

Porcupine Newsletter

Volume 3 Number 9

MAY 1987

ISSN 0309 - 3085

-219-

CONTENTS.

Lagoonal <u>Gammarus</u>	M & A Sheader	220	Channel Isles Fauna	
<u>Iruncatella</u> Records	Jan Light	224	Roger Bamber	235
Nylon Pan Scrubbers	Peter Garwood,		Letters	240
Mike Kendall & Marianne Bedford	225		Notices	240
Red Data Book	John Bratton	227	FUTURE MEETINGS	241
Pout Feeding	J. Williams,		AGM Reports	242
D. Crawford & A. Lovatelli	228		<u>Janthina</u> F.Woodward	244
Book Review		233	Records	Jon Moore 246

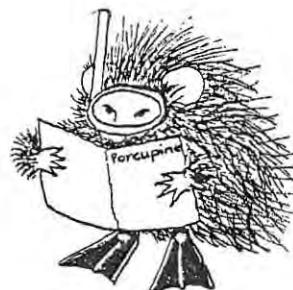
MEMBERS ARE URGENTLY REMINDED (apparently they need it) that subscriptions for 1987 are now (over-) due. The present rate for 1987 is £4.00. As PORCUPINE is in some present financial difficulty (observe excess of expenditure over income in Accounts, p.243), please be honest and pay any arrears in membership. Only paid up members will receive further copies of the Newsletter. Please send your subscriptions to the Hon. Treasurer Antony Jensen, Dept. of Oceanography, The University, Southampton SO9 5NH.

ARTICLES FROM the talks at the successful spring meeting at Lowestoft are still largely awaited, and all (available) will be published in the next (July) issue of PN. May I re-urge contributors to the meeting to send me their articles, and apologies to those who were prompt for delaying their publication.

I AM DELIGHTED to inform all Members, saddened at the news of Norman Holme's recent illness, that he is returning to comfortable health, and we all wish him our best wishes for that recovery.

FUTURE MEETINGS, at Orierton in September and Glasgow next February are detailed on p.241.

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



THE DISTRIBUTION OF THE LAGOONAL AMPHIPOD, Gammarus insensibilis
STOCK, IN ENGLAND

by M. & A. Sheader

Department of Oceanography, Southampton University, SO9 5NH

The amphipod Gammarus insensibilis, described by Stock in 1966, is morphologically close to the more familiar G. locusta (L.), which is widely distributed around the coast of Britain in fully marine shallow and littoral habitats. The two species have undoubtedly been confused in the past, but around Britain the habitats of the two species are distinct, G. locusta being restricted to fully marine areas, and G. insensibilis to certain coastal brackish lagoons.

G. insensibilis has been recorded from the Black and Mediterranean Seas and the Atlantic Coast of Europe, extending in distribution as far north as the English Channel (Stock, 1967), with an isolated population on the east coast of England (Sheader & Sheader, 1985a). In the Mediterranean, where G. locusta is absent, G. insensibilis can be found in fully marine conditions. In England the species is recorded from the Chesil Fleet in Dorset (Spooner, 1967, as G. locusta), and New England Creek on the Thames Estuary in Essex (Howes, 1939, as G. locusta). More recently, four new sites have been described, two in the Solent area and one on the Sussex coast (Sheader & Sheader, 1985a), and one on the coast of Norfolk (Williams, 1972).

During the period 1984 to 1986 the Nature Conservancy Council sponsored surveys of brackish lagoons around the coast of England. Most of these studies are now complete or nearing completion. Table 1 lists sites at which G. insensibilis has been found during these surveys.

The species is not recorded west of the Fleet in Dorset, nor in Devon or Somerset (Seaward, 1986) and is absent from the lagoons of Cornwall (Little, 1986) and the west coast of England. Cornish lagoons are typically of low salinity (<10‰) with Gammarus chevreuxi Sexton appearing as the dominant lagoonal gammarid (Little, 1986). Of the 39 lagoon sites visited between the Fleet (Dorset) and Eastbourne (Sussex), 13 contained G. insensibilis, 11 of these bordering the Solent (Sheader & Sheader, 1985b). The species is now absent from Widewater (Sussex) and its status at New England Creek (Essex) is unknown. An isolated population is present at Humberston Fitties on the Lincolnshire - South Humberside border, and populations are recorded from Shingle Street, Suffolk (Barnes, pers. comm.) and Titchwell Lagoon, Norfolk (Williams, 1972). This latter site has since been lost through reclamation. Recent surveys of brackish lagoons in East Anglia (Barnes, pers. comm.) and along coasts from Lincolnshire to Berwickshire have revealed no further sites for G. insensibilis. In England, therefore, the species is currently restricted to central southern England, with two or possibly three isolated east coast sites.

Lagoons containing G. insensibilis have several features in common (Table 2). The permanently submerged sediment and regular

Table 1 Sites at which *G. insensibilis* is recorded - Seasonal salinity data is available for Fort Gilkicker Moat and Widewater only.

<u>Site</u>	<u>O.S.Grid Ref.</u>	<u>Salinity</u> (‰)
1. Langton Herring, The Fleet, Dorset	SY 607 813	18-32
2. The Keyhaven-Lymington Lagoons, Hampshire		
a. Keyhaven-Pennington Lagoon	SZ 324 923	10-35
b. Pennington-Oxey Marsh Lagoon	SZ 326 926	12-34.5
c. Salterns Lagoon	SZ 328 935	36
d. Eight-Acre Pond	SZ 327 938	33-36
e. Normany Farm Lagoon	SZ 332 947	30-35
3. Warren Park Shore Lagoons, Beaulieu, Hampshire		
a. Great Marsh Lagoon	SZ 412 966	11-22
b. Horse Pond	SZ 410 967	11-22
4. Stansore Point Lagoon, Lepe Country Park, Hampshire	SZ 464 987	32
5. Fort Gilkicker Moat, Gosport, Hampshire	SZ 608 978	15-42
6. Little Anglesey, Gosport, Hampshire	SZ 605 988	34-38
7. Cockle Pond, Gosport, Hampshire	SZ 617 998	36-42
8. Widewater, Shoreham, Sussex	TQ 200 042	20-37
9. New England Creek, Southend-on-Sea, Essex	TQ 970 900	21.5-27.9 (Howes, 1939)
10. Shingle Street, Lagoon 6, Bowdsey, Suffolk	TM 384 438	20.4-32 (Barnes & Heath, 1980)
11. Titchwell Lagoon, Scott Head, Norfolk	TF 765 448	35-57.8 (Williams, 1972)
12. Humberston Fitties Lagoon, Cleethorpes, S.Humberside	TA 338 049	19-20



TABLE 2. Characteristics of Lagoons Where G. insensibilis is recorded

1. Regular tidal input through sea channel or culvert (except Widewater and Shingle Street where water enters by percolation through shingle).
2. Small tidal range.
3. Freshwater input (other than rainfall) low or absent.
4. Salinity high, 10-58‰, usually 15-35‰, with seasonal variation.
5. Water retained at low tide by a sill or barrier. In all lagoons, relatively little of sediment surface is exposed to the air at low tide.
6. Sediments variable, ranging from organic muds, to shingle with various admixtures of sand and silt-clay.

tidal input create a sheltered habitat able to support dense stands of attached and free floating macrophytes. A total of 17 conspicuous submerged macrophyte species are recorded from these sites (excluding the Fleet) with 3 species of alga occurring at more than half the sites (Table 3).

Table 3 Biota associated with G. insensibilis

The number of G. insensibilis sites at which each species is found is given in parentheses (max. no. 16). Only species occurring in more than half of the lagoon sites are listed. Data from Shingle Street Lagoon is not included.

Macrofauna (>0.5 mm)

Coelenterata:

Nematostella vectensis (Stevenson) (8)

Annelida:

Oligochaeta (4 spp) (10)

Nereis diversicolor (O.F. Müller) (12)

Mollusca:

Hydrobia ventrosa (Montagu) (10)

Cerastoderma glaucum (Poirer) (10)

Insecta:

Chironomus salinaricus Kiefer (12)

Crustacea:

Corophium insidiosum Crawford (11)

Idotea chelipes (Pallas) (11)

Palaemonetes varians (Leach) (11)

Corophium volutator (Pallas) (10)

Microdeutopus gryllotalpa Costa (9)

Melita palmata (Montagu) (8)

Macroalgae

Chaetomorpha linum Klitz (16)

Ulva lactuca (Linn.) (11)

Enteromorpha sp. (7)

A common feature of all lagoons containing G. insensibilis is the presence of the green alga Chaetomorpha linum, which may form extensive floating mats. Gut content analyses have revealed that this is an important food item in the diet of the amphipod. Laboratory experiments have shown that assimilation of Chaetomorpha by G. insensibilis is significantly greater than by its marine relative G. locusta, perhaps indicating an adaptation to the reduced diversity of potential food species in lagoonal habitats.

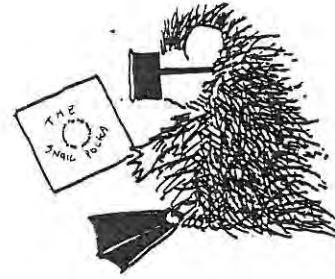
A total of 127 species of macrofauna have been recorded in lagoons containing G. insensibilis, of which 12 species occur at more than half of the sites (Table 3). Most of these species are associated with weed rather than sediment, and are typical of sheltered brackish habitats.

The distribution of G. insensibilis appears to be centred in the Mediterranean. Populations on the south coast of England exhibit life histories suggesting that the species is towards the northern limit of its range. The east coast populations are isolated and perhaps deserve further study with a view to comparison with south coast stocks. In the Fleet and in the Solent area, G. insensibilis occurs together with a number of nationally rare lagoonal species. It is suggested that these together with G. insensibilis might represent a group of relict species which have survived in areas where fleets and brackish wetlands have been a continuous feature over a long period of time.

References

- Barnes R.S.K. & Heath S.E., 1980. The shingle-foreshore / lagoon system of Shingle Street, Suffolk: a preliminary report. Trans. Suffolk Nat. Soc., 18 (2); 168-181.
- Howes N.E., 1939. The ecology of a saline lagoon in south-east Essex. J. Linn. Soc. (Zool.), 40; 383-445.
- Little C., 1986. Lagoon types in Cornwall. Porcup. Newsl., 3 (7); 166-169.
- Seaward D., 1986. NCC survey of coastal saline lagoons in Dorset, Devon and Somerset. Porcup. Newsl., 3 (7); 164-165.
- Sheader M. & Sheader A.L., 1985a. New distribution records for Gammarus insensibilis Stock, 1966, in Britain. Crustaceana, 49 (1); 101-105.
- Sheader M. & Sheader A.L., 1985b. Survey of brackish coastal lagoons, Sussex to Dorset, 1984-5. Field Report submitted to the Nature Conservancy Council; 134pp.
- Spooner G.M., 1947. The distribution of Gammarus species in estuaries. Part 1. J. mar. biol. Ass. U.K., 27; 1-52.
- Stock J.H., 1966. A key to the species of the locusta-group of the amphipod genus Gammarus, with notes on their nomenclature. Bull. Zool. Mus. Univ. Amsterdam, 1; 1-5.
- Stock J.H., 1967. A revision of the European species of the Gammarus locusta group. Zool. Verh. Leiden, 90; 1-56.
- Williams R.B., 1972. Notes on the history and invertebrate fauna of a poikilohaline lagoon in Norfolk. J. mar. biol. Ass. U.K., 52; 945-963.





NEW RECORDS, WITH SPECIAL REFERENCE TO Truncatella subcylindrica

by Jan Light

Jon Moore's 'cri de coeur' (PN. 3 (8)) prompts a sympathetic response. As Conchological Society representative for Sea Area 15 (Wight) I pursue records for my area and pass information on to Dennis Seaward who is the Society's Marine Recorder. No-one working in the field would argue with the desirability of passing records of species found to an appropriate agency and it is something most of us probably mean to get round to - eventually. Time must surely be the biggest problem, however. With reference to molluscs, which are my particular interest, it takes relatively little time to spot the beast, but then comes the matter of collecting and preserving or cleaning the shell if the specimen is to be retained, identification and cross-checking in one's literature, sending the specimen to an authority for verification and awaiting a response, entering data in one's own index and, finally, sending the record to the area representative or marine recorder. In the case of a field trip or a dredging expedition where a joint list is to be made up, complications arise out of the speed - or lack of it - with which individual members process the material and send their lists to the person nominated to draw up the master. If the professional marine biologists find it difficult to allocate time to the important matter of recording it is no easier for the group of 'serious' amateurs, like myself, who fit their field activities into 'spare time' - a commodity of diminishing supply these days.

Excuses over, let me now bring to the notice of PORCUPINE Members the fact that a third site has recently been recorded for Truncatella subcylindrica, the small gastropod which will be mainly associated in Members' minds with the Fleet. In PORCUPINE NEWSLETTER Vol 3 (6), Dennis Seaward refers to a second British site: this is at Pagham in Sussex, where Dr Mary Seddon of the Conchological Society first found the animal living in a similar habitat to the Fleet population (Seaward, 1986: J. Conch., 32; 252). Her first record was in 1977, and she found the animal again on a second visit in 1983. Late last year I checked at sites along the HWM at Church Norton on the landward side of the shingle bank and found a few live specimens as well as dead shells. As with the Fleet communities, here too the animals live at about 15 cm depth in the shingle at HWM. Associated molluscs are Phytia myosotis and, interestingly, Hydrobia ulvae which does not live at this level along the Fleet. Differences between the Pagham and Fleet habitats are the absence at Pagham of gradient flow of water through the beach, and the nature of the sediment associated with the HWM shingle - the Fleet shingle is mixed with

rotting Zostera debris, while the Pagham shingle incorporates mud but little vegetable matter.

The third site referred to above is at Warsash in Southampton Water. In July last year another Conchological Society Member, Mr Dave Guntrip, was sampling the gravel at HWM just below a stone wall looking for non-marine shells of flood debris origin. In amongst the detritus he found dead shells of Iruncatella and fresher specimens in crevices of the stone wall about a foot above ground level. When I examined the specimens, one shell had its operculum firmly in place, and one assumes this specimen was living when collected. I have not visited the site as yet, but it would appear from the above that a community of I. subcylindrica is living along the River Hamble. It will be interesting to see where the next population crops up, and whether these extensions of its distribution will be matched by findings of the equally elusive Paludinella littorina which was recorded alive in the Fleet last year for the first time since 1888 (Light, 1986: J. Conch., 32; 260).



NYLON PAN SCRUBBERS AS AN ARTIFICIAL SUBSTRATE

by Peter Garwood, Mike Kendall & Marianne Bedford

Dove Marine Laboratory, Cullercoats, Tyne-and-Wear, NE30 4PZ

Myers and Southgate (1980) first used nylon pan scrubbers as an artificial substrate in a study of the fauna of red algal turfs in Bantry Bay. They found that they acted as a very good mimic of the natural habitat, in terms of the gastropods, amphipods, isopods and tanaids they attracted. In addition, they showed that recruitment of the gastropods Rissoa parva and Lacuna vineta to the artificial substrate was essentially similar to that in the algal turfs.

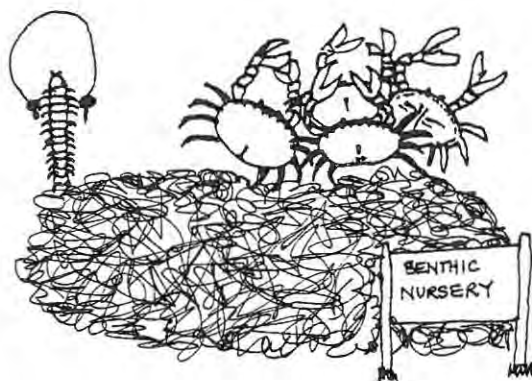
The latter observation aroused our interest as we were looking for some way of collecting newly settled specimens of trochid gastropods, as part of a study of their reproductive biology and population structure. For this purpose, nylon pan scrubbers have proved very successful, and we have been able to pinpoint the timing of settlement on the shore of Gibbula umbilicalis and Monodonta lineata on the coast of mid-Wales, and of Gibbula cineraria on the Northumberland coast.

However, the purpose of the present note is not to discuss our work on trochid settlement, but to extol the virtues of nylon pan scrubbers as collectors of all manner of small intertidal organisms. In the course of our work at Cullercoats we have noted the large variety of small animals collected using this

technique, and, although we have not been able to identify them all to the species level, we can give some idea of the range encountered. Amongst the gastropods, we collect adults and juveniles of Margarites heliclinus, Rissoa parva, Alvania semistriata and Skeneopsis planorbis. Post-larval and juvenile bivalves are periodically abundant, with Mytilus edulis and Hiatella arctica readily recognisable. The polychaetes Harmothoe imbricata, Pholoe minuta and Pherusa plumosa have been taken as newly settled stages, as has the occasional post-larval Nephtys. Adults of the small syllid polychaete Sphaerosyllis erinaceus are taken quite frequently, with mature animals bearing swimming chaetae taken in July, and females brooding attached larvae in subsequent samples. Small idoteid isopods, unidentified munnid isopods and various unidentified amphipods have been seen, and halacarid mites, harpacticoid copepods and nematodes abound. An interesting foraminiferan fauna is also present, including a naked Alogramia type, 2 species with agglutinated tests, and a number with calcareous tests including 3 miliolinids. These are currently the subject of a student project. Ostracods of at least 3 species are present, and chironomid larvae, crab megalopae and juvenile crabs are taken periodically.

It seems that the pan scrubbers may collect animals as they settle from the plankton, as benthic juveniles or as adults in the smaller, more mobile species. They consequently have great scope for those interested in a variety of intertidal animals, whether from the point of view of investigating recruitment to the adult population, or the colonisation by mobile adult and pre-adult stages.

Reference: Myers A.A. & Southgate T., 1980. Artificial substrates as a means of monitoring rocky shore cryptofauna. J. mar. biol. Ass. U.K., 60; 963-975.



INVERTEBRATE RED DATA BOOKS:
CANDIDATE BRACKISH WATER SPECIES

by John Bratton

N.C.C., Northminster House, Peterborough PE1 1UA.

The response to the request for information on potential Red Data Book brackishwater invertebrates (PN 3 no 8) has been unprecedented. In fact there is still time for one of you to set a precedent by responding to it. However, other sources of information have been tapped in the last three months. The selection criteria and a list of possible RDB amphipods were given in the previous article. Additional Red Data Book candidates which may be of interest to PORCUPINE Members are as follows:

Coelenterates: Edwardsia ivelli Proposed for addition to schedule 5 of the Wildlife and Countryside Act.

Nematostella vectensis Also proposed for section 5

Cordylophora lacustris Probably too common, but recent records would be welcome to put the matter beyond doubt.

Bryozoa: Victorella pavida Another proposed addition to schedule 5, from where it has acquired the English name 'trembling sea mat'.

Dr P.J. Hayward has agreed to write the data sheets for RDB bryozoans; I do not yet know the full species list.

Polychaetes: Armandia cirrhosa Another proposed addition to schedule 5, with the name Lagoon Sandworm.

Mollusca: Pseudamnicola confusa

Truncatella subcylindrica

Paludinella littorina

Tenellia adspersa

Dr M.P. Kerney and Mr D.R. Seaward are writing the data sheets for these species.

Crustacea: Balanus improvisus This was suggested by R.J. Driscoll who knows it from a few sites in Norfolk rivers where it appears to be on the increase. How common is it nationally?

Cyathura carinata Another species proposed by R.J. Driscoll, who has found it very infrequently during surveys of Norfolk rivers, usually well upstream in weakly saline conditions.

Any unpublished information concerning the ecology, biology or past or present status of these species would be most welcome, please. There is no need to resubmit records which are included in the NCC Lagoon Survey reports as I will be extracting the information from them. All contributors to data sheets will be acknowledged in the Red Data Book.



WINTER FEEDING OF 0-GROUP POUTING (Trisopterus luscus L.)
IN SOUTHAMPTON WATER AND THE SOLENT

by John A. Williams, D. Crawford & A. Lovatelli*

Department of Oceanography (*Dept of Biology), The University, Southampton, U.K.

INTRODUCTION

The pouting, Trisopterus luscus L., is a demersal gadoid found at depths ranging from a few metres to over 100 m. Observations in the Tamar (Hartley, 1940) and Medway Estuaries (Van den Broek, 1978) indicated that 0-group fish carry out a summer/autumn migration into inshore and estuarine waters and remain in these nursery grounds for most of their first year, before moving back into deeper water in the following late spring. Armstrong (1982) however suggests that estuaries are not always suitable grounds for young pouting, pointing to the irregularity of this species in estuarine waters, and that the larger fish certainly tend to be confined offshore, at depths of 25 to 100 m.

It has been suggested that the pouting is an adaptable species capable of feeding opportunistically on a wide range of prey, which varies with the species assemblages in the immediate environment (Steven, 1930; Hartley, 1940; Armstrong, 1982). A seasonal migration pattern into the Southampton Water area occurs during summer, when pouting are frequently caught as a by-catch during commercial trawling and dredging for the American hard-shell clam Mercenaria mercenaria (L.). The present study examines the feeding preferences of these overwintering pouting.

MATERIALS AND METHODS

Pouting were caught between early October and late March using a modified beam trawl and prawn net with a 20 mm mesh and cod end, which sampled fish down to 7-8 cm total length. Trawls were usually conducted around high water at depths of 5-10 m over a bottom grading from fine sand/silt to coarser sand/gravel, and in the immediate Southampton Water - East Solent area. There was excessive mortality of fish during the first 2-3 hr after catch, probably due to the relatively long towing periods using a fine-meshed net. Another 'population' was sampled between October to January in the area off Hayling Island, Portsmouth, at 3 to 8 m depth. Total length (snout to edge of caudal fin), wet weight and sex were determined. The J-shaped stomachs were removed and preserved in 4% formalin for gut content analysis. Regurgitation of stomach contents through fear and pressure changes due to hauling and winching aboard was observed in a number of fish. The stomachs of such fish were easily recognisable by their flaccid appearance, and were rejected from the sample.

A variety of methods of stomach content analysis are available for fish feeding studies (Pillay, 1952). Numerical methods tend to overemphasize the importance of abundant, small food items while gravimetric/volumetric methods have an opposite bias, overestimating the significance of the larger, more

indigestible food items. In this study, each stomach was allotted to a numerical category with respect to its distension or fullness, ranging from 1 (empty) to 5 (fully distended). Food items were identified, where possible, to species/family level. Each food item was then allocated a percentage value with respect to the total gut contents. Data for analysis were grouped by predator length, in 2 cm length classes, and by sampling date. Conventional otolith examinations, using a modified gadoid key (Frost, 1981), provided age structure information on the catch.

RESULTS

The length-frequency distributions of the fish show a single unimodal curve suggesting a single age group (Fig.1). Otolith examinations confirmed that all specimens were 0-group fish. Within the period of investigation the mean length increased from 11.5 to 14.7 cm; some fish had, however, reached 20 cm, a size compatible with the onset of sexual maturity, and must be considered very close to 1-group classification. The length:age group data correspond to the findings of Kennedy (1954) on a population of pouting in the Irish Sea, where mean size of overwintering 0-group fish was about 15 cm.

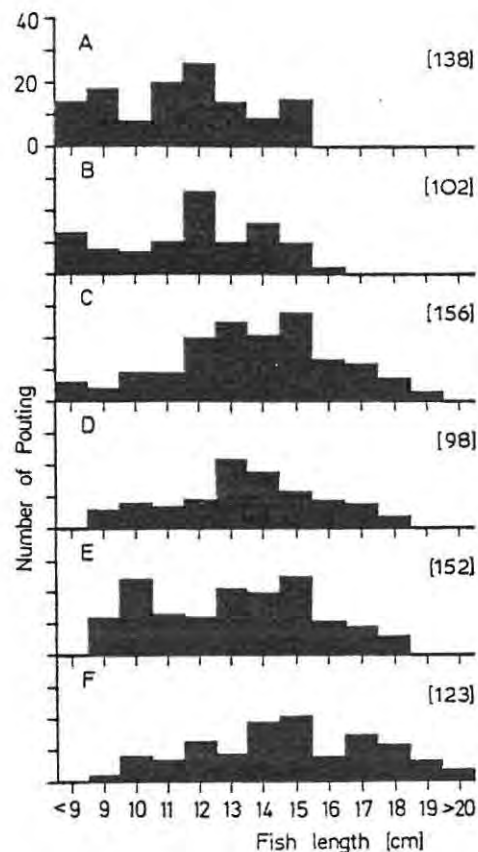


FIG.1. Length-frequency distribution of *T. luscus*. A-F: October to March respectively. (n) - total sampled fish.

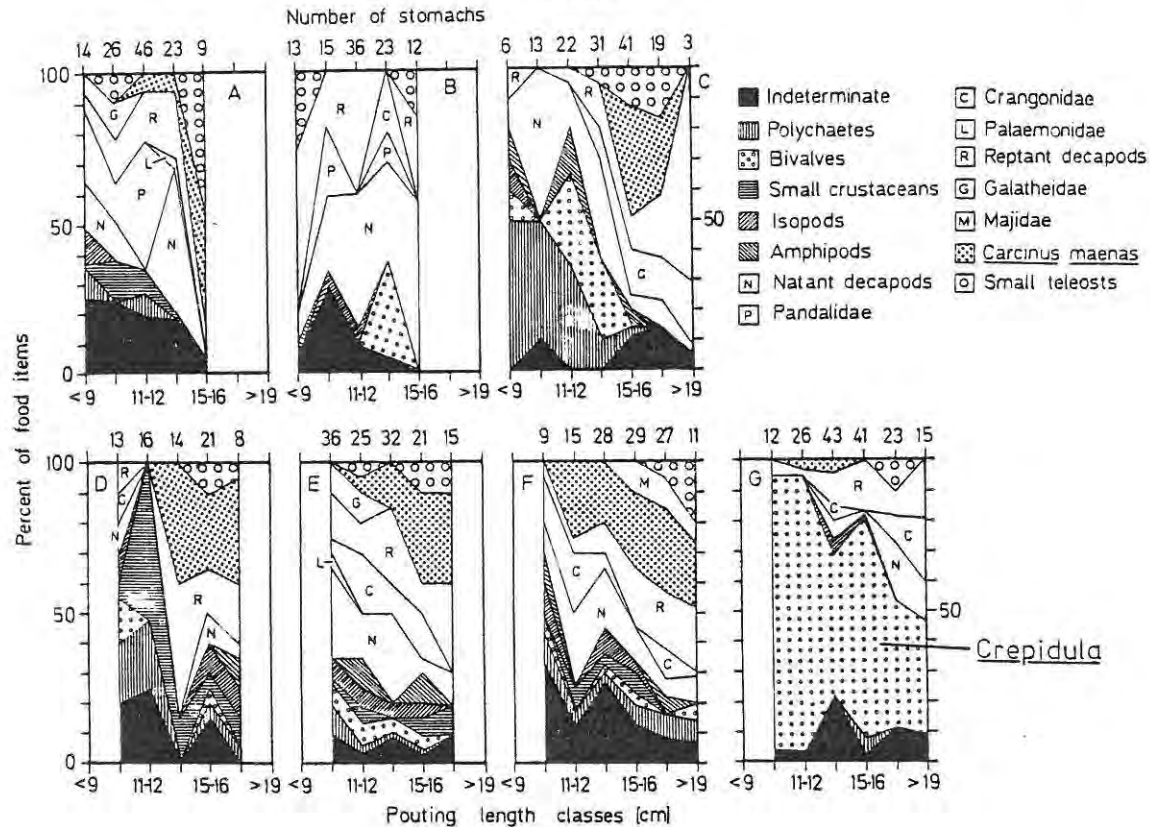


FIG.2. Species composition of diet for each 2cm size-class of pouting.

Food items are represented as % of total food in stomach.

A-F: October to March respectively; G: March sample on Crepidula bed.

The length-weight relationship of the fish sampled was:

$$\log L = \log 5.7 + 0.27 \log W$$

where 0.27 is the regression coefficient. The fish showed a virtual 1:1 sex ratio throughout the winter.

Analysis of the stomach content of the fish indicated that the basic diet was composed of 4 macroepifaunal 'groups', viz. crustaceans, polychaetes, molluscs and small teleosts. All food groups fluctuated in their 'acceptability' with time. Peracarid and decapod crustaceans comprised as much as 80% of the food items eaten during the period October to December (Fig. 2). The remaining food items principally comprised small polychaetes, such as Nephtys, and small teleosts, such as Callionymus, ranging from 2 to 4 cm in length. Over January to March, decapod crustaceans still accounted for, on average, over 60% of food items; the additional species consisted predominantly of larger polychaetes, including Aphrodita, and some larger teleosts weighing at least 1-5 g wet weight. In one March sample taken at an alternative site in Southampton Water, the importance of crustaceans in the diet declined markedly as a single molluscan species, the prosobranch Crepidula fornicata (the American slipper-limpet), became the preferred food item. This clearly reflects prey availability related to locality rather than any

temporal change in dietary preference.

Figure 2 represents the species composition of the diet of each size class of pouting during the period October to March. With respect to decapod crustaceans, there appears to be an increasing preference for reptants such as Galathea squamosa, Macropodia sp. and Carcinus maenas through the winter, this 'group' increasing as a food item from approximately 25% in October to an average of 55% in February/March. Considering the comparable life histories and relative abundance of reptantia and natantia such as Crangon crangon, Pandalus montagui and Palaemon elegans over this period, such a shift is taken to reflect a change in prey-size preference related to increasing predator size, rather than any change in prey availability. Certainly predation of Carcinus was size-related, in that it was absent from the diet of fish less than 11-12 cm in length. Fish below this size fed mainly on small polychaetes and peracarid crustaceans.

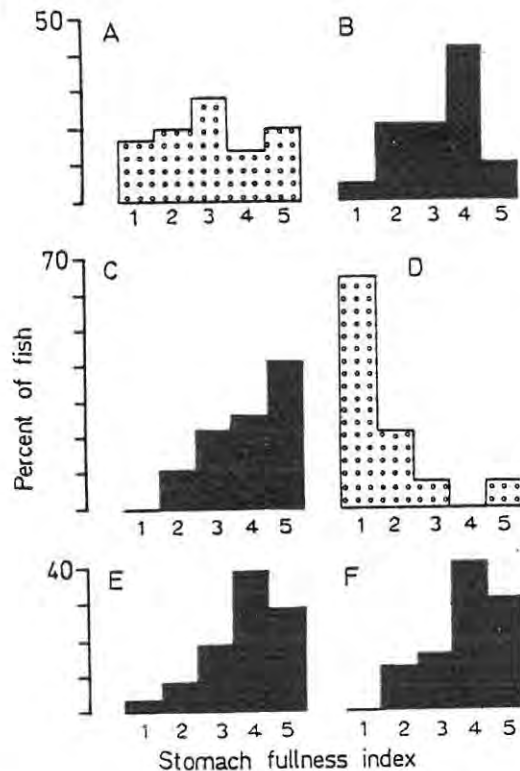


FIG.3. Stomach fullness index in relation to state of tide during sampling. ■ represents high tide, ▨ low tide; A-F: October to March respectively.

Gut distension data (Fig.3) suggest that feeding occurs predominantly during high tide, although this cannot be critically verified as no information is available on the digested state of food items. However, in those fish sampled

around high water it is clear that, on average, 80% of stomachs examined were at least half full.

DISCUSSION

The 0-group T. luscus sampled represent individuals which have migrated into the shallower waters of the Solent and Southampton Water during the previous summer. Various morphological features of this gadoid predispose it to the opportunistic, diverse bottom-feeding mode detailed in the present study. There are well-developed visual and olfactory senses, the fish have a large, slightly ventral mouth bearing sharp teeth, and the J-shaped stomach is capable of accommodating the variety of shapes and sizes of prey which are to be found over a wide range of bottom types.

The present data are comparable with the observations of Van den Broek (1978) and Armstrong (1982) that pouting will feed mainly on epifaunal invertebrates and other demersal fish. The exact species composition of the diet reflects not only the faunal assemblage in the area but also a predator-size relationship which takes advantage of optimally-sized prey species within the community. This is particularly represented in the temporal sequence of decapod crustaceans species found in the stomachs of the Solent pouting. Armstrong (1982) suggests that the optimum prey-size range for gadoid fish such as the pouting lies between 0.25 and 2.5% of the predator body weight. Unfortunately, food items were not weighed in the present study; however, from qualitative assessment the predator-prey size relationship appears to be within Armstrong's range.

Barnes et al. (1973) divided the macroscopic epifauna of the Solent into two characteristic species assemblages, a dominant Crepidula fornicata association and a smaller Nephtys/Abra grouping. The pouting sample taken over the Crepidula beds highlighted the predominance of this prosobranch in the diet, although it is difficult to propose a natural feeding method for this species, as Crepidula has a 'chain' formation of individuals which must make the animal effectively inaccessible to the fish. The extensive dredging of Southampton Water for Mercenaria mercenaria may destroy the chains, and thereby provide the pouting with individuals within their preferred prey-size range.

Armstrong (1982) reported that, for pouting aged 1-group and above, food intake was generally greatest in the autumn when bottom temperatures were maximal. In the present study, 0-group fish appeared on average to be feeding normally throughout the overwintering period.

REFERENCES

- Armstrong M.J., 1982. The predator-prey relationships of Irish Sea poor-cod (Trisopterus minutus L.), pouting (Trisopterus luscus L.) and cod (Gadus morhua L.). J. Cons. int. Explor. Mer., 40; 135-152.
- Barnes R.S.K., Coughlan J. & Holmes N.J., 1973. A preliminary survey of the macroscopic bottom fauna of the Solent, with particular reference to Crepidula fornicata and Ostrea

- edulis. Proc. Malac. Soc., London, 40; 253-273.
- Frost K.J., 1981. Descriptive key to the otoliths of gadoid fishes of the Bering, Chukchi and Beaufort Seas. Arctic, 34; 55-59.
- Hartley P.H.T., 1940. The Saltash tuck-net fishery and the ecology of some estuarine fishes. J. mar. biol. Ass. U.K., 24; 1-68.
- Kennedy M., 1954. The Sea Angler's Fishes. Hutchinson, pp.296-300
- Pillay T.V.R., 1952. A critique of the methods of study of food of fishes. J. zool. Soc. India, 4;185-200.
- Steven G.A., 1930. Bottom fauna and the food of fishes. J. mar. biol. Ass. U.K., 16; 677-700.
- Van den Broek W.L.F., 1978. Dietary habits of the fish populations in the Lower Medway Estuary. J. Fish Biol., 13; 645-654.

Porcupine Reviews

NORTH EAST ATLANTIC CRABS

by Paul Clark

Marine Conservation Society, 1986
252pp. £6.00 (+£1.78 p&p)

A volume of this kind can only result from a considerable dedication to marine recording, and a particular attention to detail. It is not a book to sit back and read, but the marine biologist with an interest in biogeography and the distribution of crab species will find it interesting, and probably very useful.

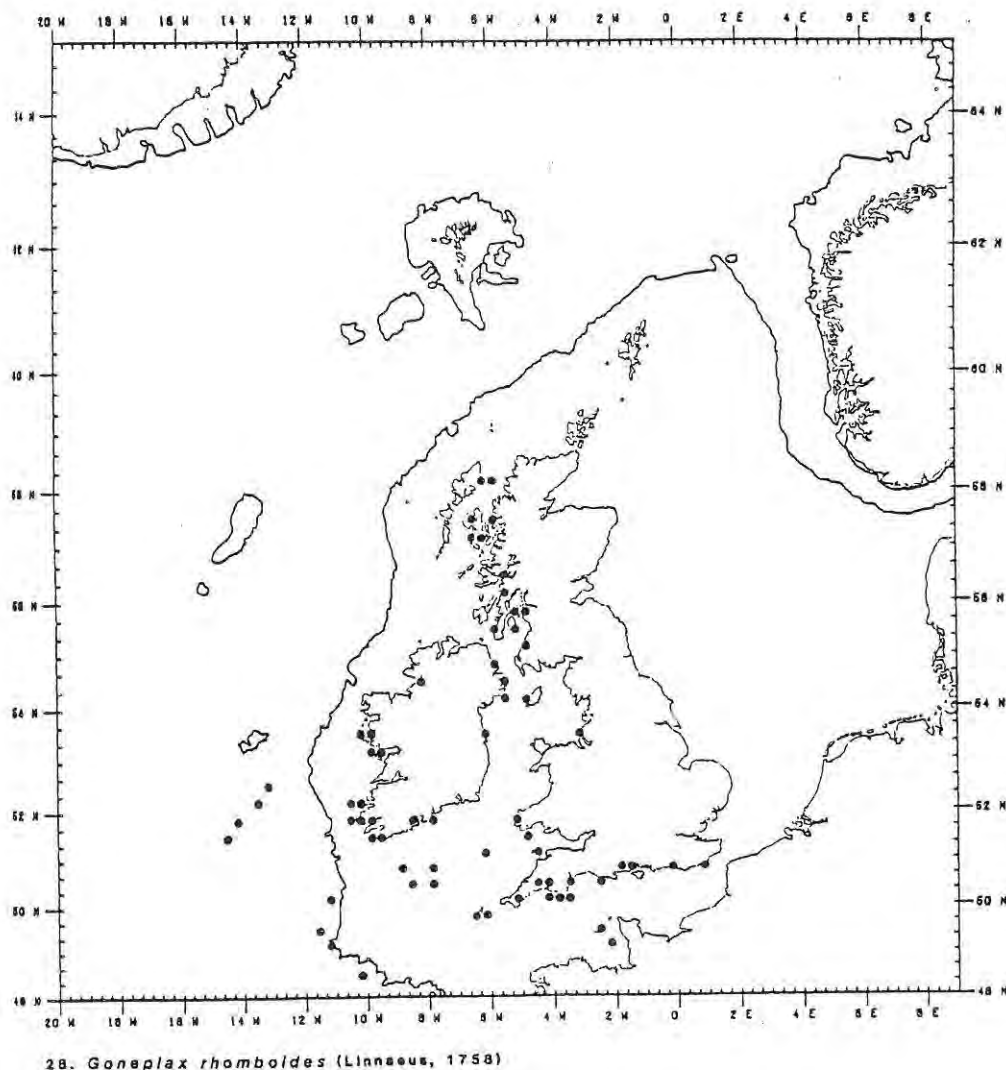
It is essentially an atlas of the distribution of 69 species (in 41 genera) of brachyuran crabs. The records are collated from a variety of sources, including the results of the Biological Records Centre's recording scheme, literature records and specimen collections at the British Museum and elsewhere. There is a full-page map (A4) for each species, and further details of literature references (a considerable reference list is given at the end), depth range, ovigerous period and distribution in the N.E. Atlantic, S.E. Atlantic and the Mediterranean. A remarks section supplies useful information on records of interest, particularly those requiring verification. A short chapter on distribution lists the crabs belonging to the various biogeographic areas, and a few pertinent discussion points and conclusions, of a practical nature, are given at the end. There is an index to genera and species.

An interesting map within the Discussion is of all the localities



from which records were made. I was surprised to see where some of the gaps on the continental shelf were. For instance, while most of the North Sea is covered there are large areas of the Irish Sea and English Channel with no records of any crabs! As mentioned in the introduction by David George, it is an excellent companion to Ray Ingle's key to "British Crabs". Of course there are certain to be a number of marine biologists remarking that they have seen species X at location Y. It is of course impossible for such a work to be complete, but if such a volume were available for all the marine groups the science of marine biology would be a giant step forward.

Jon Moore.



Example distribution map from Clark, 1986
(reduced).

EPIFAUNAL COLLECTIONS FROM THE CHANNEL ISLANDS, SEPTEMBER 1986

by Roger Bamber

One of the (many) notable benefits of PORCUPINE is that one can wander away to apparently remote climes under the excuse of a holiday, and there parasitize the local knowledge of a fellow Member. It is appropriate to begin this account with an acknowledgement to Roger Brehaut for both his hospitality at ridiculously short notice, and for suggesting to your Hon. Ed. the good sites in the Bailliwick of Guernsey to visit for collecting obscure marine animals; indeed without his proffered map and guide to the Guliott Caves on Sark, they would have proven surprisingly difficult to find (yes, some of us missed the PORCUPINE Field Trip of September 1980! See Shelagh's account, viz. Smith 1981a). The following is based on material sorted from various 0.5 litre samples collected in Guernsey and Sark in September 1986. I am extraordinarily indebted for specialist expertise to Members Jan Light for the molluscan identities, Martin Sheader for the amphipods and Peter Garwood for the polychaetes.

1. CORALLINA EPIFAUNA FROM GUERNSEY

In response to cries of "oh no, not another Corallina sample", it must be pointed out in defence that this account refers to three separate sites, with the added bonus over previous, similar articles of a molluscan list for one site. All samples were collected from rock pools near ELWST, and sorted 'live'; since the initial sorting was undertaken in the less than ideal conditions of a hotel bedroom, certain smaller beasts such as mites were not picked out. The sites were:

- (a) Chouet Bay - pools among the bedrock outcropping between this Bay and Ladies Bay, on the N.W. corner of Guernsey, with adjacent sandy beaches and some shelter from headlands to the north (Chouet) and west (Col du Pont).
- (b) Saline Bay - another typical west coast bay, near Grandes Rocques, sampled from the rocky headland; less sheltered than Chouet.
- (c) La Grosse Rock - extensive rocky shore on the S.W. corner of Guernsey, with many excellent, deep rock pools.

The faunae from these samples are listed in Table 1. Comparing the sites, it is evident, particularly among the isopods and amphipods, that the diversity of the Corallina-associated fauna increases from the sandy pools of Chouet Bay, through the cleaner but shallow Saline Bay to the deep and more stable pools of La Grosse Rock (total species 9, 15 and 20 respectively, not including molluscs). Of the pycnogonids, Anoplodactylus virescens had not been recorded previously from the Channel Islands (but see below). The tanaids Leptochelia savignyi and Apseudes latreilli are characteristic southern species; Tanais dulongii is normally associated with a more infaunal tubicolous habit, but here occurred in all samples. The isopod Paranthura costana was originally described from Guernsey,

TABLE 1. Corallina fauna from Guernsey

* = 1; ** = 2 to 10; *** = > 10.

Chouet Bay Saline Bay La Grosse Rock

PYCNOGONIDA

<u>Endeis spinosa</u> (Montagu)	*	*	
<u>Anoplodactylus angulatus</u> (Dohrn)	**	***	*
<u>A. virescens</u> (Hodge)		*	
<u>Achelia longipes</u> (Hodge)		*	
<u>A. hispida</u> Hodge			**

LEPTOSTRACA

<u>Nebalia bipes</u> (O.Fabricius)	*		
------------------------------------	---	--	--

TANAIDACEA

<u>Tanais dulongii</u> (Audouin)	**	**	*
<u>Leptochelia savignyi</u> (Kroyer)			**
<u>Apseudes latreilli</u> (Milne-Edwards)		*	

ISOPODA

<u>Munna minuta</u> Hansen		*	**
<u>Idotea granulosa</u> Rathke			***
<u>Jaera albifrons</u> Leach			**
<u>Dynamene</u> sp juveniles	**		**
<u>Paranthura costana</u> Bate & Westwood			*

AMPHIPODA

<u>Parajassa pelagica</u> (Leach)			*
<u>Dexamine spinosa</u> (Montagu)		**	**
<u>Phtisica marina</u> Slabber		*	
<u>Aora gracilis</u> Sars	*	**	
<u>Amphithoe rubricata</u> (Montagu)		**	*
<u>A. neglecta</u> Lincoln	**		
<u>Podocerus variegatus</u> Leach		*	*
<u>Lembos websteri</u> Bate		*	
<u>Stenothoe monoculoides</u> (Mont.)	**	**	**
<u>Hyale nilssoni</u> (Rathke)	**		**
<u>Microdeutopus chelifer</u> (Bate)			**
<u>Apherusa jurinei</u> (Milne-Edw.)	**		**
<u>Calliopius laeviusculus</u> (Kroyer)			**
<u>Amphilochus neapolitanus</u> Della Valle			*
<u>Lysianassa ceratina</u> (Walker)			*

MOLLUSCA

<u>Calliostoma zizyphinum</u> (L.)	*		
<u>Gibbula umbilicalis</u> (da Costa)	**		
<u>G. pennanti</u> (Philippi)	*		
<u>Bittium simplex</u> (Jeffreys)	**		
<u>Onoba semicostata</u> (Montagu)	**		
<u>Littorina obtusata</u> (L.)	**		
<u>Rissoa</u> (<u>Pusillina</u>) <u>parva</u> (da C.)	**		
<u>Ocenebra erinacea</u> (L.)	**		
<u>Cingula cingillus</u> (Montagu)	*		
<u>Barleeia unifasciata</u> (Montagu)	**		
<u>Haliotis tuberculata</u> L.	*		

not collected

not collected

(well, under Corallina really!)

since when it has rarely been recorded and never satisfactorily described; this notable (?topotypic) specimen gives the opportunity to remedy the latter (readers may wish to emphasize its small 'footnote' mention in the Linn. Soc. Synopsis - it deserves better recognition). The amphipod fauna contains some familiar Corallina denizens, such as Stenothoe monoculoides and Calliopius laeviusculus; characteristically 'southwestern' species are Microdeutopus chelifer, Amphilocus neapolitanus and Amphithoe neglecta. Of the molluscs, Gibbula pennanti is limited to the Channel Islands in the U.K., while Bittium simplex is only recorded for the C.I. as pre-1951 in Seaward (1982 - The Atlas). Littorina obtusata is not listed in the Atlas for the C.I., but these days I'm not sure what L. obtusata is (or isn't).

2. THE GOULIOT CAVES, SARK

The Gouliot Caves are an interconnecting system of dark caverns beneath a headland on the west coast of Sark, adjacent to the Isle of Brecqhou. They are flooded at high tide, and only conveniently accessible on foot at spring low tide. The remarkable sessile fauna covering the cave walls has led to the individual passages being named Sponge Cave, Anemone Cave, Jewel Cave, etc.; Koehler (1885), who published an early record of the fauna, was moved to remark "...and the whole forms a thick, living layer, whose abundance of forms, together with the variety of brilliant colours, will inevitably result in the admiration of the visiting naturalist for its incomparable richness." (it sounds more romantic in the original French!).

The species of this rich and diverse sessile fauna are most commonly intermixed, though the Actinians tend to be restricted to single-species areas. Samples were collected from the mixed hydroid-bryozoan-sponge (HBS) community between the larger Actinians, and separate samples were collected of pure strands of Tubularia larynx. These samples were fixed in 4% formalin, and subsequently sorted under the binocular microscope.

The fauna of each substrate is listed in Table 2. This was expected to be an ideal pycnogonid habitat: of the seven species recorded, Anoplodactylus virescens was common, though, as mentioned above, a new record for the Channel Islands; Achelia simplex and Callipallene emaciata tiberi are also newly recorded for this area, and Phoxichilidium femoratum (though not on its "preferred" food substrate of Tubularia) corroborates the records proffered by Roger Brehaut (pers comm) though not listed by King (1982). Koehler (loc. cit.) recorded Achelia longipes and Pycnogonum littorale from the caves.

I know of no previous records of mites from the Channel Islands ("Halacarus sp.?" is Koehler's only comment); Thalassarachna basteri appears to be ubiquitous in British coastal waters, while I. longipes is recorded from the French coast. The cosmopolitan Pseudoparatanais batei was particularly abundant; another characteristically 'southwestern' species is the isopod Jaeropsis brevicornis; it is interesting that, in this plant-less habitat, all the tanaids and isopods, and most of the amphipod species are different from those recorded from Corallina (Table 1). The common Stenothoe valida, a widespread

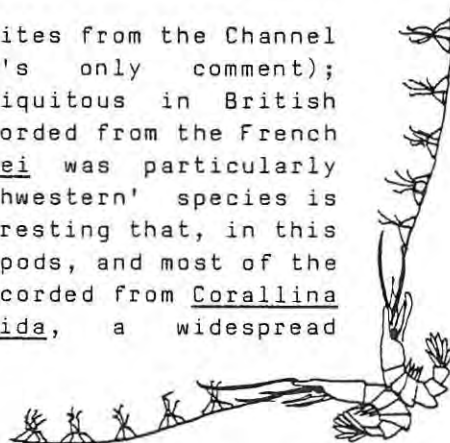


TABLE 2. Epifauna from the Guliot Caves, Sark. Samples from Tubularia and from the more general mixed hydroid/bryozoan/sponge community are treated separately.

	H/B/S	<u>Tubularia</u>
PYCNOGONIDA		
<u>Achelia echinata</u> Hodge	**	
<u>A. longipes</u> (Hodge)	***	*
<u>A. simplex</u> (Giltay)	**	
<u>A. sp. juveniles</u>		**
<u>Anoplodactylus virescens</u> (Hodge)	***	
<u>Phoxichilidium femoratum</u> (Rathke)	**	
<u>Callipallene emaciata</u> (Dohrn)	*	(subsp. <u>tiberi</u>)
<u>Pycnogonum littorale</u> (Ström)	*	
ACARI		
<u>Thalassarachna basteri</u> (Johnston)	**	
<u>T. longipes</u> (Trouessart)	***	
TANAIDACEA		
<u>Pseudoparatanais batei</u> (Sars)	***	*
ISOPODA		
<u>Munna kroyeri</u> Goodsir	**	
<u>Idotea pelagica</u> Leach	**	
<u>Janiropsis brevimis</u> Sars	***	*
<u>Jaeropsis brevicornis</u> Koehler	**	
AMPHIPODA		
<u>Parajassa pelagica</u> (Leach)	**	**
<u>Jassa falcata</u> (Montagu)		**
<u>Stenothoe valida</u> Dana	***	***
<u>Apherusa</u> sp.	*	*
<u>Dexamine spinosa</u> (Montagu)	**	
<u>Caprella acanthifera</u> Leach	***	***
MOLLUSCA		
<u>Cingula</u> (<u>Putilla</u>) <u>pulcherrima</u> (J)	***	**
<u>Lasaea rubra</u> (Montagu)		**
<u>Tricolia pullus</u> (L.)	*	
<u>Calliostoma zizyphinum</u> (L.)	*	
<u>Littorina neglecta</u> Bean	*	
<u>Skeneopsis planorbis</u> (Fabr.)	*	
<u>Kellia suborbicularis</u> (Montagu)	*	
<u>Hiatella arctica</u> L.	**	
POLYCHAETA		
<u>Eumida sanguinea</u> (Oersted)	*	
<u>Syllis gracilis</u> Grube		**
<u>Typosyllis armillaris</u> (Malmgren)	***	
<u>T. variegata</u> (Grube)	**	**
<u>T. sp. juveniles</u>		**
<u>Amblyosyllis formosa</u> (Claparede)	*	
<u>Pionosyllis lamelligera</u> St.-J.		*
<u>Eusyllis blomstrandii</u> Malmgren	**	
<u>Brania pusilla</u> (Dujardin)	**	***
<u>B. clavata</u> (Claparede)	*	
<u>Autolytus alexandri</u>	*	
<u>A. brachycephalus</u> (Marenz.)	*	
<u>A. edwardsi</u> Saint-Joseph	*	
<u>A. sp. indet.</u>		*
<u>Procerastea halleziana</u> Malaquin	*	*
<u>Nereis pelagica</u> L.	**	**
<u>Platynereis dumerilii</u> (A. & M-E)	*	
<u>Polydora</u> sp. juvenile	*	
<u>Arenicolidae</u> juvenile	*	
<u>Sabellidae</u> indet.	***	**
<u>Filograna implexa</u> Berkeley	colony	

tropical/warm temperate species, is a new record for the Channel Islands, previous British Records being from Langstone Harbour, Brixham and Plymouth Sound.

Of the molluscs, a less abundant group here compared to the Corallina fauna, Cinquula pulcherrima is limited in British Waters to the Channel Islands. Oddly, only Littorina neglecta from this list and Rissoa parva from Table 1 are also in Shelagh Smith's list from the 1980 PORCUPINE trips (Smith, 1981b). To an extent we sampled different habitats. The polychaetes are perhaps impressive for the dominance of syllids. Some of the Syllis gracilis specimens comprised about 8 adult segments regenerating heads and tails. Filograna implexa was present as "tufts" of tube colonies on many walls of the caves.

There were generally few notable differences between the Tubularia and mixed HBS substrates other than the greater diversity of animals in the more diverse habitat; many of the species recorded here only from the HBS community are known to live amongst Tubularia. Amongst the polychaetes, the distinction of Syllis gracilis and Typosyllis armillaris between the two substrates appears to be genuine. In comparison with Koehler's list, though he concentrated on sessile forms from the caves, of his 24 species of associated epifauna, only Platynereis, Jaeropsis, Janiropsis (as Janira), Pseudoparatanaïs (as Paratanaïs forcipitatus), Caprella (as C. hystrix) and the two pycnogonids mentioned above are recorded herein, though I am unaware of the synonymies involved with some of his peracarids.

All in all, an interesting collection of 84 species, generally reflecting the southwestern position of the Channel Islands relative to Britain, with a few new records, the expected oddities, and the welcome reappearance of some all too infrequent beasts. It's surprising what you pick up on holiday (sic).

Finally, the lists are not complete - I have a collection of the impressive nematodes which were abundant in the Gouliot samples: but they mean nothing to me, and I can't find anyone who is interested in them. This seems a pity. Is there anyone out there who would like to 'do' the Sark nematodes?

REFERENCES

- King P.E., 1982. Pycnogonids of the Channel Islands. Annual Bull. Soc. Jersiaise, 23; 230-232.
- Koehler R., 1885. Recherches sur la faune marine des îles Anglo-Normandes. Bulletin de la Société des Sciences, Nancy, 17 (2), Part 7; 51-120.
- Seaward D. (Ed), 1982. Sea Area Atlas of the Marine Molluscs of Britain and Ireland. Conchological Society, Nature Conservancy Council.
- Smith S., 1981a. Porcupine meeting in the Channel Isles. PN 2(1); 6-7.
- Smith S., 1981b. Porcupine meeting in the Channel Isles, September 1980. List of Molluscan Records. PN 2(2); 30-32.



Letters to the Editor



FROM Dennis Seaward
Marine Recorder, Conchological Society
Barn Court, Hamlet, Chetnole,
Sherbourne, Dorset DT9 6NY

TOWARDS A CHANNEL MOLLUSC ATLAS:

REQUEST FOR INFORMATION - MOLLUSCS OF THE FRENCH CHANNEL SHORE

I am in the early stages of preparing a Channel Atlas to show in some detail the distribution of marine molluscs in the Channel, from the Straits of Dover to the Scillies and Ushant/Roscoff, in collaboration with other Area Representatives of the Conchological Society marine census scheme. English shores are fairly well known, and I am fortunate in having the benefit of the large amount of work done over many years offshore by Dr Norman Holme, who has generously provided much recent unpublished data to add to that in his well-known published Channel papers. There are also the published surveys of French marine biologists such as Cabioch, Retiere, Glacon, Bouchet and Tardy, dealing mainly with benthic communities in various areas. However, I can find very little information on the molluscs of the French shores, and would welcome references to faunal lists, or records from personal observations. Any help will of course be gratefully acknowledged.

Dennis R. Seaward.

NOTICES

1. WANTED ON LOAN - any specimens of the white form of Calliostoma zizyphinum (shell with or without preserved animal) EXCEPT from the following two localities: Clachan Sound on the west coast of Scotland, and Strangford Lough, Northern Ireland. Any information concerning localities would be gratefully received. I would be particularly interested in dredged deep

water specimens. I would also be interested in examining specimens of the yellow (var lutea) and purple varieties of C.zizyphinum. Please contact Dr Julia Nunn, 116 Glenholm Park, Belfast, Northern Ireland BT8 4LR.

2. JULIA NUNN is also hoping to carry out a survey of the molluscan fauna of Mulroy Bay, Co Donegal, Eire. She would therefore be grateful if any member could provide information on, or records of mollusca collected from this Bay, whether recent or historical. See Notice 1 for address.

3. MUSSELWISE, Fred Woodward would appreciate any help regarding literature or experience on Mytilus edulis cultivation processes. Fred is at Dept. of Natural History, Art Gallery & Museum, Kelvingrove, Glasgow, Scotland G3 8AG.

4. NEMATODES ON OFFER - FREE to any bona fide -ologist who might be interested in a collection of marine 'littoral' nematodes from the Gouliot Caves, Sark - see p.235 et seq, above. I've picked them out; they are fixed in formalin and preserved in ethyl alcohol. Anyone interested please contact the Hon. Ed.

P.S. I've also got some of the hydroid/bryozoan/sponge substrate left if any sessile faunaologists are interested.

***** FUTURE MEETINGS *****

The Autumn meeting of PORCUPINE will be held at Orielton, Pembroke on Saturday 26 and Sunday 27 of September, on the theme held over from last Autumn of 'Aliens and Immigrants'. We hope to follow in the talks aspects of alien introduction and to update the progress around European coasts of recent and older friends (Elminius, Styela, et al.). It is hoped to combine a field trip with this meeting if demand is high enough. Offers of papers, posters or other contributions for the meeting will be gratefully received by Jon Moore, Oil Pollution Research Unit, Orielton Field Centre, Pembroke, Dyfed SA71 5EZ (Tel 064681 370), from whom further details can be obtained.

The 1988 Spring meeting and 11th Annual General Meeting of PORCUPINE will be held next February in Glasgow, courtesy of Fred Woodward. Details of exact dates and theme (something Scottish I believe) will shortly be forthcoming.

More details will be issued in the next (July) edition of PN. Members wishing to organise future meetings, or offer themes or venues are encouraged to contact the Hon. Secretary Martin Sheader.

Minutes of the TENTH Annual General Meeting of PORCUPINE, held at the MAFF Laboratory, Lowestoft on Sunday 15th March 1987

Shelagh Smith was in the Chair; 26 Members were present. The minutes of the Ninth Annual General Meeting (published in Porcupine Newsletter, Volume 3 No.6) were approved.

Reports of the Hon. Secretary, Hon. Treasurer, Hon. Editor and Hon. Records Coordinator were given and approved.

Office bearers were elected as follows:

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

The retiring Hon. Treasurer, John Wilson, agreed to continue as a member of the Council, with Peter Davis standing down. The following were elected as Council Members:

Iain Dixon	Ivor Rees
Frank Evans	Ralph Robson
Bill Farnham	Dennis Seaward
Robin Harvey	Shelagh Smith
David Heppell	Brenda Thompson
Norman Holme	John Wilson
	Fred Woodward

The Hon. Auditors were re-elected.

In the light of increasing costs, the A.G.M. agreed that the membership subscription will rise to £5.00 from next year (January 1988).

It was agreed that the Autumn meeting (September 1987) be held at Orierton in Pembroke on the topic of 'Alien Species'. Fred Woodward offered to organize next year's A.G.M. at Glasgow (topic to be decided).

The implications of the Data Protection Act to the Society were discussed, and it was considered that registration would not be necessary.

The Meeting closed with the Chair proposing thanks to those involved with the organisation of this very pleasant meeting at Lowestoft.

HON. SECRETARY'S REPORT 1986-1987

During the year 1986-1987 there was only one meeting, the Annual General Meeting held at Southampton University on 19th-20th April 1986. The meeting, on 'Coastal Lagoons', was well-attended, and provided the inspiration for a Field Meeting at the Dorset Fleet in September. This attracted a small but dedicated group of Members, and resulted in several new species

records for the lagoon. Unfortunately, a meeting on 'Alien Species', which was planned for Autumn 1986 at the NCC headquarters in Peterborough, had to be cancelled.

Membership during the year has continued to rise and now stands at just over 200, an increase of 7% over last year. Following the 1986 AGM, Frank Evans produced and distributed a poster for display, outlining the aims of PORCUPINE. This has succeeded in attracting several new members to the society and will be distributed again this year.

Using a grant awarded to PORCUPINE by the World Wildlife Fund, Member Judy Foster-Smith was employed to undertake a study to examine the feasibility of producing a synopsis of fauna and flora lists and systematic keys (FFLASK) of British marine biota. The preliminary study is now complete and we are looking for additional sources of funding to enable us to accomplish this task.

At the 1986 AGM there was a complete changeover in Office Bearers with Shelagh Smith, David Heppell and Frank Evans retiring from office after many years of service to PORCUPINE. May I take this opportunity to thank each of them for their efforts in building and developing PORCUPINE during its first 10 years.

Any society is dependent on an active input from its Members. Could I ask those who might be interested in participating in the running of PORCUPINE, or who might have ideas for sites or topics for future meetings, to contact me.

Martin Sheader.

PORCUPINE

Accounts for Period 30 November 1985 - 30 November 1986

INCOME

Subscriptions for 1986
Interest on Deposit account

Excess of expenditure over income

£221.00
£ 33.15

£644.59

£898.74

EXPENDITURE

AGM Expenses
Postage and stationary
Printing of Newsletters
FFLASK report

183.24
161.58
253.92
300.00

898.74

Statement as
1st December 1986

Balance 1 December 1985 C/A and Dep. A/C £955.86

Dep A/C Cash in bank
Curr. A/C Cash in bank
Petty Cash

298.20
155.86
3.99

£458.05

ON BRITISH VOUCHER MATERIAL OF Janthina (MOLLUSCA: GASTROPODA)
IN GLASGOW MUSEUMS

by Fred R. Woodward

Occurrences of pelagic marine gastropods belonging to the genus Janthina, commonly known as Violet Sea-snails, are relatively rare in British waters, three species being represented, namely Janthina exigua Lamarck, 1816, J. pallida Thompson, 1840 and J. janthina (L.) (= J. britannica Forbes & Hanley, 1852; J. planispirata Adams & Reeve, 1850; J. fragilis Lamarck, 1851; J. rotunda Leach in Jeffreys; J. communis Lamarck). This rarity, coupled with its attractive appearance and unusual mode of existence, has resulted in numerous published records over the past 150 years for British strandings, the bulk being in Devon, Cornwall and Ireland.

One of the earliest references to Janthina in Britain dates from Professor John Fleming (1785-1857) who wrote in 1828, under Ianthina (sic) communis:

"This species was added to our fauna by the late Miss Hutchings, in consequence of recent specimens which occurred to her in Bantry Bay. It has since been found at several places on the coast of Ireland and west of England."

Records of Janthina include:

- Pre 1828 - Bantry Bay and several places on the coast of Ireland and west of England (Fleming, ibid: 326)
1883 - A fleet of Janthina washed ashore on Islay (Marshall, 1900: 338)
1884 - present in the Scilly Isles, September 1884 (Smart & Cooke, 1885: 298)
1887 - "J. fragilis" from Magilligan Strand, August 1887 (Galway, 1888: 268)
1916 - "Ianthina rotundata" washed ashore at St Clements Bay, Jersey, 1916. (Marshall, 1917: 174)
1947 - Janthina in Cornwall (Fowler, 1947, 1948, 1949)

The presence of authentic voucher material in Glasgow to substantiate some of these records together with additional ones is worthy of mention if only to draw Member's attention to the fact that museums and kindred institutions afford a valuable resource for further research. A recent acquisition included two sets of shells belonging to Janthina, labelled Sennen Cove, Cornwall, and stimulated a more serious appraisal of the collection.. The first set (registration no. Z-1985-192-382), labelled "britannica Sennen Cove 8 July 1947", consisted of five shells whose measurements (mm) were:

	A	B	C	D	E
Height	16.0	17.3	16.3	17.2	15.1
Breadth	20.5	20.2	20.4	20.35	19.1

The second set (registration no. Z-1985-192-381), labelled

"pallida Sennen July 8 1947", consisted of three shells whose measurements were:

	A	B	C
Height	12.65	11.65	9.0
Breadth	11.6	11.6	9.25

A search was made in the relevant literature to determine if these 1947 specimens had been recorded, with positive result. Fowler (1947) records the occurrence of Janthina in Cornwall during the period 5 to 12 July 1947, and states "hundreds of Janthina planispirata (A Adams & Reeve) and Janthina britannica Forbes & Hanley were washed up in Gwenver and Whitesand Bays, as well as six examples of Janthina pallida Harvey. With them came thousands of Velella and hundreds of bunches of Lepas fascicularis, up to 7 or 8 in a bunch, all living. Most of the Janthina were living with floats attached but many of the shells were broken, to some extent no doubt by people walking along the tide lines. It was a difficult matter to forestall these collectors and could only be partially effected by being on the shore before 8 am. Mr R.H. Moses of Tottenham was also staying at Sennen at the time, and secured two specimens of the rare J.pallida."

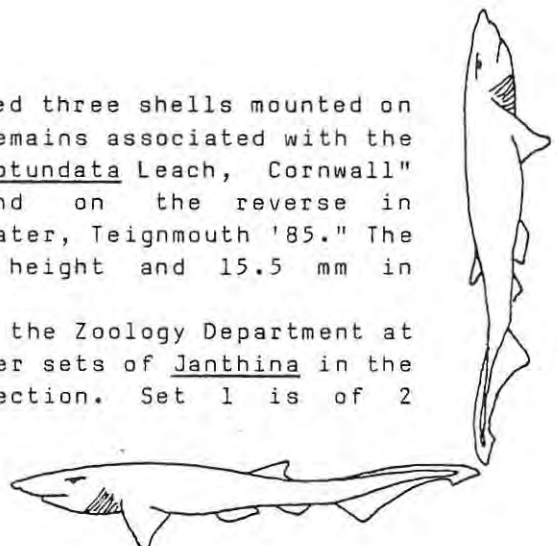
In the following year, Fowler (1948) redescribed J.pallida Thompson, his description and accompanying illustration (by Guy Wilkins) being based upon the six examples collected the previous year, the locality being given simply as 'Sennen, Cornwall'. Illustrations of J.britannica from Sennen are also included. In 1949, Fowler again refers to the 8 July 1947 records, adding a further species, J.exigua, from Sennen, again illustrated by Guy Wilkins. It is concluded that the Glasgow Museum material formed part of the July 1947 strandings, and, from the 3 J.pallida specimens, part of the T.G.W. Fowler collection (R.H. Moses only obtained 2 specimens of pallida)

The Alexander Sommerville collection includes two further sets of Janthina. The first set consists of two shells mounted on a wooden tablet, inscribed: "Ianthina rotundata Leach, Magilligan, Derry" (registration number Z-46-14 ip), and on the reverse in Sommerville's hand "from S.C. Cockerell, '85". The shell measurements (mm) are:

	A	B
Height	14.5	15.4
Breadth	17.75	18.75

The second set originally comprised three shells mounted on a wooden tablet; only one shell remains associated with the tablet, which is inscribed: "Ianthina rotundata Leach, Cornwall" (registration no. Z-46-14 ej), and on the reverse in Sommerville's hand: "From A J R Sclater, Teignmouth '85." The remaining shell measures 13.0 mm in height and 15.5 mm in breadth.

On checking the collections in the Zoology Department at Glasgow University, I found 3 further sets of Janthina in the Reverend Dr G.A. Frank Knight's collection. Set 1 is of 2



individuals in a round glass-topped box inscribed on the base "Ianthina rotundata Leach, Macgilligan Strand, near Londonderry, (Ulster, Ireland)", Glasgow University registration no. GLAHM ZB0839. These shells are 20.4 x 25.3 mm (height x breadth) and 20.8 x 23.8 mm.

Set 2 is of 4 individuals in a similar box (glass top missing), inscribed ".... Co. Mayo", and the associated label states "Enniscrone, Ballina, Co Mayo (Eire, Ireland)" (registration no. GLAHM ZB0841). The shell measurements are:

	A	B	C	D
Height	25.85	24.5	22.8	20.0
Breadth	27.0	27.0	27.2	24.6

The third set is of 8 shells in a similar (complete) box, inscribed "Ianthina rotundata, Leach, Ballintrae, Co Antrim (Ulster, Ireland)" (registration no. GLAHM ZB0840). The shells measure:

	A	B	C	D	E	F	G	H
Height	19.6	11.4	10.0	8.4	7.0	8.1	6.65	5.6
Breadth	22.0	14.4	12.2	11.2	10.5	9.5	8.75	8.2

ACKNOWLEDGEMENTS

Thanks are due to the Zoology Department, Glasgow University, for allowing me access to material in their charge, to Mrs P. Bascom and G. Hancock for comments on the manuscript and to Miss H. Dawson for producing the typescript.

REFERENCES

- Fleming J., 1928. A history of British Animals.
Fowler T.G.W. 1947. A new British Janthina. J. Conch, 22; 186, Pl.1; and "Janthina in Cornwall." ibid.; 268.
Fowler T.G.W. 1948. Janthina pallida Thompson. ibid.; 307-308 + text figures.
Fowler T.G.W. 1949. Janthina exigua Lamarck in Cornwall. ibid., 23; 49 + text figures.
Galway, Miss H., 1888. On the marine shells of Magilligan Strand, County Tyrone. ibid., 5; 267-270.
Marshall J.T., 1900. Additions to 'British Conchology'. ibid., 9; 338.
Marshall J.T., 1917. Additions to 'British Conchology'. ibid., 15; 174.
Smart & Cooke, 1885. Marine Shells of Scilly. ibid., 4; 298.



RECORDS OF RARELY RECORDED OR INTERESTING SPECIES FROM SURVEYS OF HARBOURS, RIAS AND ESTUARIES IN SOUTHERN BRITAIN

by Jonathan Moore

The records in the accompanying table are derived from five reports to the Nature Conservancy Council by the Field Studies Council's Oil Pollution Research Unit. In each of these Reports is a Table listing species of high conservation interest that were recorded during fieldwork, with notes on the interesting features (usually distributional) and a provisional assessment of

their conservation importance in the survey area (Regional, National or International). The following Table brings all of these records together, but without the assessment of importance and only a few notes. It must be stressed that this table cannot be considered complete since it does not include any previous records from the literature. Furthermore there are one or two relatively common species which are included because of their abundance or growth form in one of the survey areas (e.g. Sabella pavonina); less interesting records in the other survey areas may have been omitted.

KEY:

P = Present

E = Eastern limit in Britain

A = Abundant

N = Northern limit in Britain

T = Type locality

1. New species being described by Maggs and Guiry (in press)
2. Only previously described for the Solent
3. Does not resemble any other Halymenia spp. from the East Atlantic or Mediterranean.
4. Recently described by Maggs and Guiry (1985). First record for the South coast.
5. A cushion-like growth form not usually found on the open coast.
6. A large species found on the coast of Brittany.
7. A dense mat of tentacles of a very large species visible on sandy mud.

REPORTS:

Surveys of Harbours, Rias and Estuaries in Southern Britain. Reports to the Nature Conservancy Council from the Field Studies Council Oil Pollution Research Unit.

Dixon I.M.T. (1986). Exe Estuary. (FSC/OPRU/52/85). 65pp.

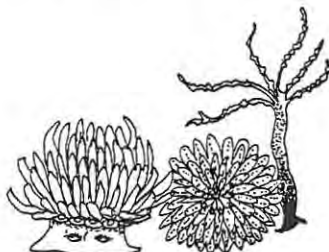
Hiscock K. (1986). Salcombe Harbour and the Kingsbridge Estuary. (FSC/OPRU/40/85). 83pp.

Hiscock K. & Moore J. (1987). Plymouth Area including the Yealm Estuary. (FSC/OPRU/36/86) (in press).

Little A.E. & Hiscock K. (1987). Milford Haven and the Estuary of the Rivers Cleddau. (FSC/OPRU/51/85). 93pp plus appendices.

Rostron D. (1985). Falmouth. (FSC/OPRU/49/85). 109pp.

Hopefully this table will make more PORCUPINE Members aware that there are many interesting records to be found in limited circulation reports. Similar syntheses of records could also be made from numerous other sources, both published and unpublished. The Newsletter is already a useful organ for publishing occasional records; I think it could easily become a very important source for large numbers of them.



Name	MILFORD HAVEN	FAL- MOUTH	PLYM- MOUTH	SAL- COMBE	EX- MOUTH
RHODOPHYTA					
Antithamnion crispum	P	-	-	-	-
Bornetia secundiflora	-	-	-	P	-
Chondria coerulescens	-	-	-	A	-
Crouania attenuata	-	-	P	P	-
Drachiella spectabilis	-	-	-	?E	-
Gelidiella calcicola 1	P	P	-	-	-
Gigartina acicularis	N	-	-	-	-
Gigartina teedii	N	-	-	P	-
Gracilaria foliifera	-	-	P	A	-
Grateloupia doryphora 2	P	-	-	-	-
Griffithsia barbata	-	-	-	A	-
Griffithsia devoniensis	N	-	A	-	-
Gymnogongrus devoniensis	N	P	-	-	-
Halymenia sp. 3	-	P	-	-	-
Lithothamnion corallioides	P	P	-	-	-
Phyllophora traillii	P	-	-	-	-
Phymatolithon calcareum	P	P	-	-	-
Rhodomenia delicatula	P	-	-	-	-
Schmitzia hiscockiana 4	P	P	P	-	-
Schmitzia neopolitana	-	P	P	-	-
Solieria chordalis	AN	P	-	-	-
Stenogramme interrupta	P	-	-	-	-
PHAEOPHYTA					
Carpomitra costata	-	-	P	-	-
Laminaria ochroleuca	-	-	A	E	-
PORIFERA					
Dysidea fragilis (cushion form) 5	P	-	-	-	-
Halichondria bowerbankia 6	A	-	-	A	-
HYDROIDEA					
Cordylophora lacustris	-	-	A	-	-
Hartlaubella gelatinosa	-	-	P	-	-
ANTHOZOA					
Aiptasia mutabilis	-	P	P	-	-
Amphianthus dorhnii	-	-	P	-	-
Anthopleura balli	-	P	-	-	-
Balanophyllia regia	-	-	P	-	-
Eunicella verucosa	-	-	A	-	-
Hoplangia durotrix	-	-	P	-	-
Leptopsammia pruvoti	-	-	P	-	-
Parazoanthus axinellae	-	-	P	-	-
Parerythropodium corallinoides	-	-	P	-	-
POLYCHAETA					
Myxicola aesthetica	-	-	A	-	-
Myxicola infundibulum	-	A	-	-	-
Ophelia bicornis	-	-	-	-	A
Pisione remota	-	-	P	-	-
Sabella flabellata	-	-	-	P	-
Sabella pavonina	-	-	-	A	-
Sabella spallanzani 6	-	-	-	?P	-
Terebellidae indet. (big) 7	-	P	-	P	-
GASTROPODA					
Calliopoia bellulus	-	-	P	-	-
ASTEROIDEA					
Asterina phyllactica	T	-	-	-	-
PISCES					
Gobius couchii	-	A	-	-	-