometimes present. Usually <20 mm long ..... **Naididae** 6

   Male pores in ovarian segment, usually in XI, spermathecae in X. Setal bundles may be composed of any combination of pectinates, bifids, hair and simple pointed setae, according to species. Specialised spermathecal or genital setae may occur in clitellar region where normal somatic setae may be reduced or absent. Asexual reproduction, when present, is by simple fission. No eyes. Usually longer than 20 mm, though offshore and meiobenthic species small ..... **Tubificidae** 9

4. Setae one per bundle when present, missing from more anterior dorsal than anterior ventral segments ..... ***Grania*** 5

   Any other combination of characters .....Not yet found in the Forth... .....see literature.

5. Dorsal setae present, from XXIII-XXV, ventrals from VI. Spermathecae with very large pear-shaped ampullae. 54-62 segments. Sperm funnel 8-9 times longer than wide .....***Grania maricola***

   Any other combination of characters .....Not yet found in the Forth... .....see literature.

6. Hair setae present in dorsal setal bundles. No proboscis on the prostomium 7

   Hair setae absent from all setal bundles 8

   Any other combination of characters .....Not yet found in the Forth... .....see literature.

7. Dorsal setae from VI. Fresh water and brackish areas. See Linn. Soc. key for separation of ..... ***Nais communis*** ..... ***Nais variabilis, Nais elinguis***

8. Dorsal setae from III onwards. ..... ***Amphichaeta sannio*** ..... ***Paranais litoralis***

   Any other combination of characters .....Not yet found in the Forth... .....see literature.

9. Somatic setae bifid or simple pointed only 10

   Hair setae present 14

10 Setae all robustly bifid with upper tooth reduced to shard well back on head. Body wall heavily papillate from before clitellum, save in juveniles, which may be entirely naked. Cuticular penis sheaths .... ***Tubificoides benedii***

   Not as above 11

11 2-3 simple bifid setae with reduced upper teeth anteriorly, becoming fewer and simple-pointed posteriorly. No cuticular penis sheaths; elongate male ducts lacking prostate glands. No gut diverticula, no genital setae, true penes. Body naked. ..... ***Clitellio arenarius***

   Somatic setae strongly bifid. Spermathecal setae may be present.. 12

12 Somatic setae with upper tooth slightly thinner and shorter than lower, 2 to 3 per bundle anteriorly, 1 or 2 per bundle in post clitellar segments. Ventral setae of XI absent, those of X occasionally absent but generally modified into spermathecal setae, one immediately posterior to each spermathecal pore - these setae single-pointed and straight with ental end slightly bent, node inconspicuous and ectal end grooved; twice as long as somatic setae. Blind-ended diverticulae on each side of intestine on IX, difficult to see. Penes eversible. No cuticular penis sheaths. No coelomocytes ..... ***Limnodriloides scandinavicus***

   No spermathecal setae. No blind diverticulae 13

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13 Paired cuticular penis sheaths, 4 or 5 times as long as broad, with lateral openings and associated heavily cuticularized projections. No coelomocytes. 2 to 6, usually 3 to 5, bifid setae in anterior segments, having upper tooth much shorter and thinner than lower, becoming longer and more equal in length to broad, shear-like lower tooth set at right-angle. Ventral setae of X and XI may be reduced or absent, and ventral setae reduced to 2 or 3 by VIII, dorsals to 1 or 2 by XII. Setae small throughout ...***Tubificoides diazi***

No cuticular penis sheaths, no true penes; tall protrusible pseudopenes present. Anterior bundles with 2 to 6 robust bifid setae, upper tooth thinner than but as long as lower, sometimes with deformed inner margin; fewer setae per bundle posteriorly. Spermathecal and male pores paired with median invaginations. Coelomocytes large and abundant, conferring glandular appearance to body wall ..... ***Monopylephorus rubroniveus***

14 Bifid setae in all dorsal bundles; no simple pointed setae in dorsum resulting from reduction of bifids. Bifids all with upper tooth shorter and thinner than lower. Anteriorly 1 to 3 (sometimes 4) short bent hairs and the same number of bifids in each bundle; behind the clitellum the dorsal bundles contain one hair and one bifid seta. Anterior ventral bundles with 3 to 4 bifids, reducing to one posteriorly. May be heavily papillate posteriorly starting from III to VI, though juveniles may be entirely naked. Penis sheath sharply conical, distended ectally. Described as "*Tubificoides benedii* with hairs" ..... ***Tubificoides insularis***

Simple setae in dorsal bundles resulting from reduction of anterior bifids **15**

15 Anterior bifids closed in both dorsum and ventrum, i.e. teeth lie parallel with each other and with the axis of the shaft. Ventral closed setae robust with inflated teeth. Anterior dorsal bundles with hair and bifid setae, 2 to 3 (sometimes 4) of each, from VIII the same number of hairs and simple pointed setae. Anterior ventral setae 2 to 5 bifids per bundle, posteriorly 3 to 4. Hairs and simple pointed setae become more similar towards posterior. Never observed to be papillate. Penis sheaths four to five times as long as broad ..... ***Tubificoides scoticus***

Open bifids obvious in anterior segments **16**

16 Dorsal bifids of anterior segments having minute, closely-applied teeth, becoming simple pointed from VIII. Equivalent ventral bifids with equal-sized short, broad teeth, the upper becoming longer and thinner than the lower by VI. Teeth on ventral bifids become minute posteriorly. 1 to 4, normally 2 to 3, hairs and bifids per dorsal bundle, , from X 1 or 2 hairs and 1 or 2 simple pointed setae. Anterior ventral setae 2 to 3 per bundle, reducing to 1 or 2 posteriorly. May be papillate, ranging from completely naked ("Largo Bay" form) to dense, or with only sparse patches of papillae. Papillae never as dense as on *T. benedii* or *T. insularis*, but characterized by flattened toroidal shape and regular distribution on body wall. Penis sheaths twice as long as broad, cylindrical ..... ***Tubificoides swirencoides***

Dorsal bifids of anterior segments clearly open, the upper tooth being shorter and thinner, these setae reducing to simple points before the clitellum. Ventral bifids having teeth of equal length, the upper being thinner. Never papillate. Body wall may become more or less heavily banded by dark subdermal particles posteriorly. Penis sheaths squat and thimble-like ..... ***Tubificoides amplivasatus***

LITERATURE

The taxonomic literature on the marine/estuarine oligochaetes is extensive; the following were used in identifying the Forth specimens:

Baker H.R., 1981. A redescription of *Tubificoides heterochaetus* (Michaelsen). Proc. Biol. Soc. Wash., **94** (2); 564-568.

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Baker H.R., 1983. New species of *Tubificoides* from the Pacific Northeast and the Arctic. Can. J. Zool., **61** (6); 1270-1283.

Baker H.R. & R.O. Brinkhurst, 1981. A revision of the genus *Monopylephorus* and redefinition of the subfamilies Rhyacodrilinae and Bronchiurinae. Can. J. Zool., **59** (6); 939-965.

Brinkhurst R.O., 1982. British and Other Marine and Estuarine Oligochaetes. Linnean Society Synopses of the British Fauna (New Series), No.21. 160pp.

Brinkhurst R.O., 1985. A further contribution to the taxonomy of the genus *Tubificoides*. Can. J. Zool., **63**; 400-410.

Brinkhurst R.O. & H.R. Baker, 1979. A review of the marine Tubificidae of North America. Can. J. Zool., **57**; 1553-1569.

Brinkhurst R.O. & K.A. Coates, 1985. The genus *Paranais* in North America. Proc. Biol. Soc. Wash., **98** (2); 303-313.

Erseus, C., 1982. Taxonomic revision of the marine genus *Limnodriloides*. Verh. naturwiss. Ver. Hamburg (NF), **25**; 207-277.

Holmquist, C., 1978. Revision of the genus *Peloscolex*. Zoologica Scripta, 7; 187-208.

DEEP-WATER WHELKS IN GLASGOW'S MUSEUM COLLECTIONS - ADDENDA

by Fred R. Woodward

Art Gallery & Museum, Kelvingrove, Glasgow G3 8AG

Further to my previous note on deep-water whelks in Glasgow Museum collections (Woodward, 1989), the following have come to light and may be of interest to members.

Phylum **MOLLUSCA**: Subclass **Prosobranchia**
Order **Monotocardia**
Suborder **Stenoglossa (= Neogastropoda)**
Superfamily Buccinacea
Family Buccinidae

Liomesus ovum (Turton, 1825)

1. Single dry example with label:

The White Whelk, *Liomesus dalei* (J. Sow.) All depths, Dogger Bank.

The specimen was live caught and has the operculum glued to some cotton wool placed in the aperture. Its dimensions are: height 37·2 mm, width 22·6 mm, height of aperture 22·0 mm, width of aperture 12·4 mm.

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2. Single dry example in glass-topped box from Thomas Gray Collection, Registration 1910-7-esw and labelled by T. Gray:

Buccinum Dalei, Sow.
Buccinopsis Dalei Jeffries
Dogger Bank

Further label in Thomas Gray's characteristic hand:

Buccinum ovum Turton
-- *dalei* Sow.
Dogger Bank.

Reverend Peter Youngson label:

10-7-esw *Buccinum dalei*

The specimen was live caught and has the operculum glued to some cotton wool placed in the aperture; the dimensions of this example are: height 38·5 mm, width 22·9 mm, height of aperture 22·5 mm, width of aperture 12·0 mm.

3. Single dry example Registration number 1981-157-2 with label:

Liomesus ovum (Turton), from fishing boats collected deep water off Northumberland Coast

The specimen was probably live caught but is without the operculum and was given to the author from an old Tyneside collection made at the end of last century, circa 1880. Its dimensions are: height 38·7 mm, width 22·6 mm, height of aperture 23·0 mm, width of aperture 14·15 mm.

REMARKS

A northern species found from sea-area Sole northwards to north Norway, the Faroes and Greenland. It is not recorded from the English Channel, the North Sea south of Dogger, the Skagerrak or Kattegat and appears to be rarer in low latitudes.

Colus gracilis (Da Costa)

Three dead shells from 56°25'N 09°10'W to 56°29'N 09°09'W, obtained by RRS Challenger on 19 October 1977, station collection number 16/77 (Haul 30) using a large Granton Trawl at a depth of 750 m. Registration No. GLAMG Z 1977-260.

REMARKS

This species is widely distributed around all coasts of the British Isles.

Colus islandicus (Mohr)

Three dead shells from 56°25'N 09°10'W to 56°29'N 09°09'W, obtained by RRS Challenger on 19 October 1977, station collection number 16/77 (Haul 30) using a large Granton Trawl at a depth of 750 m. Registration No. GLAMG Z 1977-260.

REMARKS

This species has been recorded from the east coast of England, the Bristol Channel, Liverpool Bay, the Inner and Outer Hebrides, the Faroes and the Shetland Islands.

Colus turgidulus (Friele)

Single dead juvenile shell from 56°25'N 09°10'W to 56°29'N 09°09'W, obtained by RRS Challenger on 19 October 1977, station collection number 16/77 (Haul 30) using a large Granton Trawl at a depth of 750 m. Registration No. GLAMG Z 1977-260.

REMARKS

This species is recorded from sea area 48 by D.R. Seaward in the Conchological Society's 1982 Sea Area Atlas, but he states that the record locality is vague and may refer to an adjacent area.

Porcupine Marine Natural History Society (www.pmnhs.co.uk) newsletter archive

Colus tortuosus (Reeve)

Three dead shells from 56°25'N 09°10'W to 56°29'N 09°09'W, obtained by RRS Challenger on 19 October 1977, station collection number 16/77 (Haul 30) using a large Granton Trawl at a depth of 750 m. Registration No. GLAMG Z 1977-260.

REMARKS
As under *C. turgidulus*.

Turrisipho fenestratus (Turton)

Single dead shell from 56°25'N 09°10'W to 56°29'N 09°09'W, obtained by RRS Challenger on 19 October 1977, station collection number 16/77 (Haul 30) using a large Granton Trawl at a depth of 750 m. Registration No. GLAMG Z 1977-260.

REMARKS
This species is recorded from off the west coasts of Scotland and Ireland in deep water down to depths of 1300 m.

Neptunea antiqua (L.)

The collection includes several large examples of this species of which the following three are typical.

1. Specimen labelled on attached paper labels:

'Isle of Man' & '*Fusus antiquus* var. *aba* [?*alba*]
var. *striata* off Isle of Man.'

The dimensions of the shell are:

height 173·2 mm (apical protoconch missing), width 96·7 mm, height of aperture 114·0 mm, width of aperture 66·4 mm.

This specimen was apparently live-caught, but it is heavily encrusted with barnacles and worm tubes and was also bored by a sponge.

2. Specimen labelled on attached paper label: 'Isle of Man'; the dimensions are:

height 153·5 mm (at least one apical whorl plus protoconch broken off), width 94·8 mm, height of aperture 109·2 mm, width of aperture 64·9 mm.

The shell appears to have been live caught, but was in an identical condition to that mentioned above.

3. Third specimen labelled 'Isle of Man', of identical condition to the previous two, dimensions being:

height 165·5 mm (protoconch missing), width 98·8 mm, height of aperture 113·9 mm, width of aperture 69·6 mm.

REMARKS
A north Atlantic species occurring from the Bay of Biscay to the Arctic and found all around the British Isles.

Neptunea despecta (L.)

Single dry shell from 56°25'N 09°10'W to 56°29'N 09°09'W, obtained by RRS Challenger on 19 October 1977, station collection number 16/77 (Haul 30) using a large Granton Trawl at a depth of 750 m. Registration No. GLAMG Z 1977-260. The dimensions of this specimen are:

height96·1 mm, width 50·2 mm, height of aperture 55·7 mm, width of aperture 29·6 mm.

The shell was apparently collected dead.

REMARKS
This species may be only a carinated northern race of *N. antiqua*, and is found from off Denmark and north of Shetland to the Arctic, Greenland and south to Massachusetts, also extending through the Bering Strait to Japan.

Porcupine Marine Natural History Society (www.pmnhs.co.uk) newsletter archive

Buccinum humphreysianum Bennett

A single dry shell in the Thomas Gray collection, registration no. 10.7.esv. with a label in T. Gray's hand:

Buccinum Humphreysianum
Outer Hebrides

A further Reverend Peter Youngson label reads: "10-7-esv *Buccinum Humphresianum*"

The specimen was live caught and has the operculum glued to a piece of cotton wool placed in the aperture. Behind this a further label was found inside the shell, possibly in Thomas Gray's hand, which reads:

B. Humphresianum (2)
Outer Haaf off Burra Frith
90-100 fms.

The dimensions of this specimen are:

height 48·6 mm, width 25·2 mm, height of aperture 28·5 mm, width of aperture 13·35 mm.

REMARKS

A relatively rare northern species recorded from Norway and the coast of Sweden to Bohuslan. It has been found off the Shetlands, in The Minch, off the west and south coasts of Ireland and at greater depths south to Portugal and the Western Mediterranean.

Family **Fasciolariidae**

Troschelia berniciensis (King)

Seven dead shells from 56°25'N 09°10'W to 56°29'N 09°09'W, obtained by RRS Challenger on 19 October 1977, station collection number 16/77 (Haul 30) using a large Granton Trawl at a depth of 750 m. Registration No. GLAMG Z 1977-260.

REMARKS

This species occurs in British waters from the north-east coast of England, extending northwards around Scotland and continuing southwards to the south-west corner of Ireland. One example belongs to the abyssal form of this species.

In addition to the whelks listed above, the collection also included an example of:

Family **Turridae** H. & A. Adams

Spirotropis monterosatoi (Locard)

Single dead shell from 56°25'N 09°10'W to 56°29'N 09°09'W, obtained by RRS Challenger on 19 October 1977, station collection number 16/77 (Haul 30) using a large Granton Trawl at a depth of 750 m. Registration No. GLAMG Z 1977-260.

REMARKS

This species is distributed from the Mediterranean and Azores north to northern Norway. It has been recorded off Shetland, extending perhaps to the mouth of the Skaggerak but no further, and apparently not in any part of the North Sea. Neither is it recorded close to the western coasts of the British Isles.

ACKNOWLEDGEMENTS

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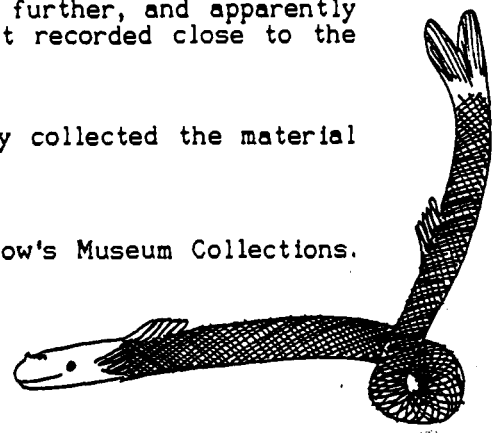
REFERENCE

Woodward F.R., 1989. Deep-water whelks in Glasgow's Museum Collections. Porcupine Newsletter, 4; 128-130.



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