THE BENTHIC INVERTEBRATE FAUNA OF SUBANTARCTIC MARION AND PRINCE EDWARD ISLANDS

By

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CONTENTS

GENERAL INTRODUCTION

General Introduction

The two islands of the subantarctic Prince Edward group are of particular interest because of their relative youth and extreme isolation. Both are summits of recent volcanoes just off the crest of the mid-Atlantic ridge. They arose about 250 000 years ago (McDougal 1971). Marion Island (46°54'S, 37°45'E) is 290km^2, while Prince Edward Island (46°38'S, 37°57'E) is one-seventh its size and lies 22 km NNE of Marion. The nearest islands are the Crozet archipelago (925 km away) to the east and the closest continental land mass is southern Africa, with Cape Town lying 2300km to the north west. MPE is further isolated from southern Africa and Antarctica by the physical barriers created by the Subantarctic Convergence to the north the Antarctic convergence at about 50° south. These convergences, where cold water from the south sinks below warmer water bodies, have steep temperature and salinity gradients. The subantarctic waters between these two zones range from 3 to 14.5°C (Knox, 1960).

There have been several expeditions to Marion and Prince Edward Islands (MPE) which have sampled the marine fauna and flora, including those of the British ships *Challenger* (1873-1876) and *Discovery* (1935), and subsequent surveys by the French ship *Marion-Dufresne* (Arnaud and Hureae, 1979). South African research began with land-based surveys that concentrated on the intertidal and shallow-water benthos and included work by Fuller (1967), Van Zinderen Bakker et al (1971), De Villiers (1976) and Blankley & Grindley (1985). More recently this research was extended offshore by the University of Cape Town, with dredging being undertaken from the *SA Agulhas* over the period 1984-1989 (GM Branch, Attwood, Gianakouras and ML Branch, 1993) and a quantitative SCUBA survey at depths of 5, 10 and 15m at Bullards Bay, Transvaal Cove and Trypot Point (Beckley and Branch, 1992).

The identification of benthic species posed a major problem during each of the recent surveys, despite the fact that the material from earlier expeditions has been referred to international taxonomic authorities. Reference specimens are not available or are housed in European collections. The number of species from the area has also increased considerably. Previous work in the subantarctic has been undertaken by scientists from a large number of countries and over a protracted period of time. Isolated detailed monographs reviewing particular groups have appeared, but these remain largely inaccessible to the more generalist worker. Furthermore many are now out-of-date in terms of the nomenclature employed. This situation prompted the compilation of the present series of identification guides, which are intended to synthesise information on the benthic invertebrate fauna of Marion and Prince Edward Islands and to present it in a manner that will allow relatively easy identification by the non-specialist:

The first six chapters presented here describe the Crustacea, Mollusca and Brachiopoda, Pycnogonida, Cnidaria, Echinodermata and Polychaeta of MPE. Each of these papers contains the following elements:

1. A comprehensive list of all the known species from MPE both from the present collections and from the published records. Synonyms are also given where they have been used previously to describe material from MPE.

2. An expanded, illustrated key in which the key characters are given first in each comparable couplet and are followed by specific characters that distinguish the MPE species from close relatives, which occur elsewhere. The most important monographs which need to be consulted to obtain more detailed descriptions are given in the reference lists for each chapter. Where possible the illustrations used in the keys were taken from actual specimens collected by the University of Cape Town or from material obtained from other collections. Others were adapted from depictions in the the existing

literature.

3. Undescribed species are included in the crustacean, molluscan and cnidarian keys under their South African Museum catalogue number (SAM), although they are named only to generic level. New species of Mollusca are to be described by Cantera and Arnaud. New species of Echinodermata have been described in separate papers: the asteroid *Solaster dianae* by Stampanato and Jangoux (in press) and the holothurians *Mesothuria edwardensis* and *Paradota marionensis* by Massin (1992). Three new species of Polychaeta are described in Chapter 7. A taxonomic discussion is also included in Chapter 6 to clarify difficult species of polychaete.

4. In the second part of each chapter the 1982-1989 records derived from the University of Cape Town (UCT) surveys are summarised to give the distribution of each species in relation to abundance, depth, substratum and habitat. A detailed similarity analysis of this information has enabled the recognition of community patterns for the entire offshore fauna (GM Branch, Attwood, Gianakouras and ML Branch, 1993), the subtidal fauna (Beckley and Branch, 1992) and the intertidal fauna.

5. Zoogeographical affinities are discussed for each species. Biogeographically it has been proposed that MPE forms part of the Kerguelen Province, within a larger Subantarctic Region, and includes Crozet as well as Kerguelen and Heard Islands. Knox and Lowry (1977) summarised previous theories and examined the biogeography of the amphipods and the polychaetes in detail. They found that in the subantarctic area, Kerguelen and Heard Islands appear to have an amphipod fauna similiar to MPE and Macquarie island. The polychaetes however followed a different scheme in which the subantarcic area included only Macquarie and MPE while Kerguelen and Heard Islands, which lie on the Antarctic convergence, aligned with the Antarctic. The Crustacea, Echinodermata and Polychaeta have been selected here to test these zoogeographical theories because they contain large numbers of species and are also well documented from other subantarctic and Antarctic areas.

6. Endemism and the possible origin of the fauna is discussed in each chapter and summarised in the concluding chapter with reference to the theories proposed by Newman (1991) for the origins of Southern Hemisphere endemism.

The author was responsible for the overall compilation of the manuscript, the keys, illustrations and the identification of material used for the distributional analyses. However, due to the broad taxonomic scope of this project it was necessary to draw on the expertise of taxonomic specialists to finalise the identification of difficult specimens. The extent of collaboration is detailed in the acknowledgements.

Material from the British *Challenger* and *Discovery* collections is housed in the British Museum (Natural History) now the Natural History Museum, London (BMNH). Material from the South African expeditions is housed in the South African Museum (SAM) and that of the 1976 voyage MD 08 of the *Marion-Dufresne* at Muséum National d'Histoire Naturelle, Paris and the Institute of Fundamental and Applied Research (IRFA), Museum Angers, France. The standard abbreviations used in the text for the specimens from these museums are given in brackets above.

The first three chapters on the Crustacea, Mollusca and Brachiopoda, and the Pycnogonida have been published in the South African Journal of Antarctic Research (SAJAR)1991. The fourth, fifth and sixth chapters on the Cnidaria, Echinodermata and Polychaeta have been submitted to SAJAR. The seventh chapter has been submitted to the Annals of the South African Museum.

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I am extremely grateful to the following specialists who provided identifications and guidance;

Chapter 1: Crustacea
Prof. CL Griffiths identified the amphipod collection, Dr. J Sieg finalised the tanaids and Dr. B Kensley the isopods and decapods while Dr. R Lemaitre examined the hermit crabs, *Pagurodes inarmatus* and *Sympagurus dimorphus.*

Chapter 2: Mollusca and Brachiopoda
Dr. PM Arnaud and J Cantera checked the identifications of the Bivalvia, Gastropoda, Scaphopoda and Polyplacophora used in the keys. Dr. C Emig identified the Brachiopoda and M Roeleveld *Octopus magnificus.*

Chapter 3: Pycnogonida
Dr. F Arnaud oversaw the Pycnogonida, provided identification and supporting information on their distribution.

Chapter 4: Cnidaria
Dr. G Williams provided the identification, key and illustrations for the Octocorallia. Dr N Millard was consulted for a few Hydrozoa and Dr. SD Cairns examined the Scleractinia.

Chapter 5: Echinodermata
Dr F Rowe gave early help with the project. Prof. M Jangoux and S Stampanato finalised the asteroid identification, Dr. V Alva the ophiuroids and Dr. C Massin the holothuroids. Dr. Ch de Ridder identified *Sterechinus agassizi.*

Chapter 6 and 7: Polychaeta
The late Prof. John Day gave guidance with the initial phase of identification and later his superb reference collection of specimens and literature were invaluable. Dr. S Chambers examined some Polynoidae and Dr. P Hutchings identified some specimens, while Dr. G Hartmann-Schröder cast an expert eye over a preliminary draft of the key. Dr. P Gillet provided material for examination.

Finally my special thanks to my husband George who has encouraged and guided me through this enormous and bewildering fauna, to Di Gianakouras who enthusiasically collected and curated the bulk of the material reported here and to Prof. Charles Griffiths for his help and supervision of this thesis.

CHAPTER 1: CRUSTACEA

The benthic fauna of subantarctic Marion and Prince Edward Islands was sampled over the period 1982-1989 by dredging, scuba-diving and intertidal surveys. This paper comprises illustrated keys for the identification of all Crustacea recorded from the islands during this and previous surveys. Summaries are also provided of the depth distributions, abundances and habitats of all species collected during the 1982-1989 surveys. A total of 125 species of Crustacea is now known from the islands, of these 49 are new records for the area including 12 presumed new species. The current fauna comprises 2 new records of Cirripedia (1 unidentified); 71 species of Amphipoda (of which 17 are new records and include 8 presumed new species); 32 species of Isopoda (including 19 new records of which 4 are new species); 10 Tanaidacea (8 new records); and 11 Decapoda (of which 4 are new records). The new species are identified to genus and are not formally described in this paper.

Introduction

This particular paper covers the Crustacea. It draws on information from the following collections: *Challenger* expedition of 1873-76 (Hoek 1883, Beddard 1884, 1886, Miers 1886, Bate 1888, Henderson 1888 & Stebbing 1888) and *Discovery* expedition of 1935 (Sheppard 1933, 1957, Barnard 1930, 1931, 1932), material from both of which is housed in the British Museum (Natural History), now the Natural History Museum, London. Also included are records from the South African expeditions of 1965-66 (Fuller 1967, Cléret 1971) and 1972-73 (De Villiers 1976) and the 1976 voyage MD 08 of the *Marion-Dufresne* (Arnaud & Hureau 1979, Shiino 1978, Ledoyer 1979, Kensley 1980, Bellan-Santini and Ledoyer 1986), the material from the latter is housed at Station Marine d'Endoume, Marseille — and later at Laboratoire de Malacologie, Muséum national d'Histoire naturelle, Paris). The Soviet Antarctic Expedition of 1970-1975 was reported by Kussakin and Vasina (1980, 1982a & 1982b). Additional data came from intertidal and subtidal surveys undertaken in 1979 (Blankley and Grindley 1985) and 1982, quantitative subtidal scuba-sampling in 1989 (Beckley & Branch 1992), and extensive recent offshore surveys by the University of Cape Town over the period 1984-89 (GM Branch *et al* 1992), the material from which is housed in the South African Museum, Cape Town. Table 1 summarises the previously unpublished records for Crustacea derived from the University of Cape Town surveys, in relation to abundance, depth, substratum and habitat. New records for the Prince Edward Islands are shown in the systematic list. A more detailed analysis of this information and a description of community patterns appears in GM Branch *et al* (1992).

Where possible the illustrations were taken from actual specimens collected by the University of Cape Town. Others were adapted from depictions in the existing literature, notably from Bellan-Santini 1972a, 1972b, Bellan-Santini and Ledoyer 1974 and 1986, Lowry and Stoddart 1983, JL Barnard 1969, Kensley 1978a and 1980, Beddard 1886, Henderson 1888, Menzies 1962, Sieg 1980a, 1980b and 1986 and Sieg & Winn 1981.

Systematic list of species

* = New records
‡ = New species (included in the keys but not named beyond generic level).
Page numbers refer to pages in the keys.

Summary of species

Cirripedia	:	1 species, 1 new record
Amphipoda	:	71 species, 17 new records, 8 new species
Isopoda	:	32 species, 19 new records, 4 new species
Tanaidacea	:	10 species, 8 new records
Decapoda	:	11 species, 4 new records.
Total Crustacea		125 species, 49 new records, 12 new species.

Key to the subclasses and orders

1 Body enclosed in a shell of calcareous plates; legless; attached forms; (barnacles).
Subclass: **Cirripedia** ..... A (p 7)

Shrimp-like or crab-like, mobile, legged forms.
Subclass: **Malacostraca** 2

2 Carapace absent or if present not fused to the thorax; brood pouch under the thorax of females; thoracic appendages include a pair of maxillipeds and seven pairs of pereopods; eyes sessile.
Superorder: **Peracarida** 3

Carapace and whole of the thorax fused into a single unit; eyes stalked and mobile.
Superorder: **Eucarida** 5

3 Carapace covering two thoracic segments (cephalothorax) followed by six visible pereon segments; body elongate; 1 pair of terminal, multijointed to 2-jointed elongate uropods; pereopod 1 (cheliped) chelate.
Order: **Tanaidacea** ..... D (p 31)

Carapace absent thus seven pereon segments visible; pereopods 1 & 2 chelate or simple; uropods terminal or lateral, not multijointed.
..... 4

4 Body usually laterally compressed; usually three pairs of uropods; pereopods 1 & 2 (gnathopods) differ from the remaining 5 pereopods and may be chelate.
Order: **Amphipoda** ..... B (p 8)

Body usually dorsoventrally flattened; one pair of uropods; pereopods 1-7 may be subchelate but are structurally similar.
Order: **Isopoda** ..... C (p 22)

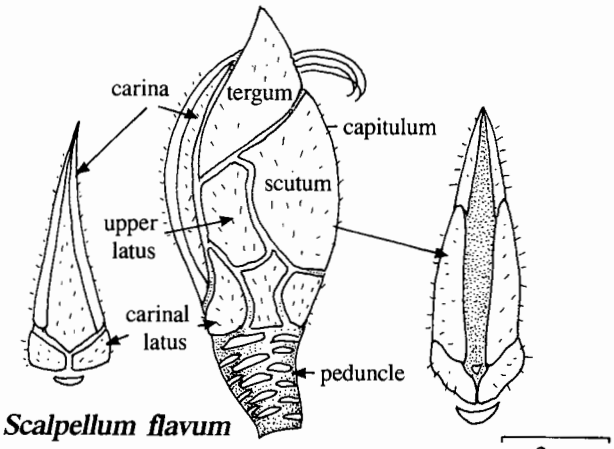
5 Seven pairs of walking legs used to filter food.
Order: **Euphausiacea** krill, planktonic, not represented in this key.

First three pairs of thoracic limbs reduced to mouth parts, leaving five pairs of walking legs on the thorax; shrimps, crabs, rocklobsters.
Order: **Decapoda** ..... E (p 35)

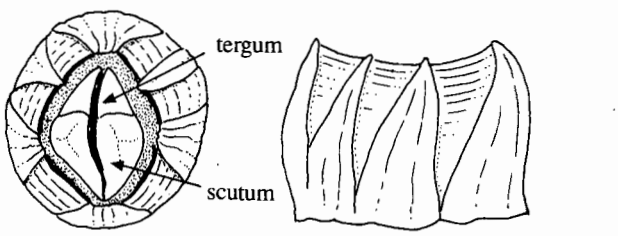
A Cirripedia

1 Body attached by a fleshy stalk or peduncle; plates restricted to upper part (capitulum).
Suborder **Lepadomorpha** — Goose barnacles.
Peduncle short, tapering proximally, bearing about 7 rows of four to five crescent-shaped scales; capitulum with 13 valves covered by a thin membrane with fine cuticular spines; carina very long, simple and bowed, upper roof of which is convex; scutum about twice as long as broad; tergum triangular, similar size to scutum; upper latus very large and quadrangular; infra median latus narrow; carinal latus elongate with the umbo near the base.
Scalpellum flavum Hoek, 1883

Body without peduncle; plates attached directly to the substratum.
Suborder **Balanomorpha** Acorn barnacles.
(Two unidentified specimens were collected.)



Scalpellum flavum



Acorn Barnacle

B Amphipoda

Characteristics of the suborders (After Griffiths 1976)

Suborder: **Caprellidea**

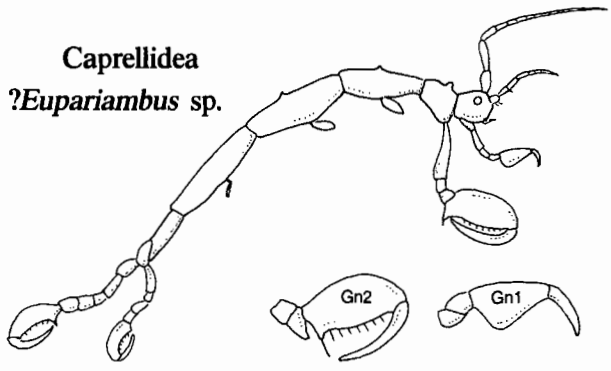
Slender, elongate, cylindrical, usually living amongst weeds; head fused to pereon segment 2; pereon often with less than 7 pairs of limbs, coxae absent; pleon and its appendages vestigial; eyes usually small. (Only 2 specimens recorded from Marion Island in the 1984-1989 benthic survey — both representing an unidentified species of the family **Aeginellidae**, close to ***Eupariambus*** sp. SAM A40356 & SAM A40357)

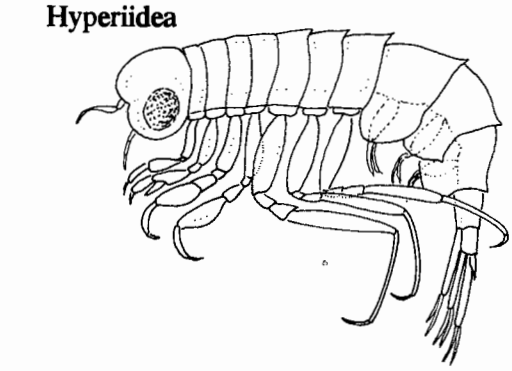
Suborder: **Hyperiidea**

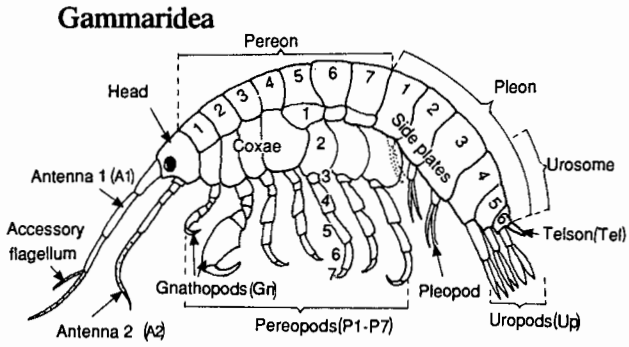
Pelagic, semi-transparent; head not fused with second pereon segment; eyes usually large; palp of maxilliped absent; pereon with 7 pairs of limbs, coxae small or absent; pleon usually well developed with 3 pairs of biramous pleopods and 3 pairs of uropods. (Although a few species of Hyperiidae were recovered in the benthic collections around Marion Island, they are planktonic in habit and are hence not considered further.)

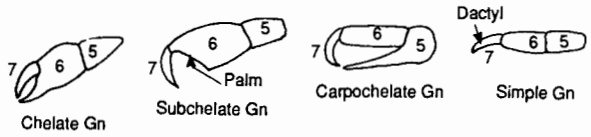
Suborder: **Gammaridea**

Usually benthic, opaque; head not fused with second pereon segment; eyes moderate to absent; palp of maxilliped present (with rare exception); pereon with 7 pairs of limbs, coxae well developed; pleon usually of 6 segments carrying 3 pairs of pleopods and usually 3 pairs of uropods.









Amphipoda — Gammaridea

Key to the species

1 Gnathopods both chelate, although the chelae may be very small, (segment three of gnathopod 2 elongate).
..... 2

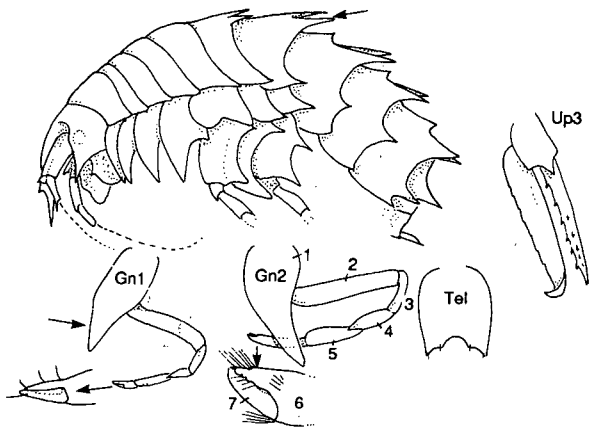
Gnathopods simple or subchelate.
..... 4

2 Large dorsal processes on pereon segments 6 and 7, pleon segments 1-3 and urosome segment 1; coxae long, acutely-pointed ventrally; gnathopods minutely chelate; uropod 3 biramus; telson shallowly cleft: mouthparts styliform, piercing.
Gnathiphimedia urodentata Bellan-Santini & Ledoyer, 1986

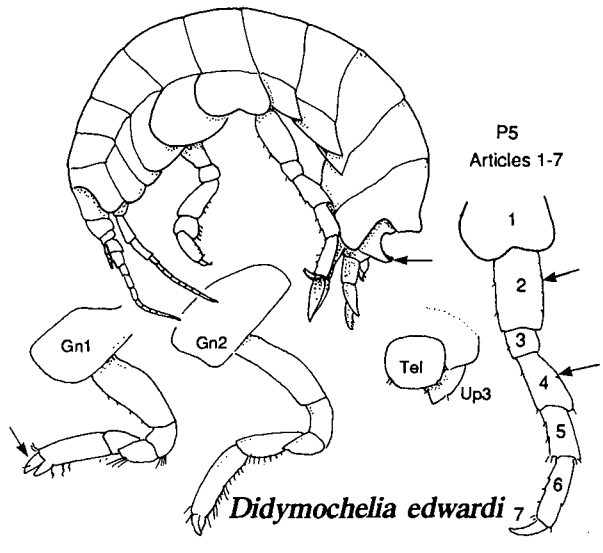
Pleon dorsally smooth; anterior coxae not ventrally pointed; uropod 3 uniramus or without rami; telson entire.
..... 3

3 Urosome segment 1 with characteristic hook-shaped dorsal process; uropod 3 reduced, without rami; pereopods 5-7, article 2 and 4 both narrow.
Didymochelia edwardi Bellan-Santini & Ledoyer, 1986

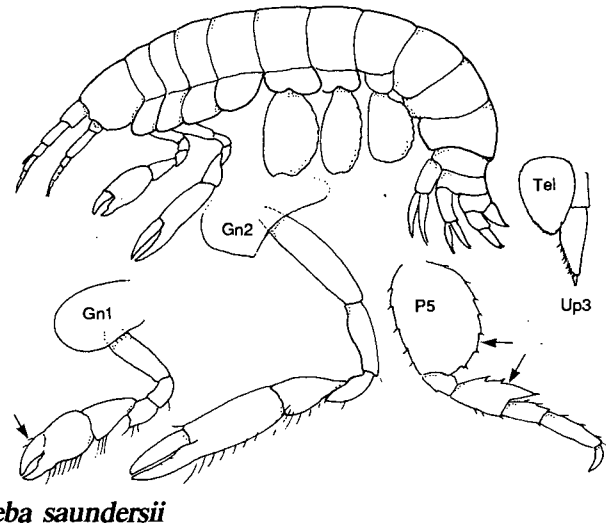
Urosome segment 1 dorsally smooth; uropod 3 with single long ramus; pereopods 5-7, article 2 dilated, article 4 expanded and projected distally.
Seba saundersii Stebbing, 1875



Gnathiphimedia urodentata



Didymochelia edwardi



Seba saundersii

4 Coxae small, length not exceeding height of pereon segments; gnathopods simple or weakly subchelate, article 5 of gnathopod 2 at least as long as article 6.
..... 5

Coxae large or gnathopods distinctly subchelate, or both.
..... 8

5 Body cylindrical; uropod 3 reduced, uniramus; urosome segments 2 and 3 coalesced; gnathopods weakly subchelate.
Cylindryllioides mawsoni Nicholls, 1938

Body laterally flattened; uropod 3 large and biramus; gnathopod 1 (and usually 2) simple.
..... 6

6 Urosome smooth; eyes present; gnathopod 2, articles 5 and 6 very elongate, setose posteriorly; uropod 3, inner ramus half length of outer.
Haplocheira barbimana (Thomson, 1879)

Urosome dorsally keeled; eyes absent; uropod 3, rami equal.
..... 7

7 Dorsal keel on pleon segment 3 and urosome segment 1; telson entire; antennae, first three articles very short; gnathopod 1, article 6 as long as 5; pereopods with expanded article 2.
Alexandrella inermis Bellan-Santini & Ledoyer, 1986

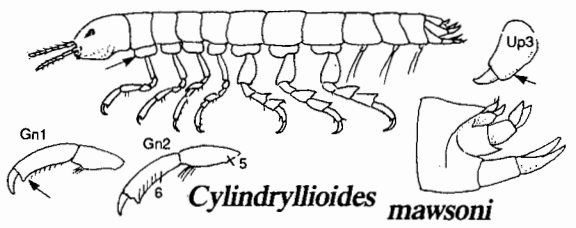
Pleon segment 3 smooth; urosome segment 1 with a pair of teeth, segment 2 with one; telson deeply cleft; antennae long; gnathopod 1, article 6 smaller and narrower than 5.
Pardalisca marionis Stebbing, 1888

8 Head with a pronounced rostrum; pereopods strongly setose.
..... 9

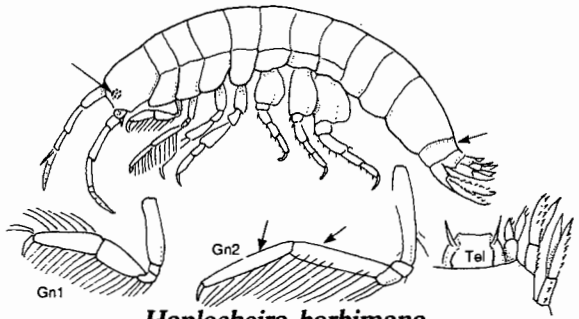
Head lacks pronounced rostrum.
..... 12

9 Head covered by large hood-like rostrum overlapping bases of antennae; pleon segment 3, posterior edge of side-plate with a pronounced distal hook; pereopod 6 much longer than 7; telson cleft.
Harpinia obtusifrons Stebbing, 1888

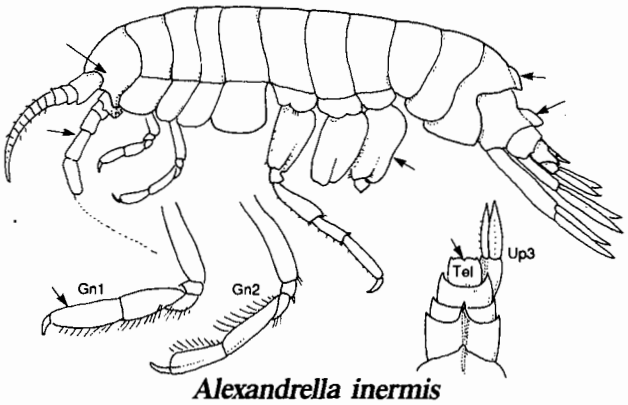
Rostrum not hood-like, antennae terminal; pereopod 7 longer than 5 and 6; telson entire.
(Oedicerotidae) 10



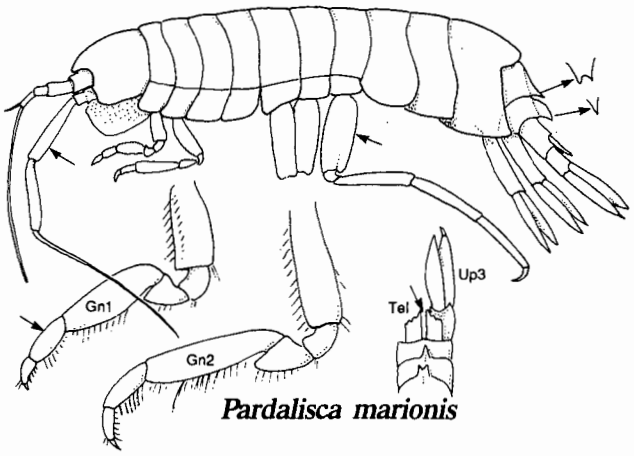
Cylindryllioides mawsoni



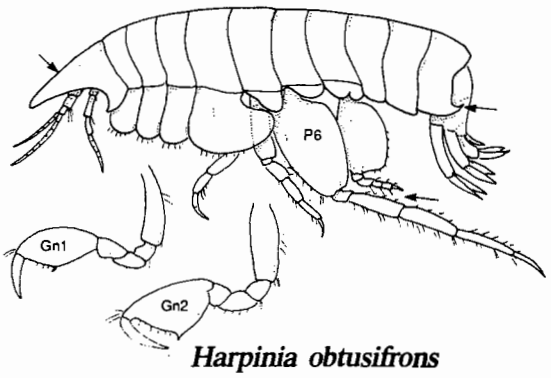
Haplocheira barbimana



Alexandrella inermis



Pardalisca marionis



Harpinia obtusifrons

10 Antenna 2 enlarged, at least 1,5 x length of antenna 1; gnathopod 2, article 5 projects at right angles and does not guard the posterior margin of article 6.
? Oediceroides cinderella Stebbing, 1888

Antenna 2 less than 1,5 x length of antenna 1; gnathopod 2, article 5 with elongate lobe that guards posterior margin of article 6.
..... 11

11 Pereopod 3 setose along the whole anterior margin of article 6; gnathopod 2 palm oblique and as long as hind margin.
Monoculodes scrabriculosus KH Barnard, 1932

Pereopod 3, anterior margin of article 6 setose only distally; gnathopod 2 palm shorter than hind margin.
? Monoculodes antarcticus KH Barnard, 1932

12 Coxae 2-4 very large, overlapping and concealing reduced coxa 1, gnathopod 2 subchelate, article 5 shorter than 6.
..... 13

Coxae 2-4 small or large but not concealing coxa 1, (or if coxa 1 concealed, gnathopods simple and article 5 longer than 6.)
..... 21

13 Uropod 3 biramus.
(Amphilochidae) 14

Uropod 3 with single 2-segmented ramus.
(Stenothoidae) 15

14 Telson narrowly triangular ending in three small points; mandibular palp setose.
Gitanopsis squamosa (Thomson, 1880)

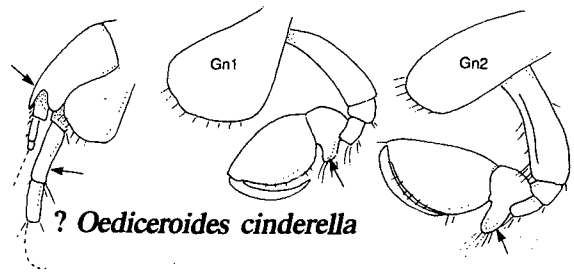
Telson triangular, terminally rounded; mandibular palp not setose.
Gitanopsis marionis (Stebbing, 1888)

15 Article 2 of pereopod 7 expanded into a flattened posterior lobe 16

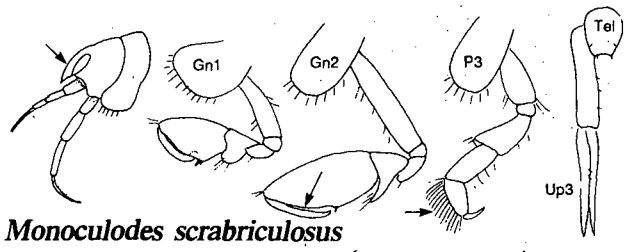
Article 2 of pereopod 7 narrow and linear, lacking posterior lobe 19

16 Gnathopods dissimilar, gnathopod 1 article 4 with a rounded projection, articles 5 and 6 elongate; antenna 2 as long as body; pereopods 5-7 article 4 narrow, as long as article 2; mandibular palp present.
Proboloides sp. A. SAM A40358

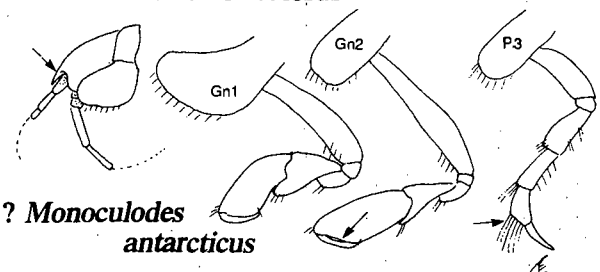
Gnathopods similar, gnathopod 1 not as above; pereopods 5-7 article 4 shorter than 2 17



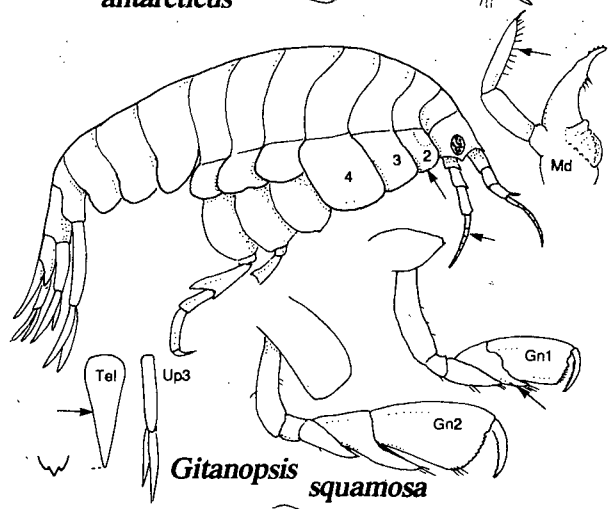
? Oediceroides cinderella



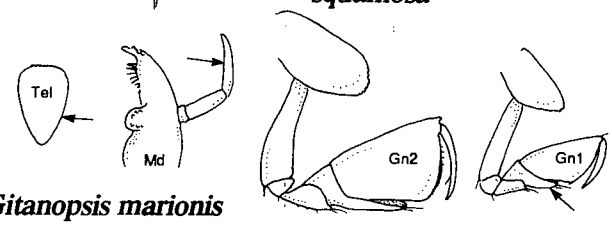
Monoculodes scrabriculosus



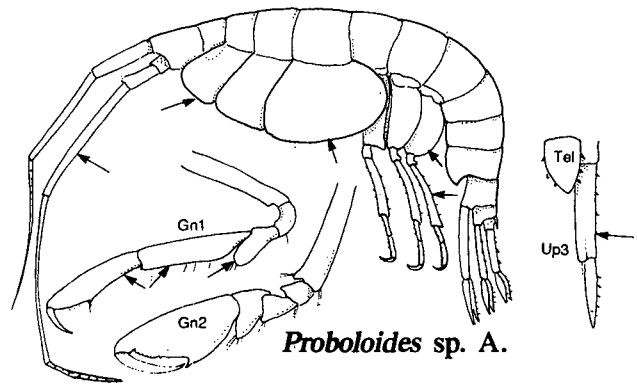
? Monoculodes antarcticus



Gitanopsis squamosa



Gitanopsis marionis



Proboloides sp. A.

17 Pereopods 5-7, article 4 not lobed posteriorly; pereopod 6, article 2 not expanded; mandibular palp 3-articulate.
Proboloides elliptica (Schellenberg, 1931)

Pereopods 5-7, article 4 postero-distally lobed; pereopod 6 and 7 article 2 expanded; mandibular palp absent or bi-articulate.
..... 18

18 Mandible without palp.
Stenothoe sp. listed by Bellan-Santini and Ledoyer (1986)

Mandible with a flat 2 articulate palp.
Proboloides sp. B SAM A40359 & SAM A 40360

19 Urosome segments smooth and separate; telson not thickened; article 1 of antenna 1 not lobed distally; mandibular palp one-segmented.
Probolisca ovata (Stebbing, 1888).

Either urosome or telson dorsally keeled; urosome segments coalesced.
..... 20

20 Urosome segment 1 with large dorsal ridge; antenna 1, article 1 with a distal lobe overlapping article 2; mandibular palp 1-segmented.
Pseudothaumatelson cyproides Nicholls, 1938

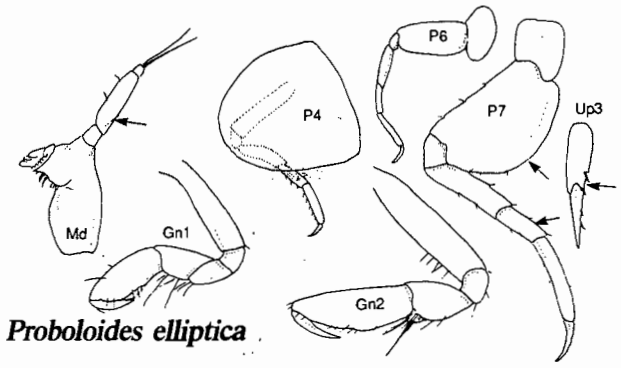
Urosome smooth but telson dorsally ridged; antenna 1, article 1 not distally lobed; mandibular palp 3-segmented.
Thaumatelson herdmani Walker, 1906

21 Coxae large, as tall as body segments; gnathopod 1 simple or weakly subchelate; article 3 of gnathopod 2 often elongate.
..... 22

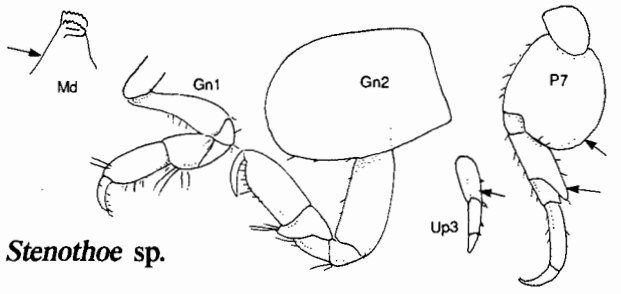
Coxae small to moderate sized, shorter than body segments; gnathopods strongly subchelate; article 3 of gnathopod 2 not elongate.
..... 35

22 Gnathopod 2, article 3 elongate; antenna 1 short and stout, articles 2 and 3 of peduncle much shorter than 1.
..... 23

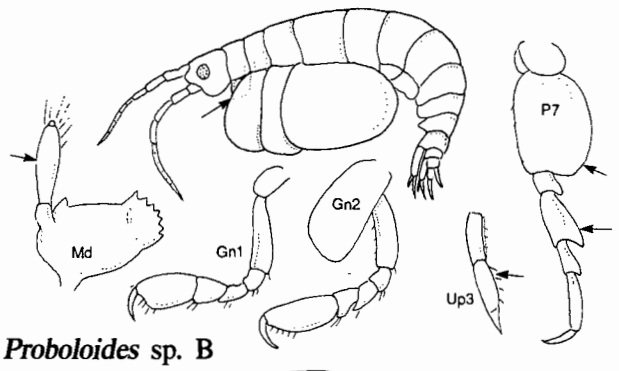
Gnathopod 2, article 3 not elongate; antenna 1 may be short but articles 2 and 3 usually as long as 1; pereopods strongly spinose and setose.
(Haustoriidae)
..... 32



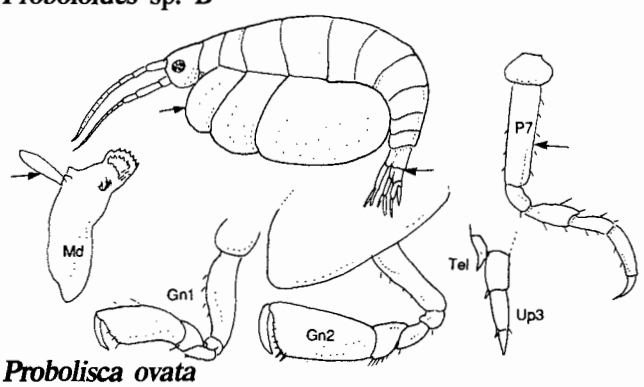
Proboloides elliptica



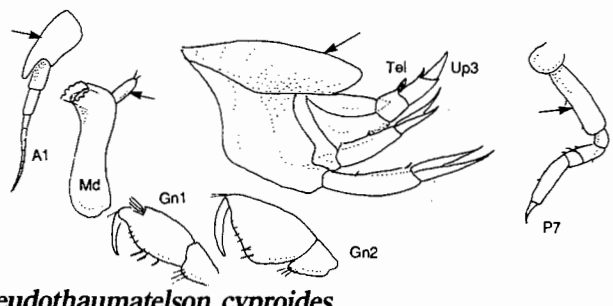
Stenothoe sp.



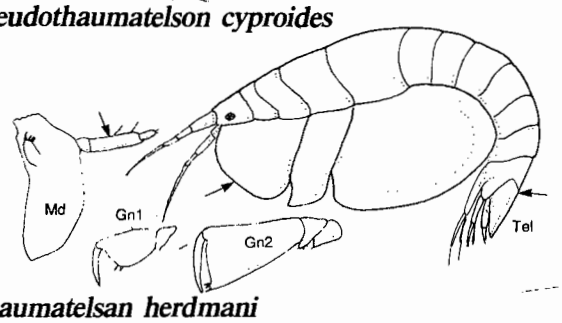
Proboloides sp. B



Probolisca ovata



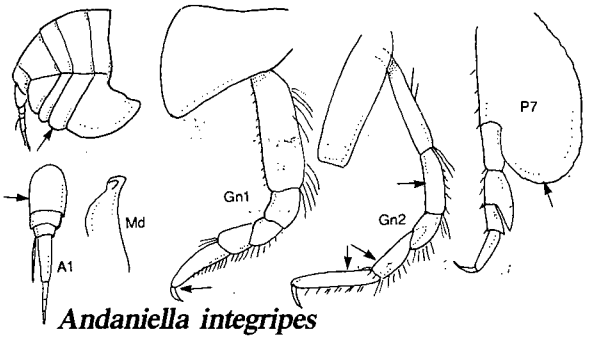
Pseudothaumatelson cyproides



Thaumatelsan herdmani

23 Both gnathopods simple, article 6 longer than 5; mandible without molar or palp; pereopods 7, article 2 very large and strongly lobed distally; pereopods 5 and 6, article 2 narrow.
Andaniella integripes Bellan-Santini and Ledoyer, 1986

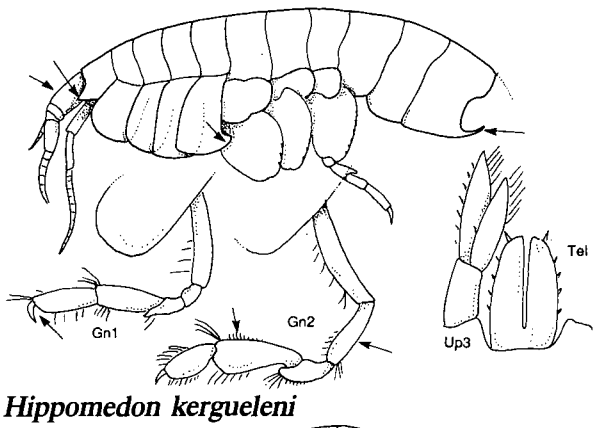
Gnathopod 2, and often 1, article 5 as long or longer than 6; mandible with palp.
(Lysiannassidae) 24



Andaniella integripes

24 Gnathopod 1 subchelate (sometimes weakly so); telson cleft.
..... 25

Gnathopod 1 simple; telson entire.
..... 27



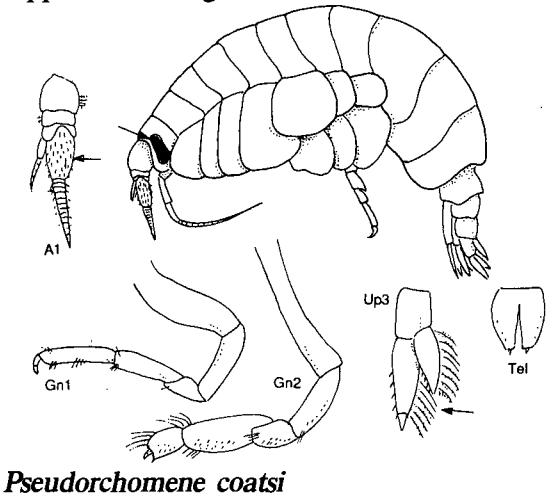
Hippomedon kergueleni

25 Pleon segment 3, posterior corner of side-plate produced into a strongly upturned tooth; anterior corner of the head pointed; eye indistinct.
Hippomedon kergueleni (Miers, 1875)

Pleon segment 3, side-plate rounded or square, not strongly produced; corner of head rounded; eye large, not obscured by coxa 1.
..... 26

26 Gnathopod 1 articles 5 and 6 elongate, length >3x width palm oblique; antenna 1, article 1 of flagellum elongate (as long as the peduncle) and covered with easthetascs (hairs).
Pseudorchomene coatsi (Chilton, 1912)

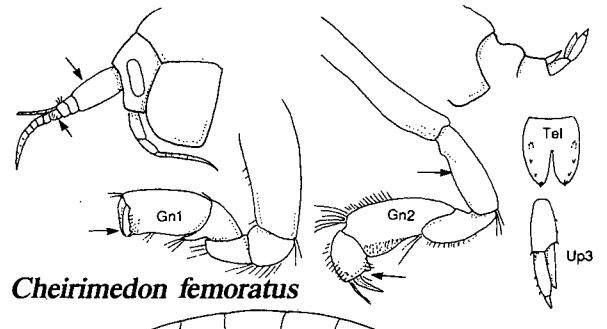
Gnathopod 1 article 6 broad, length<2x width palm flat, article 5 triangular; atenna 1 in female, article 1 of flagellum small (as short as articles 2 or 3 of peduncle), not setose.
Cheirimedon femoratus (Pfeffer, 1888)



Pseudorchomene coatsi

27 Coxae 1 and 2 small, partly hidden by forward projecting coxa 3; pleon segment 3 with triangular dorsal tooth.
Lepidepecreella tridactyla Bellan-Santini, 1972

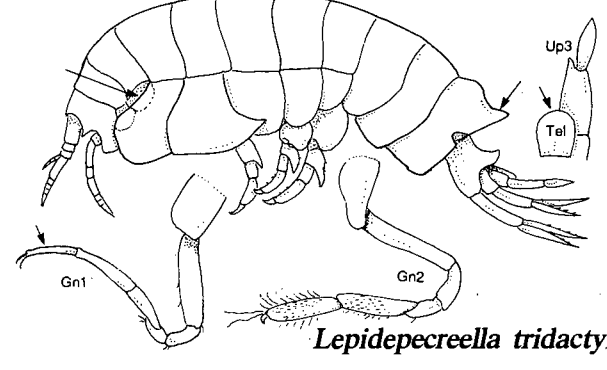
Coxae 1-3 subequal in size, coxa 1 projecting forwards to at least partly conceal head; pleon segment 3 dorsally smooth.
..... 28



Cheirimedon femoratus

28 Head totally concealed by coxa 1; dorsal hump on urosome segment 1; uropod 3 greatly reduced, with single minute ramus, or both rami absent.
..... 29

Head only partly covered by coxa 1; urosome segment 1 dorsally smooth; uropod 3 biramus, although inner ramus reduced.
..... 31



Lepidepecreella tridactyla

29 Pereopod 7, article 2 broadly rounded posteriorly, not posterior-distally pointed.
Acontiostoma marionis Stebbing, 1888

Pereopod 7, article 2 posteriorly expanded and produced to a distal point.
..... 30

30 Telson longer than broad, terminating in two short spines.
Stomacontion acutibasalis (Bellan-Santini and Ledoyer, 1974)

Telson broader than long, with 6 strong terminal spines.
Stomacontion pepinii (Stebbing, 1888)

31 Eye large, black: gnathopod 2 relatively short and stout (twice length of coxa 2).
Parawaldeckia kidderi (Smith, 1876)

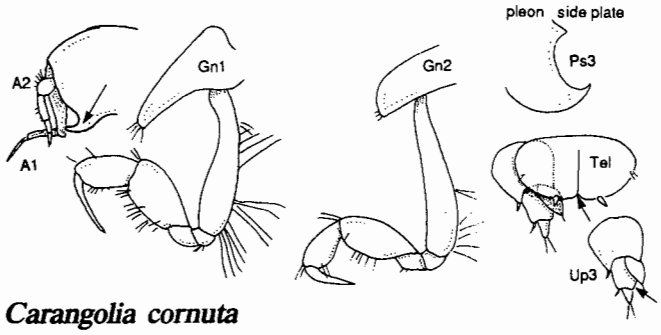
Eyes absent; gnathopod 2 long and slender (three times length of coxa 2).
Kerguelenia antiborealis Bellan-Santini & Ledoyer, 1986

32 Gnathopod 2 very elongate, simple and strongly setose, folded between articles 5 and 6, lacking dactyl; gnathopod 1 of female simple, gnathopod 1 of male subchelate; uropod 3 rami large, subequal; coxa 1 tiny, covered by coxa 2.
Cardenio paurodactylus Stebbing, 1888

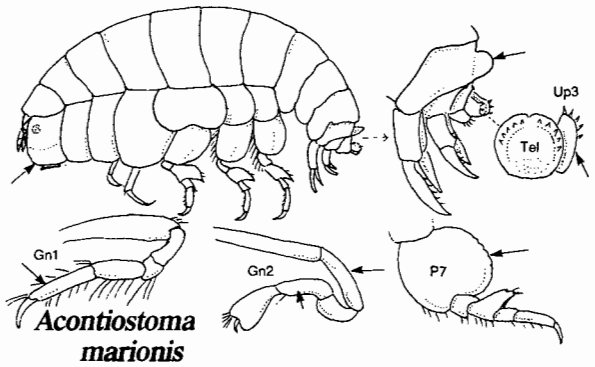
Gnathopod 2 not very elongate or setose, not folded, dactyl present; uropod 3 inner ramus considerably shorter than outer; coxa 1 not much smaller than 2.
..... 33

33 Anterior corner of head produced into an elongate tooth; uropod 3, rami reduced, both shorter than peduncle; telson short, broad and minutely cleft.
Carangolia cornuta Bellan-Santini & Ledoyer, 1986

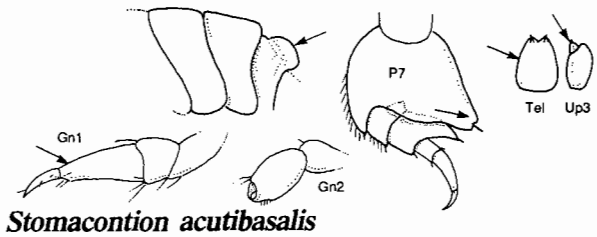
Anterior corner of head not toothed; uropod 3, outer ramus much longer than peduncle; telson deeply cleft.
..... 34



Carangolia cornuta

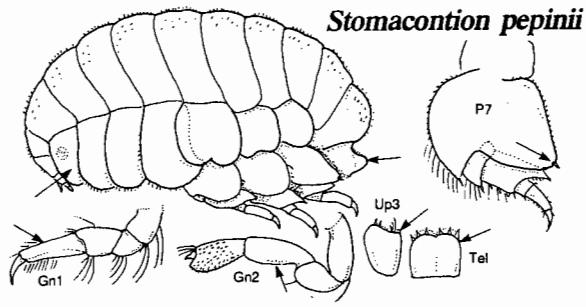


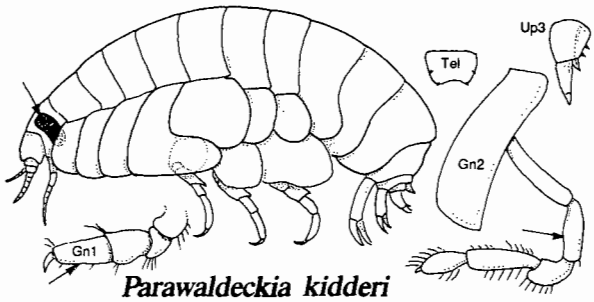
Acontiostoma marionis



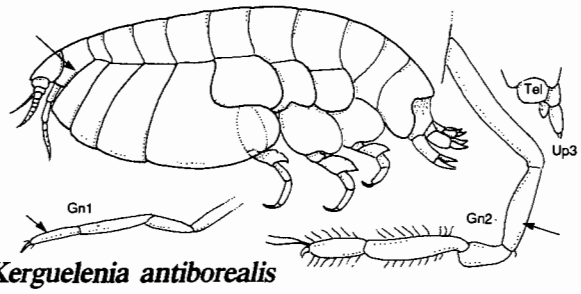
Stomacontion acutibasalis

Stomacontion pepinii

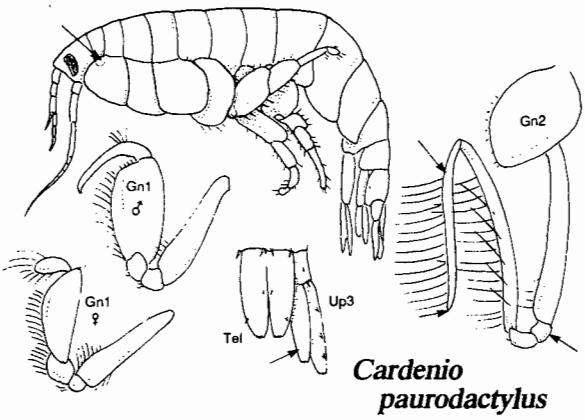




Parawaldeckia kidderi



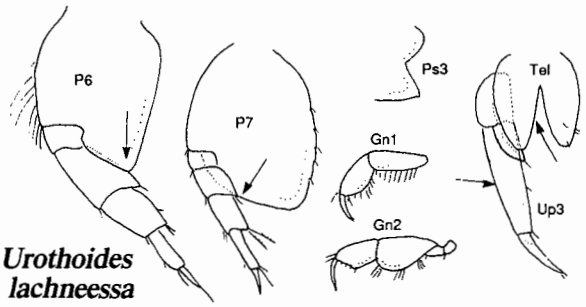
Kerguelenia antiborealis



Cardenio paurodactylus

34 Pereopod 6, article 2 greatly expanded posteriorly and distally; pereopod 7, article 2 expanded and extending distally to end of article 4; uropod 3, outer ramus about 4x length of inner.
Urothoides lachneessa Stebbing, 1888

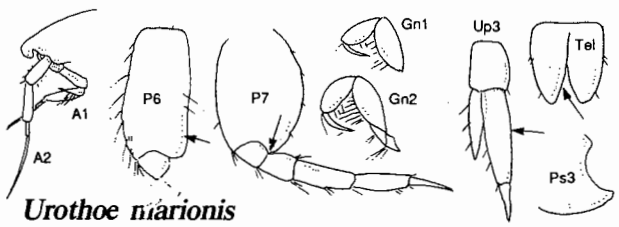
Pereopod 6, article 2 not greatly expanded posteriorly or distally; pereopod 7, article 2 not extending distally beyond the tip of article 3; uropod 3, outer ramus twice length of inner.
Urothoe marionis Bellan-Santini & Ledoyer, 1986



Urothoides lachneessa

35 Gnathopod 1 and 2, article 5 projects beneath article 6 to protect it for one third or more of its length; coxae moderate sized, thin; uropod 3 large, biramus, extends beyond uropod 2 36

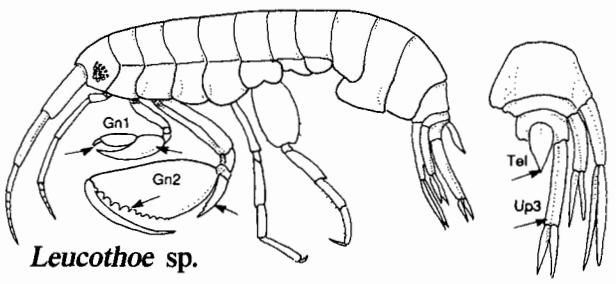
Gnathopod 1 article 5 not as above, or if so then coxae small and uropod 3 uniramus 39



Urothoe marionis

36 Gnathopod 1 carpochelate (claw formed by articles 5-7); uropod 3, huge peduncle longer than rami; telson entire; antenna 1, accessory flagellum minute or absent.
(Leucothoidae) 37

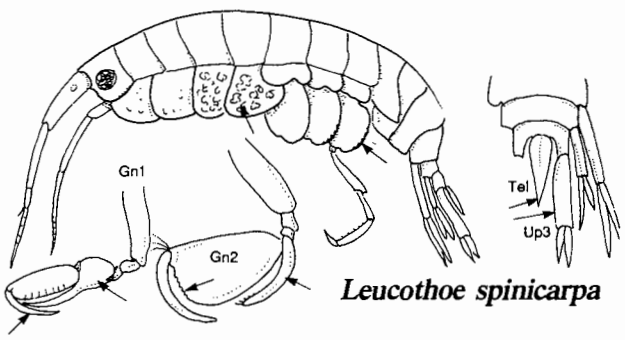
Gnathopod 2 strongly subchelate. Uropod 3 large, peduncle shorter than rami; telson deeply cleft; antenna 1 with long accessory flagellum.
(Liljeborgidae) 38



Leucothoe **sp.**

37 Gnathopod 1, dactyl very short; telson short, length 2x width; gnathopod 2, palm with teeth; pereopods 5-7, article 2 smooth; exoskeleton smooth.
***Leucothoe* sp.** SAM A40379

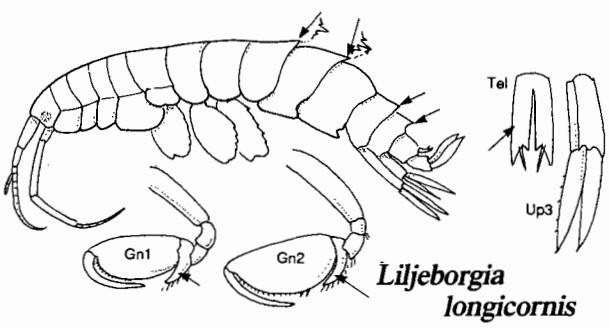
Gnathopod 1, dactyl elongate, overlaps the projection of article 5; gnathopod 2, palm rounded, finely serrated; telson long, length 4x width; pereopods 5-7 , article 2 expanded with serrated margins; exoskeleton textured.
Leucothoe spinicarpa (Abilgaard, 1879)



Leucothoe spinicarpa

38 Pleonal segments 1-5 with 3:3:0:1:1 dorsal teeth respectively.
Liljeborgia longicornis (Schellenberg, 1931)

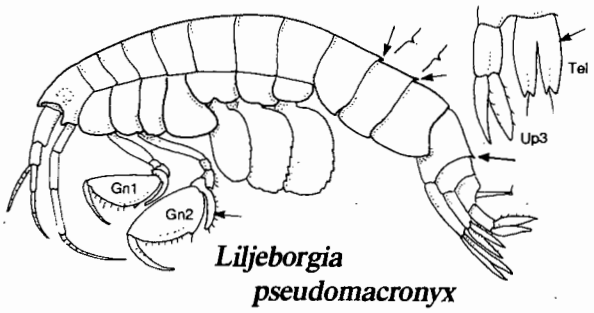
Pleonal segments 1-5 with 1:1:0:1:0 dorsal teeth respectively.
Liljeborgia pseudomacronyx Bellan-Santini & Ledoyer, 1986



Liljeborgia longicornis

39 Antenna 1 shorter than pereon and than antenna 2, without accessory flagellum; mandibular palp absent; uropod 3 short, uniramus; telson thick and cleft — conical lobes set at an angle to one another
(Talitroidea) 40

Antenna 1 longer than pereon, usually with accessory flagellum; mandibular palp present 42



Liljeborgia pseudomacronyx

40 Male gnathopod 2 large, palm very setose and oblique, poorly defined from hind margin; eyes pale.
Hyale hirtipalma (Dana, 1852)

Male gnathopod 2, palm not setose, distinct angle between palm and hind margin; eyes dark.
..... 41

41 Male gnathopod 2, article 5 not projecting between articles 4 and 6, palm oblique; uropods 1 and 2 extending well beyond short uropod 3; coxae do not project forward to partly cover head.
Hyale grandicornis (Kroyer, 1945)

Male gnathopod 2, article 5 projecting between 4 and 6 to form a large lobe, palm transverse; uropod 2 not projecting beyond 3; coxa 1 large, projecting forward beyond front of head.
Talitridae ? new genus SAM A40361

42 Urosome segment 1 elongate, more than twice as long as 2; body strongly depressed; coxae small; telson entire; uropod 3 reduced and lacking rami.
(Podoceridae) 43

Urosome segment 1 not much longer than 2; uropod 3 with one or two rami.
..... 44

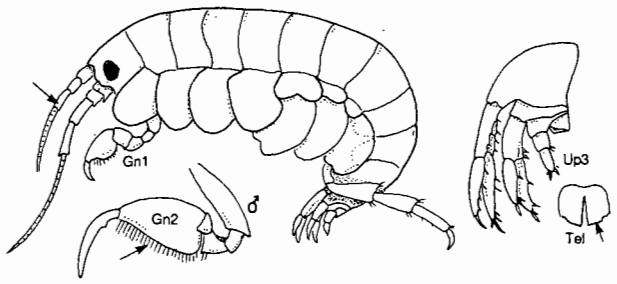
43 Dorsal teeth on pereon segments 3-7 and pleon segments 1-3; gnathopod 2 large, twisted to lie under the body, palm with several teeth distally and a large semicircular excision near defining tooth.
Podocerus danae (Stebbing, 1888)

Body dorsally smooth, lacking teeth; gnathopod 2 large, palm evenly convex with small serrated teeth for most of its length and a very setose inner margin.
Podocerus **sp.** ? ***P. capillimanus*** SAM A40362

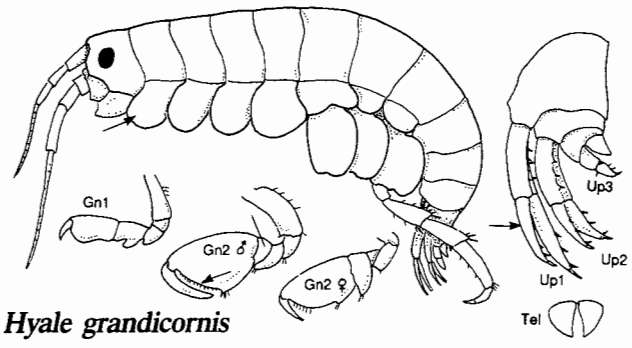
44 Telson short, fleshy, entire; uropod 3 with short rami; tubicolous; antennae long and setose, accessory flagellum present; gnathopod 2 usually well developed toothed, larger than gnathopod 1; pereopods glandular.
..... 45

Telson elongate, laminar, usually cleft; uropod 3 bears elongate rami; free living; antennae usually not very setose; pereopods not glandular.
Eusiridae & Gammaridae..... 55

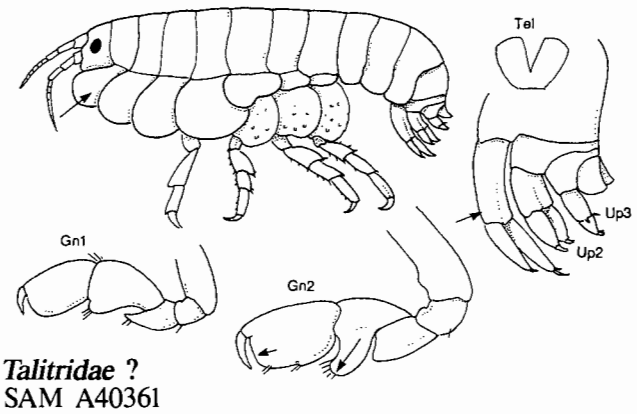
45 Uropod 3 rami shorter than elongate peduncle, outer ramus with hooked tip or hooked spines at tip; if rami reduced then male gnathopod 2 carpochelate (dactyl closing on article 5).
(Ischyroceridae) 46



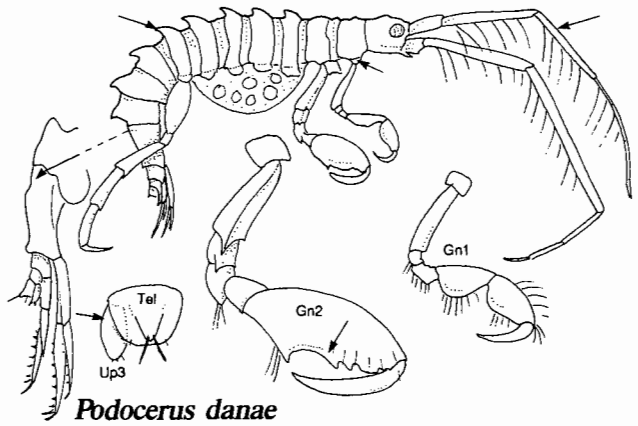
Hyale hirtipalma



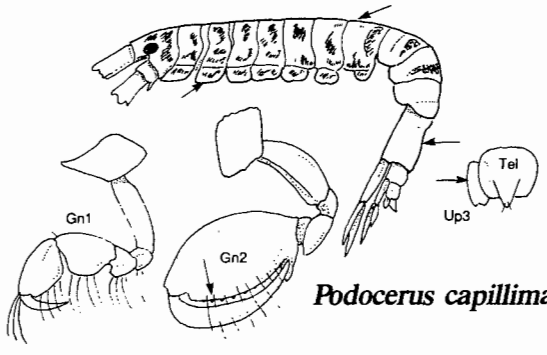
Hyale grandicornis



Talitridae ?
SAM A40361



Podocerus danae



Podocerus capillimanus

Uropod 3 rami longer than peduncle, rami not hooked.
(Corophiidae) 53

46 Male gnathopod 2, article 5 greatly expanded, larger than 6 and forming the 'hand' on which articles 6 and 7 close (carpochelate); uropod 3 uniramus.
..... 47

Gnathopod 2 subchelate, article 6 longer than 5, which is not expanded.
..... 48

47 Uropod 2 uniramus; male gnathopod 2 , article 6 slender and curved; antenna 1, article 1 swollen with distal projections.
Cerapus oppositus KH Barnard, 1932

Uropod 2 biramus, inner ramus reduced; male gnathopod 2, article 6 almost as broad as long, much shorter than article 5.
Pseudericthonius gaussi Schellenberg, 1926

48 Urosome segments 1 and 3 each with small, paired dorso-lateral teeth; pereopods 6 and 7, article 2 posteriorly crenulate; pereopod 5, article 4 expanded and similar in width to article 2.
Pseudischyrocerus crenatipes Bellan-Santini and Ledoyer, 1986

Urosome segments dorsally smooth; pereopods 5-7, article 2 posteriorly smooth, article 4 not expanded
..... 49

49 Uropod 3, rami dorsally and terminally smooth or with short spines or setae.
..... 50

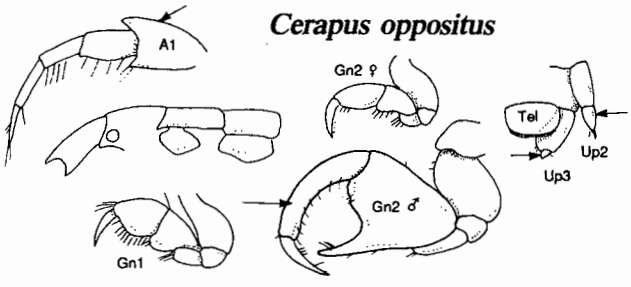
Uropod 3, outer ramus with a strong terminal spine and two triangular dorsal teeth.
..... 52

50 Telson constricted terminally with a bluntly rounded tip; gnathopod 1, article 5 longer than article 6; male gnathopod 2 palm almost transverse; coxae moderate sized, thin, rectangular in shape.
Pseudischyrocerus distichon (KH Barnard, 1930)

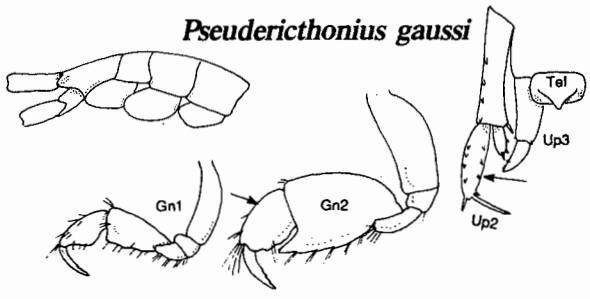
Telson smoothly rounded, semicircular; gnathopod 1, article 6 longer than 5.
..... 51

51 Gnathopod 2, palm very oblique with a distal tooth and large proximal concavity, dactyl stout; uropod 3, peduncle about twice length of rami; antenna 2, stout, without flagellum, curved to meet at the tips to form a circle with filtering hairs facing the centre; ***Ventojassa georgiana*** Schellenberg, 1931

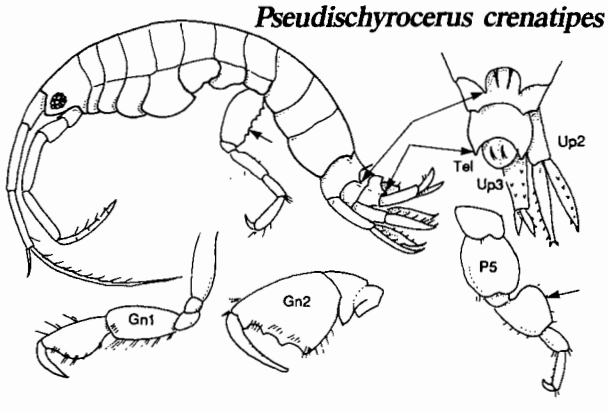
Cerapus oppositus



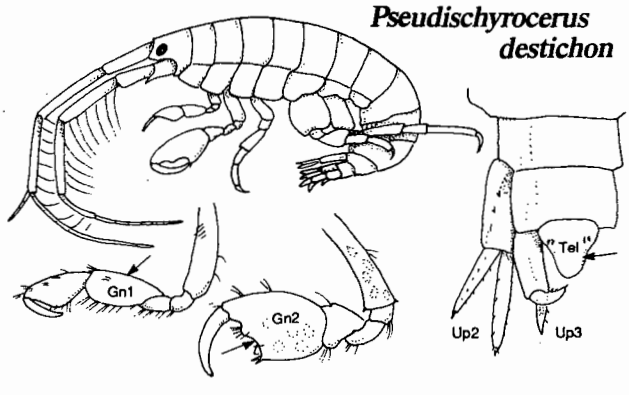
Pseudericthonius gaussi



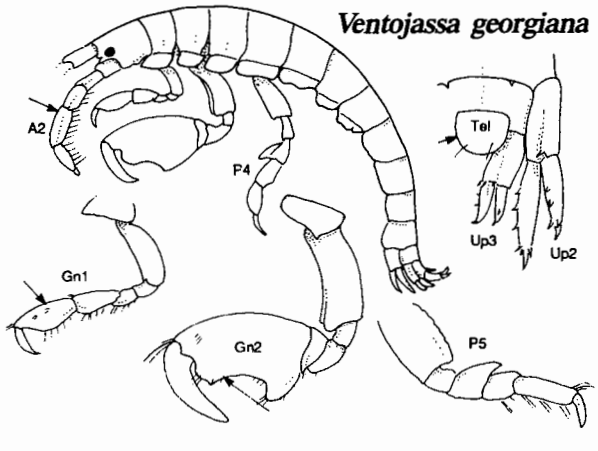
Pseudischyrocerus crenatipes



Pseudischyrocerus destichon



Ventojassa georgiana



Gnathopod 2, palm only slightly oblique, as long as hind margin, without large teeth; uropod 3, peduncle four times length of minute rami.
? Ischyrocerus **sp.** 1 listed by Bellan-Santini & Ledoyer, (1986)

52 Male gnathopod 2, palm very oblique with a large characteristic 'thumb' when male fully mature; common.
Jassa alonsoae Conlan, 1990

Gnathopod 2, palm oblique but not much longer than hind margin, bearing large triangular distal tooth but no thumb; coxa 1 longer than 2.
? Ischyrocerus **sp.** 2 SAM A 40363

53 Gnathopod 2 powerful much larger than 1, article 5 small and triangular, palm with a broad flat tooth near the articulation of the dactyl.
Gammaropsis **sp.** SAM A 40364

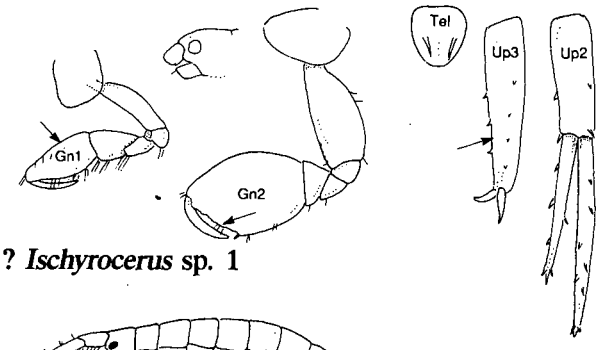
Gnathopod 2 slender and similiar in size to gnathopod 1, article 5 elongate, equal in length to article 6. 54

54 Urosome segment 1 with a pair of latero-dorsal keels; gnathopod 2 larger than 1, palm strongly oblique.
Gammaropsis longitarsus (Schellenberg, 1931)

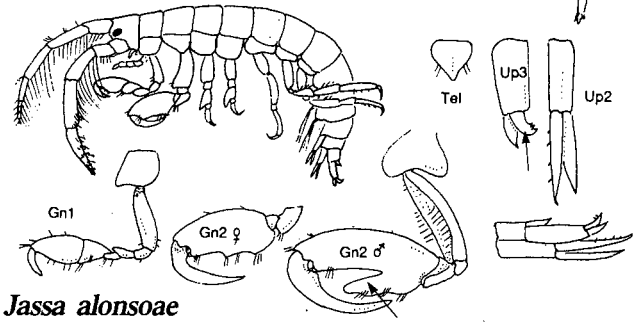
Urosome not keeled; gnathopods 1 and 2 about equal in size; palm of gnathopod 2 almost transverse.
Lembos **sp.** Bellan-Santini and Ledoyer, 1986

55 Antenna 1 much longer than 2. 56

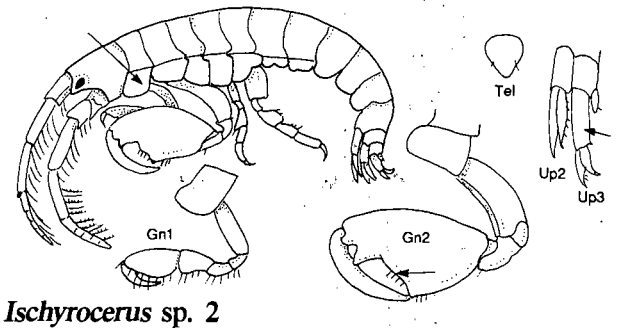
Antenna 1 shorter or only slightly longer than antenna 2, accessory flagellum absent or very small. **(Eusiridae)** 58



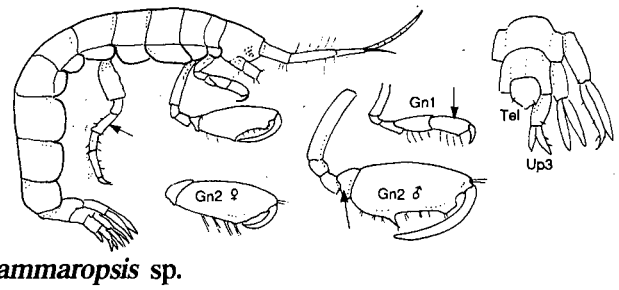
? *Ischyrocerus* **sp. 1**



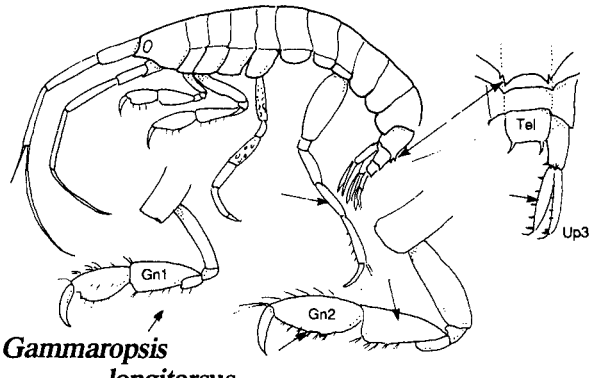
Jassa alonsoae



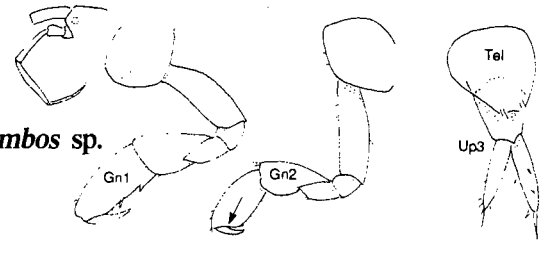
? *Ischyrocerus* **sp. 2**



Gammaropsis **sp.**



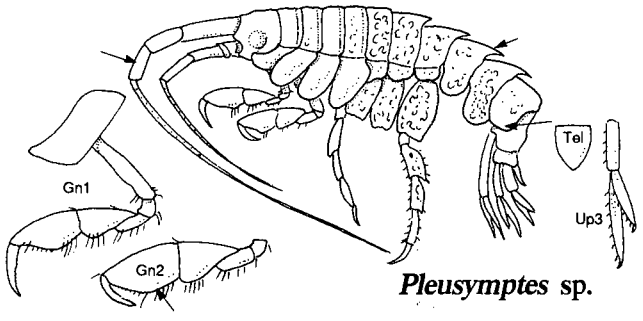
Gammaropsis longitarsus



Lembos **sp.**

56 Telson entire; accessory flagellum on antenna 1, small or absent. **(Pleustidae).**
Large dorsal spines on pereon segments 5-7 and pleon segments 1 and 2; pleonal side plates with blunt posterior corners; surface with characteristic mottled texture.
***Pleusymtes* sp.** SAM A 40378

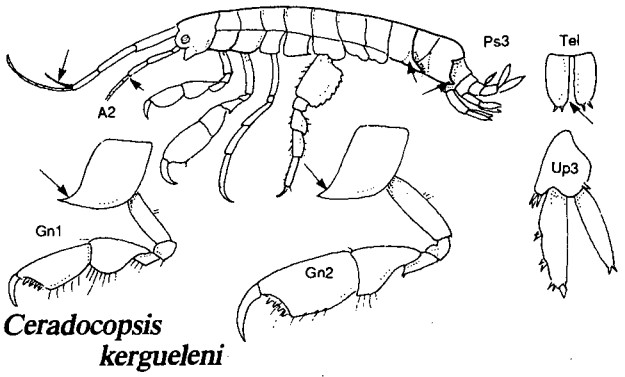
Telson deeply cleft; accessory flagellum on antenna 1 long and multi-articulate.
(Gammaridae) 57



***Pleusymptes* sp.**

57 Single pair of compound eyes; coxae 1 and 2, lower anterior corner produced into an acute point; pleon side plates 1 and 3 with an acutely produced posterior ventral corner; antenna 2 very short, usually not exceeding the peduncle of antenna 1.
Ceradocopsis kergueleni Schellenberg, 1926

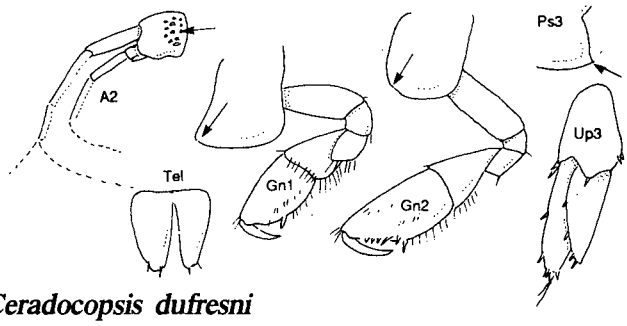
Eyes unusual, comprised of diffuse ocelli scattered on the posterior half of the head; coxa 1 and 2 quadrate, anterior angle not produced; antenna 2 short but exceeds peduncle of antenna 1; pleon side plates not strongly produced.
Ceradocopsis dufresni Bellan-Santini and Ledoyer, 1986



Ceradocopsis kergueleni

58 Telson long, tapering, at least 50% cleft; eyes always present.
..... 59

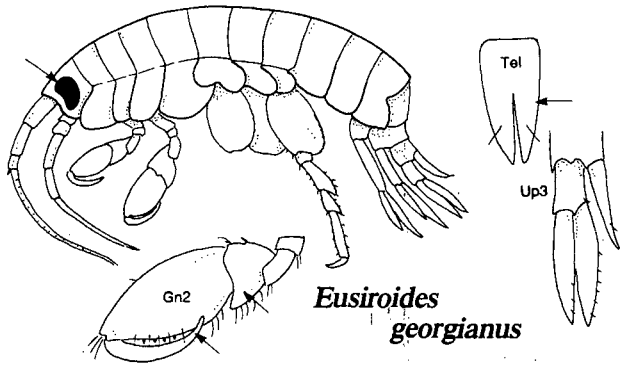
Telson entire or notched, but less than 50% cleft; eyes present or absent.
..... 64



Ceradocopsis dufresni

59 Gnathopod 2, article 5 short, less than half length of 6, posteriorly lobed; palm strongly oblique, poorly defined, dactyl closes inside palm; eye large, black, bean-shaped; exoskeleton porcellanous.
Eusiroides georgianus KH Barnard, 1932

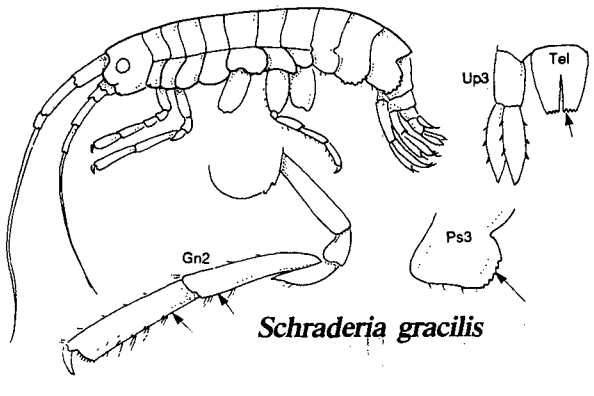
Gnathopod 2, article 5 more than half length of 6; palm short, transverse, well defined from hind margin, dactyl does not close inside palm.
..... 60



Eusiroides georgianus

60 Gnathopods 1 and 2, articles 5 and 6 narrow, elongate and parallel-sided, length >3x width; telson truncated at tip, not pointed. 61

Gnathopods 1 and 2, articles 5 and 6 stout, length <2x width, widening distally; telson tapers to a blunt point. 62



Schraderia gracilis

61 Pleon dorsally smooth, pleonal side plates strongly serrated posteriorly; eye pale, round; telson with a truncated, serrated tip.
Schraderia gracilis Pfeffer, 1888

Pleon segments 1 and 2 each with single, mediodorsal tooth on the posterior margin; pleonal side plates not serrated, a strongly curved point on the posterio-ventral corner; eye large, dark and square; telson with a smooth, flat tip.
Djerboa furcipes Chevreux, 1906

62 Lower front corner of head and upper lip both produced into points; pleonal side plate 3 with a semi-circular notch above pointed ventral corner; eye round with a dark margin.
Atyloella magellanica (Stebbing, 1888)

Head and upper lip without points; pleonal side plate 3 bluntly rounded; eyes square or bean-shaped.
..... 63

63 Eyes very large, dark, rectangular; coxa 1 less than height of pereon segment 1, not extending forward beneath head; antenna 1, accessory flagellum small, articulate; telson elongate with a terminal spine to each tip; (common).
Paramoera fissicauda (Dana, 1852)

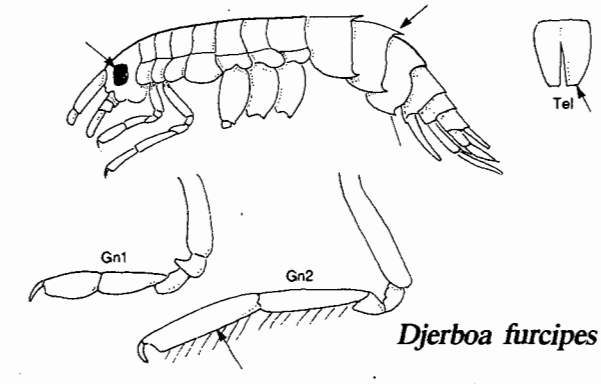
Eyes moderate sized, dark, bean-shaped; coxa 1 longer than height of pereon segment 1, extending forward beneath head; accessory flagellum absent; telson tapering to blunt tips without terminal spines.
Pontogeneiella brevicornis (Chevreux, 1906)

64 Telson entire, terminally rounded or pointed; gnathopod 2 elongate and slender, articles 5 and 6 length >3x width; pleon side plates, posterior corner drawn into a curved point.
..... 65

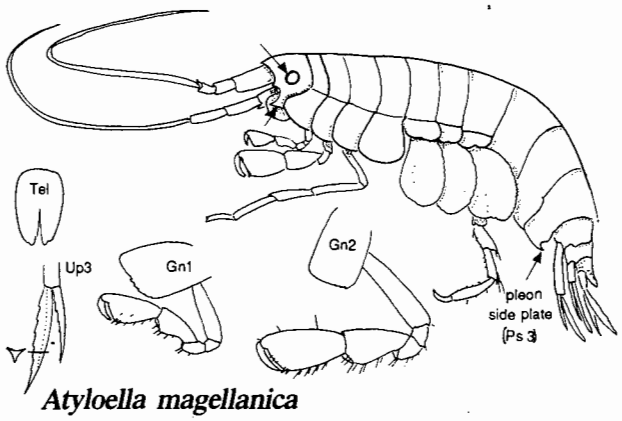
Telson terminally notched or cleft; gnathopod 2 articles 5 and 6 not elongate and slender; pleon side plates posteriorly rounded.
..... 66

65 Pleon segment 1 with a minute tooth and 2 with a larger tooth on the postero-dorsal margin; gnathopod 2 palm transverse, articles 5 and 6 equal in length; telson tip rounded, finely scalloped.
Oradarea ocellata Thurston, 1974

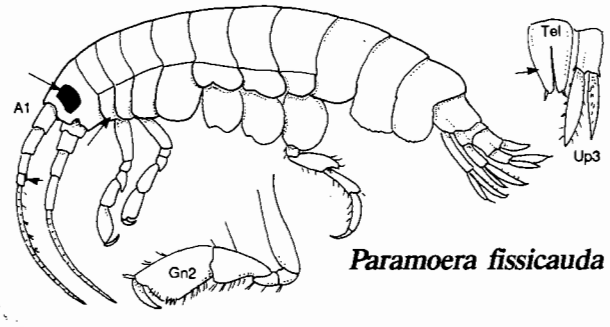
Pleon segments 1 and 2 postero-dorsally smooth; gnathopod 2 palm oblique, article 6 longer than 5; telson pointed.
Oradarea ?edentata Thurston, 1974
SAM A 40365



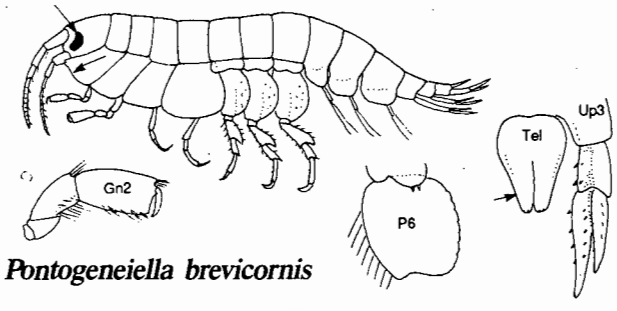
Djerboa furcipes



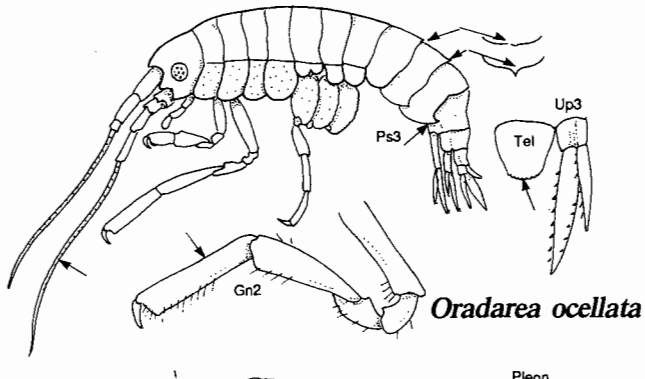
Atyloella magellanica



Paramoera fissicauda



Pontogeneiella brevicornis



Oradarea ocellata

Oradarea ?edentata

66 Eyes large, obvious; telson lobes terminally rounded.
..... 67

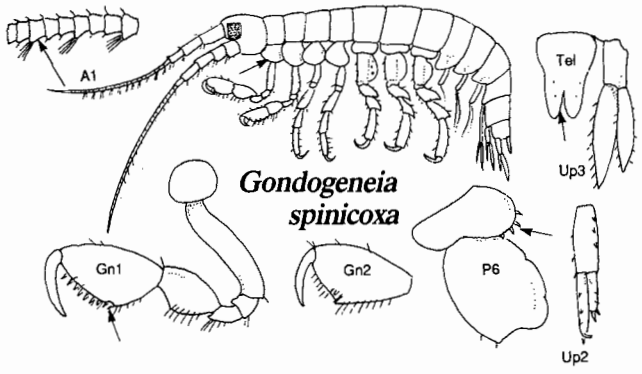
Eyes absent or pale, not obvious; telson lobes terminally pointed 68

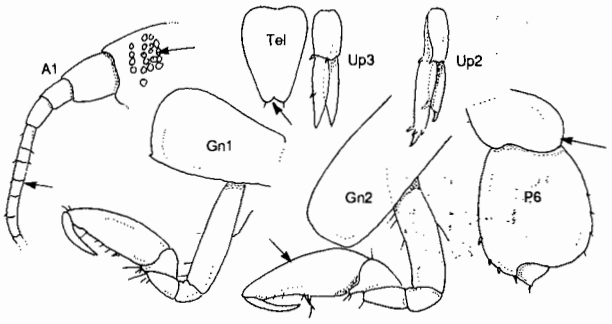
67 Antenna 1 shorter than 2, every second or third segment of the flagellum dilated and bearing a tuft of hairs; telson one third cleft; eye large rectangular; gnathopods, palm defined from hind margin; coxae small; coxae 5 and 6 with strong spines on posterior margin.
Gondogeneia spinicoxa Bellan-Santini and Ledoyer, 1974

Antenna 1, flagellum of uniform width; telson with a small terminal notch; eye consists of diffuse ocelli; gnathopods characteristic, article 6 elongate and evenly tapering, palm not defined from hind margin; coxae moderate sized; coxae 5 and 6, posterior margin without spines.
Harpinioides drepanocheir Stebbing, 1888

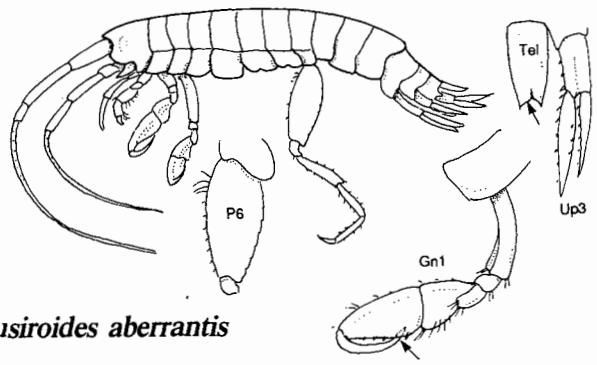
68 Pleon dorsally smooth; gnathopod twisted to lie beneath the body, dactyl closes on inside of palm; telson shape characteristic, concave tip, cleft for a short distance.
Eusiroides aberrantis Bellan-Santini and Ledoyer, 1986

Pleon segments 1 and 2 with small dorsal teeth on posterior margin; gnathopod, dactyl short and does not overlap the palm; telson with a wide, concave, terminal notch.
Atylopsis emarginatus Stebbing, 1888

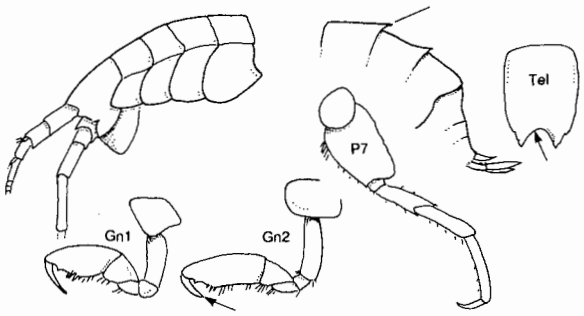




Harpinioides drepanocheir



Eusiroides aberrantis



Atylopsis emarginatus

C Isopoda

Key to the suborders (After Kensley, 1978)

1 Parasitic on other crustaceans; body usually asymmetrical.
Epicaridea (p 23)

Free living or parasitic on fish; body usually symmetrical. 2

2 Uropods lateral or ventral. 3

Uropods terminal or dorsal. 5

3 Uropods ventral, folded under pleotelson to form an operculum covering branchial chamber.
Valvifera (p 23)

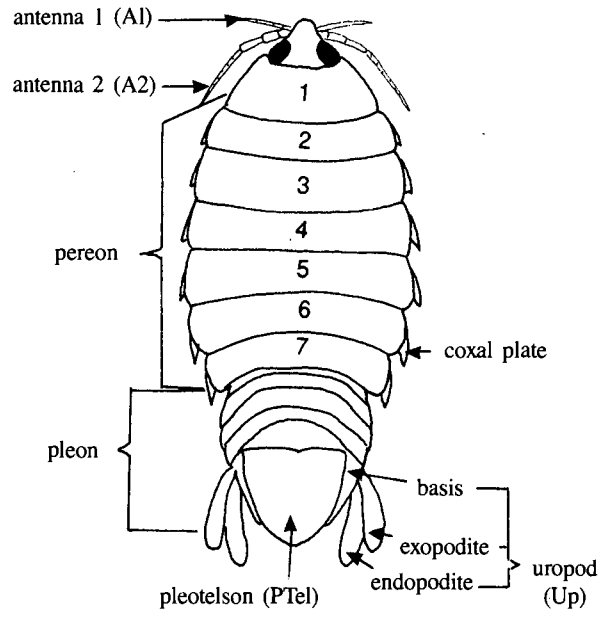
Uropods lateral or absent. 4

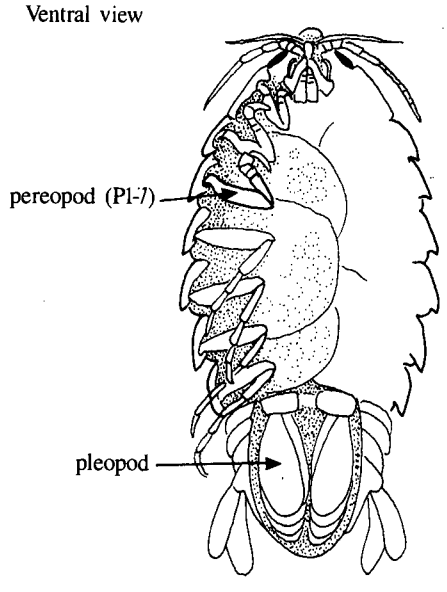
4 Body elongate, cylindrical; uropods often partially folded over telson or pleotelson.
Anthuridea (p 25)

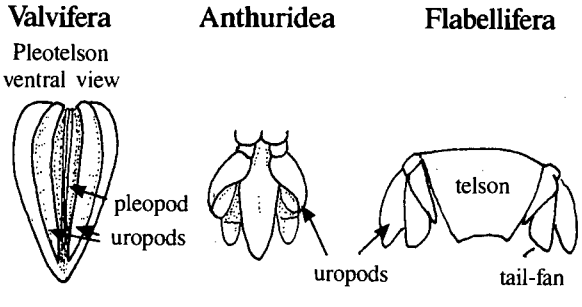
Body never elongate and cylindrical; uropods flattened, not arched over pleotelson, forming a tail-fan with pleotelson.
Flabellifera (p 25 & 26)

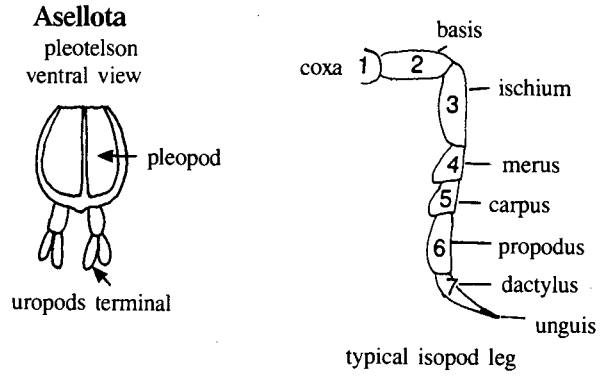
5 At least one pair of pleopods forming operculum covering rest of pleopods; pleon with at least three posterior segments (pleonites) fused to the telson to form pleotelson; uropods often terminal.
Asellota (p 25 & 28).

Operculate pleopods not present; pleon with at least five pleonites plus pleotelson; mandibles in male projecting beyond the cephalon.
Gnathiidea (p 25)







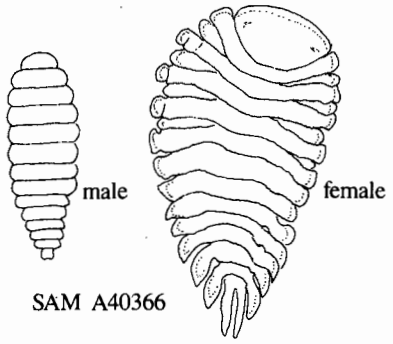


Isopoda

Key to the species

1 Parasitic on crustaceans; body usually asymmetrical. Suborder **Epicaridea**
Female large and asymmetrical; male small, symmetrical, attached to female; cephalon wide, anterior four pleonites laterally bilobed and rounded; coxae well defined; uropods uniramous.
Family **Bopyridae**
SAM A40366 & SAM A40367 found on the shrimp *Nauticaris marionis*.

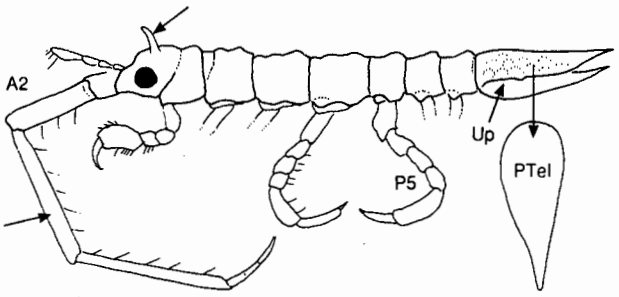
Free living or parasitic on fish; body usually symmetrical.
..... 2



SAM A40366

2 Uropods ventral, folded under pleotelson, operculate, covering the branchial chamber.
Suborder **Valvifera**
..... 3

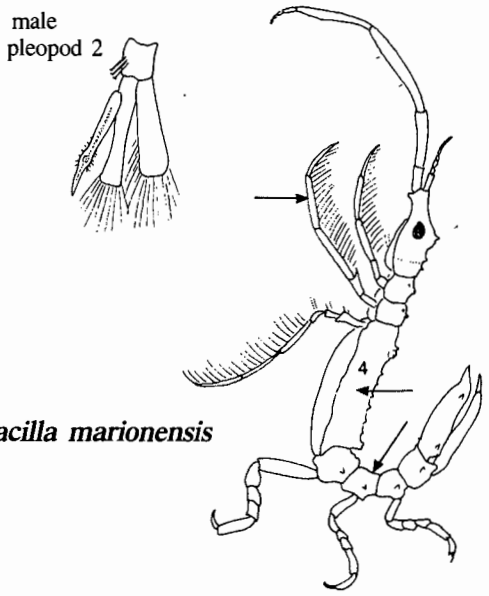
Uropods lateral, terminal, dorsal or absent.
..... 8



Arcturides cornutus

3 All pereopods stout and ambulatory with short stiff hairs; body long and cylindrical, not flexed, usually with a pair of spines on cephalon above large eyes, remainder of the body bumpy, without spines; pleotelson smooth, with scaley pattern, narrow with an acutely pointed tip; antennae long, stout; common on octocoral *Thouarella variabilis*.
Arcturides cornutus Studer, 1882

Pereopods 1-4 setose, 5-7 ambulatory; body cylindrical, often flexed (geniculate).
Family **Arcturidae**
..... 4



Neastacilla marionensis

4 Pereon segment 4 cylindrical, much longer than preceding segments; body strongly geniculate; body with varying degree of tuberculation, pereon segment 4 female more tuberculate than male.
Neastacilla marionensis (Beddard, 1886)

Pereon segment 4 similiar in length to preceding segments.
..... 5

12 Body broad and flattened, almost circular in outline; pleon consists of 3 free segments (pleonites) plus pleotelson; uropod, rami both moveable.
Family **Serolidae**
Pleotelson bears seven longitudinal ridges, terminal margin broadly notched; eyes large, paired.
Serolis septemcarinata Miers, 1847

(Three other Serolis species recorded from Crozet and Kerguelen Islands are:
***Serolis antarctica*:** Eyes absent; pereon segment 7 lateral margins extend back beyond pleotelson; pleotelson, margin entire, three longitudinal dorsal ridges; deep water near Crozet Islands, 1300 fathoms.
***Serolis cornuta*:** Eyes present; pleotelson, margin coarsely serrated, four middorsal spines; from Crozet and Kerguelen Islands.
***Serolis latifrons*:** Eyes absent; pleotelson not ridged, terminal margin notched; from Crozet and Kerguelen Islands.)

Body longer than broad; pleon consists of 1, 4 or 5 free segments (pleonites) plus pleotelson.
..... 13

13 Eyes very large, cover more than half of the cephalon; pleon of 5 free segments plus pleotelson; pereopods 1-3 prehensile, 4-7 ambulatory.
Family **Aegidae**
..... 14

Eyes obvious but small; pleon of one free segment plus pleotelson.
Family **Sphaeromatidae**
..... 16

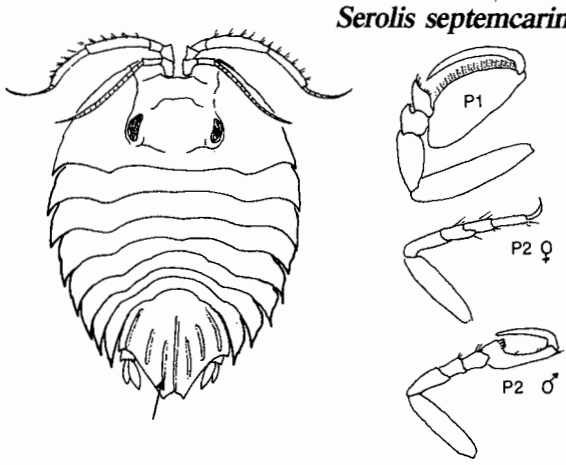
14 Pleotelson with a concave terminal margin forming two blunt points; surface pocked with a pair of large circular depressions on dorsal surface; uropod, endopodite triangular, terminal end flat; eyes large but do not almost meet in the centre.
Aega semicarinata Miers, 1875a

Pleotelson terminally pointed, margin serrated; uropod, endopodite not triangular, lateral margin notched; eyes extremely large almost meeting in centre and cover entire anterior margin of cephalon.
..... 15

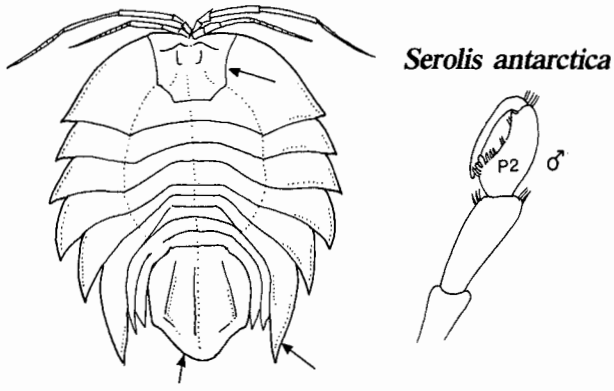
15 Large, 37 x 25mm; exoskeleton sturdy, thick; telson pointed, margin finely serrate; uropod, endopodite lateral margin notched.
Aega falklandica Kussakin, 1967

Small, up to 24 x 10mm; telson margin strongly serrate; uropod, endopodite with very slight notch.
Aega* cf. *crozetensis Kussakin & Vasina, 1982

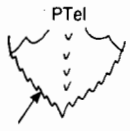
Serolis septemcarinata



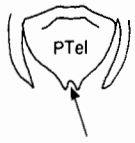
Serolis antarctica



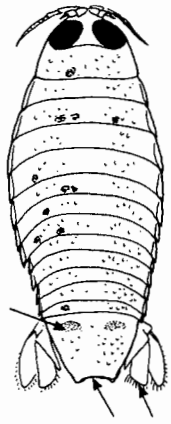
Serolis cornuta



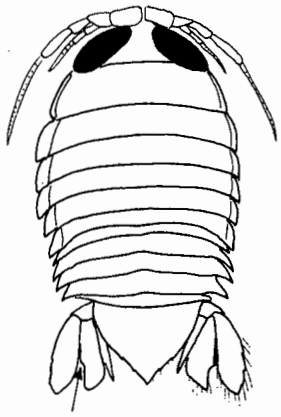
Serolis latifrons



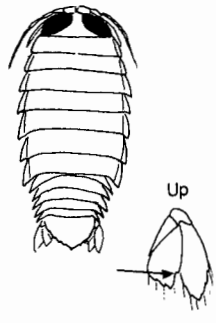
Aega semicarinata



Aega falklandica



Aega cf. *crozetensis*



16 Pleopods 4 and 5, inner ramus pleated, outer ramus membranous. **(Sphaeromatinae)**. Body slightly grayish with shallow white furrows laterally on the pereonites; often curled into a ball; pleotelson, tip rounded; uropods large and pointed. *Iais pubescens*, a small white asellote isopod, lives between the appendages on the ventral surface. ***Exosphaeroma gigas*** (Leach, 1818)

Pleopods 4 and 5 both rami pleated. **(Dynameninae)**. Either body brown-pigmented or pleotelson curled or with a notched tip.
..... 17

17 Pleotelson curled under to form a tube. ***Cymodocella* sp.** SAM A40368, SAM A40369 & SAM A40370

Pleotelson not tubular.
..... 18

18 Pleotelson margin with a terminal notch, smooth or rough; pleopods 4 and 5 rami not jointed; uropod rami similar; cephalon with a transverse ridge anteriorly; common subantarctic species. ***Dynamenella eatoni*** (Miers, 1875b)

(Dynamenella huttoni (Thomson,1879) which occurs commonly in South Africa and New Zealand is always smooth and shiny and lacks the anterior ridge to the cephalon. Earlier records of *D. huttoni* from Marion Island are in fact *D. eatoni*.)

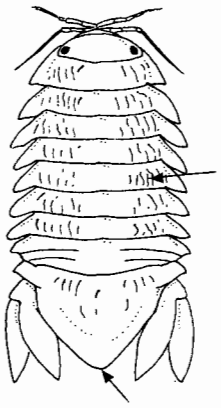
Pleotelson margin entire; pleopods 4 and 5, exopodite jointed; uropod, exopodite less than half length of endopodite.
..... 19

19 Pleotelson tapering terminally to a flattened tip; body length up to 15mm, brown; maxilliped with no coupling hook; uropod, rami paddle-shaped. ***Euvallentinia darwini*** (Cunningham, 1871)

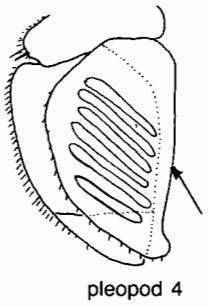
Pleotelson smooth, rounded terminally, tip feebly emarginate; maxilliped with one coupling hook; uropod, exopod stylet-shaped, attached to endopod at midpoint of lateral border; recorded from Falkland, Crozet and Kerguelen Islands. ***Cassidinopsis emarginata*** (Guérin-Méneville, 1843)

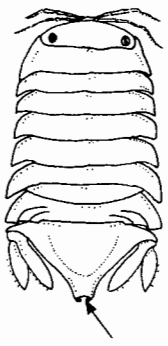
20 Eyes absent or dorsal, not bulging from margin of the cephalon.
..... 21

Eyes on lateral bulges of cephalon or dorso-laterally positioned.
..... 26

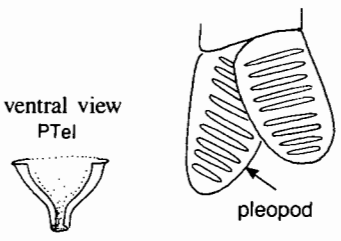


Exosphaeroma gigas

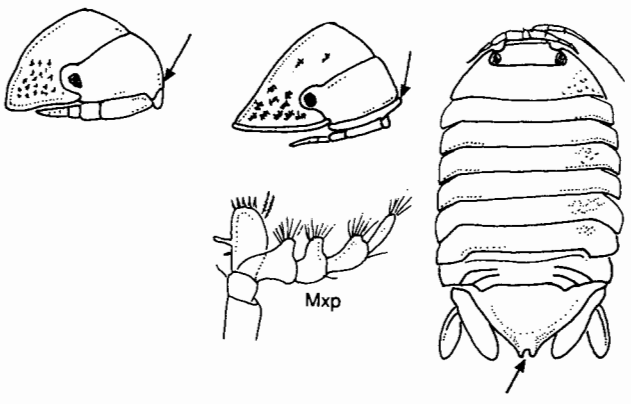




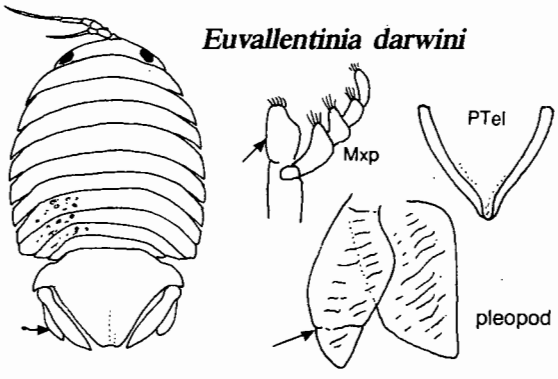
***Cymodocella* sp.**



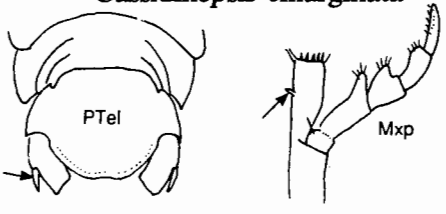
Dynamenella huttoni ***Dynamenella eatoni***



Euvallentinia darwini



Cassidinopsis emarginata



31 Antenna 2 shorter than body; eyes small, dark, on narrow, tapering lateral processes of cephalon.
Family **Pleurogoniidae**
..... 32

Antennae 2 at least as long as body; eyes large, lateral processes of cephalon bear an anterior projection.
Family **Munnidae**
..... 33

32 Pereonite 1 not inflated laterally; pleotelson flat, forms a continuous, smooth, oval outline with the rest of body; male pereopod 1 strongly carpochelate
***Paramunna* sp.** SAM A40373.

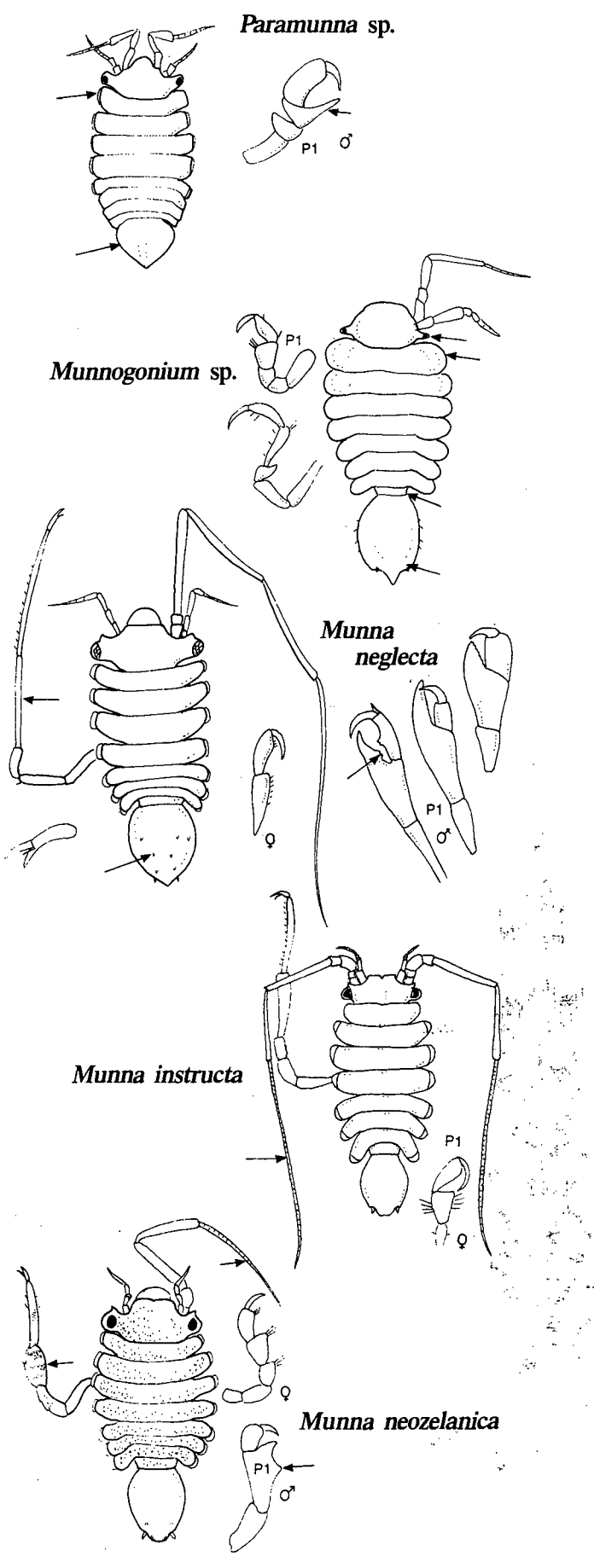
Pereonites 1 and 2 inflated laterally; pleotelson bulged, oval with a terminal point, separated from the rest of the body by a narrow segment.
***Munnogonium* sp.** SAM A40374 & SAM A40375.

33 Pereopods much longer than body; eyes large, dark brown; pleotelson with a few short blunt spines; male pereopod 1 flattened with tooth-like projections on the inner surfaces of the propodus and the dactylus.
Munna neglecta Monod, 1931

Pereopods not much longer than body; pleotelson with a few hairs, male pereopod 1 carpochelate with smooth inner surface to the propodus and dactylus.
..... 34

34 Eyes fairly small and black; body narrowly oval, white; male pereopod 1 broad and flat, carpus projected into a flat thumb with a smooth convex outer margin; antenna, flagellum almost as long as body.
Munna instructa Cléret, 1973

Eyes large brownish; body broadly oval with brown pigment spots; male pereopod 1 broad and flat, carpus with a large tooth on outer margin and a short triangular thumb; antenna, flagellum shorter than body; pereopods fairly short and stout with brown stripes.
Munna neozelanica Chilton, 1909



D Tanaidacea

1 Body more or less cylindrical; antenna 1 with only one flagellum; mandible without palp.
Suborder: **Tanaidomorpha** 2

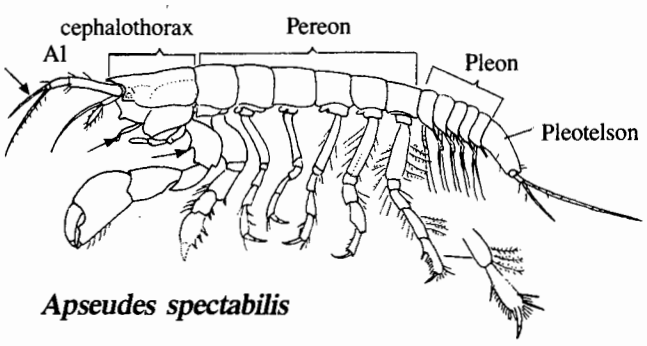
Body more or less dorso-ventrally depressed; antenna 1 with inner and outer flagellum; mandible with palp.
Superfamily: **Apseudoidea**
Cephalothorax with a lateral notch; rostrum narrowly concentric at the base with a median spine; chela of cheliped oval in shape, immovable finger armed with a tooth mid-way along its length, articles 2 and 3 fused (ischio-basis) with a strong anterior/dorsal spine and a small ventral spine; left mandible, incisor 4-dentate, lacinia mobilis 4-dentate; common.
Apseudes spectabilis (Studer, 1884)

(***Apseudes antarcticus,*** Beddard 1886 has been recorded from Kerguelen Island but not the Prince Edward Islands. Cephalothorax rectangular with small lateral constrictions; rostrum with a broadly concentric base and acute median spine; chela on cheliped of female lacks a tooth on the immovable finger, male chela triangular in shape, fused articles 2 and 3 (ischio-basis) has a large ventral spine; left mandible, incisor smooth, lacinia mobilis 5-dentate.)

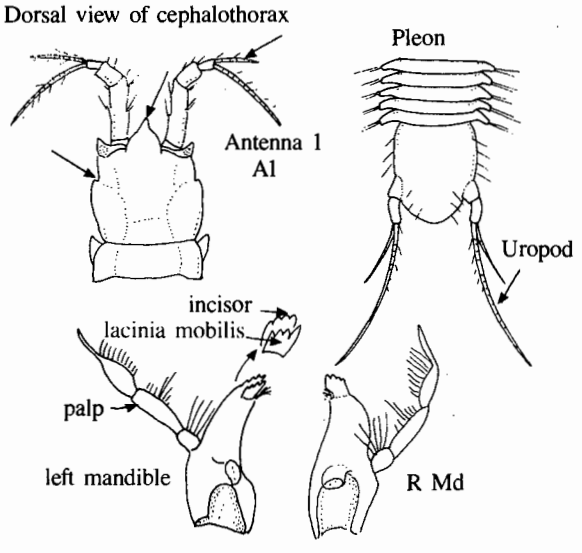
(***Apseudes crozetensis*** Shiino 1978, recorded from the Crozet Islands but not the Prince Edward Islands, is very similiar to ***A. spectabilis.*** Cephalothorax with very marked lateral spines; rostrum triangular; cheliped with large processes on the immovable finger and the ischio-basis and two pointed processes on the lower border of the carpus; left mandible, incisor and lacinia mobilis broad, 4-dentate.)

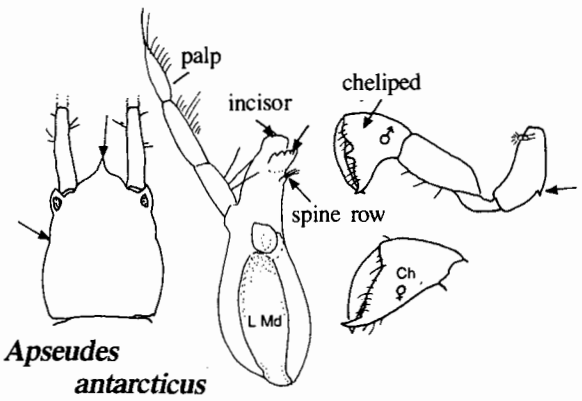
2 Pleon with 5 similar segments (pleonites), 5 pairs of biramous pleopods; pereopods 1-3 or all with ischium present (7 articles); uropods typically biramous.
Superfamily **Paratanaoidea**
..... 3

Pleon segments 1-3 large, 4-6 smaller, only three pairs of biramous pleopods; pereopods all lack an ischium (6 articles); uropods uniramous; eyes on small antero-lateral projections.
Superfamily **Tanaoidea**
..... 6

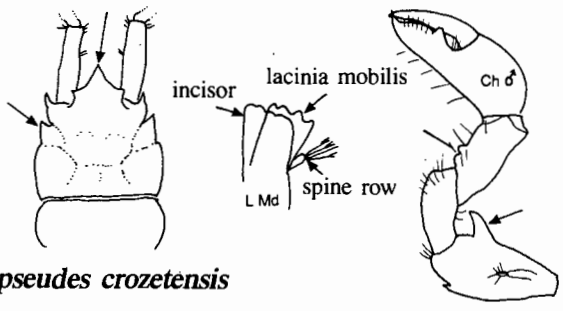


Apseudes spectabilis





Apseudes antarcticus



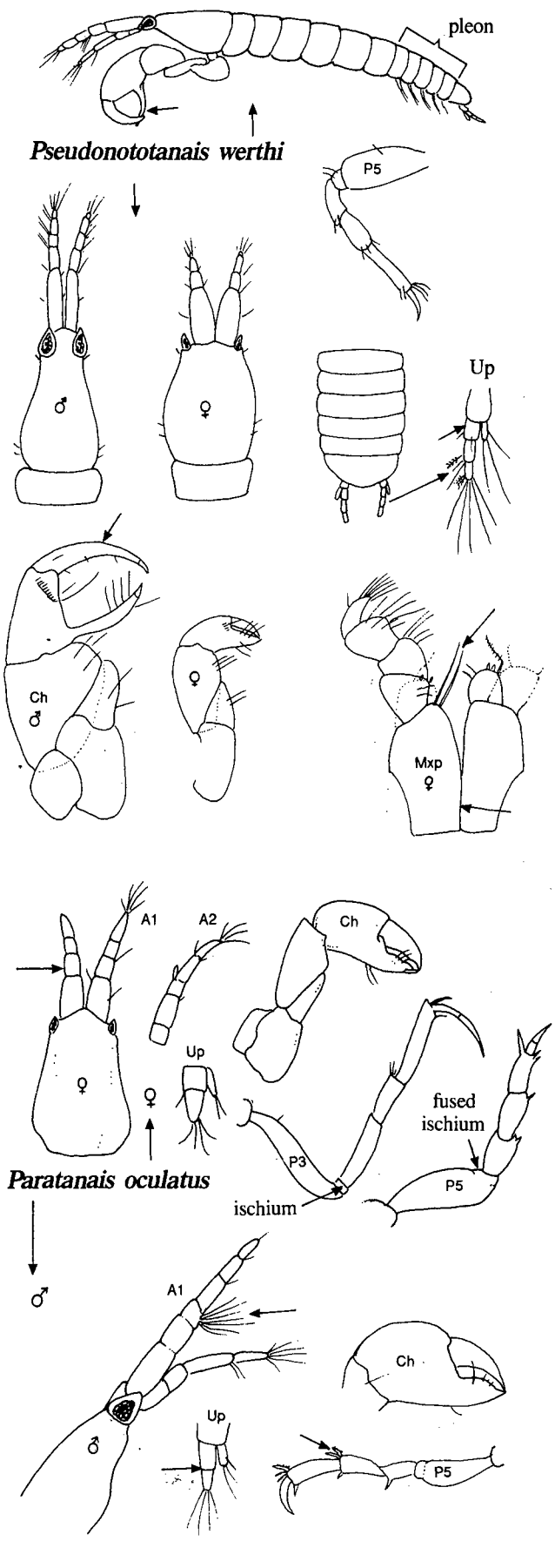
Apseudes crozetensis

3 Uropod, endopodite always with more than 2 segments; maxilliped, bases never fused medially.
Family: **Leptocheliidae**
Male cheliped of characteristic shape: chela broad, smooth finger and thumb curved in sickle-shape with broad oval space between them when closed; male maxilliped reduced, only bases and remnants of one palpal segment present; female maxilliped, bases with 2 setae near articulation of palp.
Pseudonototanais werthi (Vanhöffen, 1914)

Uropod, endopodite only 2-segmented; mouth parts in the male reduced, only a modified maxilliped remaining.
..... 4

4 Family: **Paratanaidae**
Male: Antenna 1, 7-segmented, segment 2 enlarged and laterally depressed, 3-4 small, annular, the fourth with a large bunch of hairs (aesthetacs), 5-6 elongate with fewer aesthetacs and 7 with a terminal aesthetac; cheliped similar to female but stronger. Female: Antenna 1, 4-segmented; maxilliped, bases laterally expanded forming a plate-like structure.
Paratanais oculatus (Vanhöffen, 1914)

Male: Antenna 1, 5-segmented, segments 1 and 2 elongate, and 3-5 shorter with few aesthetacs; cheliped larger than female with a swollen thumb. Female: Antenna 1, 3-segmented; maxilliped, bases fused medially, not laterally expanded.
Family: **Nototanaidae** 5

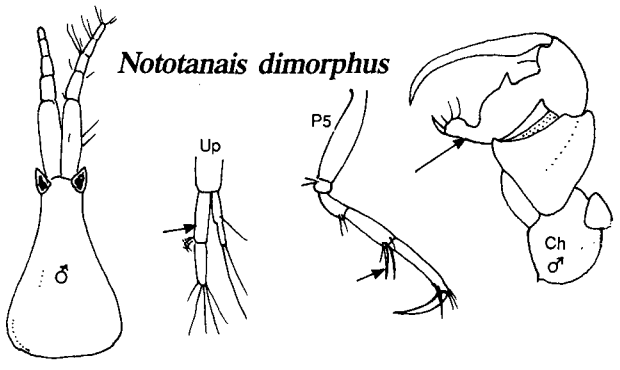


5 Uropod long, endopodite length 9x width; maxilla 1, palp with two terminal bristles; pereopods 4-6, carpus with long slender spines; male cheliped characteristic, thumb of chela with two flattened bulges, the larger proximal one bears a large tooth, dactylus long and narrow; carapace narrower anteriorly.
Nototanais dimorphus (Beddard, 1886)

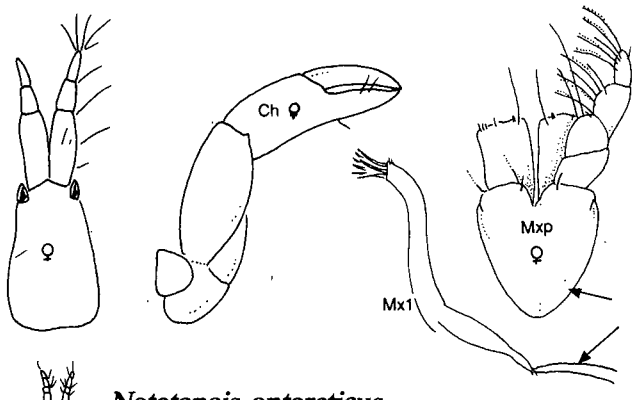
Uropod short, endopodite length less than 5x width; maxilla 1, palp with 5 terminal bristles; pereopod 4-6, carpus with short finely-haired spines; male cheliped characteristic, thumb of chela with two small flattened distal bulges.
Nototanais antarcticus (Hodgson, 1902)

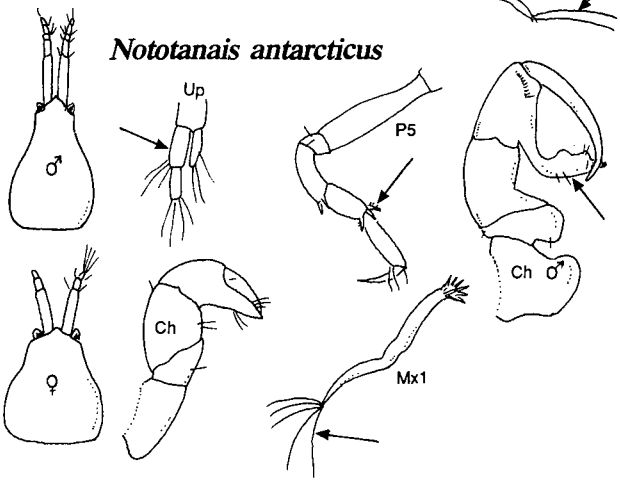
6 Uropods filiform with many-segmented flagellum; antennae longer than the carapace, stout, first three segments elongate, long setae encircle each joint; pereon half as long as body; pleon one third as long as body; carapace anterior border with a blunt conical rostrum; chela with a dark ridge and row of setae along dorsal margin of fixed finger; maxilla 1 characteristic: inner-terminal area covered with fine hairs on both surfaces plus 8 terminal spines and three pairs of spines along inner distal margin.
Allotanais hirsutus (Beddard, 1886a)

Uropods, flagellum short of 4-5 joints; pereon more than half length of body; antennae shorter than carapace, with progressively shorter segments and short setae at joints; carapace, frontal margin evenly arched; maxilla 1 stout, ending in 8 teeth.
..... 7

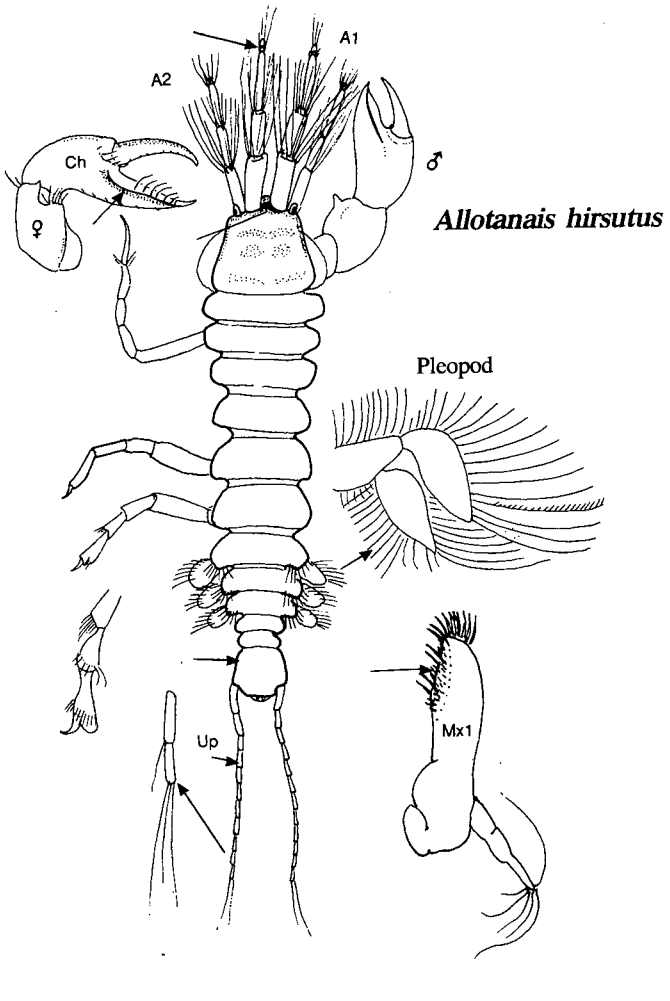


Nototanais dimorphus





Nototanais antarcticus



Allotanais hirsutus

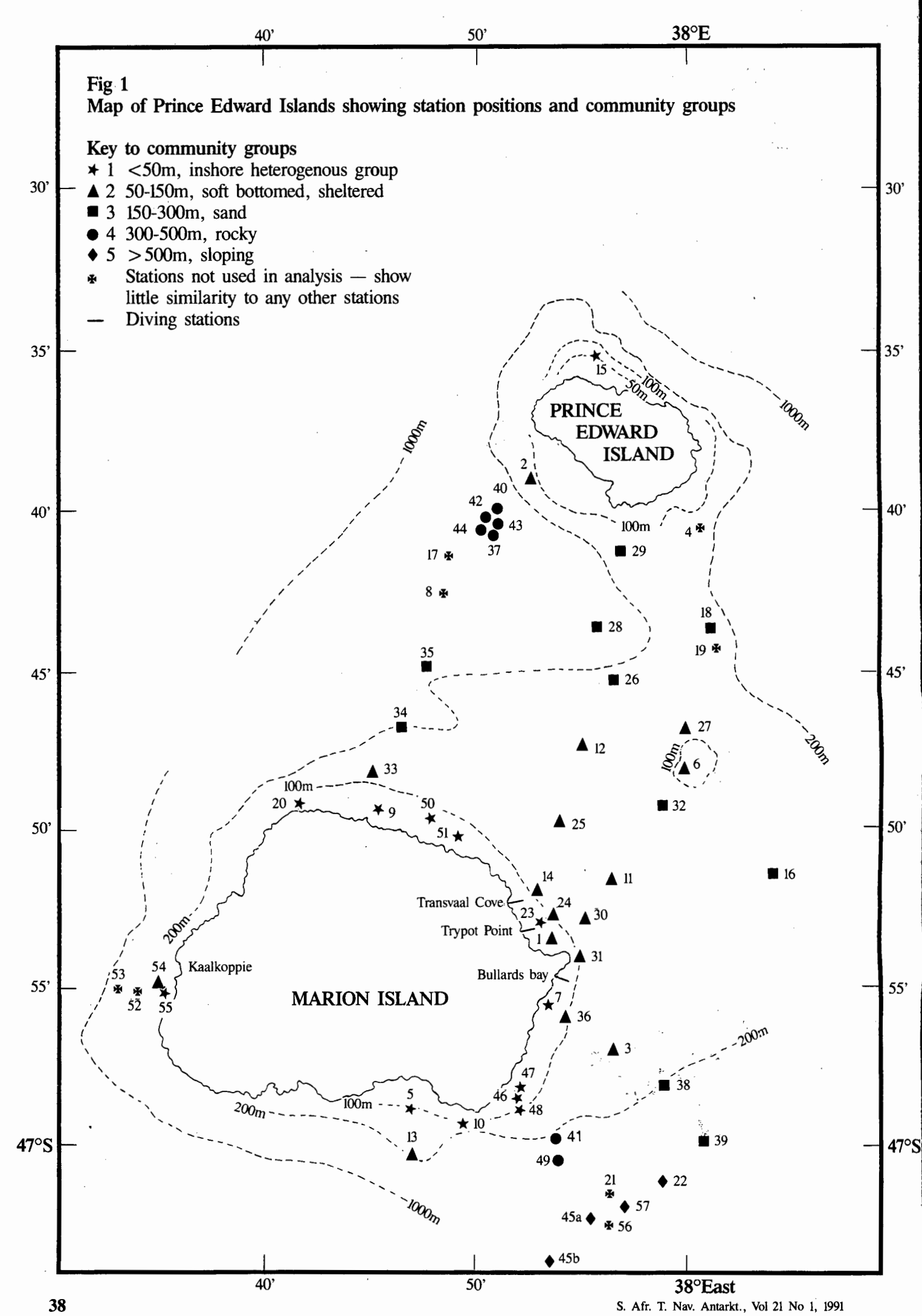


Fig 1
Map of Prince Edward Islands showing station positions and community groups

Discussion

Crustacea (with 126 species) comprised one of the most species-rich classes occurring around Marion and Prince Edward Islands. Bryozoa, Polychaeta, Mollusca, Porifera and Echinodermata formed the other dominant taxa. The Decapoda only contributed 11 species, which were generally large in size and usually confined to the deeper dredged samples. Among them was the stone crab *Lithodes murrayi* which can reach a leg span of over 1 m, although only smaller specimens of 150-300 mm leg span were collected by the dredge. The Natantia prawns and *Munida spinosa* and *Uroptychus insignus* are usually about 100 mm long. The only brachyuran crab collected, *Halicarcinus planatus*, barely reached 10 mm body length but was abundant intertidally and to depths of 100 m and was especially associated with the holdfasts of *Macrocystis laevis*. The Amphipoda (71 species), Isopoda (32 species) and Tanaidacea (10 species) occurred most abundantly in 0-15 m depths associated with algae, but some Isopoda and Amphipoda were confined to deep rocky stations where they were associated with octocorals. Although small in size (rarely above 10 mm length) they reached high densities in some stations with a maximum of 9442 amphipods m^{-2} and 4197 isopods m^{-2} at 5 m at Bullards Bay (Beckley and Branch, 1992). The Cirripedia were of negligible importance, unlike continental shores where barnacles dominate. Only six small specimens of the goose barnacle *Scalpellum flavum* were collected, all attached to rock at deep stations, and two specimens of unidentified acorn barnacles were found.

The species of Crustacea recorded from Marion and Prince Edward Islands during the 1982-1989 University of Cape Town Surveys are listed in Table 1 (p 40 & p 41). The localities and stations are shown in Fig 1 (p 38). Collections were made at 8 intertidal sites and 44 scuba-diving samples were collected, 36 being taken during a quantitative survey at 5,10 and 15 m depths at Bullards Bay, Trypot Point and Transvaal Cove (Beckley and Branch, 1992). The results of the 57 dredge collections are given in two sections. The first relates the modal abundance of individual species to the substrate types which ranged from volcanic rock, through gravel to black volcanic sand, the second records the abundance of species within community groups which were identified by a Brey-Curtis similarity analysis of the species composition at each station (Branch, Attwood *et al* 1992).

The composition of species within the community groups shown on the map, Fig 1 were characterised as follows.

Group 1. A heterogenous inshore community found around the Island in < 50 m depth where the amphipod *Atyloella magellanic*, tanaid *Allotanais hirsutus* and decapod *Halicarcinus planatus* were common.

Group 2. This was a shallow (50-100 m), soft-sediment community dominated by several species of bivalve, the large brachiopod *Magellania kerguelenensis*, the urchin *Pseudechinus marionis* and the tubiculous polychaete *Lanice conchilega*. The most common Crustacea were *Nauticaris marionis, Halicarcinus planatus, Allotanais hirsutus, Apseudes spectabilis, Notasellus sarsi* and *Atyloella magellanica*.

Group 3. This was a deeper (150-300 m), soft-sediment community between the Islands and had a similar species composition to group 2 but, associated with an increase in the abundance of bryozoans and octocorals, the isopod *Arcturides cornutus* was common, as was the anemone-hermit crab *Sympagurus dimorphus*.

Group 4. This group comprised a cluster of stations south-west of Prince Edward Island and two stations south-east of Marion Island. These were deep (300-500 m) rocky-bottomed localities with an abundance of octocorals, especially *Thouarella variabilis*, and the large ophiuroid basket stars. Several Crustacea are associated with the octocorals, and many of these are spiny including amphipods *Lepidepecreella tridactyla, Leucothoe spinicarpa* and *Podocerus danae*, and isopods *Acanthomunna spinipes, Aega* cf. *crozetensis, Antarcturus aculeatus, Arcturides cornutus* and *Neastacilla marionensis*. The Decapoda *Chorismus antarcticus, Nauticaris marionis, Munida spinosa* and *Sympagurus dimorphus* were common to abundant. No Tanaids were found at the deeper stations. This group yielded 4 new amphipod species: *?Pleusymtes* sp., *Leucothoe* sp., *Proboloides* sp. A and the first caprellid record for the area, *?Eupariambus* sp.

Group 5. This group comprised deep (>500 m), sloping, rocky-bottomed sites to the south-east of Marion Island. This was not as rich in species as group 4 and most of the Crustacea were in very low numbers. The benthic prawns *Campylonotus capensis* and *Nematocarcinus lanceopes* as well as the hermit crab *Pagurodes inarmatus* were collected only in this area, the last two species being new records.

Group 6. The intertidal community was influenced by the zonation of the algae in which the small Crustacea found shelter and food. Amphipods were common amongst the *Porphyra* in the upper littoral zones, *Hyale grandicornis* and *Jassa alonsoae* being most common. Lower on the shore *Hyale hirtipalma* was common amongst the Rhodymenia. The isopods *Dynamenella eatoni* and *Exospheroma* gigas were common, especially in the boulder regions. The crab *Halicarcinus planatus* extended into this zone where it occurred amongst the *Durvillaea antarctica*. Tanaids were rarely recorded in the intertidal.

Group 7. Scuba-sampling between 5-15 m depths at Bullards Bay, Trypot Point and Transvaal Cove, yielded a rich fauna of Amphipoda (23 species), Isopoda (19 species), Tanaidacea (10 species) and a single species of crab, the common small *Halicarcinus planatus*. The abundant amphipods were *Atyloella magellanica, Haplocheira barbimana* and *Jassa alonsoae* while *Hyale hirtipalma* and *Seba saundersii* were common. There were undescribed species of *Proboloides, ?Ischyrocerus* and *Gammaropsis*. The two abundant isopods were *Joeropsis curvicornis* and *Dynamenella eatoni* while *Exospheroma gigas* and *Ianisera trepidus* were common. There were undescribed species of *Paramunna* and *Munnogonium* and 9 new records. All the species of tanaid were found in the scuba samples and *Zeuxoides pseudolitoralis* was abundant and *Apseudes spectabilis* and *Allotanais hirsutus* were common.

Geographical distribution

The fauna of Marion and Prince Edward Islands contains many species in common with neighbouring Crozet and Kerguelen Islands. Fewer species are in common with other subantarctic localities and only cosmopolitan species are shared with the Antarctic Peninsula or the southern continents.

Of the 71 species of Amphipoda known for Marion Island, 28 also occur at either Crozet or Kerguelen Islands; 18 of the 71 species have been recorded only from Marion which include 8 new undescribed species from the UCT collection and 10 new species from the *Marion Dufresne* 1976 survey (Bellan-Santini & Ledoyer 1986). Many of the amphipods are widespread throughout the Southern Ocean and some are cosmopolitan, occurring at New Zealand, South Africa and South America. The distribution and a synonymical biography of the marine gammaridean Amphipoda of the Southern Ocean is summarised by Lowry & Bullock (1976). According to Bellan-Santini & Ledoyer (1974) 81 species of Amphipoda have been reported from Kerguelen (24 of these also at Marion) and 16 from Crozet (11 of these also at Marion). Knox and Lowry, 1977, analysed the zoogeography of the benthic amphipods of the Southern Ocean. They divided the fauna into four distinct areas; the Subantarctic, the Magellanic, the Scotia and the East Antarctic. In the Subantarctic area, which linked the Kerguelen, Crozet and Prince Edward Islands with Auckland, Campbell and Macquarie Islands, 50% of the species were endemic while a pool of circumsubantarctic species tied the loosely knit group together and linked it to the Magellanic area (composed of Tierra del Fuego, Falkland Islands and Burdwood bank). The circumsubantarctic species included *Hyale hirtipalma, Gitanopsis squamosa, Acontiostoma marionis, Paramoera fissicauda* and *Probolisca ovata*, which are all algal-living amphipods and could have been dispersed on floating rafts of algae by the West Wind Drift. The present results, while expanding the records from 13 to 71 species from Marion Island and from 59 to 81 for Kerguelen, reinforce this grouping because of the 28 species shared between Marion, Crozet and Kerguelen Islands, 24 are either cosmopolitan or shared with other subantarctic Islands.

Kensley compares the geographical distribution of the known species of Isopoda from Crozet, Prince Edward and Marion Islands (Kensley, 1980) with other subantarctic localities. The isopods from the subantarctic waters of the Indian Ocean are summarised by Kussakin and Vasina (1982). The 21 new records of Isopoda from Marion Island which are documented here bring the total to 35, and of these only 6 have not already been recorded from either Crozet or Kerguelen Islands. Four of these 6 were new species, while *Ianisera trepidus* and *Santia* cf. *hofsteni* have been recorded from the Indian Ocean subantarctic Islands of St Paul and Amsterdam.

Geographical distribution of the tanaids was taken from Shino 1978, and Sieg 1980. Of the 11 species of tanaid recorded here from Marion Island, 8 are new records. Nine of the species also occur at Kerguelen Island. Of the remaining species 2 were rare; *Nototanais antarcticus* is usually confined to the antarctic and *Sinolobus stanfordi* is a Californian species whose presence at Marion Island needs confirmation.

The decapods were more abundant in the deeper stations to the west and south of the Prince Edward Islands where sampling had not previously been undertaken and yielded 4 new records. Four species of swimming prawns were recorded from Marion Island. By far the most widespread and abundant was *Nauticaris marionis* which also occurs in smaller numbers at Kerguelen and Crozet Islands (Ledoyer, 1979). Parasitic isopods of the family Bopyridae were found in the gill chambers of *N. marionis*. The only true crab was the small round *Halicarcinus planatus* which is also known from Kerguelen. There were four anomuran decapods. The stone crab *Lithodes murrayi* is widespread in distribution and usually more successfully caught in a baited trap, hence the low dredge numbers. *Munida spinosa* was locally abundant in the deep rocky zone south-west of Prince Edward Island, as was the anemone hermit crab *Sympagurus dimorphus* which also occurred in the deeper waters between the Islands.

In summary the order Amphipoda is the most species-rich order of Crustacea at Marion Island, has more endemic species and shares a smaller percentage of species with the Kerguelen Islands than do the other orders. However, all orders showed strong affinities with both Crozet and Kerguelen Islands and the 49 new records reinforce the placement of Marion Island in the Kerguelen province which can be loosely linked with other subantarctic islands.

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CHAPTER 2: MOLLUSCA AND BRACHIOPODA

Part 1 presents illustrated keys for the identification of the benthic molluscan and brachiopod fauna (excluding the non-shelled gastropods) of the subantarctic Marion and Prince Edward Islands. These are based on both published records and unpublished collections made by the Marion-Dufresne *1974-1976 and the University of Cape Town 1982-1989. There were 85 species of Mollusca consisting of 32 Bivalvia (3 unidentified species, 13 new records) 46 Gastropoda (4 unidentified species, 24 new records), 4 Polyplacophora (1 unidentified), 1 Scaphopoda, 1 Solenogastres (a new unidentified record) and 1 Cephalopoda. There were 3 species of Brachiopoda. The new species are included in the keys but not designated specific names as they will be described in a later paper. In part 2 records of the dredging, scuba-diving and intertidal surveys undertaken by the University of Cape Town (1982-1989) are summarised, for the Mollusca and Brachiopoda in relation to abundance, depth, substratum and community-grouping.*

Introduction

Part 1 of this particular paper covers the Brachiopoda and Mollusca including only the Solenogastres, Bivalvia, shelled Gastropoda, Polyplacophora, Scaphopoda and benthic Cephalopoda collected during the following surveys: *Challenger*, 1873-76 (Davidson 1880, Smith 1885, Bergh 1886, Watson 1886, Haddon 1886) and *Discovery*, 1935 (Dell 1964b, Ponder 1983, Salvini-Plawen 1978), material from both of which is housed in the British Museum (Natural History); the South African littoral samplings of 1965-66 (Fuller 1967, Gaillard 1971) and 1972-73 (De Villiers 1976) and the 1976 cruise MD 08 (Arnaud & Hureau, 1979) of the *Marion-Dufresne* (material now housed at Station marine d'Endoume, Marseille and later at Laboratoire de Malacologie, Museum national d'Histoire naturelle, Paris). Material from intertidal and subtidal surveys undertaken in 1982, quantitative subtidal scuba-sampling in 1989 (Beckley & Branch 1992), and extensive recent offshore surveys by the University of Cape Town over the period 1984-89 (GM Branch *et al* 1992) are all housed in the South African Museum, Cape Town.

The illustrations where possible were taken from actual specimens collected by the University of Cape Town, but others were adapted from depictions in the existing literature.

Part 2 of the paper reports the previously unpublished records for Mollusca and Brachiopoda for the Prince Edward Islands, derived from the University of Cape Town surveys, 1982-1989, in relation to abundance, depth, substratum and habitat. An analysis and description of community patterns for the invertebrates as a whole appears in GM Branch *et al* 1992.

Species found

Mollusca
46 Gastropoda, (4 unidentified species, 24 new records).
32 Bivalvia, (3 unidentified species, 13 new records).
4 Polyplacophora, (1 unidentified).
1 Scaphopoda.
1 Cephalopoda.
1 Solenogastres.
Total of 85 living species.
Brachiopoda
3 Species, (1 unidentified).
New species will be described in a later monograph.

Certain species were found only as empty and very rare shells. There is no proof that they are still part of the living fauna of Marion Island. There is the remote possibility that they could be part of an ancient fauna (eliminated as a result of the Quaternary latitudinal displacements of the convergence) although it is unlikely as they were not particularly "old" or weathered. The possibility of their being drift shells transported for example by floating kelps is unlikely due to the nature of the shells and extreme isolation of the islands. They are therefore included but separated in the species lists and key.

Systematic list of species

* = New records
‡ = New species (included in the keys but not named beyond generic level)
Page numbers refer to pages in the keys

Mollusca and Brachiopoda of Marion and Prince Edward Islands

Key to the phyla and classes

1 Body bilaterally symmetrical with a large ciliated lophophore for filter feeding; bivalve shell formed of a dorsal and ventral valve; attached by a stalk, the pedicel; (lamp shells).
Phylum: **Brachiopoda** ..... A (p 49)

Soft-bodied animal typically possessing a head, muscular foot, visceral hump and a mantle fold covering the gills; shell usually present, if bivalved then comprised of two lateral valves; occasionally worm-shaped, imbedded with calcareous spicules and with a mid-ventral groove.
Phylum: **Mollusca** 2

2 Worm-shaped body, imbedded with calcareous spicules; foot reduced to a mid-ventral, longitudinal groove; head poorly developed.
Class: **Solenogastres**

Recorded from Marion Island in the deep rocky-bottomed stations which are rich in octocorals and hydroids.
SAM A37651 & SAM A37652

Body not worm-shaped; usually protected by an external shell; where shell is absent or internal, the animal is slug-like or octopus-like with 8 to 10 tentacles 3

3 Shell composed of a series of 8 valves surrounded by a mantle; foot broad and flat.
Class: **Polyplacophora** (Chitons)..... D (p 60)

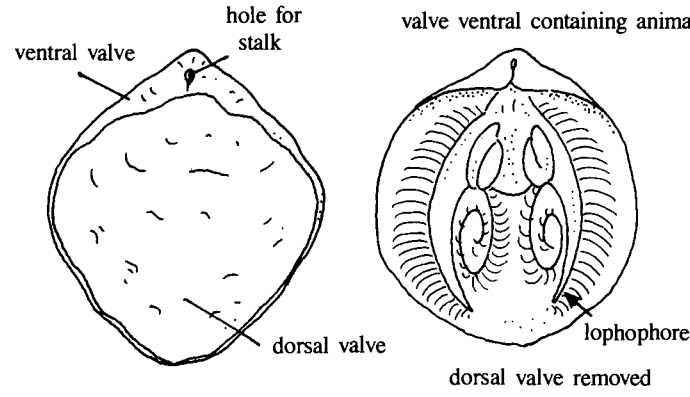
Shell absent or single or composed of two valves; foot various shapes.
..... 4

4 Hinged bivalve shell; foot wedge-shaped and usually hidden; head and radula absent.
Class: **Bivalvia** ..... B (p 50)

Shell single or absent; head obvious, radula present.
..... 5

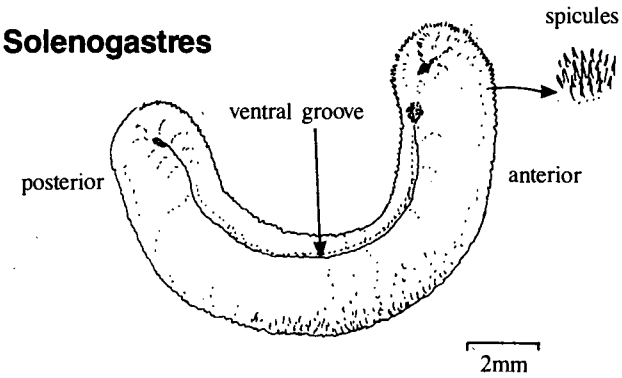
5 Single tusk-shaped, tubular shell; foot small; gills absent; head with several long, thin tentacles.
Class: **Scaphopoda** (Tusk-shells)
One species recorded at Marion Island; shell white with fine longitudinal ridges.
Fissidentalium sp. SAM A37649
(=?*Dentalium entalis* var. *orthrum* Watson, 1879)

BRACHIOPODA

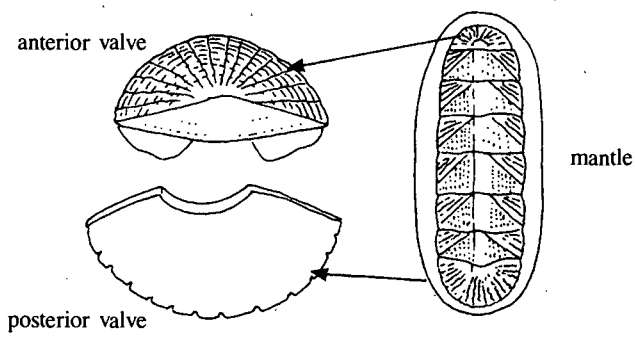


MOLLUSCA

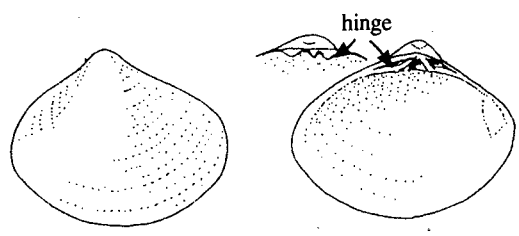
Solenogastres



Polyplacophora



Bivalvia



Scaphopoda

Fissidentalium sp.

Shell not tusk-shaped, either coiled, cap-shaped or internal.
..... 6

6 Shell absent or internal; foot forming 8 to 10 suckered tentacles around the mouth.
Class: **Cephalopoda** (cuttle-fish, squid and octopuses)
One large Octopus is the only benthic species recorded at Marion Island.
Octopus magnificus Vilanueva, Sanchez & Roeleveld, 1991
= *Octopus dofleini* (Wülker, 1910) partim.

Shell single, usually coiled or cap-shaped, sometimes internal or absent; body usually asymmetrical; foot broad and flat.
Class: **Gastropoda** (winkles, whelks, limpets and slugs). Only shelled forms included in the key.
..... C (p 55)

A Phylum Brachiopoda (Lamp shells)

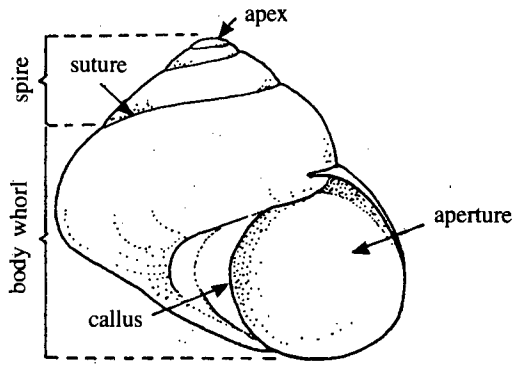
1 Shell delicate, oval, length at least 1.5x width, surface finely pitted; ventral valve with a hole where the stalk emerges; dorsal valve very much shorter than ventral valve.
***Liothyrella* sp.** SAM A37653

Shell almost circular in outline, length almost equal to width; surface pitted in juveniles.
..... 2

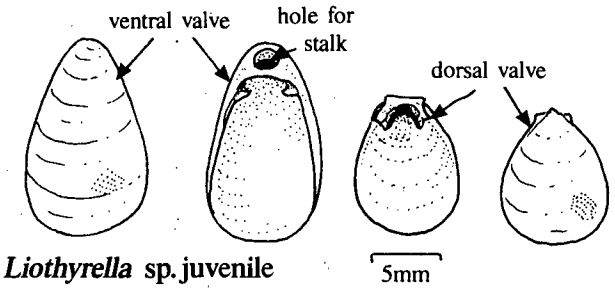
2 Shell large, coarce; ventral valve curves dorsally at the hinge forming a small hole and groove, where the stalk emerges; dorsal valve with a central bulged hinge area on upper edge, and two lateral attachments for the animal; juveniles transparent with a finely pitted surface; common.
Magellania kerguelenensis (Davidson, 1880)

Small, semitransparent, with a pitted surface; stalk emerges between the upper and lower valve and not through a hole in the ventral valve; dorsal valve with a concave margin at the stalk; a large central and two small lateral attachments for the animal.
Platydia anomioides Scacchi, 1844
(= *P. appressa* Forbes, 1844)

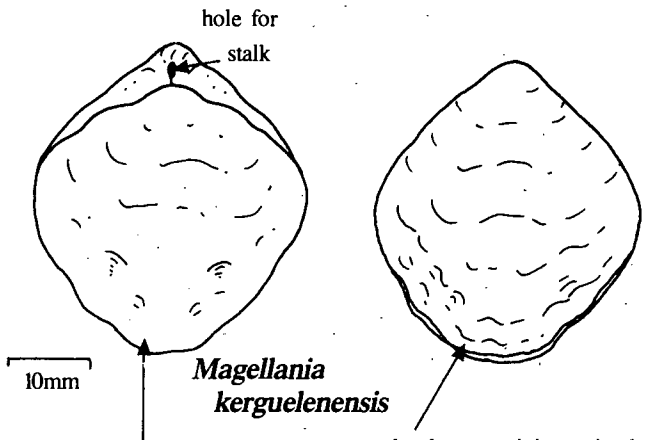
Gastropoda

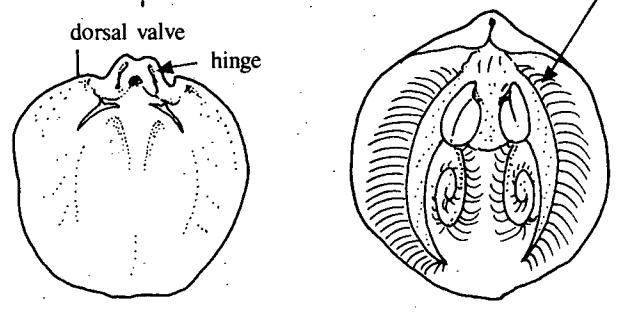


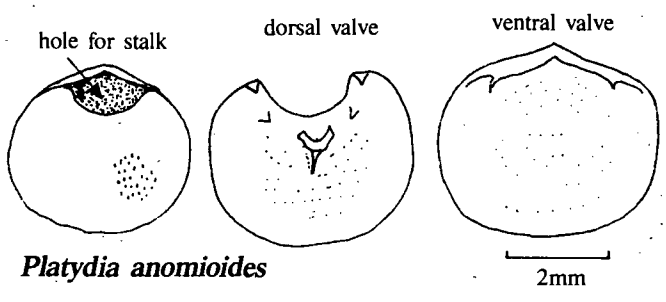
BRACHIOPODA



***Liothyrella* sp. juvenile**







Platydia anomioides

B Living Bivalvia

1 Shell expanded laterally, either on both sides or, more rarely, on one side of the umbo to form a straight hinge.
..... 2

Shell lacking lateral expansion; hinge usually angular.
..... 8

2 Shell valves the same (equivalve).
..... 3

Shell valves differ (inequivalve); anterior auricle well developed and rounded, posterior one small and triangular.
..... 7

3 Valves flattened; posterior auricle long, anterior one short and triangular; (shell transparent, a little nacreous, small, 4-6 mm; attached to the hydrozoan *Plumularia insignis*)
Pteria sp. SAM A37650

Valves inflated; auricles poorly developed 4

4 Valves equilateral or subequilateral 5

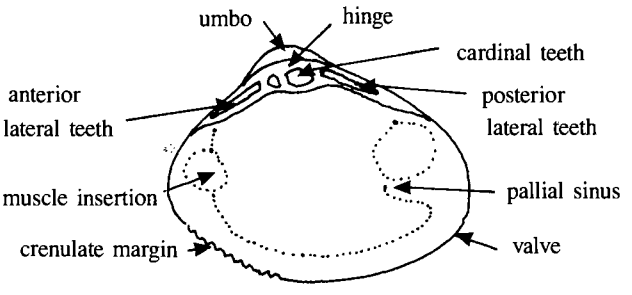
Valves inequilateral 6

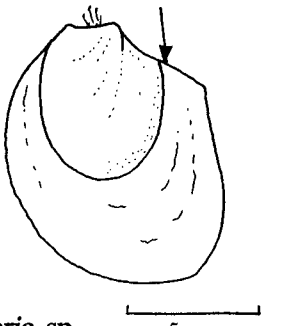
5 (Shell narrowly ovate, light radial ornamentation, regular except a larger interspace near the middle of the valve, white with white flammulations more or less conspicuous, 10-15 mm).
Limatula simillima Thiele, 1912

(Shell broadly ovate, radial ridges crossed by growth rings, white, 15 mm); common.
Limatula pygmaea (Philippi, 1845)

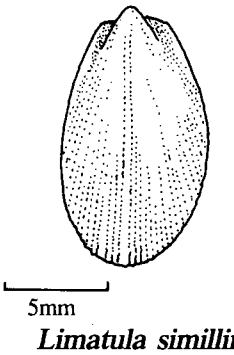
6 Margins not crenulate; (large shell, up to 100 mm, white, glossy and translucent with faint irregular flat ribs, marked growth ridges; hinge thick, length = about 1/4 shell length).
Acesta sp. SAM A37648

Margins crennulate; (shell moderate sized, 20 mm, whitish, fine regular radial ornamentation of alternating weak and heavier riblets crossed by growth rings resulting in a scaly appearance).
Escalima goughensis (Melvill & Standen, 1907)

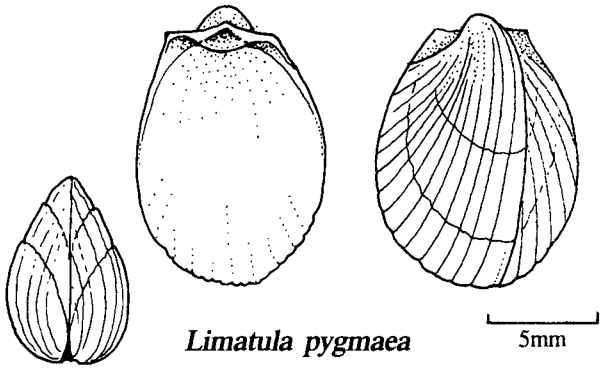




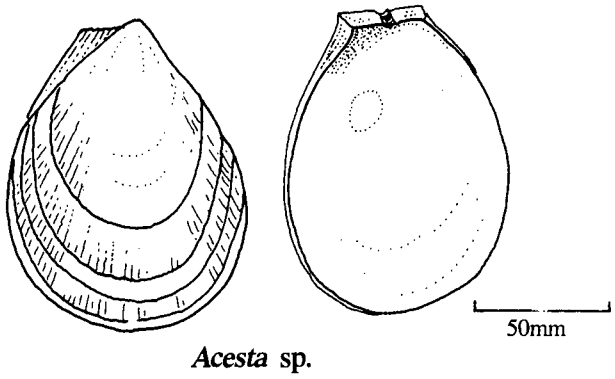
Pteria sp.



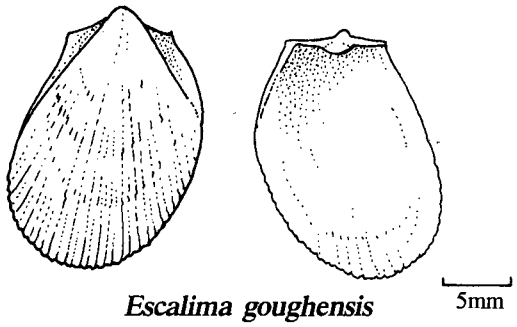
Limatula simillima



Limatula pygmaea



Acesta sp.



Escalima goughensis

7 Dissymmetric valves, left one, regular facets with pronounced radial ridges and concentric ribs; right one with a much lighter sculpturing, (2 mm whitish); auricles as long as the shell.
Cyclopecten aviculoides Smith, 1885

Valves almost circular, left one sculptured with concentric ridges and tiny radials, right one with fine ornamentation; (shell whitish, sometimes with white flammulations, thin and translucent, 10 mm).
Palliolum clathratum Martens, 1881 = *Pecten distinctus* Smith, 1885

8 Shell spoon-shaped, posterior margin drawn out to form a truncated rostrum 9

Shell not spoon-shaped 11

9 Shell ornamentation of radial ribs, (very fragile and transparent, 30 mm).
Myonera fragilissima Smith, 1885

Shell smooth or with concentric ridges. 10

10 Shell ornamention of concentric ridges, very conspicuous in the juvenile and becoming more and more obsolete with age; beak straight and angular; (shell 5-20 mm, yellowish or whitish).
Cuspidaria kerguelenensis Smith, 1885

Shell smooth apart from fine concentric growth rings; beak long and curved, (chalky-white, 10-20 mm).
Cuspidaria cf. ***tenella*** Smith, 1907

11 Shell truncated at posterior side 12

Shell not truncated at posterior side 13

12 Shell elongate and inflated, with a large posterior gap for a big siphon; umbo a little posterior to the middle of the shell; (shell 50-70 mm, whitish).
Laternula elliptica King & Broderip, 1831

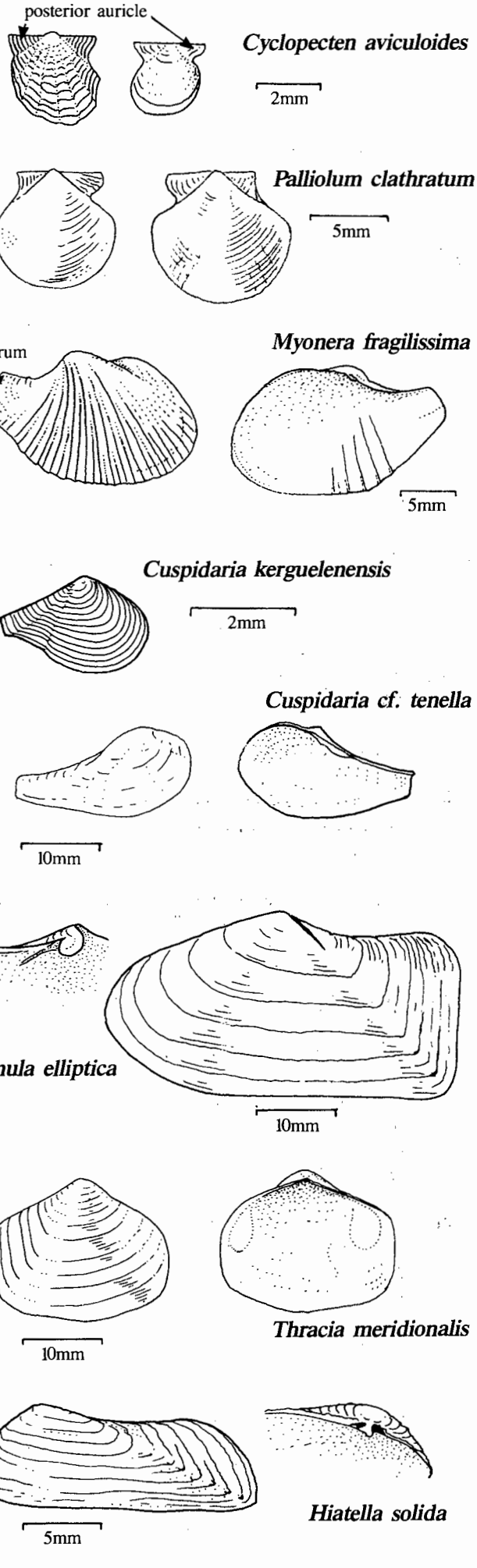
Shell shorter, not gaping at the posterior edge, and relatively flattened with a subcentral umbo; (chalky pinkish-white, about 15 mm).
Thracia meridionalis Smith, 1885

13 Shell elongate, slightly gaping, with two rows of tubercles radiating to the postero-ventral edge, frequently distorted; (chalky white, up to 25 mm).
Hiatella solida (Sowerby, 1834)

Shell not elongate and gaping 14

14 Byssus threads present; hinge usually smooth. 15

Byssus threads absent; hinge toothed..... 22



15 Periostracum brownish, forming lamellae or hairs in fresh specimens; shell small and white.
..... 16

Periostracum not projecting from the surface or the margin of the shell.
..... 18

16 Shell pinctadoid (oyster-like with the right valve shallower than the left); lamellar periostracum projecting ventrally beyond the shell margin.
Philobrya quadrata Thiele, 1912

Shell mytiloid (mussel-like with equal valves); periostracum not extending beyond the shell margin.
..... 17

17 (Hairy periostracum forming radial crests in juvenile).
Philobrya barbata Thiele, 1912

(Lamellar periostracum; shell characteristic shape).
Philobrya kerguelenensis (Smith, 1885)

18 Shell circular, fine concentric and radial riblets, tiny row of denticles along the cardinal edge, (glossy white, 5 mm).
Adacnarca marionensis (Smith, 1885)

Shell not circular 19

19 Hinge smooth; shell outline irregular with a weak anterior rostrum; periostracum brightly coloured.
..... 20

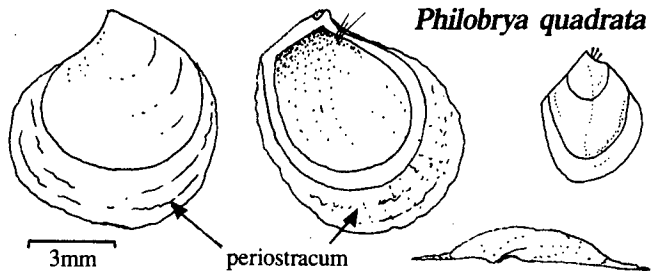
Hinge with one or two cardinal teeth; shell elongate, lacks a rostrum, 3-5 mm; periostracum reddish or pinkish with fine growth lines 21

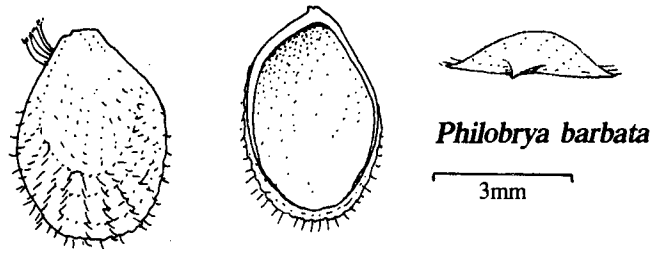
20 Rostrum protruding; shell globose, small, 3-4 mm, (dark pink, attached to algae).
Gaimardia adamsiorum Osorio & Arnaud, 1984

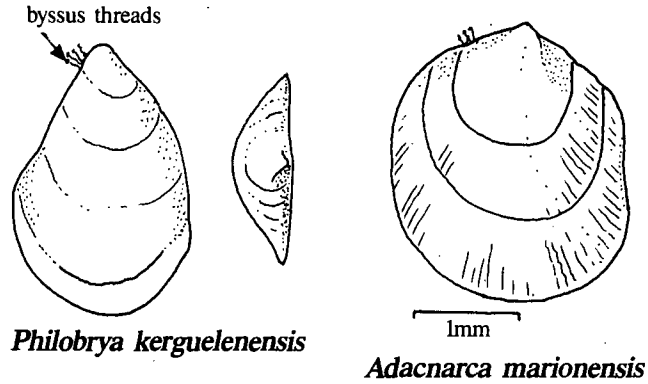
Rostrum less pronounced; shell not globose, large, up to 25 mm, (pinkish-yellow, attached to the blades of the kelp *Macrocystis pyrifera*).
Gaimardia trapesina (Lamarck, 1819)

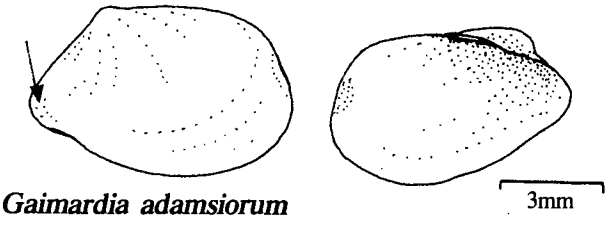
21 No radial ornamentation; shell very transverse, (frequently bicoloured, whitish/ochraceous).
Kidderia minuta Dall, 1876
= *Modiolarca bicolor* Martens, 1885

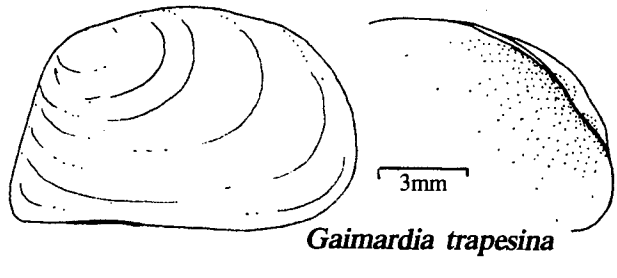
Some tiny riblets radiating from the umbo to the mid-ventral edge; shell less transverse, (light pinkish).
Kidderia oblonga (Smith, 1898)

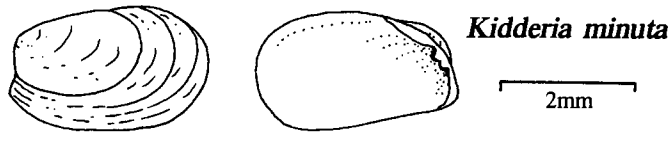


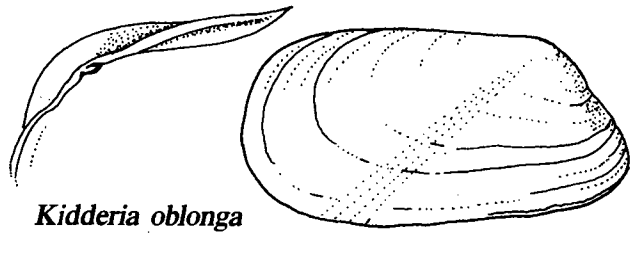












22 Hinge taxodont (=numerous teeth) 23

Hinge with diversified teeth including laterals. 26

23 Shell hidden by a yellowish-brown, hairy periostracum when fresh; (shell large, 30-50 mm, obliquely ovoid, with fine radial and concentric ornamentation), small pointed umbo; hinge with 15 or more teeth.
Limopsis marionensis Smith 1885

Shell without projecting periostracum. 24

24 Margin not crenulate; shell elongate ovoid, subequilateral, (thin, bright yellowish, small, 2-3 mm).
Yoldiella profundorum Melvill & Standen, 1912

Margin more or less crenulate 25

25 Shell ovoid, inequilateral, small 1-2 mm, nacreous and shining, with tiny radiating lines; margin crenulate.
Nucula kerguelenensis Thiele, 1912

Shell obliquely ovate, small, 2-3 mm; margin crenulate, except ventrally; (attached by byssus thread to algae).
Lissarca miliaris (Philippi, 1845)

26 Shell with coarse and regular concentric ornamentation, small, 1 mm.
Condylocardia **sp.**

Shell smooth or with only tiny lines. 27

27 Umbo forming a long curved rostrum; (shell with a bright yellow periostracum).
Astarte longirostris d'Orbigny, 1846

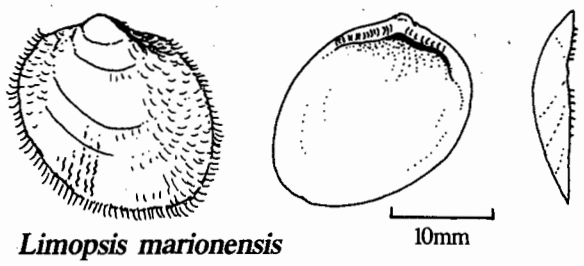
Shell not rostrate 28

28 Shell circular with a radial furrow indenting the posterior side of the shell, (translucent and whitish, 1 mm).
Thyasira marionensis Smith, 1885

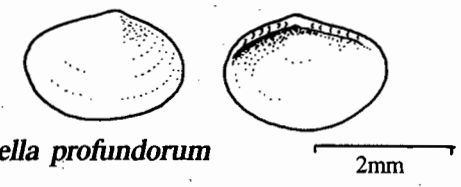
Shell lacks the radial furrow on the posterior side of the shell 29

29 Shell inequilateral, pink or yellow 30

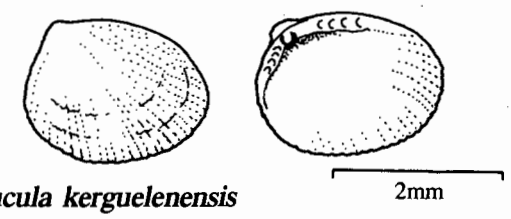
Shell almost equilateral, white 31



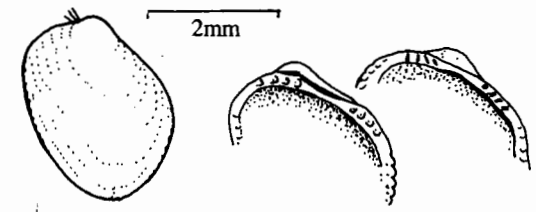
Limopsis marionensis



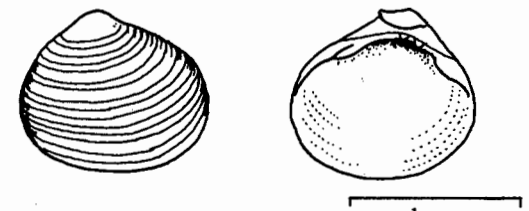
Yoldiella profundorum



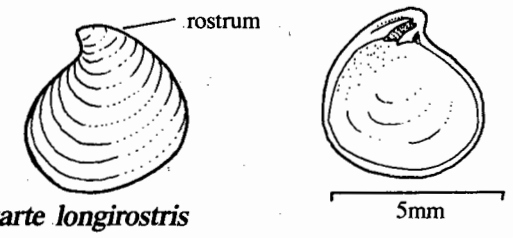
Nucula kerguelenensis



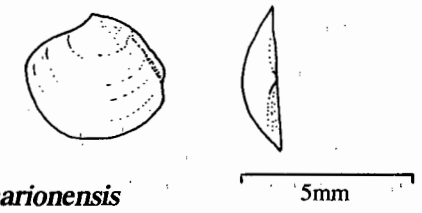
Lissarca miliaris



Condylocardia **sp.**



Astarte longirostris



Thyasira marionensis

30 Shell triangular, (thick and yellowish, 1-2 mm), umbo small; hinge, two large cardinal teeth in one valve and none in the other.
Mysella charcoti (Lamy, 1906)

Shell circular, inflated, pink, 2-3 mm, umbo bluntly rounded; hinge stout with cardinal teeth; (intertidal).
Lasaea consanguinea (Smith, 1877)

31 Shell noticeably longer than high, a little inflated (glossy yellowish-white), 8 mm; umbo prominent, rounded; subtidal.
Neoleptum umbonatum Smith, 1885

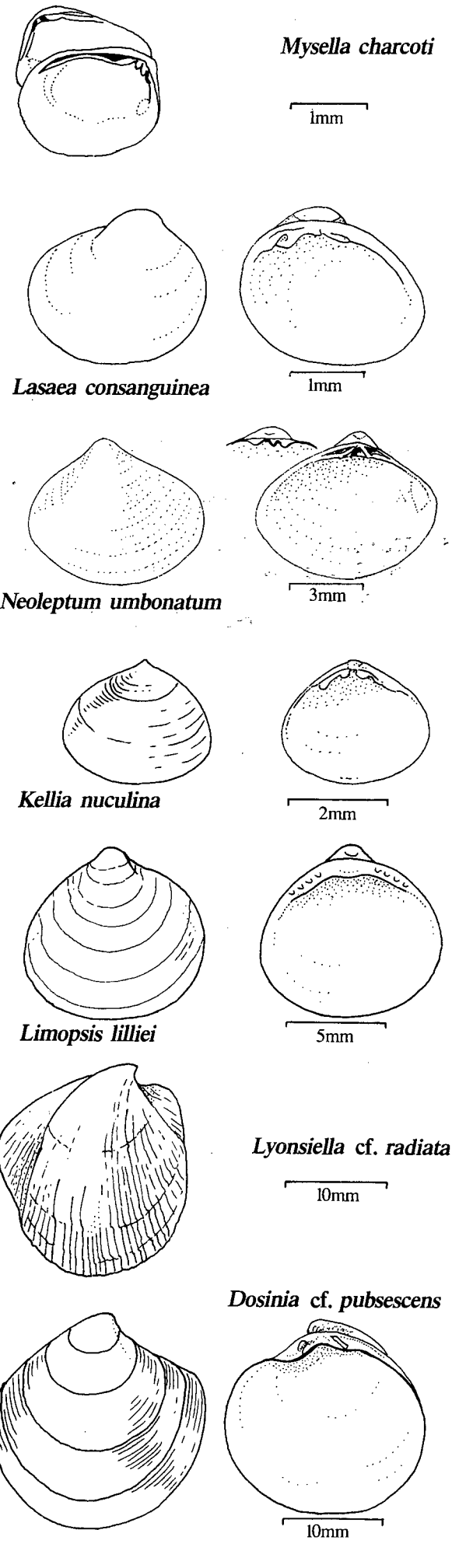
Shell higher and less inflated (whitish), 3 mm; umbo pointed; common intertidal and subtidal.
Kellia nuculina Martens, 1881

Shells were collected of:

Limopsis lilliei Smith, 1915
Shell thick, white, concentric ridges, 8 mm; hinge thick with 4 anterior- and 4 posterior-lateral teeth.

Lyonsiella cf. ***radiata*** Dall, 1889
Shell pearly white, marked radial ribs, flattened anteriorly and posteriorly, 20 mm; umbo cruved to one side, pointed; periostracum yellow.
SAM A37655

Dosinia cf. ***pubescens***
Shell with concentric ridges, prominent curved umbo, 20 mm; hinge with two cardinal teeth.
SAM A37656



C Living Gastropods

1 Shell internal; (animal globose, soft, with scattered nodules, reddish yellow or white with red dots, 12 mm).
Marseniopsis pacifica Bergh, 1886

Shell external 2

2 Patelloid (limpet like) shell 3

Coiled shell 5

3 Shell perforate at the apex, (radially ribbed with punctuations, white, 10 mm).
Puncturella conica (d'Orbigny, 1841)

Shell without such hole 4

4 Shell symmetrical, muscle scar interrupted anteriorly; (shell with radiating black lines, 60 mm; littoral).
Nacella delesserti (Philippi, 1849)

Shell asymmetrical, muscle scar interrupted laterally, (pulmonate, dark brown, 15 mm; intertidal).
Kerguelenella lateralis (Gould, 1849)

5 Shell discoid, (flattened coil or very short spire, 1-2 mm).
..... 6

Shell not discoid, (with a spire), small to large.
..... 7

6 Shell horny and brownish, planispiral with a horizontal aperture, 1 mm.
Omalogyra cf. *atomus* (Philippi, 1841)

Shell not horny, whitish, anticlockwise coil with an oblique, round aperture, 1 mm.
Microdiscula subcanaliculata (Smith, 1875)

7 Aperture entire 8

Aperture not entire 29

8 Shell short-spired 9

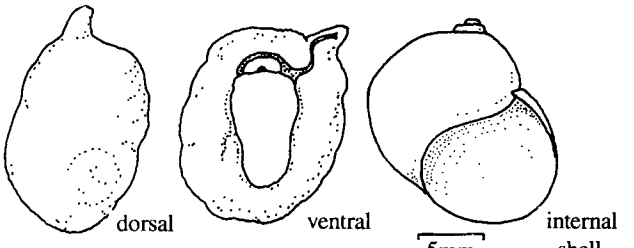
Shell long-spired 27

9 Shell trochoid (shaped like a top shell).
..... 10

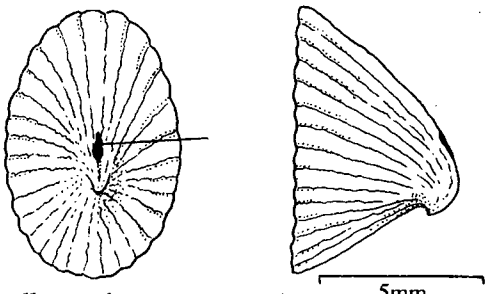
Shell globose (rounded).
..... 14

10 Surface smooth 11

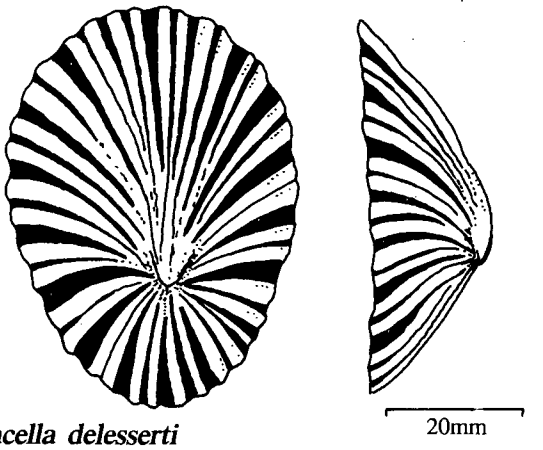
Surface sculptured 12



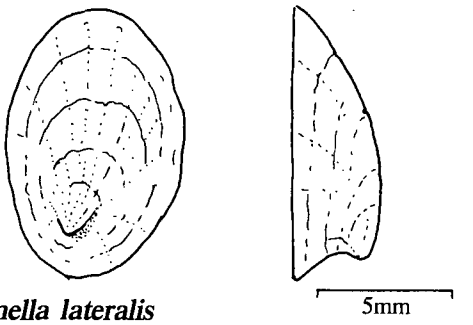
Marseniopsis pacifica



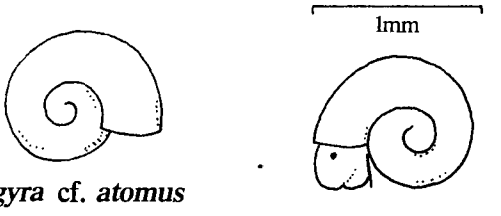
Puncturella conica



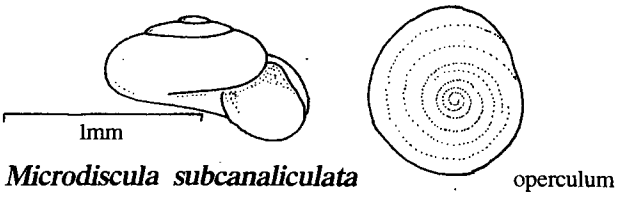
Nacella delesserti



Kerguelenella lateralis



Omalogyra cf. *atomus*



Microdiscula subcanaliculata

11 Pinkish ochre with a white callus; (subtidal, common in kelp beds).
Margarella expansa (Sowerby, 1838)

Polished nacreus white; (subtidal).
Margarella porcellana Powell, 1951

12 Shell, axial ribs, (white, 1 mm).
Brookula cf. *crassicostata* (Strebel, 1908)

Shell sculptured with spiral cords and tubercles. 13

13 Suture impressed, without subsutural cord, tubercles along the upper cord, more than one spiral of tubercles; aperture scalloped.
Solariella infundibulum (Watson, 1879)
(*Solariella* sp. SAM A37657 shell collected with single spiral cord of tubercles; aperture smooth.)

Suture not impressed, one small and granulose subsutural cord; aperture scalloped.
Calliostoma delli McLean & Andrade, 1982

14 Operculum concentric, nucleus apical; (shell soft; periostracum thick, forming spiral rows; 20 mm).
Torellia angulifera Waren, Arnaud & Cantera, 1986

Operculum absent or paucispiral; shell not soft; periostracum without spiral rows. 15

15 Operculum absent; columella tooth present; shell smooth, whitish and translucent; spire 3 whorls.
Toledonia limnaeaeformis (Smith, 1877)
(Shells of *Toledonia elata* were collected with a longer spire of 4 whorls.)

Operculum paucispiral; columellar tooth absent. 16

16 Callus present, with or without umbilicus; shell medium sized 17

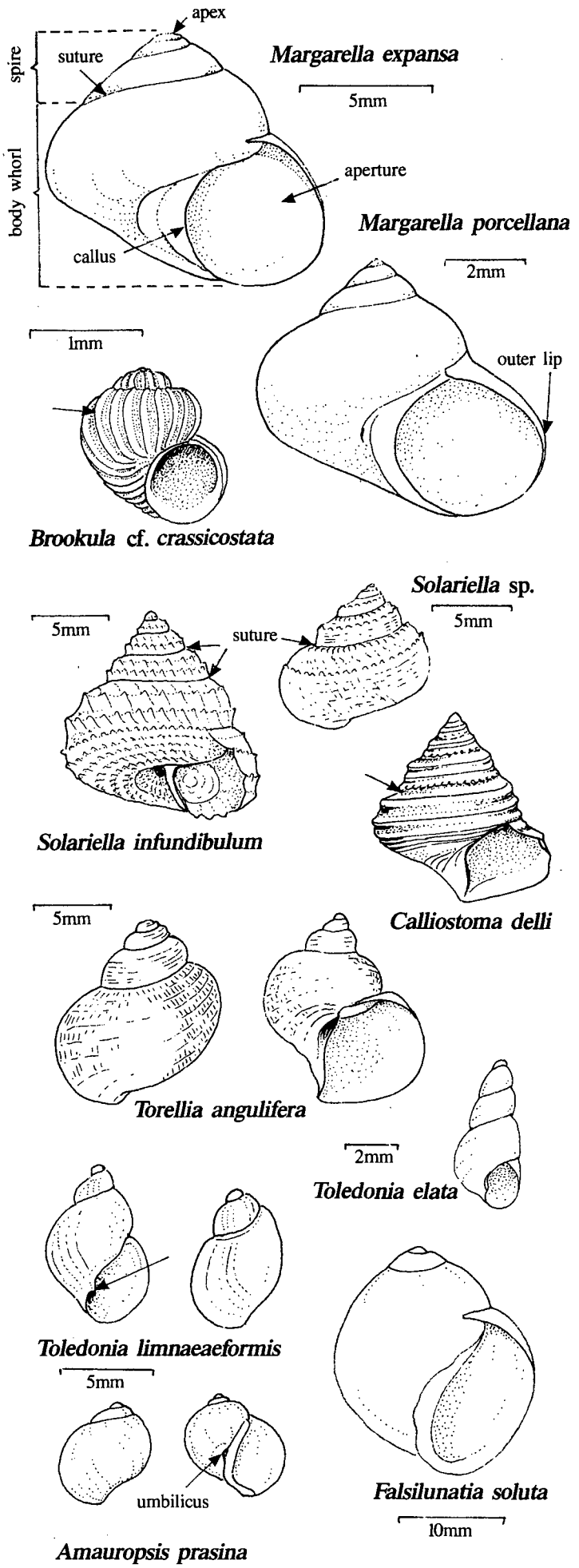
Callus and umbilicus absent; shell small, less than 5 mm 20

17 Callus not reaching the upper part of the aperture; periostracum olive yellow, thin; shell more than 10 mm).
Falsilunatia soluta (Gould, 1847)
= *Natica fartilis* (Watson, 1881)

Callus reaching the upper part of the aperture; shell about 10 mm 18

18 Umbilicus well marked, semicircular; (periostracum greyish).
Amauropsis prasina (Watson, 1881)
= *Natica suturalis* Watson, 1881

Umbilicus more or less closed by the callus 19



19 Umbilicus circular, partly closed; spire flat.
Amauropsis anderssoni Strebel, 1906

Umbilicus closed; spire relatively high.
Tectonatica impervia (Philippi, 1845)

20 Shell coloured 21

Shell white or whitish 23

21 No opercular peg; (shell thin and brown; intertidal).
Laevilitorina caliginosa (Gould, 1848)

Opercular peg present; shell not very thin.
..... 22

22 Shell brown or blackish; (subtidal).
Eatoniella kerguelenensis regularis (Smith, 1915)

Shell pale; (subtidal).
Eatoniella subrufescens (Smith, 1875)

23 Shell spiral sculptured 24

Shell smooth 25

24 Shell thin with about 15 spiral cords.
Onoba transenna (Watson, 1886)

Shell heavier with about 5 spiral cords.
Onoba paucicarinata (Ponder, 1983)

25 Aperture circular with thickened, splayed, outer lip.
Powellisetia principis (Watson, 1886)

Aperture oval, outer lip not thickened 26

26 Columella bulging; (shell yellow-white).
Skenella edwardiensis (Watson, 1886)

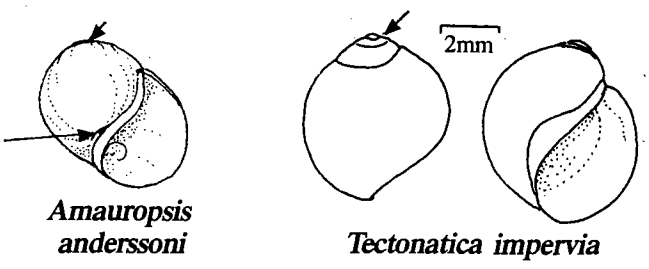
Columella not bulging; (shell glossy white, outer lip sharp).
"Jeffreysia" edwardiensis (Watson, 1886)

27 Surface smooth, no constriction along the suture, (glossy white, 7 mm).
Balcis amblia (Watson, 1883)

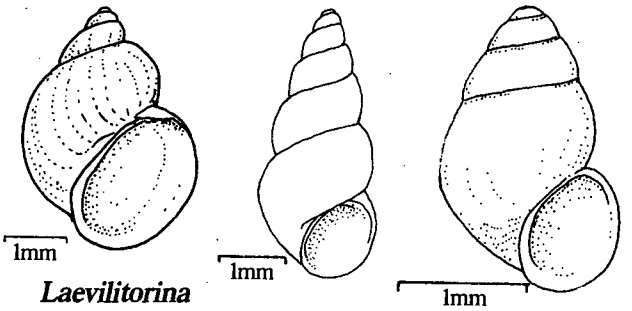
Surface sculptured 28

28 Shell sculpture, two long spiral ridges and two small intermediate ones, (white, aperture small, round, 15 mm).
Banzarecolpus austrina (Watson, 1883)

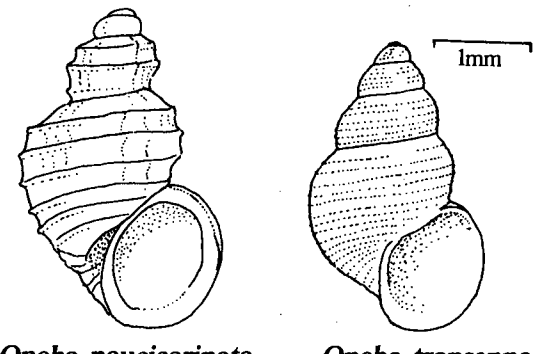
Shell sculpture, axial ribs, (white, aperture square, apex blunt, 3 mm).
Turbonilla lamyi Hedley, 1916



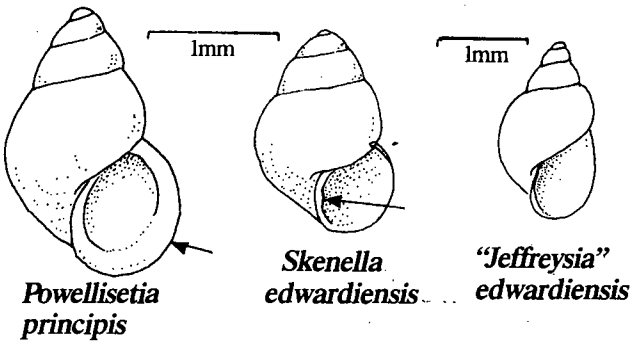
Amauropsis anderssoni *Tectonatica impervia*



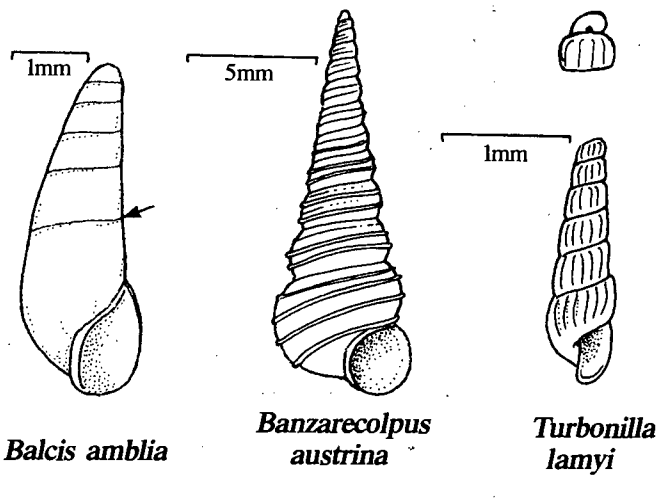
Laevilitorina caliginosa *Eatoniella kerguelenensis regularis* *Eatoniella subrufescens*



Onoba paucicarinata *Onoba transenna*



Powellisetia principis *Skenella edwardiensis* *"Jeffreysia" edwardiensis*



Balcis amblia *Banzarecolpus austrina* *Turbonilla lamyi*

29 Shell cylindrical, spire reduced.
..... 30

Shell conical
..... 31

30 Whorls shouldered; aperture reaching about 2/3 of the height of the shell; (fragile, white, 2 mm).
Diaphana kerguelenensis Thiele, 1912

Whorls without shoulder; aperture higher than 2/3 the height of the shell; (fragile, white, 10 mm).
Retusa sp. SAM A37646

31 No siphonal canal; shell with low spire; apertural slit present.
..... 32

Siphonal canal present; shell with high spire; no apertural slit, but may have a subsutural sinus.
..... 33

32 Shell trochoid, sculpturing of oblique, axial, fine ribs crossed by spiral lines, 5 mm.
Anatoma euglypta (Pelseneer, 1903)

Shell globose, axial riblets only 3 mm; (apertural slit evolved into a marginal perforation in the adult).
Sinezona sp.

33 Parietal tooth present; periostracum thick and hairy; (shell large, 100 mm, sculpture of riblets and fine spiral lines with tubercles at their crossing).
Fusitriton magellanicus (Roeding, 1798)
= *Triton cancellatum* Lamarck, 1816

Parietal tooth absent; periostracum not thick and hairy.
..... 34

34 Shell narrow with a long spire, length >2.5x width.
..... 35

Shell with short spire, length <2x width.
..... 39

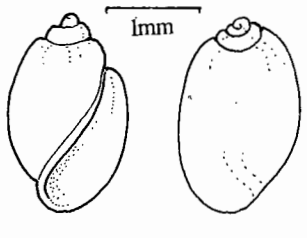
35 Shell with a subsutural sinus, (wavy axial ribs issued from subsutural blunt tubercles, white, 15 mm).
Spirotropis studeriana (Martens, 1878)
= ? *Typhlomangelia fluctuosa* (Watson, 1881).

Subsutural sinus absent 36

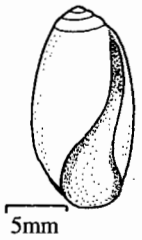
36 Strong axial ribs and weak spiral lines; up to 20 mm. 37

Spiral lines dominant on axial ornamentation; up to 10 mm 38

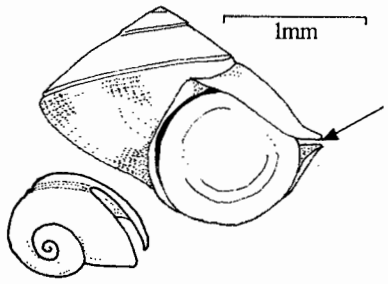
37 (Less than 20 axial ribs on the body whorl).
Eumetula macquariensis Tomlin, 1948



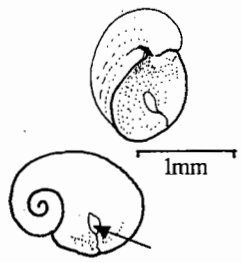
Diaphana kerguelenensis



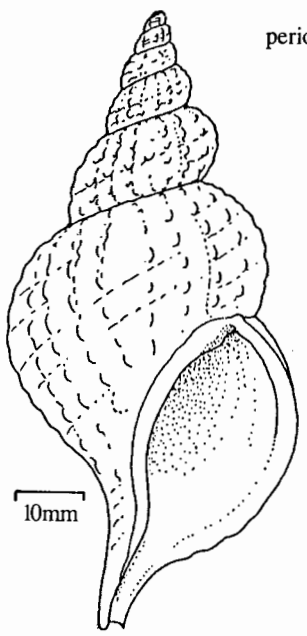
Retusa sp.

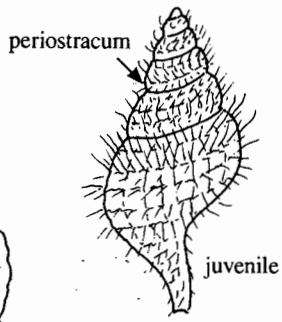


Anatoma euglypta

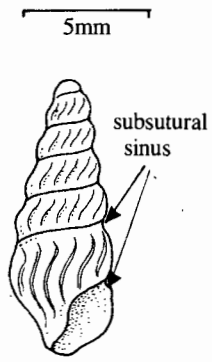


Sinezona sp.

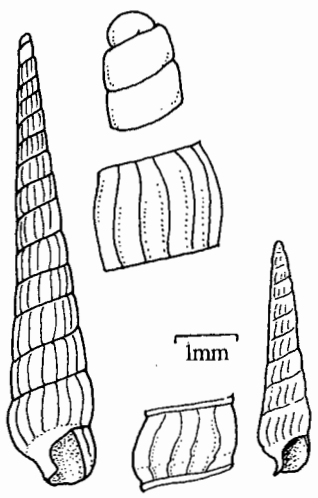




Fusitriton magellanicus



Spirotropis studeriana



Eumetula macquariensis

(More than 20 axial ribs on the body whorl, crossed by spiral threads, except on the first two whorls).
Eumetula **sp.** SAM A37645

38 Shell with two to three spiral threads with tubercles, except on the body whorl, yellowish.
Cerithiella **cf.** ***werthi*** Thiele, 1912

Shell with three or four flat, spiral ridges, (white).
Cerithiopsilla **sp.** SAM A37644

39 Axial ornamentation dominant 40

No axial ornamentation; 7-12 mm 44

40 Axial lamellae; 15-20 mm 41

Axial ribs 42

41 (Lamellae sharp, angulose at the shoulder, subsutural tubercles).
Trophon septus Watson, 1882

(Lamellae without shoulder and tubercles).
Trophon declinans Watson, 1882

42 Shell with subsutural sinus, (light subsutural shoulder, axial ribs crossed by spiral lines; 12 mm).
Typhlodaphne platamodes (Watson, 1881)

No subsutural sinus; (7 mm) 43

43 Whole surface sculptured.
Pareuthria regulus Watson, 1833

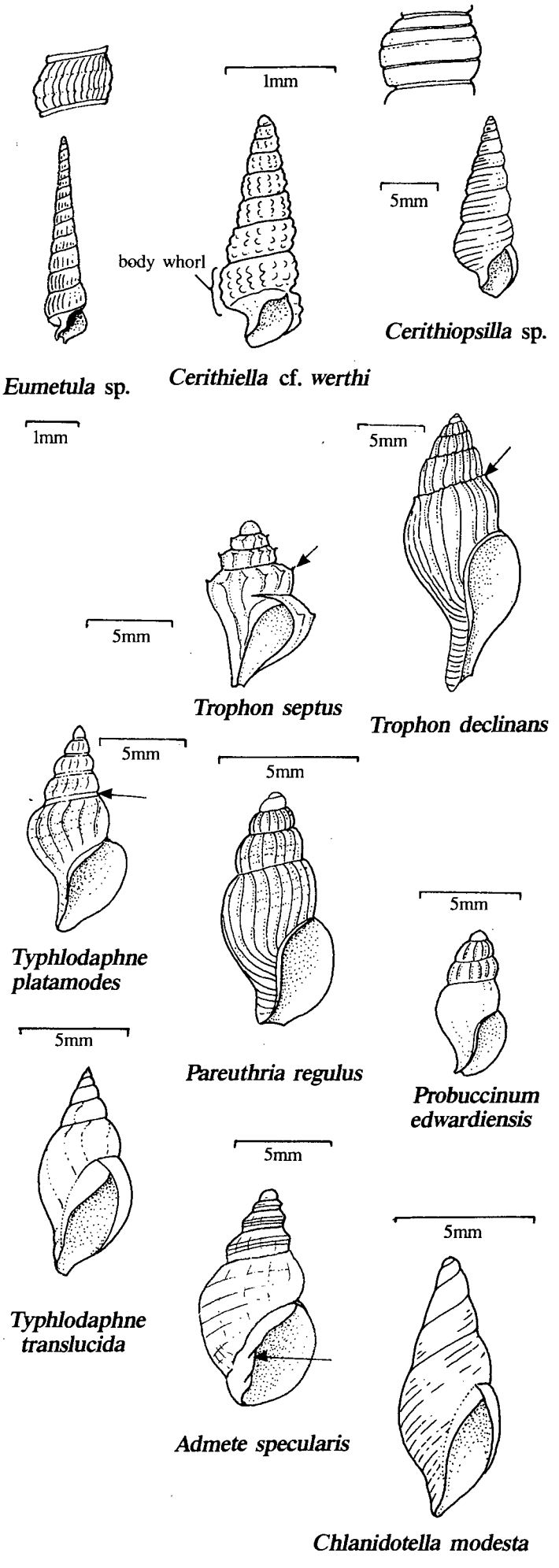
Body whorl without axial ribs.
Probuccinum edwardiensis (Watson, 1882)

44 Shell glossy white.
Typhlodaphne translucida (Watson, 1881)

Shell with spiral ornamentation 45

45 Columellar teeth present; (spiral lines on the whole shell surface).
Admete specularis (Watson, 1882)

Columellar tooth absent; (shell with weak spiral lines in the spire and on the upper part of the body whorl only).
Chlanidotella modesta (Martens, 1885)



D Living Polyplacophora (Chitons)

Shell composed of a series of eight valves surrounded by a mantle; foot broad and flat; radula present.

1 Girdle greatly expanded anteriorly, almost twice as long as the shell length, surface granular with spinose papillae on the surface and at the margin; valves wide and flat, whitish; occurs at over 360 m depth.
? Placiphorella sp. SAM A37647

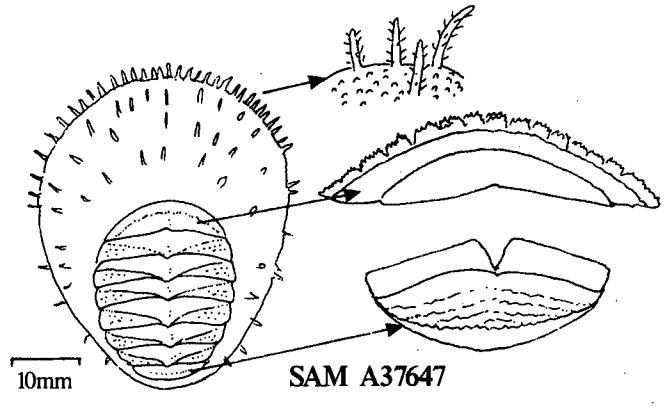
Girdle forms a narrow margin around the valves. 2

2 Girdle chestnut brown with small tufts of white spicular scales in the angles between the valves; valves dark brown; intertidal.
Hemiarthrum setulosum Dall, 1876

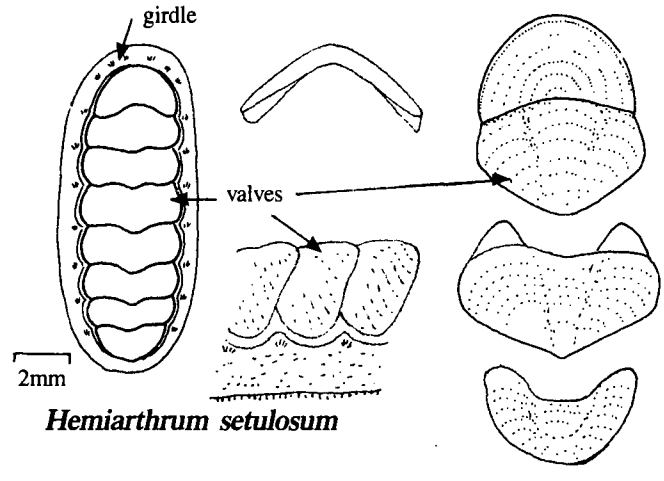
Girdle covered with small, overlapping scales; valves white.
..... 3

3 Valves with distinct radial sculpturing; anterior valve insertion plate fissured (like teeth); valves compressed laterally, form angle of 75°; large about 20 mm long; occurs at over 100 m depth.
Lepidopleurus dorsuosus Haddon, 1886

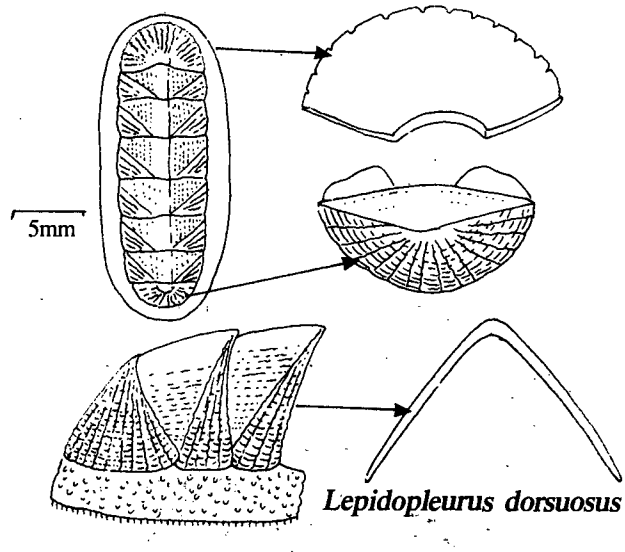
Valves smooth with scattered tubercles; insertion plate with a smooth margin; valve sides meet at an angle of 100°; small about 3 mm long.
Lepidopleurus kerguelenensis (Haddon, 1886)



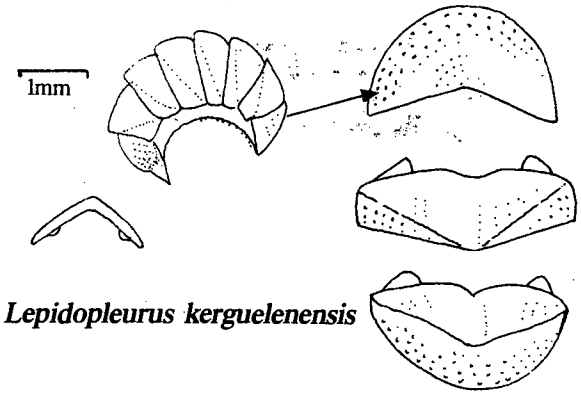
SAM A37647



Hemiarthrum setulosum



Lepidopleurus dorsuosus



Lepidopleurus kerguelenensis

Discussion

The benthic molluscan fauna of Marion Island comprises 85 living species, including 46 gastropods, 32 bivalves, 4 polyplacophorans and single representatives of the Cephalopoda, Solenogastres and Scaphopoda. Of these, 38 are recorded here for the first time. Of the 85 species, 76 are identified to specific level in this guide, the remaining 9 have been identified to genus and await identification or description of new species. Three brachiopods have been recorded. One of them, *Magellania kerguelenensis*, is common to abundant at almost all stations sampled except in the intertidal and very shallow subtidal zone. The molluscan fauna is made up predominantly of small, white shelled species 20 mm or less in length, notable exceptions being the common intertidal limpet *Nacella delesserti*, the large whelk *Fusitriton magellanicus* and the large white bivalves *Laternula elliptica* and *Acesta* sp. Several of the small shallow-water bivalves that are usually attached to algae are various shades of pink to orange, namely *Gaimardia adamsiorum, Lasaea consanguinea* on the filaments of *Rama antarctica, Gaimardia trapesina* attached to the kelp *Macrocystis laevis*, and *Kidderia minuta* and *Kidderia oblonga*.

A Brey-Curtis similarity analysis of the entire benthic invertebrate collection (Branch *et al* 1992) identified several communities around the Islands. These are largely influenced by depth and substratum. The dredged collections from soft substrates were very uniform while those from rocky areas were more patchy, due to the dredge bouncing on the rock surface and not taking consistent samples. Seven communities were recognised in analysing the molluscan and brachiopod fauna; these were 5 benthic communities (sampled by dredging)(1-5), an intertidal community (6), and a subtidal community (sampled by scuba-diving) (7). The results are summarised in Table 1 (p 62 & 63).

The benthic communities shown on the map (Fig 1, p 64) were characterised as follows:

Group 1. A heterogenous inshore community around the Islands to a depth of about 50 m. This was rich in species but among the molluscs only *Trophon declinans, Margarella expansa* and *Kellia nuculina* were common.

Group 2. A large community between the Islands, occurring on soft substrate at depths of about 50-150 m, contained an abundance of filter-feeding bivalves namely *Limatula pygmaea, Thracia meridionalis, Hiatella solida* and *Astarte longirostris* together with the common brachiopod *Magellania kerguelenensis*. The carnivorous whelk *Trophon declinans* was also abundant and, judging by the number of bivalves with drill holes, it probably feeds on bivalves. The abundant gastropod *Margarella porcellana* and the common keyhole limpet *Puncturella conica* are probably detritus feeders.

Group 3. A deeper, 150-300 m, soft-substrate community between and to the east of the Islands contained the same bivalves and brachiopods as group 2 with the omission of *Thracia meridionalis* and the addition of *Limopsis marionensis*. Several different detritivorous gastropods were recorded but none of these were common.

Group 4. This community was found in a deep (300-500 m) rocky locality to the south-west of Prince Edward Island and again to the south-east of Marion Island where there were dense colonies of octocorals and hydrozoans. The common gastropods were *Pareuthria regulus, Tectonatica impervia, Trophon declinans* and *Eumetula macquariensis*. The chiton *Lepidopleurus dorsuosus* was also common. There were fewer bivalves, including *Hiatella solida, Limopsis marionensis* and *Pteria* sp. attached to *Plumularia insignis*. The Solenogastres were recorded only in this group, with 9 specimens on the hydrozoan *Symplectoscyphus subarticulatus*.

Group 5. This community characterised the deepest locality sampled at over 500 m depth at sites with a sloping and predominantly rocky floor. There were very few molluscs apart from shells and a few live specimens of a large bivalve *Acesta* sp., the gastropods *Solariella infundibulum, Pareuthria regulus* and a single specimen of the unusual large-girdled chiton *?Placiphorella* sp. all of which are new records.

Group 6. The intertidal from Marion Island was investigated by de Villiers (1976) and the 8 intertidal collections taken in 1982 present similar patterns to those reported by de Villiers. The pulmonate limpet *Kerguelenella lateralis* was particularly common in the intertidal above the bull kelp *(Durvillea antarctica)* zone. *Laevilitorina caliginosa* was most common around high tide pools. The bivalves *Lasaea consanguinea* grew attached to the alga *Rama antarctica*. In the *Durvillea* zone *Kidderia minuta* (= *K. bicolor*) "hid" in crevices beneath the kelp and *Hemiarthrum setulosum* and *Nacella delesserti* were common on encrusting corallines.

Group 7. The scuba-sampling between 5-15 m depths was quantitative and a much finer sampling method than dredging (Beckley and Branch 1992). Thirty four species of mollusc were recorded. The bivalves *Kellia nuculina* and *Kidderia minuta* were abundant and *Gaimardia trapesina* was attached to the kelp *Macrocystis laevis* in large numbers. There were three species of small *Philobrya* mussels, with *Philobrya barbata* being the most common. The chiton *Hemiarthrum setulosum* was abundant and the smaller *Lepidopleurus kerguelenensis* was also present in this zone. *Pareuthria regulus* and *Trophon declinans* were common whelks. The limpet *Nacella delesserti* was abundant on lithothamnion closer inshore and the minute *"Jeffreysia" edwardiensis* was collected in large numbers.

The brachiopod *Magellania kerguelenensis* occurred throughout the sampling zones and was abundant at depths of 100-500 m. Limpets and chitons were largely confined to the intertidal and subtidal where they dominated. The bivalves were divided into two groups; those that were associated with algae in the intertidal to depths of 15 m and the sand-dwelling forms concentrated between the two Islands.

Table 1

Summary of all species of Mollusca and Brachiopoda recorded from Marion and Prince Edward Islands during the 1982-89 University of Cape Town Surveys.

Species	No of Records			Depth m		Modal abundance in substrates						Abundance in communities						
						rock					sand	Offshore					Int	Div
	Int	Dv	Dr	Min	Max							shallow			deep		<5 m	5-15m
BRACHIOPODA						A	B	C	D	E	F	1	2	3	4	5	6	7
Liothyrella sp.	—	5	3	10	527	1	0	0	0	0	0	—	—	—	r	r	—	r
Magellania kerguelenensis	—	6	35	10	510	2	1	1	1	2	1	r	a	a	a	r	—	r
Platydia anomioides SAM A 37643	—	—	3	255	527	1	0	0	4	0	0	—	—	—	p	—		
MOLLUSCA																		
GASTROPODA																		
Admete specularis	—	4	7	49	228	0	0	0	2	1	1	r	p	r	—	—	—	p
Amauropsis prasina	—	2	4	10	527	1	0	1	0	1	0	—	r	p	p	—	—	r
Anatoma euglypta	—	—	3	355	420	2	0	0	0	0	1	—	—	r	p	—		
Balcis amblia	—	3	1	510	510	2	0	0	0	0	0	—	—	—	p	—	—	r
Banzarecolpus austrina	—	—	6	85	228	1	0	0	0	4	0	—	p	p	p	—		
Cerithiella cf. *werthi*	—	8	1	10	102	0	0	1	0	0	0	—	r	—	—	—	—	p
Cerithiopsilla sp. SAM A37644	—	—	1	49	59	0	0	0	1	0	0	r	—	—	—	—		
Chlanidotella modesta	1	9	10	0	510	1	0	0	0	1	1	r	p	p	p	—	r	p
Diaphana kerguelenensis	—	4	—	10	10												—	r
Eatoniella kerguelenensis regularis	—	?3	—	10	10												—	r
Eumetula macquariensis	—	—	7	151	697	1	0	0	0	1	1	—	r	—	c	r		
Eumetula sp. SAM A37645	—	—	1	355	355	1	0	0	0	0	0							
Falsilunatia soluta	—	—	1	31	31	0	0	0	0	0	1							
Fusitriton magellanicus	—	—	2	290	475	1	1	0	0	0	0	—	—	—	p	—		
"Jeffreysia" edwardiensis	—	27	1	5	45	1	0	0	0	0	0	r	—	—	—	—	—	a
Kerguelenella lateralis	3	—	—	0	10												c	
Laevilitorina caliginosa	5	3	—	0	10												a	r
Margarella expansa	—	1	12	10	102	3	0	2	5	1	1	a	r	—	—	—	—	r
Margarella porcellana	—	1	11	10	151	2	0	1	1	2	2	r	a	—	—	—	—	r
Marseniopsis pacifica	—	—	1	147	147	0	1	0	0	0	0							
Microdiscula subcanaliculata	—	1	—	10	10												—	r
Nacella delesserti	4	20	—	0	15												c	a
Omalogyra cf. *atomus*	—	5	1	5	145	0	0	0	0	1	0	—	—	r	—	—	—	r
Onoba transenna	—	—	2	52	90	0	0	0	0	0	1	r	r	—	—	—		
Pareuthria regulus	1	8	12	0	527	1	0	1	1	1	1	r	p	r	a	r	r	c
Powellisetia principis	—	—	1	102	102	0	0	1	0	0	0	—	r	—	—	—		
Puncturella conica	—	4	13	5	355	1	0	0	1	1	2	r	c	p	—	—	—	r
Retusa sp. SAM A37646	—	—	4	151	210	0	0	0	0	1	1	—	r	p	—	—		
Sinezona sp.	—	8	—	5	5												—	p
Skenella edwardiensis	—	—	2	120	355	1	0	0	0	0	1	—	r	—	—	—		
Solariella infundibulum	—	—	2	45	750	2	0	0	0	0	0	—	—	—	—	r		
Spirotropis studeriana	—	—	4	140	204	0	0	0	0	1	1	—	r	p	—	—		
Tectonatica impervia	—	—	9	38	420	1	0	1	2	1	2	p	p	—	c	—		
Torellia angulifera	—	—	2	474	527	1	1	0	0	0	0	—	—	—	p	—		
Toledonia elata	—	—	1	460	560	1	0	0	0	0	0	—	—	—	r	—		
Trophon declinans	2	23	15	5	527	1	0	2	3	2	2	c	a	r	c	—	p	c
Trophon septus	—	—	2	140	200	0	0	0	0	1	1	—	r	r	—	—		
Typhlodaphne translucida	—	1	2	210	355	1	0	0	0	0	0	—	—	—	p	—	—	r
Typhlodaphne platomodes	—	—	1	140	140	0	0	0	0	1	0	—	r	—	—	—		
POLYPLACOPHORA																		
Hemiarthrum setulosum	4	33	2	0	45	2	0	0	0	0	0	p	—	—	—	—	c	a
Lepidopleurus dorsuosus	—	—	6	355	697	1	1	0	0	0	2	—	—	p	c	r		
Lepidopleurus kerguelenensis	2	8	1	0	102	0	0	1	0	0	0	—	r	—	—	—	p	p
?Placiphorella SAM A37647	—	—	1	340	400	1	0	0	0	0	0	—	—	—	—	r		
SCAPHOPODA																		
Fissidentalium sp. SAM A37649	—	—	5	139	420	0	0	0	0	1	1	—	r	p	r	—		
BIVALVIA																		
Acesta sp. SAM A37648	—	—	1	697	697	1	0	0	0	0	0	—	—	—	—	r		
Adacnarca marionensis	—	—	1	200	200	0	0	0	0	0	1	—	—	r	—	—		
Astarte longirostris	—	—	17	52	370	1	0	4	0	1	1	r	c	p	—	—		
Cuspidaria cf. *tenella*	—	—	1	139	139	0	0	0	0	1	0	—	r	—	—	—		
Cyclopecten aviculoides	—	4	1	10	63	0	0	0	0	1	0	—	r	—	—	—	—	r

Table 1 (continued)

Species	No of Records			Depth m		Modal abundance in substrates						Abundance in communities						
												Offshore					Int	Div
	Int	Dv	Dr	Min	Max	rock					sand	shallow			deep		<5 m	5-15m
MOLLUSCA						A	B	C	D	E	F	1	2	3	4	5	6	7
BIVALVIA																		
Gaimardia adamsiorium	4	5	3	0	52	1	0	0	0	0	0	p	—	—	—	—	p	p
Gaimardia trapesina	—	12	1	5	200	0	0	0	0	0	1	—	—	r	—	—	—	p
Hiatella solida	—	1	29	15	474	2	1	3	2	2	3	p	a	a	c	—	—	r
Kellia nuculina	—	25	10	5	106	3	0	4	1	1	1	c	p	—	—	—	—	a
Kidderia minuta	4	24	—	0	10												c	a
Kidderia oblonga																		
Lasaea consanguinea	3	—	1	0	52	0	0	0	0	0	1	r	—	—	—	—	p	—
Limatula pygmaea	—	3	27	38	240	1	0	2	0	4	1	p	a	c	—	—	—	r
Limopsis marionensis	—	—	16	106	527	1	3	0	0	1	1	—	p	c	a	—		
Mysella sp.	—	1	—	10	10												—	r
Neolepton umbonatum	—	2	7	10	750	1	0	0	0	i	3	p	r	r	p	—	—	r
Nucula kerguelenensis	—	2	—	15	15												—	r
Palliolum clathratum	—	—	13	106	474	0	1	0	0	1	2	—	c	c	p	—		
Philobrya barbata	—	17	—														—	c
Philobrya kerguelenensis	—	3	—	5	10												—	r
Philobrya quadrata	—	13	4	5	208	1	0	0	0	1	3	—	r	c	—	—	—	p
Pteria sp. SAM A37650	—	—	2	210	475	1	0	0	0	0	0	—	—	—	p	—		
Thracia meridionalis	—	1	8	15	120	0	0	4	0	4	3	p	a	—	—	—	—	r
Thyasira marionensis	—	—	3	31	145	0	0	0	0	1	3	—	r	r	—	—		
Yoldiella profundorum	—	—	1	228	228	0	0	0	0	1	0	—	—	r	—	—		
CEPHALOPODA																		
Octopus magnificus	—	6	5	10	474	1	1	1	0	1	0	r	p	—	p	—	—	p
SOLENOGASTRES																		
SAM A37651	—	—	2	50	527	2	0	0	0	0	0	—	—	—	p	—		

The number of stations at which each species was recorded is given for intertidal (Int), scuba-diving (Dv) and dredging (Dr) surveys. For these three survey methods 8, 44 and 57 stations were sampled, respectively. Maximum and minimum depths are given. The modal abundance of each species is shown in relation to substratum where the modal abundance is expressed as follows: 0= absent, 1=1-5, 2=6-15, 3=16-30, 4=31-50, 5=51-100 individuals per sample. Substrate types are: A= >60% rock, B=10-60% rock, C= >50% gravel, D=sand with 5%-50% gravel, E= sand with >5% mud, F= 100% sand.

Abundance is also summarised in relation to five community groups recognised by similarity analyses of the offshore dredged material (community groups 1-5, see map in Fig 1) or for intertidal (Int. group 6 <5m depth) and shallow-water scuba-samples (Dv, group 7, 5-15m). Abundance was ranked as: —= absent, r=rare, p=present, c=common, a=abundant. Ranking was assigned on the basis of the product of the modal abundance and the percentage of stations within a community group at which the species was collected.

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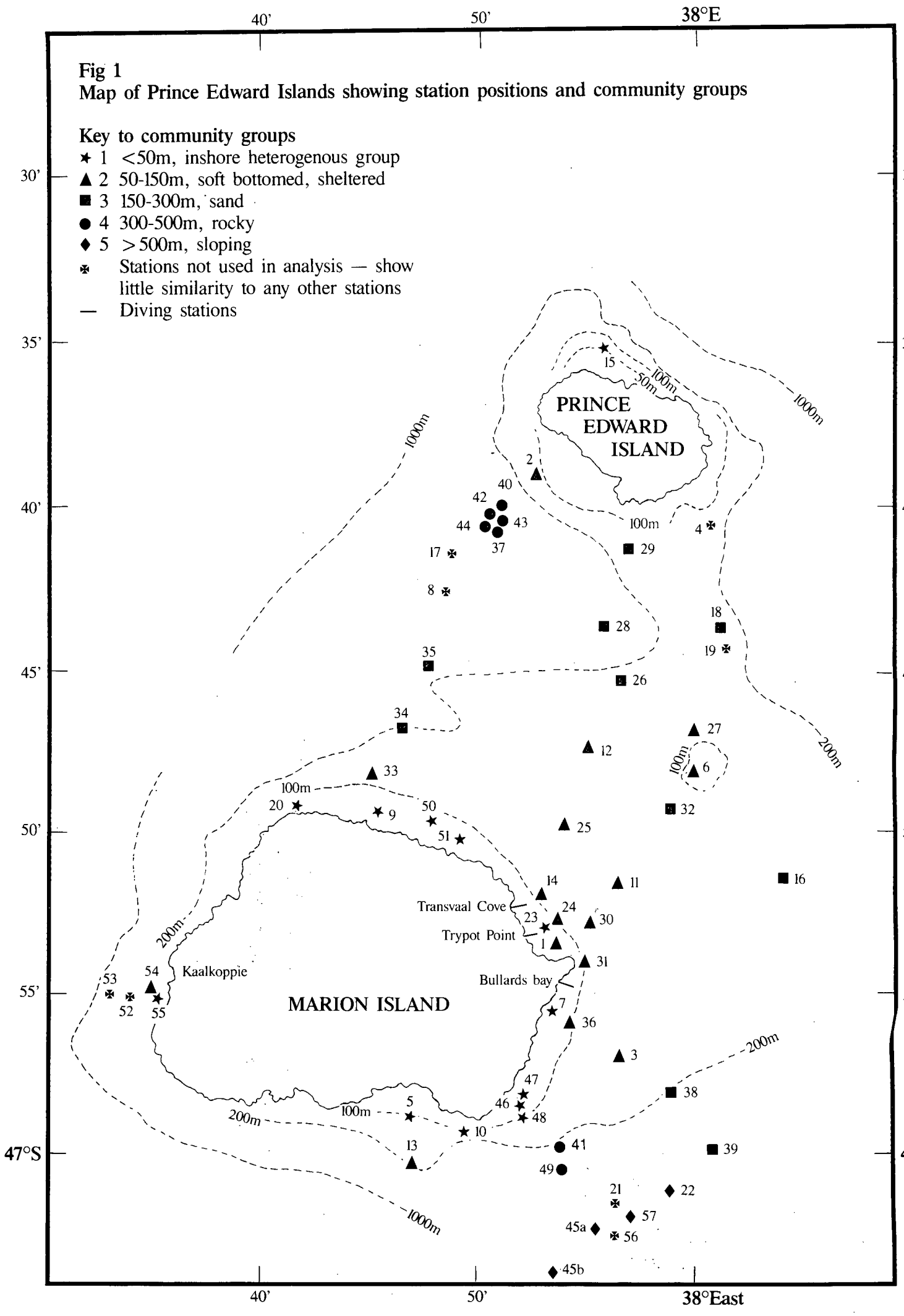


Fig 1
Map of Prince Edward Islands showing station positions and community groups

CHAPTER 3: PYCNOGONIDA

The Pycnogonida of Marion and Prince Edward Islands were sampled over the period 1973-1989 by dredging, scuba-diving and intertidal surveys undertaken by the University of Cape Town and in 1976 deep water sampling by the French vessel Marion-Dufresne *campaign MD.08. This paper comprises illustrated keys for the identification of the 17 species of Pycnogonida recorded from the area. Of these, 14 are new records for the area and one, still unidentified, a presumed new species. The bathymetric range and geographical distribution of the species are outlined.*

Introduction

Marion and Prince Edward Islands are remote islands belonging to the same subantarctic province as the Crozet archipelago. Their geographical positions are 46°54'S — 37°45'E for Marion and 46°38'S — 37°57'E for Prince Edward. Both islands are emerged summits of volcanoes originating from the mid-Atlantic ridge.

Among the expeditions that have collected pycnogonids in waters lying around the Prince Edward Islands, the oldest is the *Challenger* in 1873-1876, with Hoek's (1881) descriptions providing a basis for all subsequent work. The 1976 *Marion-Dufresne* campaign MD.08 undertook a dense benthic survey (Arnaud and Hureau, 1979). South African research began with land-based surveys of the intertidal and shallow benthos (Fuller, 1967 and de Villiers, 1976) and, in 1989, was extended subtidally by quantitative scuba-sampling at depths of five, ten and 15 meters (Beckley & Branch 1992). Extensive offshore dredging from the *SA Agulhas* over the period 1984-1989 sampled 57 stations between 32 and 775 meters, (GM Branch *et al* 1992); 27 samples yielded pycnogonids sent to one of us (FA) for identification.

The primary aims of this paper are to document the pycnogonid material and to present keys for the identification of all species thus far collected at the Prince Edward Islands.

Systematic List of Species

* = New records for the Marion and Prince Edward Islands

Phylum Pycnogonida	Depth Range at Prince Edward Is (m)
Family **Ammotheidae**	
* *Cilunculus kravcovi* Pushkin, 1973	360-376
Tanystylum cavidorsum Stock, 1957b	0-5
* *Tanystylum neorhetum* Marcus, 1940	95-190
* *Tanystylum oedinotum* Loman, 1923	13
* *Tanystylum ornatum* Flynn, 1928	410-560
Family **Austrodecidae**	
* *Pantopipetta australis* (Hodgson, 1914)	680-715
Austrodecus elegans Stock, 1957a	51-606
* *Austrodecus goughense* Stock, 1957a	42-90
* *Austrodecus tristanense* Stock, 1957a	10-70
Family **Callipallenidae**	
* *Pseudopallene glutus* Pushkin, 1975	570-315
Family **Pycnogonidae**	
* *Pycnogonum platylophum* Loman, 1923	335-375
Family **Colossendeidae**	
Colossendeis megalonyx megalonyx Hoek, 1881	220-488
Family **Endeidae**	
* *Endeis viridis* Pushkin, 1976	120-185
Family **Rhynchothoracidae**	
* *Rhynchothorax australis* Hodgson, 1907	224-232
Family **Nymphonidae**	
* *Nymphon gracilipes* Miers, 1875	110-460
* *Nymphon longicoxa* Hoek, 1881	570-315
* *Nymphon* sp. SAM A40589 & SAM A40590	355-420

Pycnogonida of Marion and Prince Edward Islands

Key to the species

1 Palp absent.
..... 2

Palp present.
..... 4

2 Chelifores present, functional, scape 1-jointed, fingers robust without teeth; proboscis conical with a distal fringe; legs long, without auxiliaries.
Pseudopallene glutus Pushkin, 1975

Chelifores absent.
..... 3

3 Lateral processes of trunk segments well separated; proboscis as long as trunk, cylindrical; ocular tubercle low-rounded; legs long and with long auxiliaries.
Endeis viridis Pushkin, 1976

Lateral processes of trunk segments almost touching; proboscis short, conical; legs short and stout, without auxiliaries.
Pycnogonum platylophum Loman, 1923

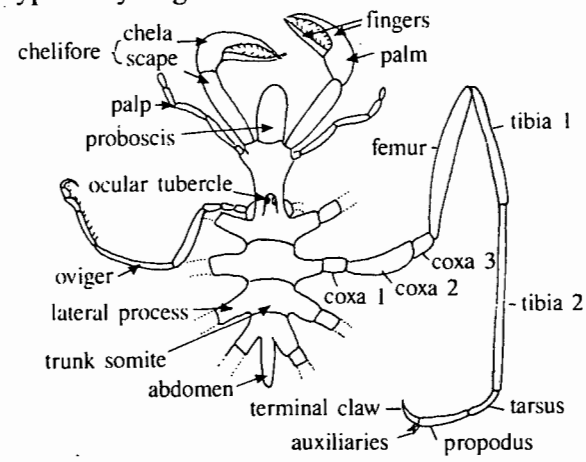
4 Chelifores present 5

Chelifores absent 11

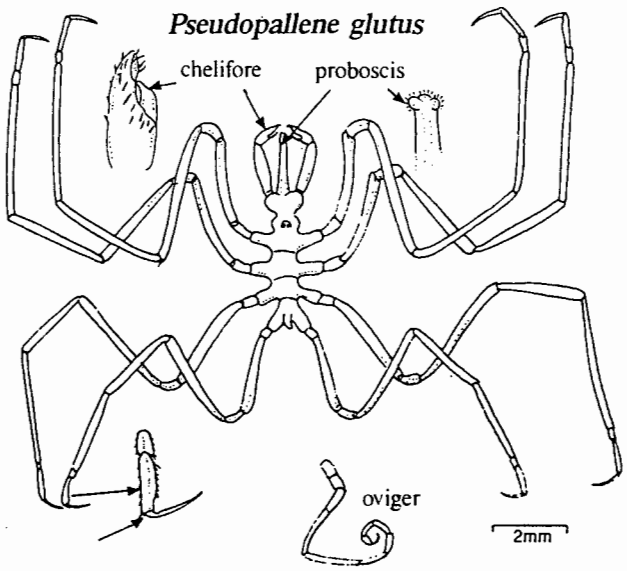
5 Chelifores strong, functional, scape 1-jointed; palp 5-segmented with second segment the longest; leg 2nd tibia the longest.
..... 6

Chelifores vestigial or occasionally developed.
..... 7

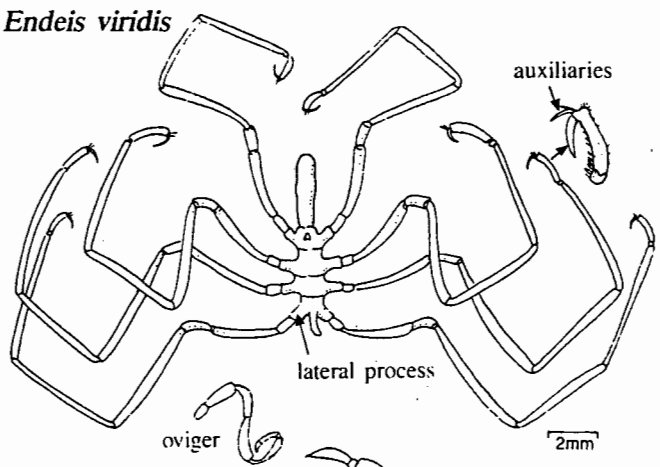
Typical Pycnogonid



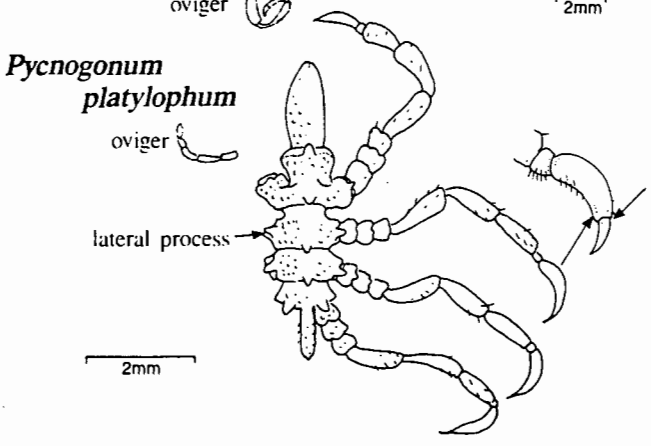
Pseudopallene glutus



Endeis viridis



Pycnogonum platylophum



6 Short "neck" with ocular tubercle situated just in front of first lateral processes; oviger base inserted ventrally at level of ocular tubercle; chelifore, fingers armed with 9-22 spinules; legs hairy, auxiliaries present, longer than half claw length.
Nymphon gracilipes Miers, 1875

Long slender "neck" with ocular tubercle inserted just in front of first lateral processes; oviger base inserted midway between the first lateral processes and anterior cephalic lobe; fingers armed with about 100 spinules; legs long, glabrous with 2nd coxae four times as long as 1st and 3rd coxae; tarsus half propodus, short arched claw, no auxiliaries; trunk slender; abdomen shorter than fourth trunk segment.
Nymphon longicoxa Hoek, 1881

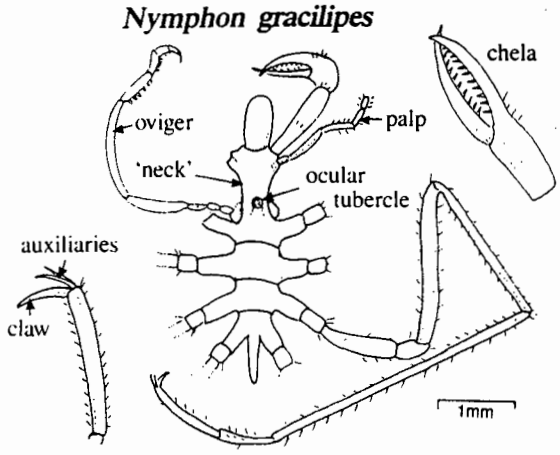
(The unidentified Nymphon sp. SAM A40589 and SAM A40590 had a short broad "neck" with the ocular tubercle inserted just in front of first lateral processes; oviger base inserted midway between the first lateral processes and anterior cephalic lobe; chelifore, fingers armed with about 25 spinules; legs, short, hairy, 2nd coxa less than three times as long as 1st and 3rd coxae, tarsus less than half propodus, claw short, no auxiliaries; trunk broad; abdomen longer than trunk segments.)

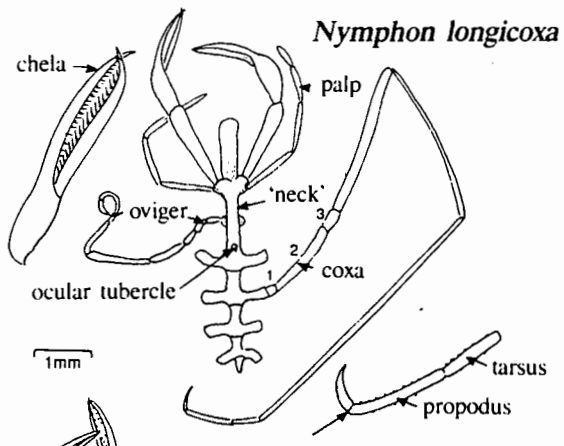
7 Trunk elongate, lateral processes well separated with 1 long dorsal seta near base of each process; chelifores, few developed into a small chela, others vestigial; proboscis bulbous; ocular tubercle pointed, slender, lacking eyes; legs with long hairs.
Cilunculus kravcovi Pushkin, 1973

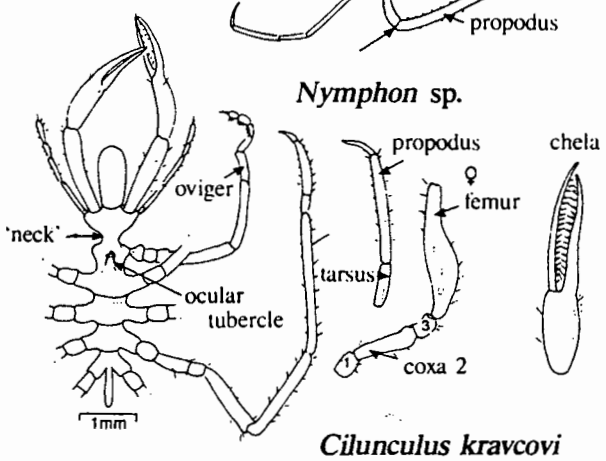
Trunk discoid, segments coalesced; chelifores very small consisting of a single article; ocular tubercle with 4 eyes; medium-sized species.
..... 8

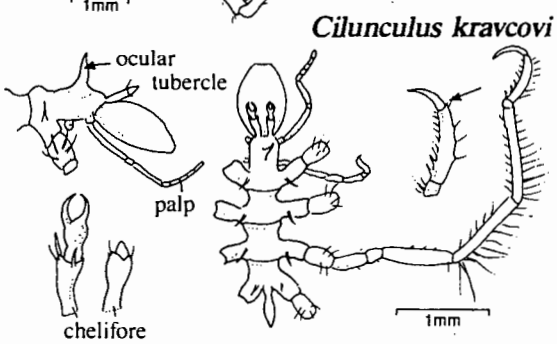
8 A "horn" on anterior corners of cephalon and on the corners of all lateral processes and 1st coxae; abdomen very long, obliquely upturned.
Tanystylum ornatum Flynn, 1928

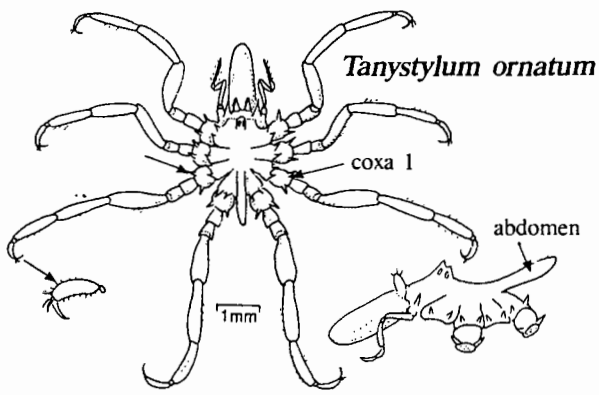
Absence of "horns" on lateral processes, which are touching.
..... 9











9 Trunk with a distinct mid-dorsal setiferous tubercle, equal to or higher than the ocular tubercle.
Tanystylum oedinotum Loman, 1923

Absence of a distinct mid-dorsal tubercle.
..... 10

10 Abdomen horizontal, setose anteriorly and posteriorly; legs spinulose with a dorso-distal swelling on 1st tibia.
Tanystylum cavidorsum Stock, 1957b

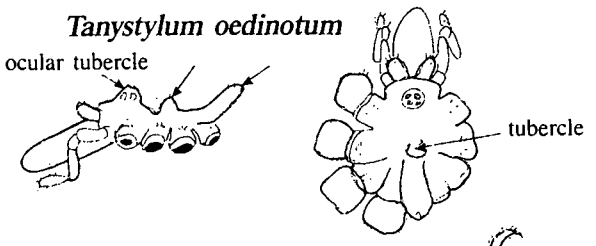
Abdomen erect, higher than ocular tubercle, legs robust, finely setose.
Tanystylum neorhetum Marcus, 1940

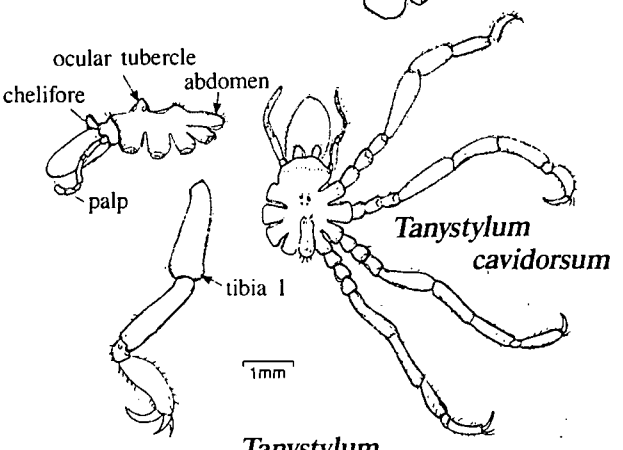
11 Large glabrous species; legs up to 80 mm, devoid of auxiliaries; body 20 mm long, lateral processes separated by about their diameter; palp 9-segmented; proboscis longer than trunk, with broadly rounded tip.
Colossendeis megalonyx megalonyx Hoek, 1881

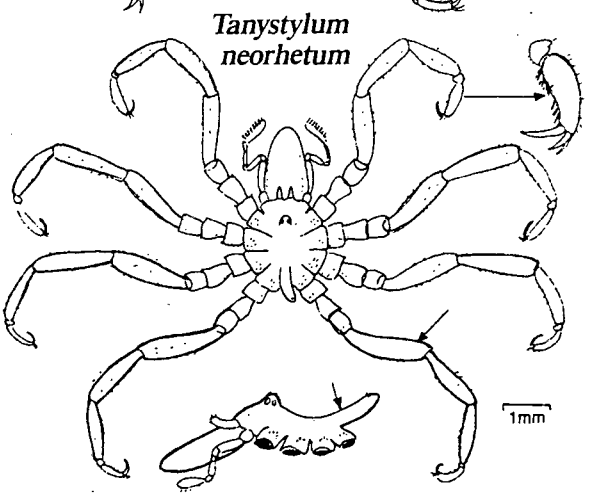
Minute species, body less than 5 mm long, poorly setose.
..... 12

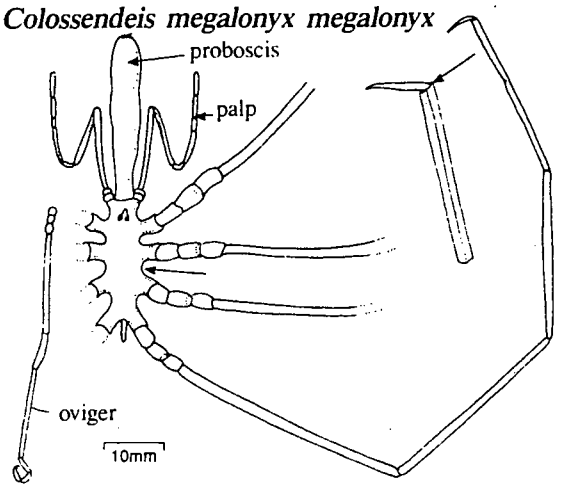
12 Proboscis conical; trunk oval, 3-segmented with 3 columnar mid-dorsal tubercles; ocular tubercle stout, bent above the proboscis.
Rhynchothorax australis Hodgson, 1907.

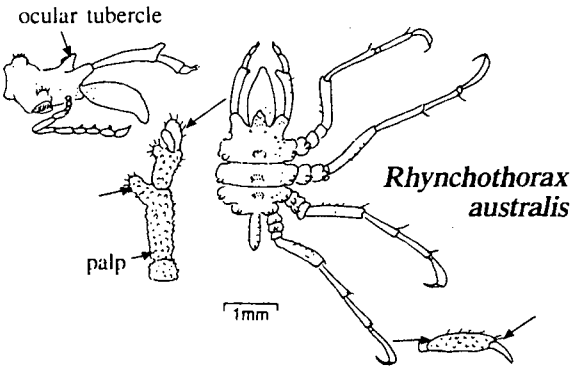
Probscis pipette-shaped.
..... 13











13 Lateral processes smooth; legs, 1 ventral spine on all 1st coxae and 1 dorsal spine on all 3rd coxae; ocular tubercle verticle, sharp, conical, lacking eyes; legs with no auxiliaries.
Pantopipetta australis (Hodgson, 1914).

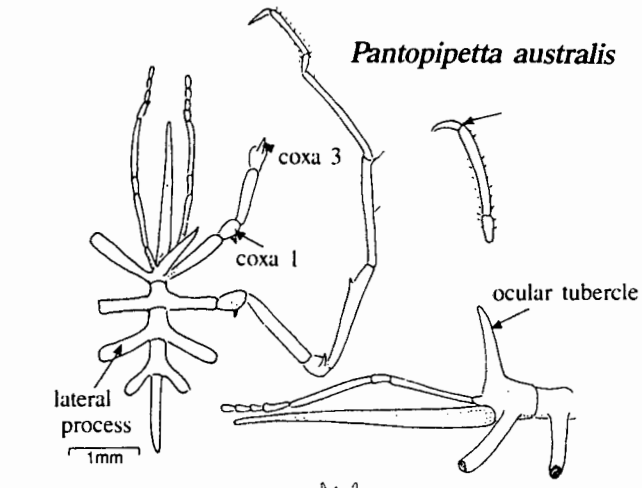
Ocular tubercle bent forwards, with 4 eyes at the tip.
..... 14

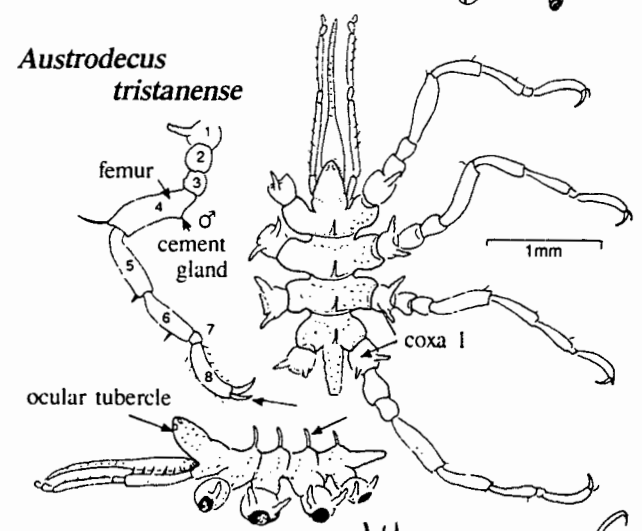
14 Ocular tubercle short, obtuse; trunk robust with 4 tall mid-dorsal spurs (often broken); legs robust with long auxiliaries (about half claw length); 1st coxa with one spur on 1st legs and 2 spurs on legs 2 to 4; in male the cement gland is a mound in the proximal part of femur.
Austrodecus tristanense Stock, 1957a
(= *A. kelpi* Pushkin, 1977 from South Georgia)

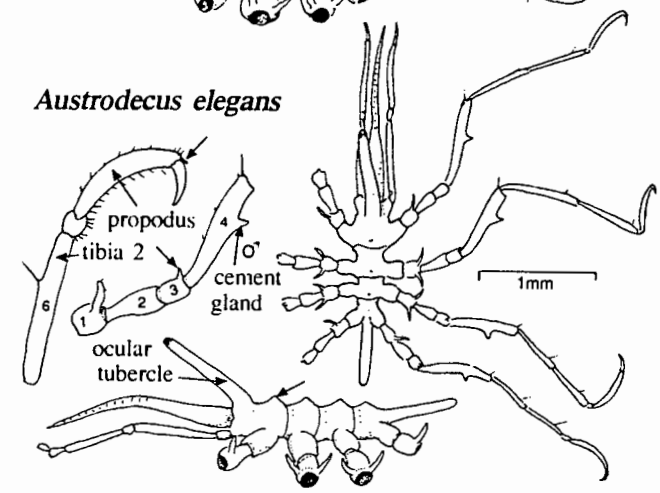
Ocular tubercle long.
..... 15

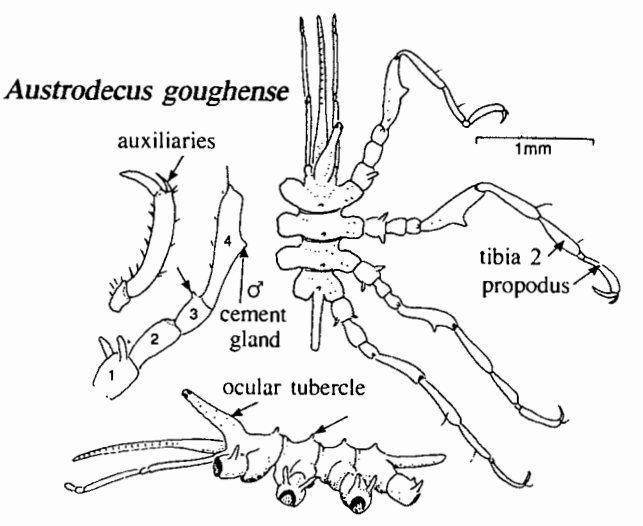
15 Ocular tubercle very long; trunk, no dorsal processes; abdomen slender; legs long, with second tibia longer than propodus, minute auxiliaries; high processes on first coxae (one on legs 1 and 4, two on legs 2 and 3) and one small digitation on third coxae; male, cement gland is a strong cone in the mid-ventral part of femur.
Austrodecus elegans Stock, 1957a

Ocular tubercle moderately long; trunk with feeble mid-dorsal spurs; abdomen long; high processes on first coxae (one on leg 1, two on legs 2 and 3 and a large and small process on leg 4) and a small tubercle on 3rd coxae; legs long, auxiliaries one-third claw length; male, cement gland is a strong cone on the mid-ventral part of femur.
Austrodecus goughense Stock, 1957a









Results and Discussion

The pycnogonid fauna of Marion and Prince Edward known to date is represented by 16 species plus one unnamed *Nymphon* sp. The littoral species are *Tanystylum cavidorsum* and *T. oedinotum*, while the shelf inhabitants are *T. neorhetum*, *Austrodecus goughense*, *A. tristanense*, *Endeis viridis* and *Nymphon gracilipes*. Below 200 m, the bathyal species are represented by *Cilunculus kravcovi*, *Tanystylum ornatum*, *Pantopipetta australis*, *Pseudopallene glutus*, *Pycnogonum platylophum*, *Colossendeis megalonyx megalonyx*, *Rhynchothorax australis* and *Nymphon longicoxa*. The most common species, *Austrodecus elegans*, ranged from 50-510 m. It is to be noted that none of Hoek's species of abyssal *Colossendeis* was dredged or trawled in the present collections as sampling did not exceed 880 m in depth. They are not considered to be part of the Prince Edward Islands' fauna as they were collected far from the islands, at great depths, between Marion and Crozet Islands.

The geographic distribution of these species and their depth range in the localities from which they were first recorded are summarised below. The large family Ammotheidae is curiously only represented by two genera here, *Cilunculus* and *Tanystylum*. *Cilunculus kravcovi* was described from Crozet Islands, (255-309 m) (Pushkin 1973). *Tanystylum cavidorsum* from South Georgia (26 m) and *T. oedinotum* from Falkland Islands (22 m) are newly recorded at the Marion group as is the curious *T. ornatum* which was previously only known from South Africa (Flynn 1928). On the contrary, *T. neorhetum* is widely dispersed around Kerguelen, Macquarie, South Georgia, Tierra del Fuego, Bouvet, Gough, Tristan da Cunha and Auckland, always in littoral depths (Arnaud 1972 & Clark 1977).

The family Austrodecidae, which only has two genera, is represented by four species; *Austrodecus elegans* known from North of Marion at 99-113 m, *A. goughense* from Gough at 102-141 m, *A. tristanense* from Tristan at 0-55 m (Stock 1957a), and *Pantopipetta australis* occurs abyssally in Antarctic waters (2450-3725 m) (Hedgpeth & McCain 1971). This last species was found at the greatest depths sampled around Marion and Prince Edward occurring at 680-715 m.

The Callipallenidae is a rich family in tropical waters but is represented by one species only; *Pseudopallene glutus* was described originally from Crozet Islands, (320 m) (Pushkin 1975), with new records from Crozet at 150-187 m in the *Marion Dufresne* samples. The family Pycnogonidae has 50 species belonging to the genus Pycnogonum, but it is represented here by only one species, *Pycnogonum platylophum*, already known from Tierra del Fuego (78 m), East Antarctica (640 m), and Crozet (littoral), Falkland (130 m) and Macquarie (littoral to 69 m) Islands (Fry & Hedgpeth, 1969 & Arnaud 1970).

The family Colossendeidae has a large number of species in antarctic and subantarctic waters where *Colossendeis megalonyx megalonyx* has been reported from 7 to 5 000 m. It also occurs below 3 000 m at North Madagascar (Arnaud & Bamber, 1987). The family Endeidae is monogeneric and *Endeis viridis* is the only subantarctic species recorded from Marion Island. First recorded at Kerguelen (150-377 m, 3-30 m and 59 m) (Pushkin 1976) it is also found at Crozet Islands. Three species represent the large genus *Nymphon* (family Nymphonidae) which contains many cold-adapted inhabitants, *N. gracilipes* shows a large bathymetrical range between shelf and abyssal depths down to 3 000 m, while *N. longicoxa* is reported as "cold antarctic" from 318 to 2 578 m (Child 1982). The newly recorded *Nymphon* sp. was collected south-west of Prince Edward Island in depths of 355-420 m.

The Rhynchothoracidae is a homogeneous family based on the genus *Rhynchothorax* with one species, *R. australis* dredged from 200 to 400 m in East antarctic waters, and from 138 to 275 m in the Crozet archipelago (unpublished data).

Finally, 14 of these 17 species are new to the Marion and Prince Edward group and pycnogonids are an important component of their benthic fauna. They represent a non-negligible part of the animal biomass, with values of 10 mg m^{-2} (dry weight) and a maximum density of 14 *Tanystylum cavidorsum* per square meter (Arnaud & Bamber, 1987). A useful comparison could be done with the South African pycnogonid fauna proper, as updated by Arnaud & Child (1988).

The material from the 1982-1989 surveys of the University of Cape Town and representative samples of the MD.08 campaign are housed in the South African Museum, Cape Town. The MD.08 collection of the *Marion Dufresne* is housed at Station Marine d'Endoume, Marseille.

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CHAPTER 4: CNIDARIA

Abstract

The benthic Hydrozoa, Octocorallia and Scleractinia (Cnidaria) of subantarctic Marion and Prince Edward Islands were sampled over the period 1982-1989 by dredging, SCUBA-diving and intertidal surveys. Illustrated keys are provided for the identification of 31 species of Hydrozoa (of which 18 are new records including 2 unidentified), 14 species of Octocorallia (of which 8 are new records including 3 unidentified) and 6 species of Scleractinia (of which 4 are new records and one identified to genus and one a probable new genus). Octocorallia and Scleractinia are confined to deeper subtidal zones and are most common on rocky substrata. Hydrozoans are widespread and grow on algae, shells and rocks.

Introduction

The Cnidarian fauna of the subantarctic Marion Island (46°54'S, 37°45'E) and Prince Edward Island (46°38'S, 37°57'E) has been sampled during several expeditions including those of the British HMS *Challenger* (1873-1876) and RRS *Discovery* (1935). The Cnidaria were poorly represented in these collections, dredging by the HMS *Challenger* yielding only three species of Hydrozoa (Allman 1883 &1888), two species of Scleractinia (Moseley 1876 &1881) and 6 species of Octocorallia (Wright and Studer 1889).

South African research began with land-based surveys and Fuller (1967) sampled the intertidal and shallow-water benthos yeilding 11 hydrozoans (Millard 1971). There are no records of Octocorallia or Scleractinia in the intertidal or shallow waters (<50m depth) around the islands. More recently research was extended offshore by the University of Cape Town, with dredging undertaken from the SA *Agulhas* over the period 1984-1989 (GM Branch et al 1993) and subtidal SCUBA-diving surveys in 1982, 1987 and 1989 (Beckley and Branch 1992). New records for the Prince Edward Islands are shown in the systematic list. Illustrated keys are provided to all the known species from MPE. Where possible the illustrations were taken from actual specimens collected by the University of Cape Town, including those mounted by Dr Millard, and housed in the South African Museum. Others were adapted from depictions in the existing literature, notably Millard (1971, 1975 &1977) and Cairns (1982). Bayer (1981a) provides a key to the world genera of octocorals excluding sea pens. The abundance and distribution of the species with respect to depth, substratum and habitat as well as their zoogeographical affinities are discussed.

Systematic list of species

* = New records
\# = New species
##= Species not determined

CLASS HYDROZOA

* ***Symplectoscyphus subarticulatus*** (Coughtrey, 1975) 11
* ***Symplectoscyphus subdichotomus*** (Kirchenpauer, 1884) 11
* ***Symplectoscyphus vanhoeffeni*** Totton, 1930 11
= *Symplectoscyphus* sp. in Millard 1971

Family **Syntheciidae**
Staurotheca dichotoma Allman,1888 8

CLASS ANTHOZOA

Subclass **Hexacorallia** (anemones and corals)

Order **Scleractinia** (hard corals)(From Cairns 1982)

Family **Caryophylliidae**
* ***Cyathoceras irregularis*** Cairns1982 15
* ***Desmophyllum cristigalli*** Milne Edwards & Haime, 1848 15
Solenosmilia variabilis Duncan 1873 15
\# ***Trochocyathus*** sp. SAM H 4453 15

Family **Flabellidae**
Flabellum apertum Moseley, 1876 15
\# **SAM H 4452** (?new genus aff. *Stenorynthus*) 15

Subclass **Octocorallia** (sea pens and soft corals)

Order **Alcyonacea**

Family **Clavulariidae** (stoloniferous octocorals)
*## ***Clavularia*** sp. SAM H 4278 & SAM H 4288 13

Family **Alcyoniidae** (soft corals)
* ***Anthomastus antarcticus*** Kükenthal, 1910b 12
* ***Rhodelinda gardineri*** (Gohar, 1940) 13

Family **Paragorgiidae** (scleraxonian gorgonian)
* ***Paragorgia arborea*** (Linnaeus, 1758) 12

Family **Acanthogorgiidae** (holaxonian gorgonians)
Acanthogorgia ramossissima Wright & Studer, 1889 13

Family **Primnoidae** (holaxonian gorgonians)
Candidella spinosa (Wright & Studer, 1889) 14
*## ***Narella*** sp. SAM H 4298, SAM H 4442 14
Primnoeides sertularoides Wright & Studer, 1889 14
Thouarella variabilis Wright & Studer, 1889 14

Family **Isididae** (holaxonian gorgonians)
Primnoisis antarctica (Studer, 1879) 13
Primnoisis sparsa Wright & Studer, 1889 13

Order **Pennatulacea** (sea pens)

Family **Virgulariidae**
*## ***Halipteris*** sp. SAM H 4441 & SAM H 4280 12

Family **Pennatulidae**
* ***Pennatula inflata*** Kükenthal, 1910a 12
* ***Pennatula phosphorea*** Linnaeus, 1758 12

Summary of species

Hydrozoa 31 species, 18 new records, 2 unidentified.
Scleractinia 6 species , 4 new records, 2 unidentified.
Octocorallia 14 species, 8 new records, 3 unidentified.
Zoanthidea approximately 3 species not reported in detail here.
Actinaria approximately 10 species not reported in detail here.

Cnidaria of Marion and Prince Edward Islands

Key to the classes and orders

1 Polyp either small and solitary or colonial; coelenteron with 4 septa or septa absent; medusa present at least for part of the life cycle. 2

Polyp the only stage in the life cycle; coelenteron subdivided by many septa or mesenteries; medusa never present.
Class: **Anthozoa** 3

2 Polyp stage dominant, commonly colonial; coelenteron undivided; medusa with a velum.
Class: **Hydrozoa** (sea firs)..... **A** (p4)

Medusoid stage dominant; coelenteron usually subdivided by 4 septa; medusa without a velum; polyp solitary and usually small and short lived.
Class: **Scyphozoa** (jelly-fish) not included here.

3 Tentacles numerous, usually simple; polyps solitary or colonial; skeleton present or absent. 4

Tentacles 8, always pinnate; polyps always colonial; skeleton mainly spicular and flexible.
Order: **Octocorallia** (sea pens and soft corals) ..... **B** (p12)

4 Skeleton absent. 5

Rigid calcareous skeleton; polyps usually colonial.
Order: **Scleractinia** (corals) ..... **C** (p15)

5 Polyps usually solitary, with a pedal disc.
Order: **Actiniaria** (sea-anemones) not included

Polyps usually colonial, no pedal disc.
Order: **Zoanthidea** (zooanthids) not included

A Hydrozoa (Adapted from Millard 1975)

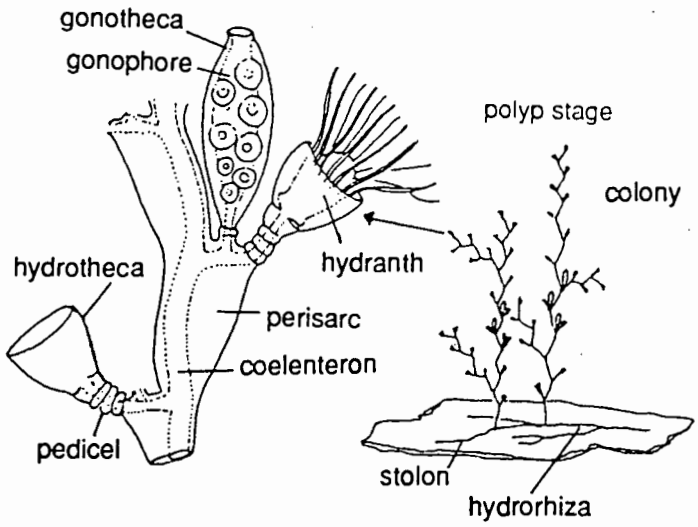
1 Athecate colony (hydranths not seated in a thecal cup); medusae deep, umbrella-shaped.
Suborder **Athecata**. 2

Thecate colony (hydranths in definite cup-like hydrothecae), medusae usually flat.
Family **Thecata**. 9

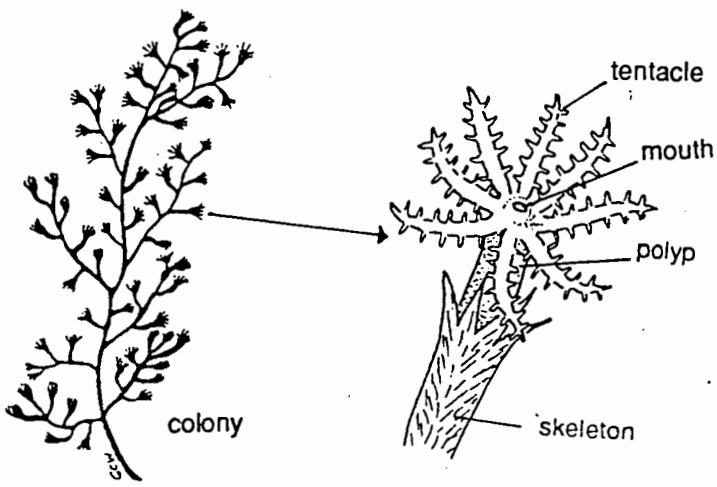
2 External skeleton absent. 3

External skeleton present as a firm, transparent perisarc around the pedicel. 5

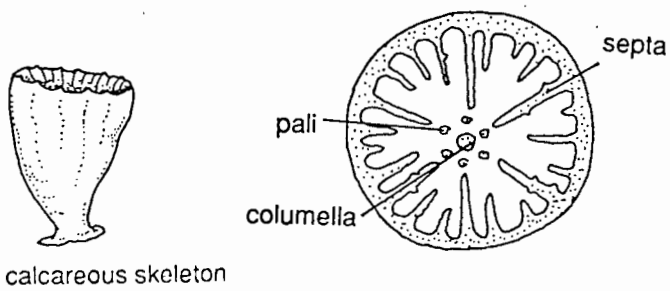
Typical Hydrozoa



Typical Octocorallia



Typical Scleractinia



calcareous skeleton

3 Hydranth solitary with numerous capitate (knob-tipped) tentacles scattered over the whole body; base may be divided and is attached by short tentacles; male and female blastostyles occur immediately above the base; colour purple with orange tinges; up to 25mm long; occurs under rocks in littoral region.
Candelabrum meridianum (Briggs, 1939)

Hydranth unbranched, tentacles all filiform.
..... 4

4 Hydranths solitary or stolonal, tentacles scattered over surface with a whorl around the conical hypostome; about 3mm high; gonophores on stolon; depth about 10m.
***Rhizogeton* sp.**
SAM H 4476 aff. *R.nudum* Broch, 1909

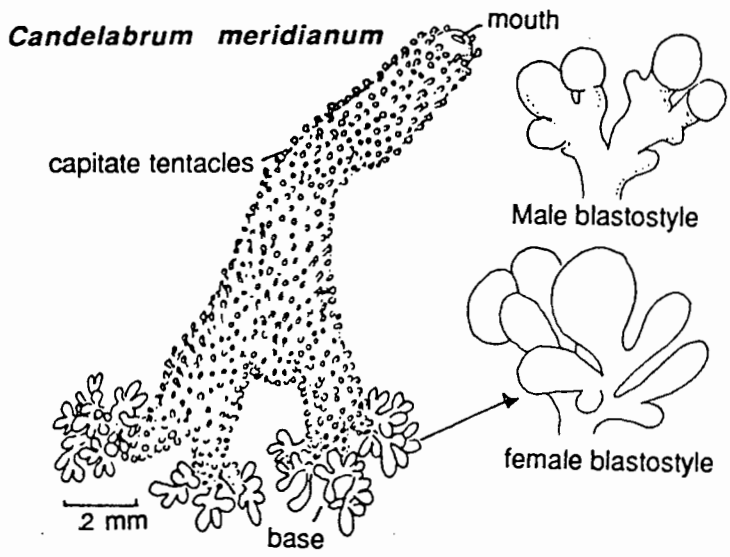
Colony of different types of upright hydranths arising from a flat coenosarc layer; gasterozoids with 11 to 16 tentacles in a whorl around a well-developed hypostome; coenosarc layer with smooth hollow spines projecting; gonophores borne on special gonozoids; up to 6mm high; on pebbles under stones in lower littoral region.
Hydractinia parvispina Hartlaub, 1905

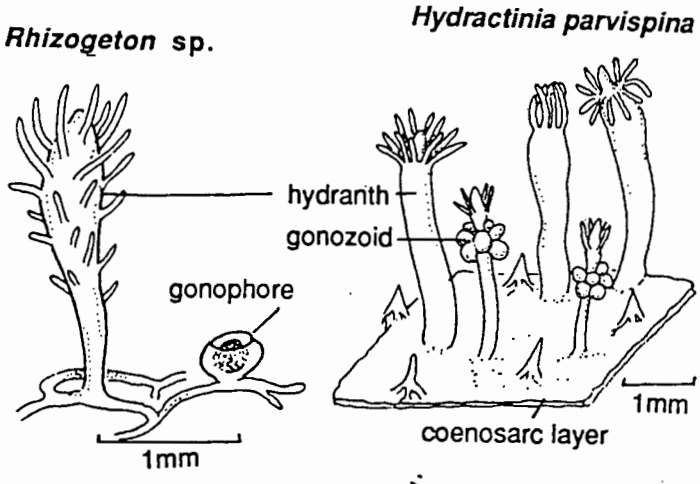
5 Hydranth with two whorls of tentacles; gonophores borne on the space between the whorls; unbranched stems arise from a stolon; perisarc stiff, smooth, extends to base of hydranth.
Tubularia sp.

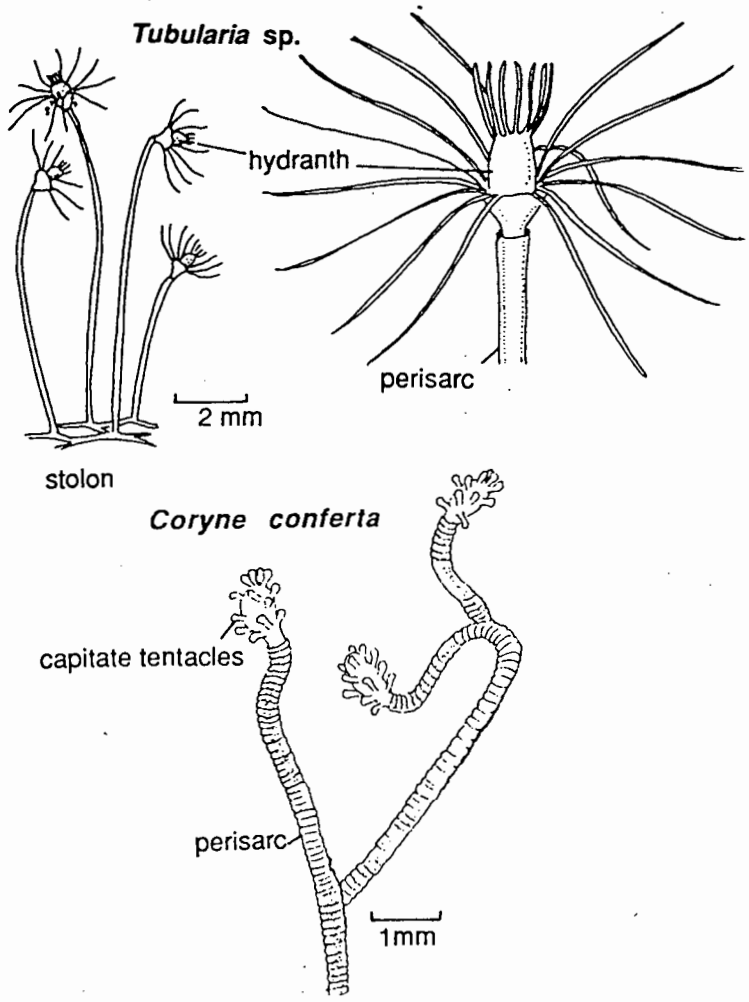
Hydranths with a single whorl of tentacles or scattered capitate tentacles; hydranths borne on a branching stem; perisarc often annulated.
..... 6

6 Hydranths pink to orange with scattered white capitate tentacles, 14 to 20 tentacles of which 4 surround the mouth; stem branching irregularly; perisarc closely annulated and ending at the base of the hydranths; intertidal in crevices and under rocks.
Coryne conferta Allman, 1876
(This species may be conspecific with *Coryne pusilla* Gaertner, 1774 which is a well-known near-cosmopolitan form with 30 to 40 tentacles).

Filiform tentacles in one whorl around the mouth.
..... 7

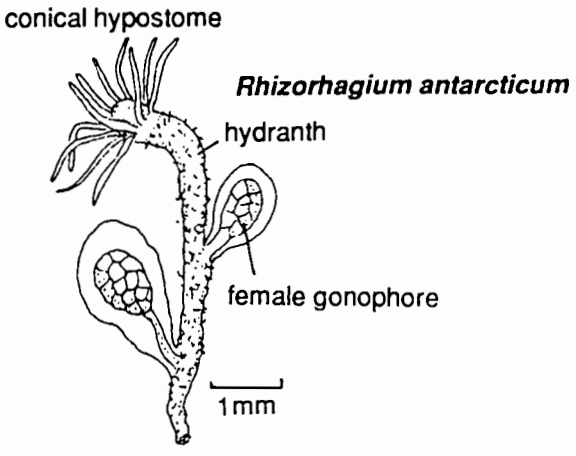






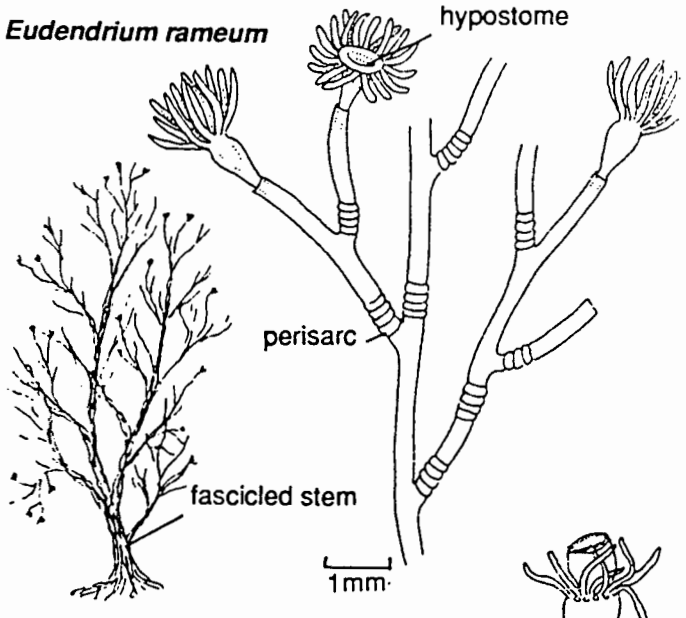
7 Hydranth with one whorl of 11 to 13 filiform tentacles around a conical hypostome; stems up to 5 or 6 mm long, with terminal and possibly one or two lateral hydranths; perisarc smooth or irregularly corrugated especially at the origin of the branches, partly expanded over the base of the hydranth as a pseudohydrotheca, silt adhering to the surface; colour, opaque white; gonophores creamy-red, borne on the stem, completely enclosed in perisarc, egg-shaped when mature containing 30 - 40 eggs.
Rhizorhagium antarcticum (Hickson and Gravely, 1907)

Hydranth large with a trumpet-shaped hypostome; reproductive sporosacs are borne on the hydranth body just below the tentacles; colonies branching, perisarc annulated at the origin of the branches and rarely at other points. 8



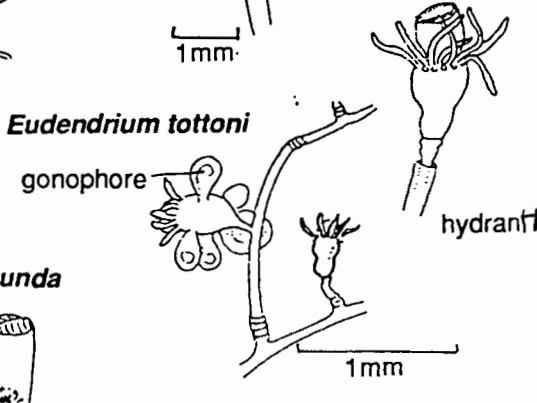
8 Colony stiff, bushy with thick fascicled (of entwined tubes) stems up to 120mm tall and 5mm in diameter at the base; hydranth brown, with approximately 20 tentacles.
Eudendrium rameum (Pallas, 1766)

Colony delicate, stems flexuose, up to 16mm tall, unfascicled or weakly fascicled at the base.
Eudendrium tottoni Stechow, 1932



9 Hydrothecae deep, tubular or campanulate (bell-like), usually pedicillate (with stalk).
..... 10

Hydrothecae never deep and tubular, either adnate (fused to stem) or if pedicillate then saucer-shaped and too shallow to house retracted hydranth.
..... 20

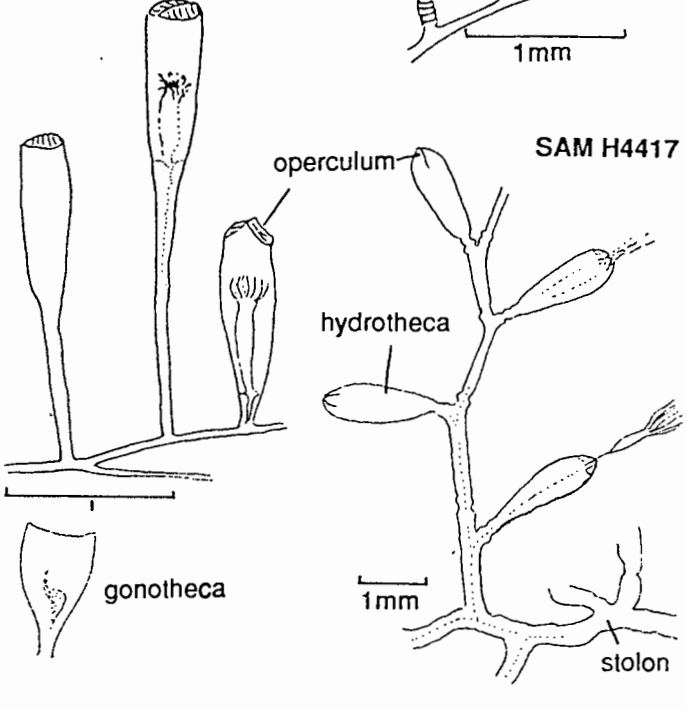


10 Hydrothecal aperture closed by an operculum; hydrotheca pedicillate, borne on creeping stolons.
Family **Campanulinidae** 11

Hydrotheca without operculum. 12

11 Operculum consists of two pleated membranes which meet one another like the roof of a gable; colony growing on other hydroids, creeping stolons give rise to solitary, pedicilate hydrothecae and gonothecae; hydranth with about 13 tentacles.
Modeeria rotunda (Quoy and Gaimard,1827)

Operculum pyramidal, 4 valves; colony growing on other hydroids, branching stolons give rise to delicate upright stems with alternating, elongated hydro- thecae; annular constrictions occur on the stem above the hydrothecae and at the base of the hydrothecae; white.
? ***Operculariella*** sp. SAM H 4417



12 Hydrotheca campanulate; pedicel long; colony stolonial, with creeping stolons that giving rise to solitary or branching uprights; gonotheca a single oval sac.
Family **Campanulariidae**. 13

Hydrotheca tubular, pedicel short or absent; colony usually erect and branching.
..... 16

13 Delicate branched colony up to 20mm; stem unfascicled, geniculate (zigzag), hydranths alternate up the stem; perisarc thickened below the shoulder that bears the hydrotheca; hydrotheca shallow bell-shaped with a thickened diaphragm at the base, pedicel annulated and shorter than the hydrotheca; gonothecae in the axil of the hydrotheca, smooth, elongate pear-shaped, aperture terminal with a short tubular neck; usually growing on laminarian algae.
Obelia geniculata (Linnaeus, 1758)

Hydranths solitary; pedicel longer than hydrotheca with a terminal spherule just below the theca.
..... 14

14 Hydrotheca with 9 -11 blunt marginal cusps, ring of annular thickening at the base with a delicate diaphragm; pedicel corrugated; gonotheca narrow at proximal end and truncated distally with a low collar around the small aperture.
Campanularia subantarctica Millard, 1971

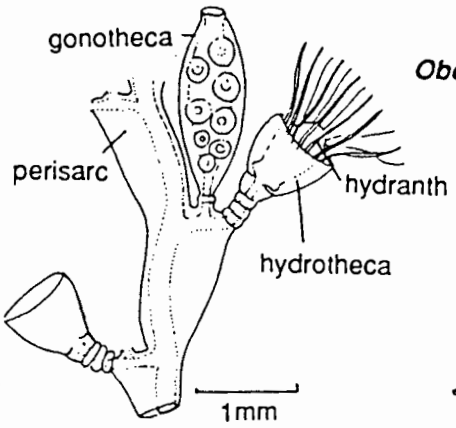
Hydrotheca margin smooth, compressed laterally, oval in section due to thickening on two sides.
..... 15

15 Pedicel entirely, or partly, spirally grooved; gonotheca irregularly bottle shaped, aperture narrow, gonothecal pedicel short and annulated.
Orthopyxis norvegiae (Broch,1948)

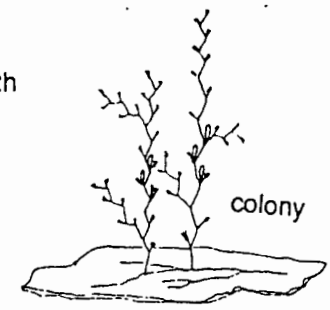
Pedicel about 6mm long, smooth, arising from a reticulate stolon; hydrotheca margin oblique; hydranth cannot be completely housed in hydrotheca; gonotheca elongate, spindle-shaped; common on the alga *Macrocystis laevis.*
Silicularia rosea Meyen, 1834

16 Colony stolonial, epizootic on other hydroids; hydrotheca adherent to stolon, smooth.
Filellum ?antarcticum (Hartlaub, 1904)
(*Filellum serratum* (Clark, 1879) recorded from subantarctic has hydrotheca transversely ridged.)

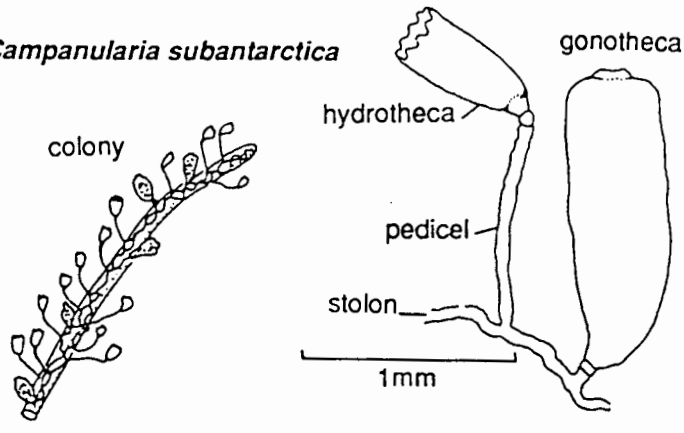
Shrub-like colony, stem and main branches fascicled; large, often 90 to 200mm.
..... 17



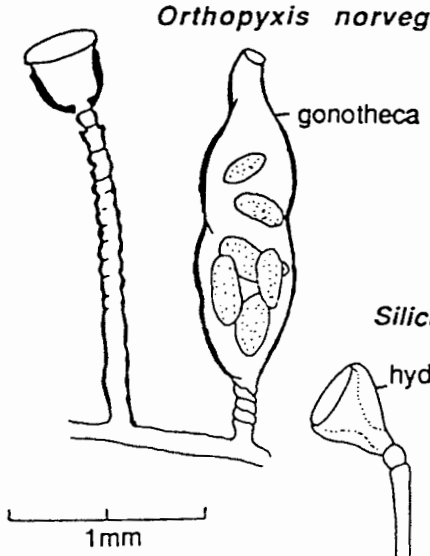
Obelia geniculata



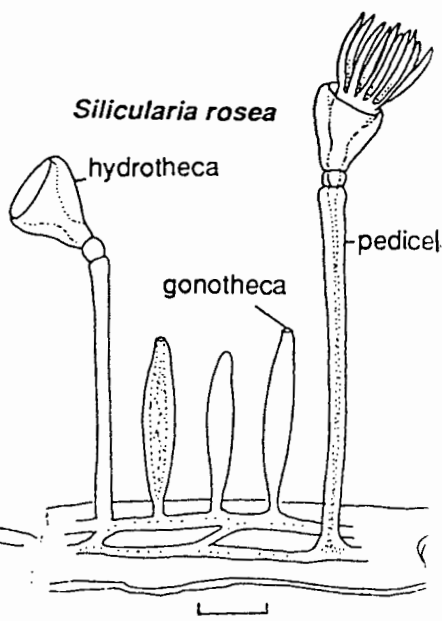
Campanularia subantarctica



Orthopyxis norvegiae

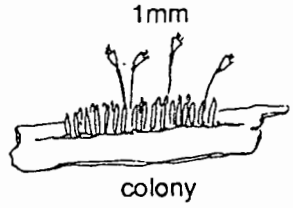


Silicularia rosea



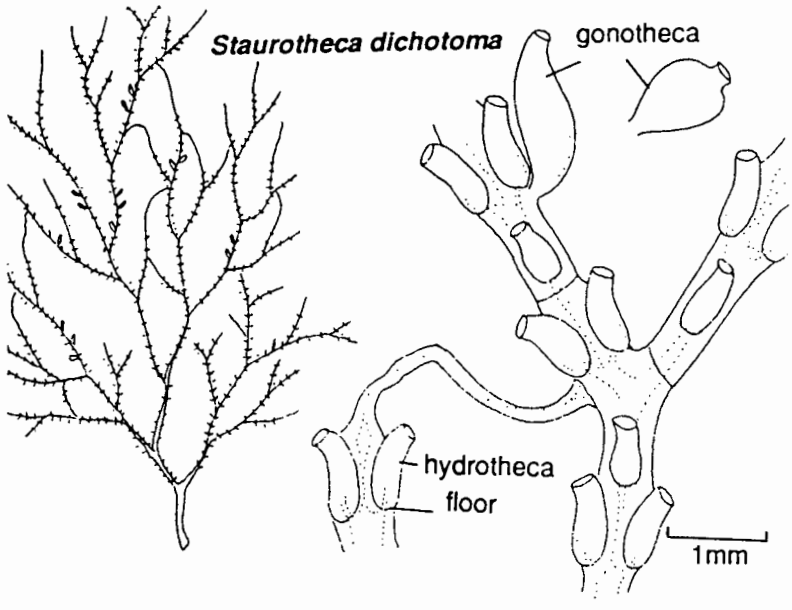
Filellum antarcticum

Filellum serratum



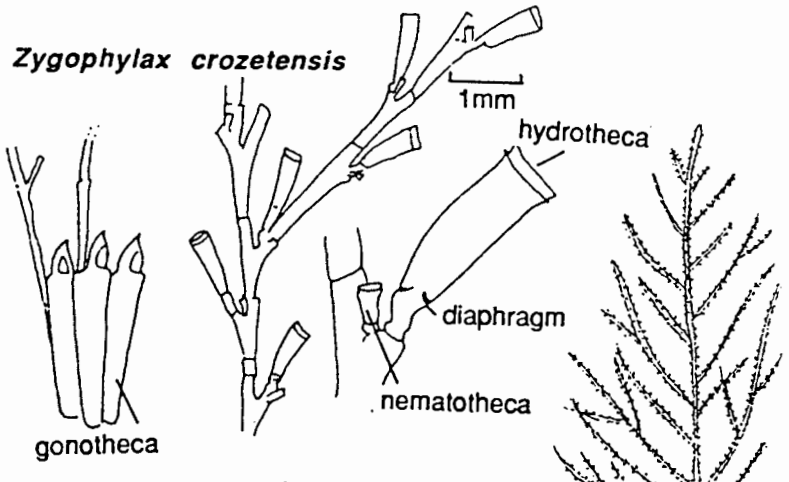
17 Colonies, brown, luxuriant, branching dichotomously and reuniting to form an elaborate reticulum; sessile hydrotheca with a definite floor; stem thickly fascicled at the base of larger colonies; hydrothecae generally three to a whorl forming 6 longitudinal rows (8 rows at the base, 4 rows at the tips), adnate for almost the entire length; female gonotheca solitary bottle-shaped.
Staurotheca dichotoma Allman, 1888
(*Staurotheca antarctica* Hartlaub, 1904 collected from Crozet Island. Stems unfascicled; hydrothecae arranged in opposit pairs, smaller than the above species, with a greater portion free from the stem).

Hydrothecae with no definite floor; adnate or pedicillate; gonothecae grouped to form a nest-like structure around the stem (coppinia) with modified hydrothecae and nematothecae projecting from the surface to give a bristled appearance.
Family **Lafoeidae** 18

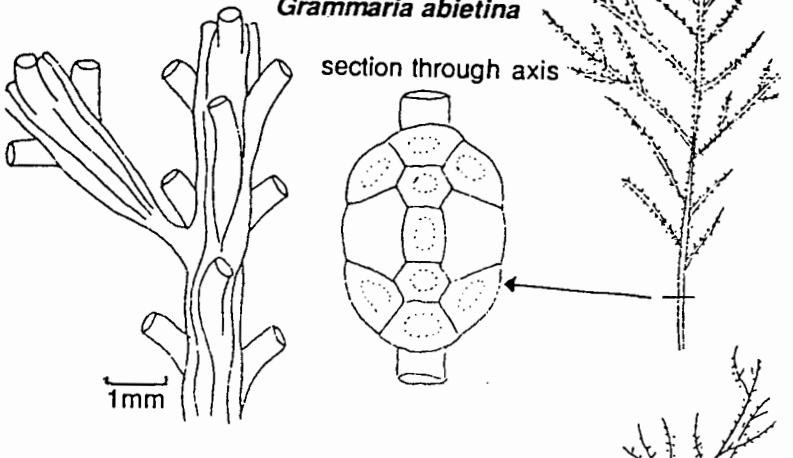


18 Hydrothecae in two longitudinal rows alternating up the stem, tubular with a short pedicel and a diaphragm; nematotheca two-chambered positioned at base of hydrotheca; colony large, branching, fascicled stem about 200mm, root stock forming a mass of interwoven fibres; coppinia numerous, clothe most of the larger branches, gonothecae with slender adnate bases and pointed horn-like tips with an aperture on one side.
Zygophylax crozetensis Millard, 1977

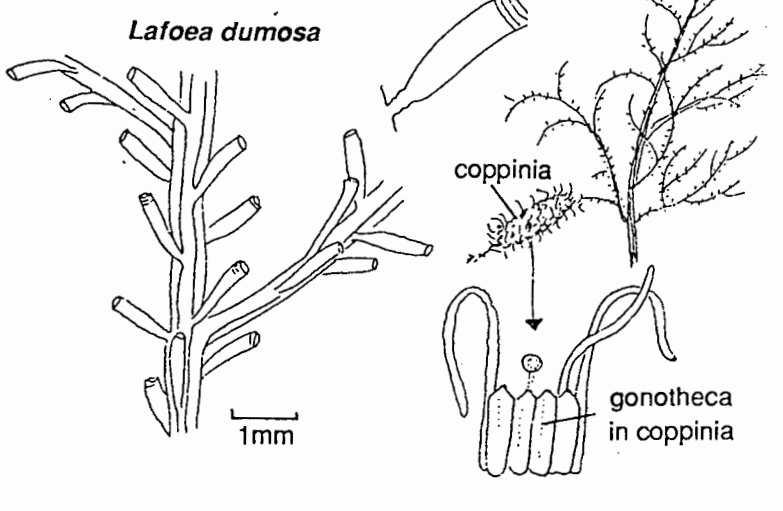
Hydrothecae in more than two rows; nematothecae absent; coppinia gonothecae bottle-shaped with a terminal aperture on a short neck, accessory tubes long and coiled. 19



19 Colony stiff, brown, branch in one plane with alternating or sub-opposite branches; stem an axial tube with several periferal tubes that are fused inseperably; tubular hydrothecae curve out from between the tubes forming 4 to 6 longitudinal rows roughly in opposite pairs.
Grammaria abietina (Sars, 1850)
= *G. stentor, G. magellanica* and *G. Insignis* Allman, 1888 (see Cornelius 1975)



Colony flexuose, irregularly branched, loosely fascicled; hydrothecae deep, tubular, without a diaphragm, pedicel definite but short.
Lafoea dumosa (Fleming,1820)
= *L. fruticosa* (M. Sars,1851)
= *L. gracillima* (Alder, 1856)



20 Hydrotheca without an operculum. 21

Hydrothecae in two rows, closed at the top with an operculum, aperture toothed.
Family **Sertulariidae** 27

21 Hydrothecae saucer shaped arise on both sides of the stem, regeneration leads to tiers of hydrothecae arising one within the other; sympodial growth (first hydranth terminal and new branches bud from the base of the hydranth). Family **Haleciidae** 22

Colony feather-shaped, hydrothecae on one side of branches only; hydrocladia (hydranth-bearing branches) arise alternately along upright stems. Family **Plumulariidae**. 26

22 Nematothecae present, normally one on each internode on the side opposite the hydrotheca; gonotheca strongly curved with a tubular neck, borne in clusters on a specialised branch (glomerulus); colony shrub-like with thick fascicled stem, terminal branches divided by oblique nodes; hydrotheca very shallow, margin may be slightly reflexed.
Hydrodendron arboreum (Allman,1888)

Nematothecae absent; gonothecae solitary. .. 23

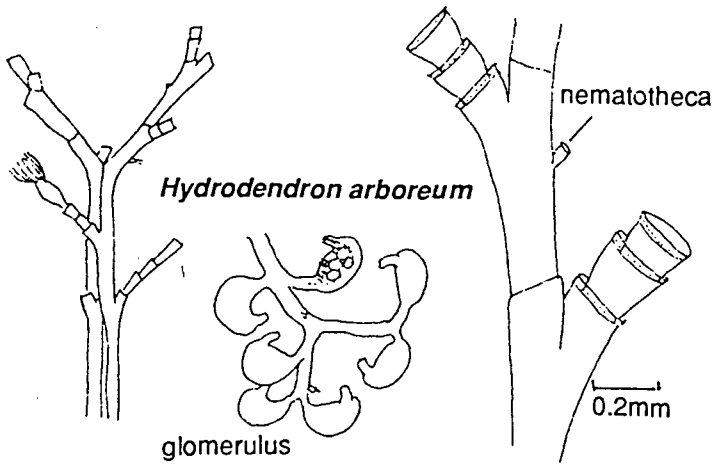
23 Hydrothecal margin strongly reflexed, primary hydrothecae free from the stem; usually growing on hydrozoans, bryozoans or gorgonians. 24

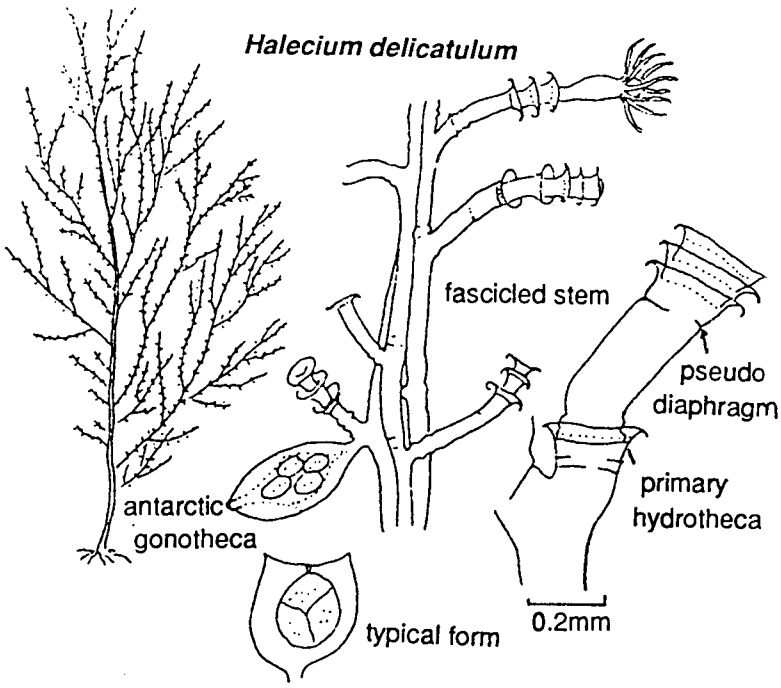
Hydrothecal margin slightly reflexed, primary hydrothecae adnate. 25

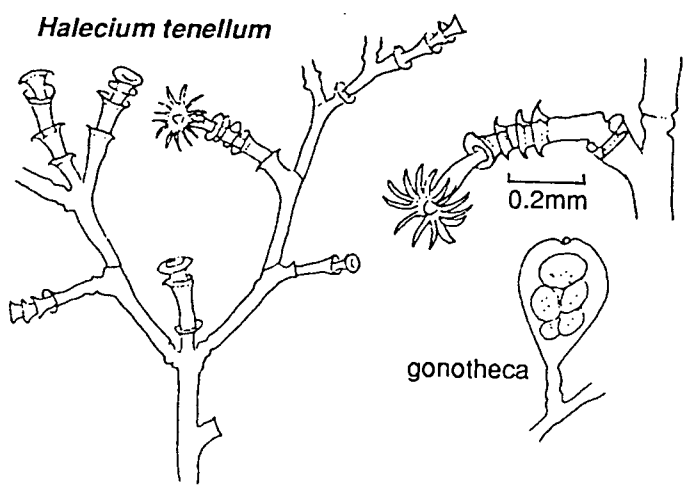
24 Stem stiff, fascicled, branching irregular, height about 30mm; primary hydrotheca sometimes con- taining a pseudodiaphragm, margin strongly flared outward diameter at the margin 0,13 to 0,4mm; female gonotheca compressed with a terminal aperture and typically flattened 'ears', the Antarctic form has less developed ears.
Halecium delicatulum Coughtrey,1876
(=*H. antarcticum* Vanhöffen, 1910. Some authors consider this antarctic species to be seperate on account of the habit and gonophores see Blanco 1984, while Naumov and Stepaniants 1962 and Vervoort, 1972 consider them conspecfic).

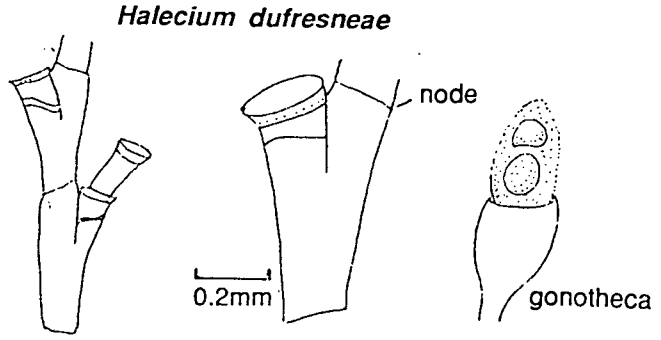
Stems delicate, unfascicled, sparsely branched, up to 10 mm high; primary hydrotheca without pseudo-diaphragm, small, delicate, margin strongly everted diameter up to 0,18mm; female gonotheca smooth, compressed, ovoid with a terminal aperture.
Halecium tenellum Hincks, 1861

25 Stem thick, fascicled, 245mm high, branching irregularly but mainly in one plane, large root stock; primary hydrotheca with a stout pseudo-diaphragm in the base, adnate to the internode; gonothecae borne on the sides of the hydrotheca, flattened, widening to the truncated distal end with one or two large embryos discharged into a marsupium.
Halecium dufresneae Millard, 1977









Stem thick, fascicled, up to 160mm high and 4 - 8mm diameter at the base, branching irregularly in all planes; hydrothecae very shallow, adnate to the internodes; female gonotheca club-shaped, contains up to 6 larvae.
Halecium jaederholmi Vervoort, 1972

26 Main stem 10-30mm high, unbranched - like a single feather; female gonotheca compressed with a tubular neck and a large aperture.
Plumularia setacea (Linnaeus, 1758)

Stem fascicled, much branched up to 120mm. Hydrocladia born alternately on side branches; large matted rootstock; common in dredges; female gonotheca with large oblique aperture but no neck.
Plumularia insignis Allman,1883
=*P. flabellum* Allman, 1883
=*P. abietina* Allman1883

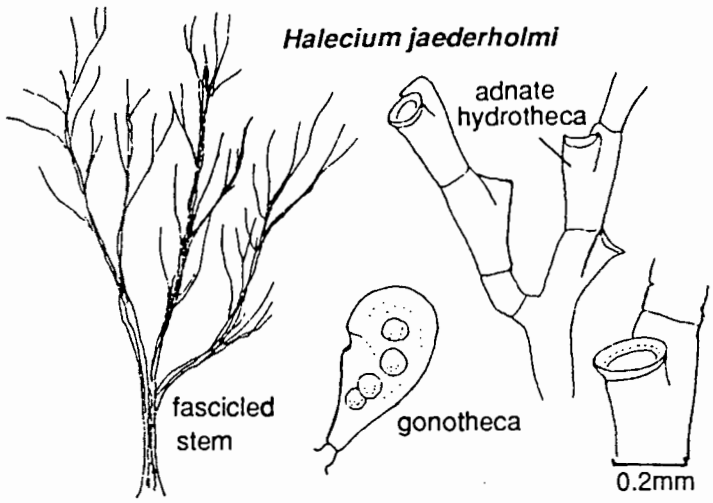
27 Hydrotheca with three marginal cusps and operculum of three valves, mouth triangular.
..... 28

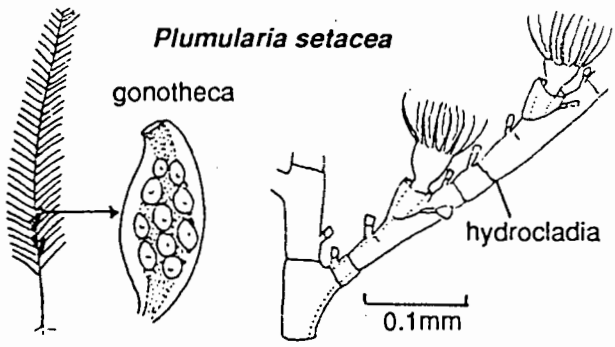
Hydrotheca with four marginal cusps and operculum of four valves, mouth quadrangular; stems slender, straggling, branching repeatedly to form tangled colonies on other hydrozoans and bryozoans; hydro- theca adnate for less than half of the adcauline height, bulging in the centre and narrowing towards the mouth, three inner teeth usually present; gonotheca opening with five teeth.
Sertularella picta (Meyen, 1834)

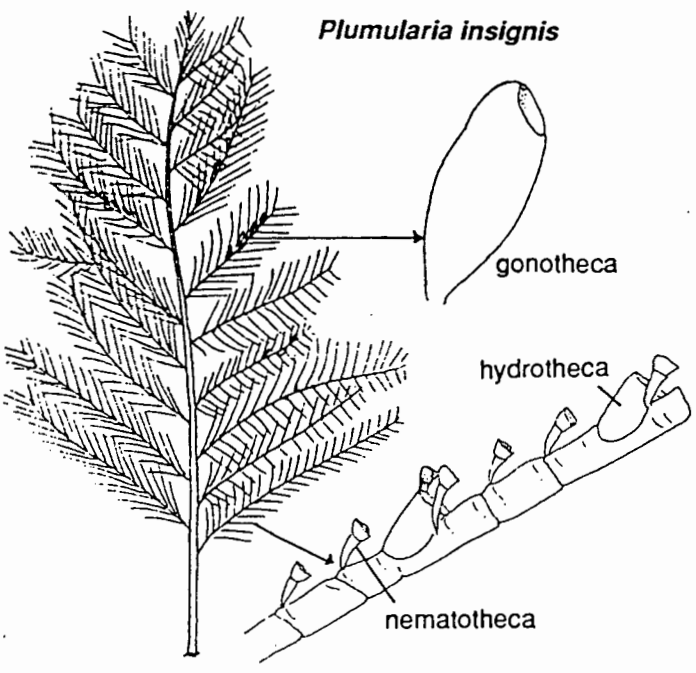
(*Sertularella geodiae* Totton, 1930 from Kerguelen Island has a stiff stem, fascicled and straight at the base, geniculate in terminal regions, branching sparsely in one plane; hydrotheca adnate for about half adcauline wall, wide mouth, no internal teeth).

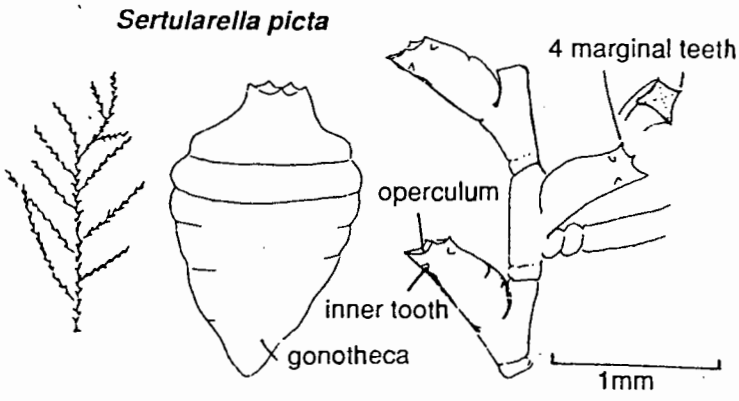
28 Stem less than 50mm, unfascicled with pinnate, geniculate branching in one plane, branches often diverge at a wide angle giving subdichotomous effect; hydrothecae face laterally.
..... 29

Large branching stems more than 50mm, may be fascicled at the base, branching may be in several planes not subdichotomous; hydrothecae may face slightly frontally.
..... 31









29 Stem stiff, coarse, pinnate geniculate; hydrothecae large, tubular, curved outwards, abcauline side 0.6 - 0.7 mm long, less than half of the adcauline surface adnate, diameter of hydrotheca the same in the centre and the margin; female gonotheca obovate with about 9 crested annulations, mouth funnel wide and short.
Symplectoscyphus curvatus (Jäderholm, 1917)

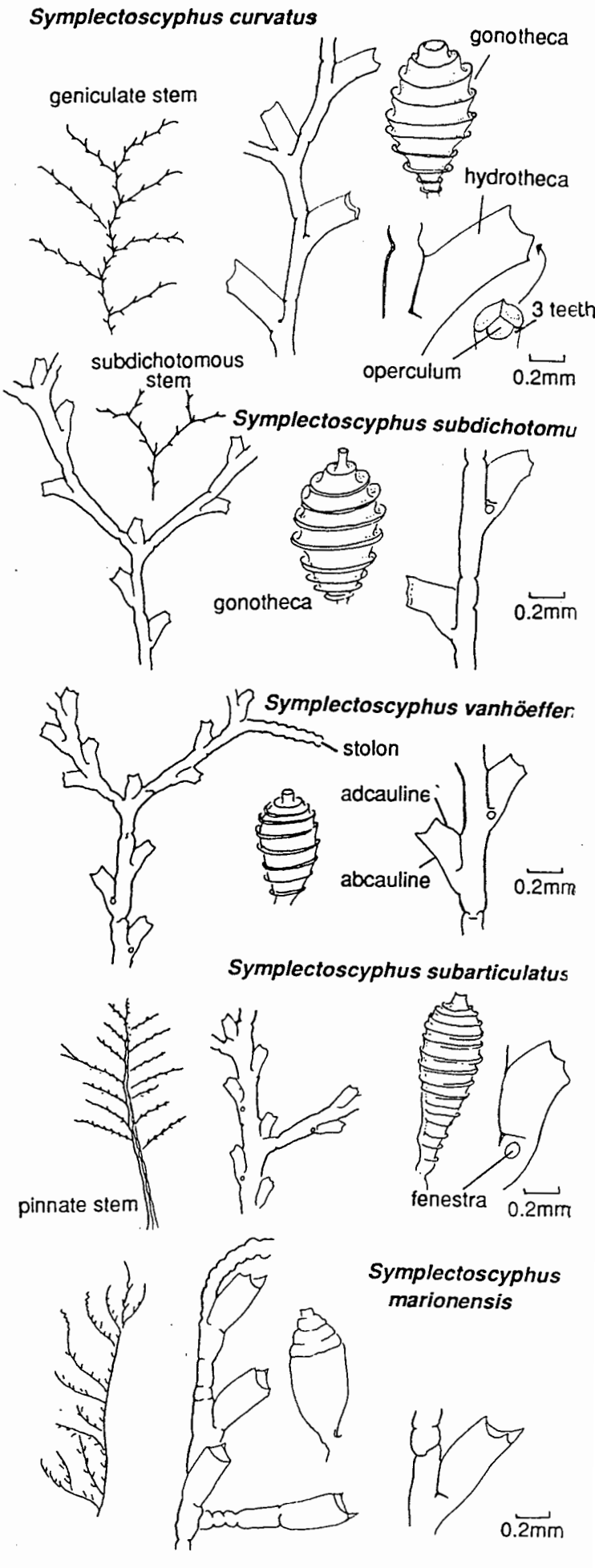
Stem delicate, flexuose, subdichotomously branched; hydrothecae less than 0.4mm along abcauline side.
..... 30

30 Hydrothecae widely spaced along stem, widest in the centre, more than half of the adcauline surface adnate, diameter at mouth 0,13 to 0,3; female gonotheca obovate with 9 to 11 strong, crested circular annulations, long flaring mouth-funnel; commonly entangled with other hydrozoans, branches not ending in stolons; white; depth 40-500m.
Symplectoscyphus subdichotomus (Kirchenpauer, 1884)

Hydrothecae closely space along stem almost overlap, about half of adcauline side adnate, diameter at mouth 0,16mm; female gonophore with 8-9 low annulations and a short tubular neck; branches often end in annulated stolon; brown; depth 0-15m.
Symplectoscyphus vanhoeffeni Totton, 1930

31 Stem fascicled at the base, pinnately branched, each internode of the stem bears three alternating hydrothecae with a branch arising below the third; hydrothecae closely set so that in the distal region the margin of one overlaps the base of the next, adnate for nearly two thirds of the adcauline length, fenestra usually present immediately below the base; female gonotheca carrot-shaped with raised circular annulations and a tubular collar around the aperture, typically 5-8 annulations but the Kerguelen material had 15-17 annulations.
Symplectoscyphus subarticulatus (Coughtrey, 1875)

Stem not fascicled but branching irregularly in several planes, base of the branches with two or three annulations and tips often form annulated stolons; hydrothecae do not lie in one plane, fenestra absent; gonotheca with two or three annular constrictions and a short collar around the aperture.
Symplectoscyphus marionensis Millard, 1971



B Octocorallia

1 Colonies anchored in soft sediment by an unbranched fleshy peduncle.
..... 2

Colonies firmly attached to solid objects by a basal stolon or holdfast.
..... 4

2 Polyps contained on fleshy, wing-like or branch-like polyp leaves that emanate laterally from the rachis giving the colony a feather-like appearance; calyx teeth eight.
..... 3

Conspicuous polyp leaves absent; polyps attached directly to the rachis or are present on raised ridges that adhere to the rachis; calyx teeth two.
Halipteris sp.

3 Polyps generally 20-50 or more per polyp leaf; colony colour orange or yellowish-orange.
Pennatula inflata Kükenthal, 1910a

Polyps 3-10 per polyp leaf; colony colour deep brick-red.
Pennatula phosphorea Linnaeus, 1758

4 Polyps dimorphic (of two distinct kinds).
..... 5

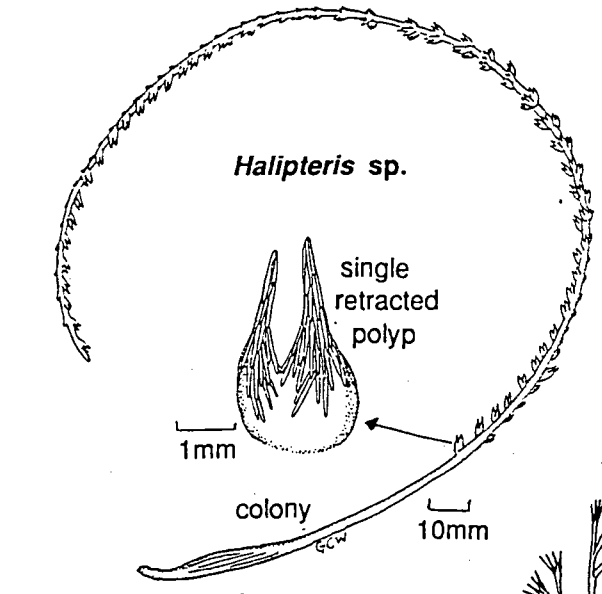
Polyps monomorphic (of one kind only).
..... 6

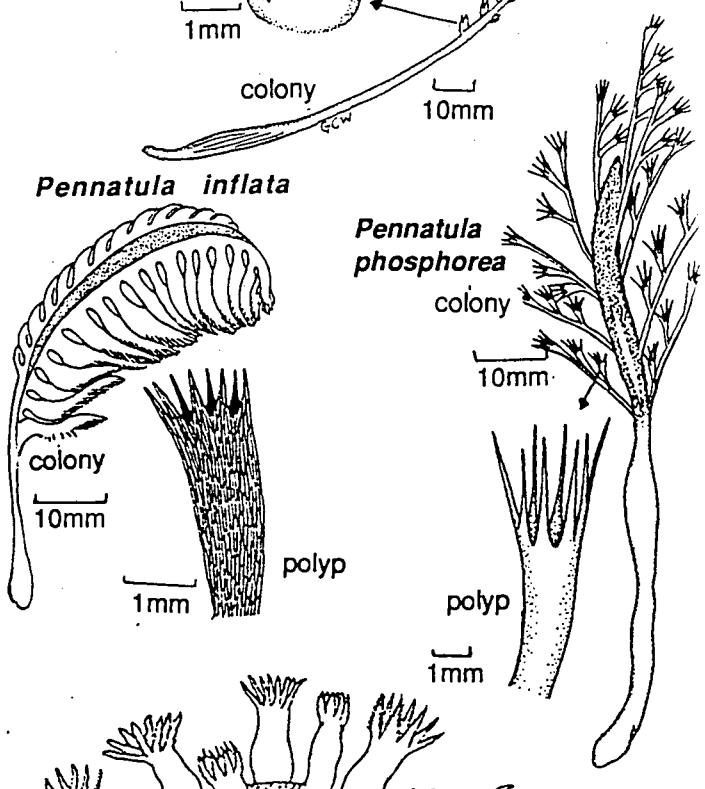
5 Colonies unbranched and mushroom-shaped, single expanded polyp-bearing capitulum arises from a narrower basal stalk; colony colour brick-red.
Anthomastus antarcticus Kükenthal, 1910b

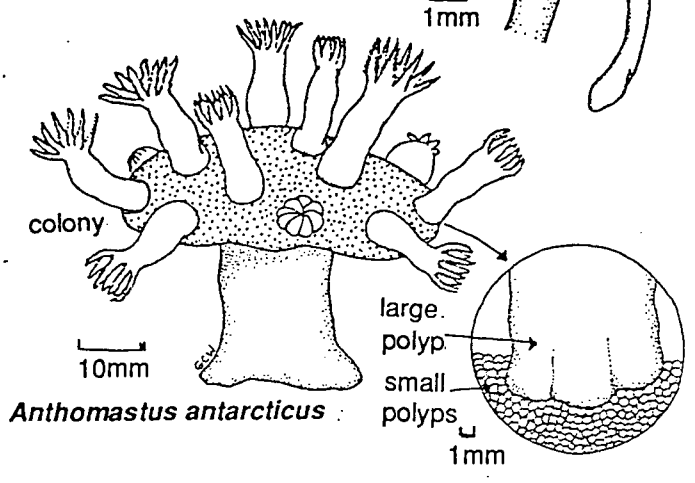
Colonies branched with many short, rounded, lobe- like branchlets that contain the polyps; colony colour salmon-pink.
Paragorgia arborea (Linnaeus, 1758)

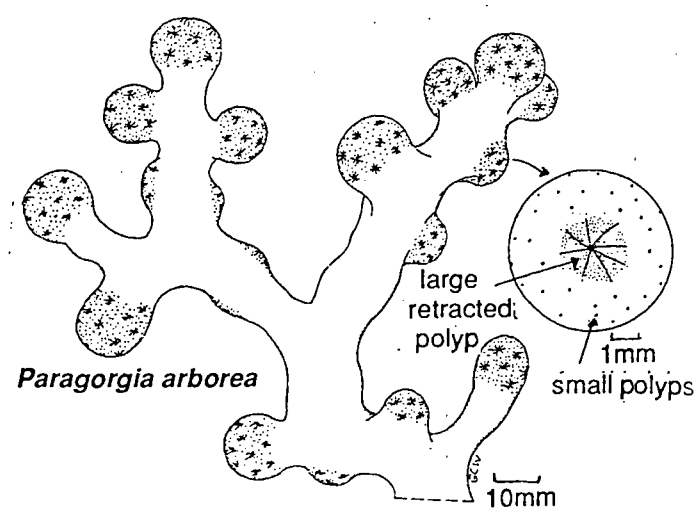
6 Colonies unbranched, composed of cylindrical or conical calyces arising from a common, basal, ribbon-like stolon that adheres to firm objects.
..... 7

Colonies branched, attached to solid objects by a single basal holdfast; stolons absent.
..... 8









7 Calyces soft and flexible, composed of densely-set free sclerites; colony colour grey or light brown.
Clavularia sp.

Calyces hard and brittle, composed of inseparably-fused sclerites; colony colour rose, pink, or light red.
Rhodelinda gardineri (Gohar, 1940)

8 Colony axis jointed, composed of alternating gold-coloured nodes and milky-white internodes; branches arise from internodes.
..... 9

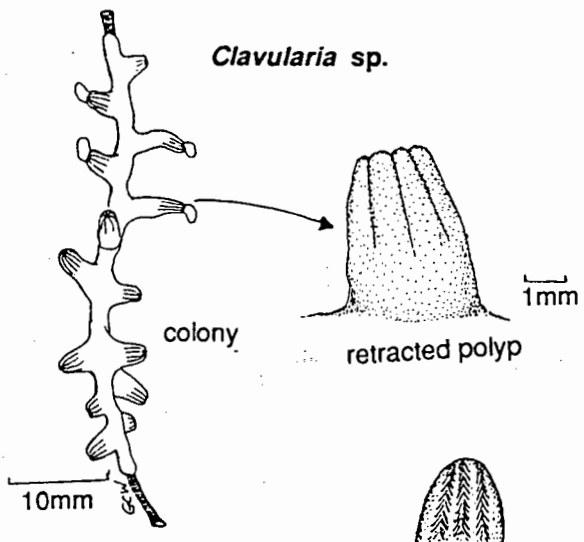
Colony axis continuous and uniform; nodes and inter- nodes absent.
..... 10

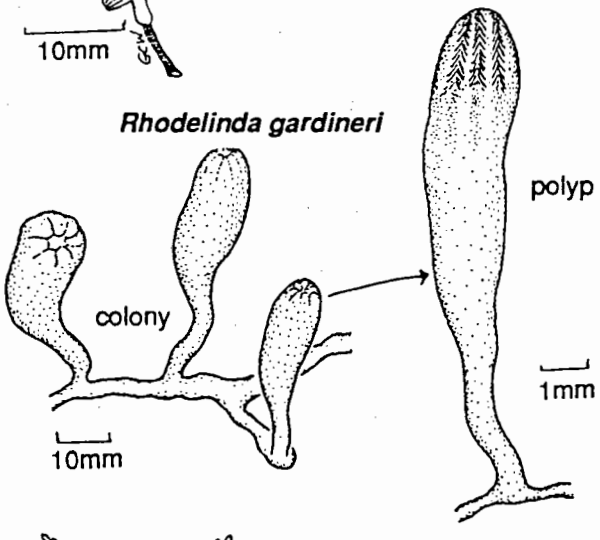
9 Colonies sparsely branched; polyps distinctly recurved, club-shaped; scales of calyx rough and spiny.
Primnoisis sparsa Wright & Studer, 1889

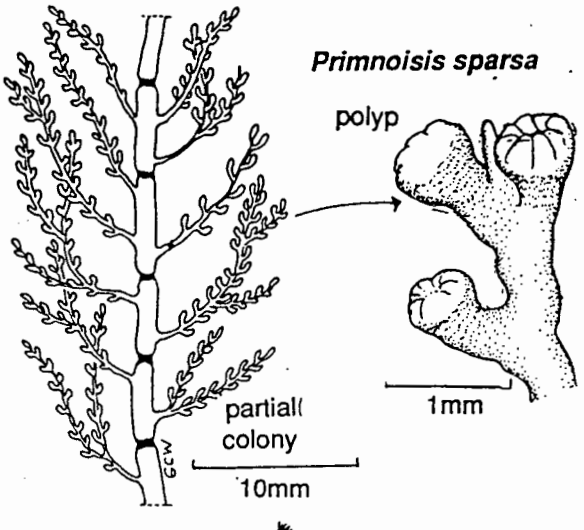
Colonies copiously branched; polyps slightly bent inward or not at all; scales of calyx not particularly rough or spiny.
Primnoisis antarctica (Studer, 1879)
(Collected at Prince Edward Island, 567m in depth, by HMS *Challenger* Expedition (see Bayer & Stefani, 1987: 944-946, fig. 1-4) but not in the UCT collections. A comparison of the types of *Primnoisis antarctica* and *P. sparsa* is necessary to determine if they are indeed separate species.)

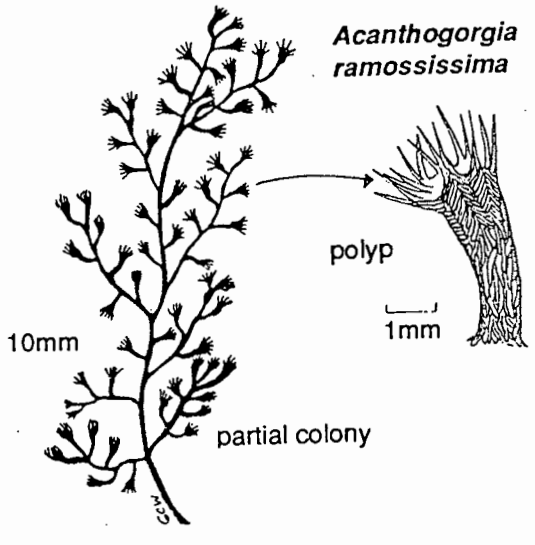
10 Colony axis has a hollow and cross-chambered central core that is surrounded by horn-like material; polyps with long spines at the tips.
Acanthogorgia ramossissima Wright & Studer 1889

Colony axis solid throughout.
..... 11









11 Colonies have bottlebrush branching; polyps 2-3mm long, club-shaped, with variably spiny tips; colour of polyps white to cream, branches light tan to bronzy- brownish.
Thouarella variabilis Wright & Studer, 1889

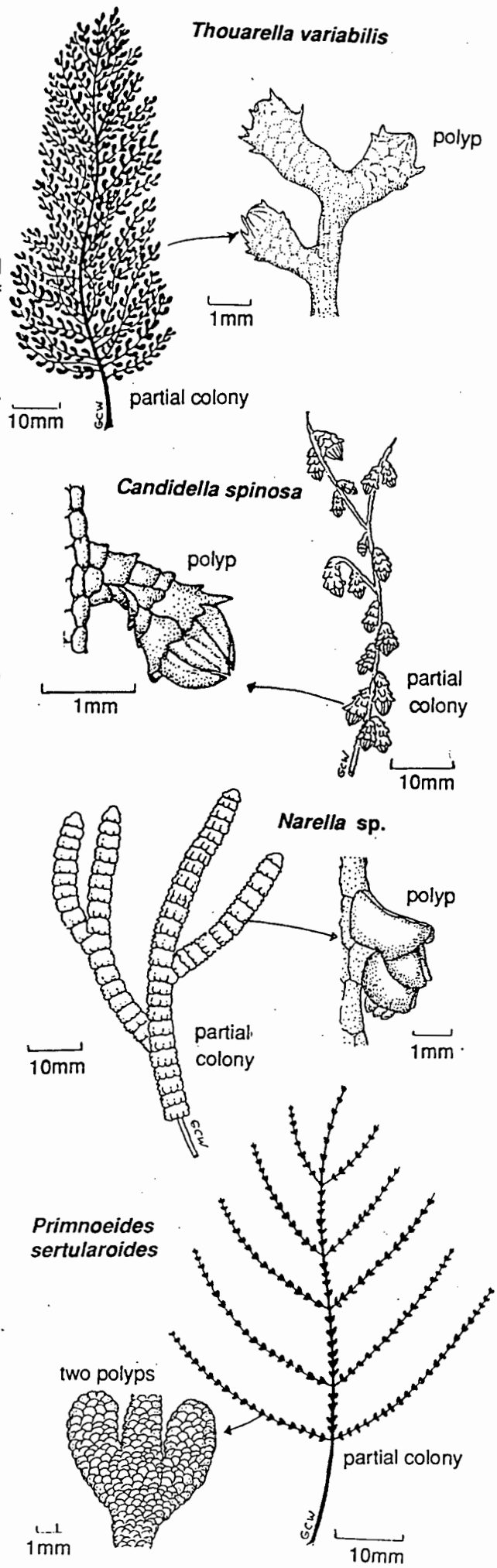
Colonies have planar, dichotomous or fan-like branching.
..... 12

12 Polyps distinctly clavate (club-like), arranged singly or in an irregular fashion, or in whorls of 2-4.
Candidella spinosa Wright & Studer, 1889

Polyps not clavate, arranged in whorls of 4-8, or in distinct pairs set opposite to one another.
..... 13

13 Colonies have dichotomous branching; polyps arranged in whorls, usually 6-7 polyps per whorl.
Narella sp.

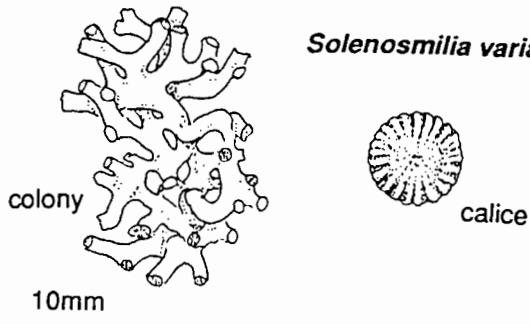
Colonies have pinnate branching; polyps arranged in conspicuous pairs, opposite one another; polyps rounded and cylindrical, not spiny; scales of the polyp's body (verruca) rounded and smooth.
Primnoeides sertularoides Wright & Studer, 1889



C Scleractinia

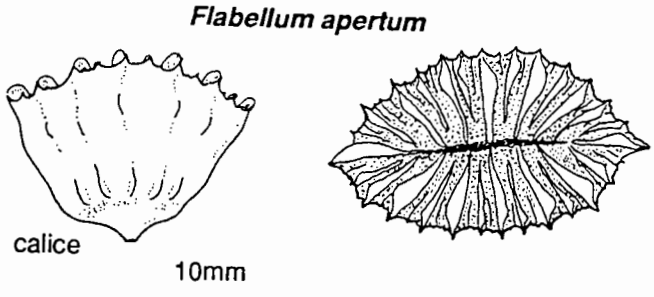
1 Colonies a tangle of anastomosing branches, intratentacular budding, terminal branches and calices approximately 6mm in diameter, circular; septa hexamerally arranged, irregular, up to four series present; columella absent or very small and spongy.
Solenosmilia variabilis Duncan, 1873

Solitary corallum, occasionally with one or two corralites fused at the base. 2



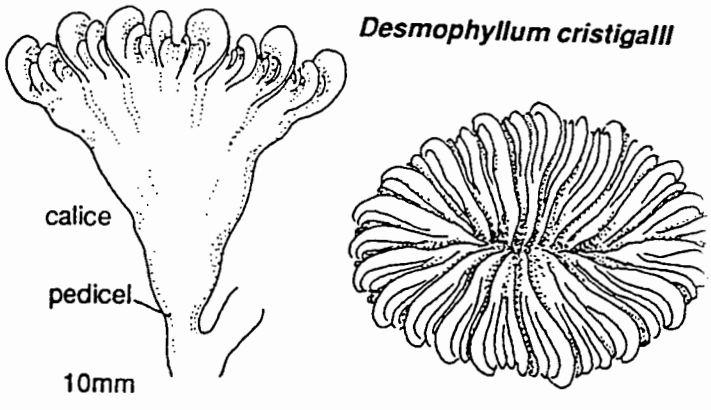
2 Corallum compressed, transverse section oval; columella absent or very small. 3

Corallum transverse section circular; collumella present. 4



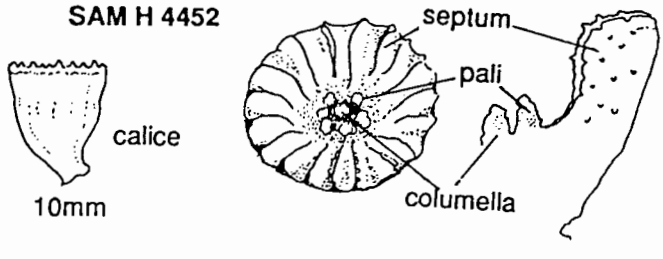
3. Solitary; calice sides almost parallel but taper sharply to a very short pedicel 2-2.5mm long, originally attached but becomes free early in its development; margin scalloped; septa hexamerally arranged in four cycles with rudiments of a fifth cycle, inner edges straight with numerous small pointed granules; pale pink; 58 x 40mm.
Flabellum apertum Moseley, 1876

Corallum firmly attached by a large thick pedicel, individuals may be fused in clumps; calice often greatly flared; septa hexamerally arranged in five or more cycles with S1 and S2 greatly exsert; large up to 80 x 50mm; cosmopolitan.
Desmophyllum cristagalli Milne Edwards and Haime, 1848



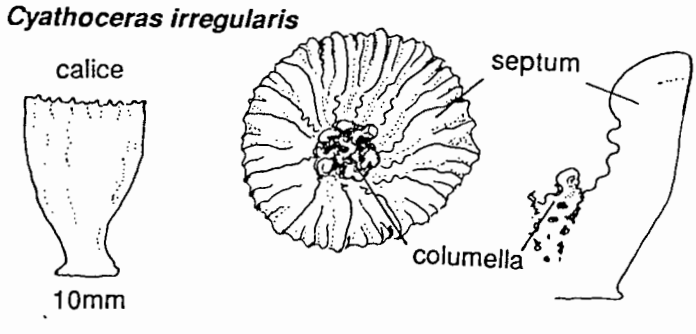
4 Columella short with 6 to 12 round-tipped pali; calice tubular slightly ridged, diameter 8mm; short pedicel; septae hexamerally arranged in 3 cycles with a partial fourth cycle, small surface granules, inner edge smooth, straight, not exsert.
SAM H 4452 (Undescribed genus aff *Stenorynthus*)

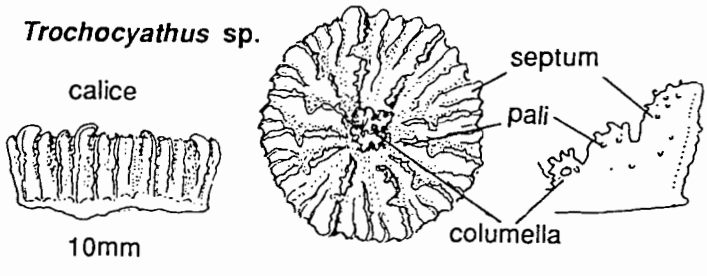
Columella with twisted ribbons; septa hexamerally arranged in four cycles with a partial fifth, S1 and S2 with slightly sinuous inner margins. 5



5 Calice deep, with fine surface granules; short pedicel; columellar short, in the base of calice, made up of about 8 coiled ribbons, partially fused together; pali absent; septa barely exsert; diameter about 10mm.
Cyathoceros irregularis Cairns 1982

Calice smooth, porcelanous with flat costae; septum S1 and S2 exsert; pali present opposite S3; columella of 4-20 slender, twisted ribbons; septal ornamentations of carinae are squared off granules.
Trochocyathus sp. SAM A4453





Distribution patterns

The species of Hydrozoa, Octocorallia and Scleractinia recorded from Marion and Prince Edward Islands during the 1965 - 1989 University of Cape Town Surveys are listed in table1. The localities and stations are shown in Fig. 1. Collections were made at three intertidal sites in 1965 (Millard, 1971) and at eight intertidal sites in 1982, 44 samples were collected by SCUBA-diving and analysed, 36 of these were taken during a quantitative survey at 5, 10, and 15m depths at Bullards Bay, Trypot Point and Transvaal Cove (Beckley and Branch, 1992) and at 57 sites sampled by dredging in moderately deep waters (30 - 800m). For all the species table 1 summarises the number of stations at which each species was recorded, and the depth range. The relative abundance of the species in the dredged collections is shown in two different ways. The first relates the modal abundance of individual species to six substrate types (A-F) which range from volcanic rock, through gravel, to black volcanic sand. The second records the abundance of species within community groups which were identified by a Brey-Curtis analysis of the total species composition at each station. (G.M.Branch et al. 1993).

Many of the hydrozoans grew epiphytically on algae, bryozoans or other hydrozoans. Others were associated with crustaceans (especially isopods and amphipods) and *Plumularia insignis* had small bivalves of an undescribed *Pteria* sp. attached to it. (ML Branch et al 1991a &1991b). One specimen of the rarely reported*Symplectoscyphus articulatus* carried large numbers of isopods (*Arcturides* sp.) and nine small Solenogastres. The Hydrozoa, unlike the Octocorallia and Scleractinia, occurred in both the intertidal and SCUBA samples as well as the dredged collections. Their distribution was not closely linked to the nature of the substrate although there were distinct intertidal and deep-water communities with different species. The dominant deep-water species were *Grammaria abietina, Halecium delicatulum, Lafoea dumosa, Plumularia insignis, Staurotheca dichotoma* and *Symplectoscyphus subdichotomus*, whereas the common shallow-water species were *Sertularella picta, Symplectoscyphus vanhoeffeni* and *Candelabrum meridianum.*

The 14 species of Octocorallia occurred only in relatively deep waters, none being recorded shallower than 100m, with the majority being collected at depths exceeding 350m. Greatest concentrations occurred at the deeper stations with rocky subtrata. The pennatulaceans (*Halipteris* sp., *Pennatula inflata* and *Pennatula phosphorea*) tended to be rare and were the only species that anchored in soft sediment using their fleshy peduncles. *Clavularia* sp. and *Rhodelinda gardineri* were attached to rocks by creeping stolons that give rise to upright unbranched colonies. They were both rare and small and contributed little to the overall biomass. In contrast *Thouarella variabilis* was by far the most common and wide-spread species and formed tall, delicate bushes which were orange, green and yellow in colour and sheltered a variety of small spiny crustacea (Branch et al. 1991a). Other branching species with a single holdfast were *Narella* sp. and *Primnoeides sertularoides* which were collected only south-east of Marion Island while *Candidella spinosa* and *Acanthogorgia ramossissima* were found south-west of Prince Edward and west of Marion Island. *Primnoisis sparsa*, like *Thouarella variabilis,* occurred in a wider range of substrates for although they occured most densely in the deep, rocky stations they also extended into the deeper stations between the islands where the substrate was more sandy. One very large specimen of *Paragorgia arborea* was collected at station 44. Specimens of *Anthomastus antarcticus* were found at stations 57 and 42.

All of the Scleractinia were absent from the intertidal and shallow sub-tidal zones to a depth of 17m, and were confined to rocky substrates in deep water (290-697m) where they occurred in relatively small numbers. They were found at only seven stations, four grouped in the south east of Marion Island, two to the south west of Prince Edward Island and one west of Marion Island. *Flabellum apertum* was the only

	No. of records			Depth		Modal abundance in substrates						Abundance in Communities						
	Int.	Dv.	Dr.	Min.	Max.	Rock				Sand		Shallow			Deep		Int	Dv
Octocorallia						A	B	C	D	E	F	1	2	3	4	5	6	7
Acanthogorgia ramossissima			4	474	693	5	4	0	0	0	0	-	-	-	a	-		
Anthomastus antarcticus			2	510	697	1	0	0	0	0	0	-	-	-	r	r		
Candidella spinosa			3	370	527	1	1	0	0	0	0	-	-	-	p	-		
Clavularia sp.			2	145	368	1	0	0	0	1	0	-	-	-	r	-		
Halipteris sp.			2	110	368	1	0	0	0	0	1	-	r	-	r	-		
Narella sp.			3	368	750	1	0	0	0	0	0	-	-	r	-	r		
Paragorgia arborea			1	527	527	5	0	0	0	0	0	-	-	-	p	-		
Pennatula inflata			1	240	240	0	0	0	0	0	1	-	-	-	-	r		
Pennatula phosphorea			1	697	697	1	0	0	0	0	0	-	-	r	-	r		
Primnoeides sertularoides			4	368	697	1	0	0	0	0	0	-	-	r	-	r		
Primnoisis antarctica																		
Primnoisis sparsa			5	208	475	4	2	0	1	1	0	-	-	p	c	-		
Rhodelinda gardineri			3	165	474	1	1	0	0	1	0	1	1	r	p	-		
Thouarella variabilis			15	145	697	5	5	0	2	3	2	-	-	p	a	r		

Scleractinia																		
*Desmophyllum cristagalli**			2	370	697	1	0	0	0	0	0	-	-	-	-	r		
Flabellum apertum			3	290	368	2	1	0	0	0	0	-	-	r	r	c		
*Solenosmilia variabilis**			1	697	697	1	0	0	0	0	0	-	-	-		-		r
Cyathocerus irregularis			4	420	697	1	0	0	0	0	0	-	-	-	r	r		
*Trochocyathus sp.**			1	697	697	1	0	0	0	0	0	-	-	-	-	r		
SAM H 4452			1	697	697	1	0	0	0	0	0	-	-	-	-	r		

*no live material collected

species that was common with over thirty individuals at stations 22 and 39. Station 57 yielded four species, all new records for the Prince Edward Islands, two of which are undescribed species.

Five communities could be recognised for the dredged stations (Fig. 1; see GM Branch et al, 1993 for a more detailed analysis) and two additional communities for the intertidal and shallow-water stations:

Group 1 The only common Cnidarian species in this shallow (<50m) inshore community around the islands were *Sertularella picta* and *Symplectoscyphus subdichotomus.*

Group 2 was a shallow (50-100m) soft-sediment community dominated by bivalves, the brachiopod *Magellania kerguelensis*, the urchin *Pseudechinus marionis* and the polychaete *Lanice conchilega.* Here *Halecium delicatulum* and *Symplectoscyphus subdichotomus* were abundant with *Lafoea dumosa* common.

Group 3 was also a soft-sediment community occupying deeper waters (150-300m) between the islands with a similiar species composition to group 2 but here the common hydrozoans were *Grammaria abietina*, *Plumularia insignis*, *Staurotheca dichotoma* and *Symplectoscyphus subdichotomus.* Small numbers of 6 species of Octocoralia were collected at stations falling in this group.

Group 4 occurred in deep (300-500m) rocky-bottomed localities south west of Prince Edward Is. and south-east of Marion Is. and were dominated by octocorals (9 species) and hydrozoans (13 species) and their associated crustacean, bivalve and solenogastran fauna. The octocoral *Thouarella variabilis* was the dominant species while *Acanthogorgia ramossissima* and *Primnoisis sparsa* were common to abundant. *Plumularia insignis* was the abundant hydrozoan, with *Staurotheca dichotoma, Modeeria rotunda, Symplectoscyphus curvatus* and *Symmplectoscyphus subdichotomus* being common. Two species of Scleractinia were also found attached to rocks.

Group 5 The deepest (>500m) sloping rocky sites south east of Marion Island supported a sparse community with only four species of Hydrozoa and five of Octocoralia but all four species of Scleractinia occurred here, albiet in small numbers. *Flabellum apertum* was common at two stations.

Group 6 The intertidal community yielded nine species of hydrozoans. Seven were found in crevices or gulleys under rocks at Transvaal cove where *Candelabrum meridianum* was the only species collected in any quantity. *Sertularella picta* and *Symplectoscyphus marionensis* with its epizootic colonies of *Campanularia subantarctica* were collected near the mouth of the Soft Plume River, on the eastern coast of Marion Island (Millard 1971).

Group 7 The diving survey (depths 5-15m) produced 10 species. *Obelia geniculata* and *Silicularia rosea* were recorded growing on the kelp *Macrocystis laevis. Sertularella picta* was common as was *Symplectoscyphus vanhoeffeni.* The latter species is the same as *Symplectoscyphus* sp. recorded by Millard (1971) confirmed by the structure of female gonophores detected in the 1988 collections. *Candelabrum meridianum* were present at eight stations and a small *Rhizogeton* sp. at 10 amd 15m at Transvaal Cove.

Geographical distribution

Millard (1977) described the hydroids from the Kerguelen and Crozet shelves and recorded the distribution of the species with reference to the results of Naumov & Stephaniants (1962), Ralph (1957, 1958 & 1961) Vervoort, (1972a & b) and Vanhöffen (1910). Only five out of the 33 species from these Islands were shared with Marion and Prince Edward Islands. The present paper includes 16 newly recorded and 2 unidentified species, which, together with the nine intertidal and shallow water species (Millard 1971) and those of the HMS *Challenger* make a total of 31 species for Marion and Prince Edward Islands. These records are taken together with those of Blanco (1984) to update the geographical records of Millard (1977). Four species have been recorded only from Marion Island *Symplectoscyphus marionis, Campanularia subantarctica,* and the possible new species *Rhizogeton* sp. and ?*Operculariella* sp. of the family Campanulinidae. Five of the species are near-cosmopolitan in shallow waters, namely *Modeeria rotunda, Halecium delicatulum, Halecium tenellum, Lafoea dumosa* and *Obelia geniculata.* These near-cosmopolitan species and *Fillelum antarcticum* are the only species from the Prince Edward islands which also occur in S. Africa. Together with *Silicularia rosea* and *Staurotheca subdichotomus* they are also found in the Australasian region. Twenty of the 31 species are shared with either Crozet or Kerguelen Islands, 19 with the Magellan region, and 13 with Antarctica. This supports the theory that the faunas of Marion, Kerguelen and Crozet Islands are closely linked into the Kerguelen province. The affinity between the Marion region and the Magellan region is higher (73%) than that shown by the mollusca and crustacea (ML Branch et al, 1991a & b) and supports the recognition of a subantarctic faunal region (Briggs 1974) for the hydrozoans. They have a lower affinity (44%) to the Antarctic fauna and very little affinity to those from continental regions of Africa and Australasia.

The only previous records of octocorals from the Marion/Prince Edward region are those of Wright & Studer (1889), who recorded six species from the vicinity of Prince Edward Island. *Primnoisis antarctica* is also recorded from the Kerguelen Islands (Studer, 1879; Wright & Studer, 1889). *Primnoisis sparsa, Candidela spinosa, Acanthogorgia ramossissima* and *Primnoides sertularoides* have only been recorded from Marion/Prince Edward, and one form of *Thouarella variabilis* is also recorded from Heard Island (Wright & Studer, 1889), with a tentative identification from Antarctica (Kükenthal, 1912). The other eight taxa presented here are considered new records for the region. *Rhodelinda gardineri* was previously recorded from Macquarie, Tristan da Cunha and Gough Islands (Bayer, 1981b). *Paragorgia arborea* has a bipolar distribution (southern Atlantic, northern Atlantic and northern Pacific) as well as Crozet Island (Grasshoff, 1979). The sea pen *Pennatula inflata* is also recorded from Somalia and Atlantic South Africa (Williams, 1990), while *Pennatula phosphorea* has a cosmopolitan distribution (Kükenthal, 1915). *Anthomastus antarcticus* was previously recorded only from Bouvet Island (Kükenthal, 1906 &1910). Three genera are represented in the present collection in which the species have not been determined - the stoloniferous octocoral *Clavularia,* the primnoid gorgonian *Narella* and the pennatulacean *Halipteris.* Four of the eleven identified species are known only from Marion/Prince Edward; eight of the eleven identified species are presumably restricted to the Southern oceans. One species shows a bipolar distribution, one is cosmopolitan and one extends to Africa only.

Cairns (1982 & 1990) in his synopses of the Antarctic and Subantarctic Scleractinia summarises the distribution of the known species. *Scleractinia solenosmilia* is wide-spread in the Atlantic and Indian oceans and circumpolar in the southern seas and was present but not common in the collections from the Prince Edward Islands. The type locality for *Flabellum apertum* is off Prince Edward Island at station 145 of the HMS *Challenger* and it has since been shown to be circum-subantarctic. The new record of the large *Desmophyllum cristigali* at the Prince Edward islands extends the

records of this cosmopolitan species which was previously known from the Pacific, Atlantic and Indian Oceans and the southern seas although it is not present off continental Antarctica. Prior to this collection *Cyathoceras irregularis* had only been recorded from its type locality, a seamount on the Eltanin fracture zone system on the opposite side of the globe from Marion island. At its type locallity it was attached to dead corals, usually *Solenosmilia variabilis* . Both *D. cristigali* and *C. irregularis* were present in the dredged sample from station 57 at Marion Island at a similiar depth 500-700m. The Scleractinia do not form a large component of the fauna of Marion Island. Those that do occur are cosmopolitan or have also been found at great distances from this Island group. Most of them fit into a broad subantarctic group with some affinity to the southern continents but no affinity to the Antarctic peninsula.

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CHAPTER 5: ECHINODERMATA

Abstract

The Echinodermata of subantarctic Marion and Prince Edward Islands (MPE) were sampled over the period 1982-1989 by dredging, SCUBA-diving, intertidal surveys and remote control photography in a University of Cape Town project. This chapter provides illustrated keys to all the known 69 species of Echinodermata from MPE, including 31 new records. These comprise 33 Asteroidea, 22 Ophiuroidea, 10 Holothuroidea, 2 Echinoidea and 2 Crinoidea. Summaries are provided of the depth distribution, abundances and habitats, as well as the geographical distribution of the species. The Asteroidea include more cosmopolitan and warm water species and have a greater affinity to the Falklands than do the Ophiuroidea and Holothuroidea, which are largely confined to the Antarctic and subantarctic and have a greater affinity to the Kerguelen Islands. Asteroidea from deep, rocky areas have an affinity to the Falklands, while those from shallow, sandy localities are shared with Kerguelen.

Introduction

Echinoderms have been recorded by a number of offshore scientific expeditions to subantarctic Marion and Prince Edward Islands (MPE) (46°54'S, 37°45'E and 46°38'S, 37°57'E respectively). These included the British *Challenger* Expedition of 1873 (Agassiz 1881, Lyman 1879 &1882, Théel 1886, Carpenter 1888 and Sladen 1889), the *Discovery* Expedition of 1935 (Mortensen 1936, Fischer 1940 and AM Clark 1962 & 1970) and the French *Marion-Dufresne* voyage in 1976 (Jangoux 1982). South African research began with land-based surveys that reported on the intertidal zonation and shallow water benthos (Fuller 1967, Bernasconi 1968 &1971, Pawson 1971, Rowe & Clark 1975 and De Villiers 1976). Blankley subsequently investigated the intertidal and shallow subtidal food web at Marion Island (Blankley 1984, Blankley & Branch 1984 and Blankley & Grindley 1985).

During the 1980s the University of Cape Town (UCT) extended this research offshore (Beckley & Branch 1992, GM Branch, Attwood, Gianakouras & ML Branch, 1993). One new species of asteroid *Solaster dianae* from the UCT collection was described by Stampanato & Jangoux (in press)and two new holothurians, *Mesothuria edwardensis* and *Paradota marionensis,* by Massin (1992). Taxonomic notes for the ophiuroids and crinoids are included as footnotes in the illustrated keys. Synonyms are given in the systematic list where species from Marion Island have been reported under different names.

This present report provides illustrated keys to all species known from the area and analyses the abundance and distribution of all the echinoderms collected during these recent surveys and discusses their zoogeography.

Systematic list of species of Echinodermata

* = New records
\# = New species (Described by Massin, 1992 and Stampanato & Jangoux in press)
Synonyms used in the records for MPE are given

CLASS ECHINOIDEA (Sea urchins)
Suborder **Echinina**
Family **Echinidae**
* ***Sterechinus agassizi*** Mortensen, 1936 18

Suborder **Temnopleurina**
Family **Temnopleuridae**
Pseudechinus marionis Mortensen, 1936 18

CLASS HOLOTHUROIDEA (sea cucumbers)
Order Aspidochirotida
Family **Synallactidae**
\# ***Mesothuria edwardensis*** Massin, 1992 19
* ***Synallactes challengeri*** (Théel, 1886) 19
= *Stichopus challengeri* (Théel, 1886)
Family **Gephyrothuridae**
Pseudostichopus mollis Théel, 1886 19

Order Dendrochirotida
Family **Cucumariidae**
* ***Cucumaria kerguelensis*** Théel, 1886 20
Pseudocnus laevigatus (Verrill, 1876) 20
=*Cucumaria serrata* Théel 1886
* ***Cladodactyla crocea croceoides*** (Vaney, 1908) 20

Family **Psolidae**
* ***Psolidium incertum*** (Théel, 1886) 20
Psolus paradublosus Carriol & Feral, 1985 19
= *Psolus ephippifer* (partim)

Order Apodida
Family **Chiridotidae**
Taeniogyrus contortus (Ludwig, 1874) 20
=*Chirodota contorta* Ludwig, 1974
\# ***Paradota marionensis*** Massin, 1992 20

CLASS CRINOIDEA (Feather stars)
Order Comatulae
Suborder **Macrophreata**
Family **Antedonidae**
Phrixometra exigua (Carpenter, 1888) 21
=*Antedon exigua* Carpenter, 1888
Eumorphometra hirsuta (Carpenter, 1888)
=*Antedon hirsuta* Carpenter, 1888 21

Summary of species

Asteroidea: 33 species, 11 new records, 1 new species
Ophiuroidea: 22 species, 13 new records,
Holothuroidea: 10 species, 6 new records, 2 new species
Echinoidea: 2 species, 1 new record
Crinoidea: 2 species

Echinodermata of Marion and Prince Edward Islands

A Asteroidea
Characteristics of the Orders

Order **Paxillosida:**

Asteroids normally with 5 arms; main ossicles form longitudinal series ventrally with a marginal frame consisting of well-developed infero- and superomarginal plates, and a distinct furrow frame which consists of ambulacral and adambulacral plates; the two frames abut distally but are linked proximally by actinal plates; pedicellariae, simple, sessile, spiniform; podia in two rows usually tapering to a point without suckers.

Order **Valvatida:**

Asteroids with 5 or more arms; marginal plates conspicuous or not, abut on the furrow frame along the arms (superambulacral ossicles absent); actinal plates in the interradii; pedicellaria if present vary from elementary to alveolar in which hollows in the underlying plates accomodate the valves when they are open; podia suckered in two rows.

Order **Forcipulatida:**

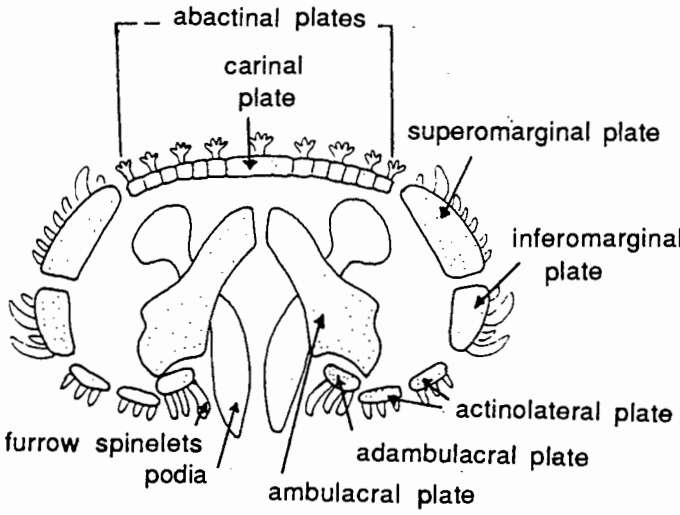
Asteroids with 5 or more long arms; abactinal skeleton reticulate and with spaced spines; inferomarginal plates inconspicuous from above, are short and lie ventrolaterally; podia suckered, in two or four rows; pedicellariae complex with two valves and an extra basal piece, either below the valves in straight pedicellaria or between the proximal lobes of the scissor-like crossed pedicellariae.

Order **Spinulosida:**

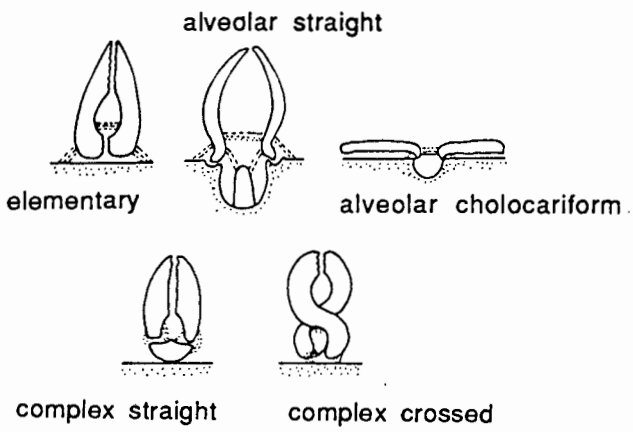
Asteroids with 5 or more arms; main ossicles form longitudinal series ventrally; infero- and superomarginal plates not enlarged and usually inconspicuous; pedicellariae rare; podia suckered in two rows but in the Pterasteridae they are staggered to form four rows.

(General references, giving the external organisation of asteroids and the vocabulary used in asteroid external anatomy, are Clark and Rowe, 1971 and Jangoux, 1986. Types and definitions of pedicellariae were taken from Jangoux and Lambert 1988).

Transverse section through Asteroid Arm



Types of Pedicellariae



Asteroidea - Starfish

Key to the species

1 Two rows of podia (tube-feet) per arm; podia suckered (disc-tipped) or pointed (cone shaped); pedicellariae absent or present. (Four rows of podia may occur occasionally in large cushion stars)..... 2

Four rows of podia per arm; podia suckered; pedicellariae present (complex - straight and crossed pedicellariae).
Order **Forcipulatida** (part) 30

2 Pedicellariae elementary, alveolar or absent. 3

Crossed pedicellariae present.
Order **Forcipulatida** (part)..... 27

3 Podia pointed (lacking sucker disc); marginal plates very conspicuous, defining the outline of the body.
Order **Paxillosida** 4

Podia suckered; marginal plates conspicuous or not..... 5

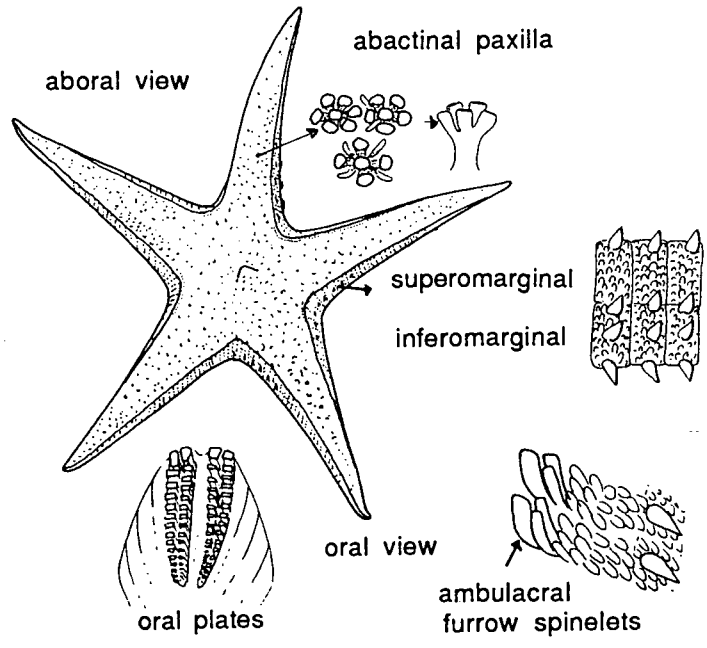
4 Superomarginal and inferomarginal plates equally developed; marginals often bearing enlarged flattened spinelets as well as numerous small spinelets; oral plates separate, each bearing two rows of flat-topped spines; abactinal paxillae (modified plates with a central column crowned with spinelets) crowded, bearing several flat-topped spines and fewer thinner spinelets around the margins.
Bathybiaster loripes Sladen, 1889

Superomarginals distinctly smaller than the inferomarginals; marginals bearing uniform small spines; oral plates fused with cylindrical spines (older specimens have flattened marginal spines); abactinal paxillae not crowded, bearing numerous slightly thorny spinelets (10-40).
Leptychaster kerguelenensis Smith, 1876

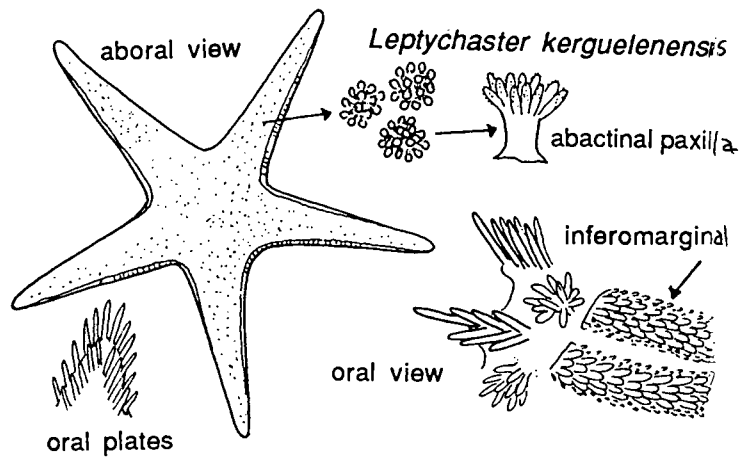
5 Abactinal plates overlapping; enlarged openings in the proximal part of each interradial area, both orally and aborally; body pentagonal and markedly convex; four rows of tube feet proximally.
Tremaster mirabilis Verrill, 1879

Abactinal skeleton reticulate or juxtaposed plates; no interradial openings; body stellate or pentagonal; two rows of tube feet 6

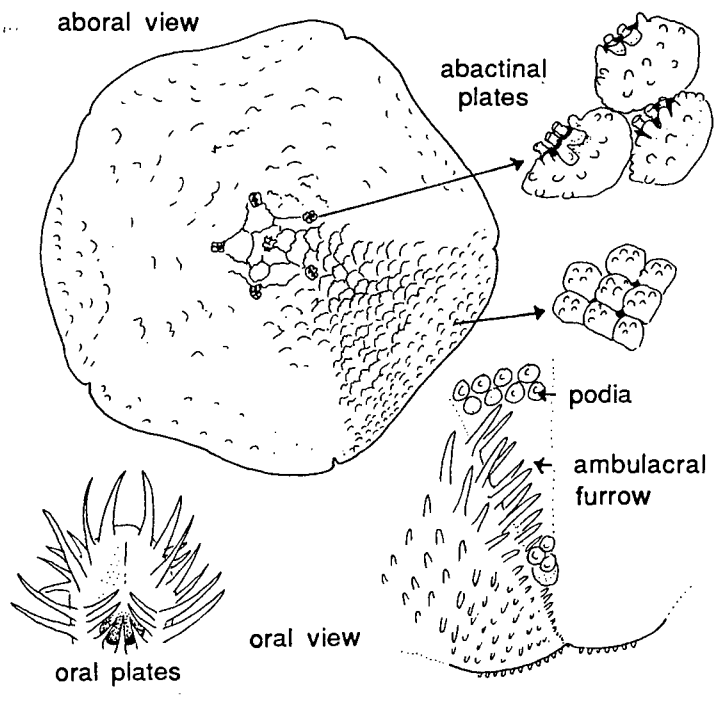
Bathybiaster loripes



Leptychaster kerguelenensis



Tremaster mirabilis



6 Abactinal skeleton made of distinct juxtaposed plates; body flat, disc runs smoothly into the triangular arms; marginal region obvious. 7

Abactinal skeleton reticulate, may be obscured by a thick skin; body and arms usually rounded, disc often small; marginal region indistinct. 14

7 Each jaw (paired oral plates) bears at least one well-developed, glassy-tipped spine; elementary pedicellariae may be present (valves articulate directly with the underlying skeletal plate).
Family Odontasteridae. 8

Jaws without large, glassy-tipped spine; alveolar pedicellariae sometimes present (valves articulate with the underlying skeletal plate and are always associated with a depression or alveole). 11

8 Body stellate; abactinal plates flat or slightly convex, covered with equal-sized flat-topped granules, forming subcircular groups of about 9-12 granules; actinolateral plates covered with granules that increase in size proximally; marginal plates lateral, form a narrow raised margin to the slightly convex arms.
Acodontaster elongatus (Sladen, 1889)

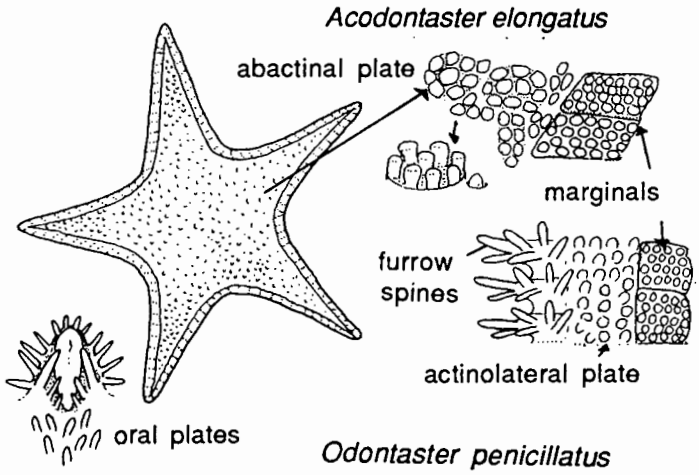
Body pentagonal to stellate; abactinal plates tabulate bearing a group of spinelets (paxilliform); actinolateral plates covered with spines; marginal plates conspicuous or not. 9

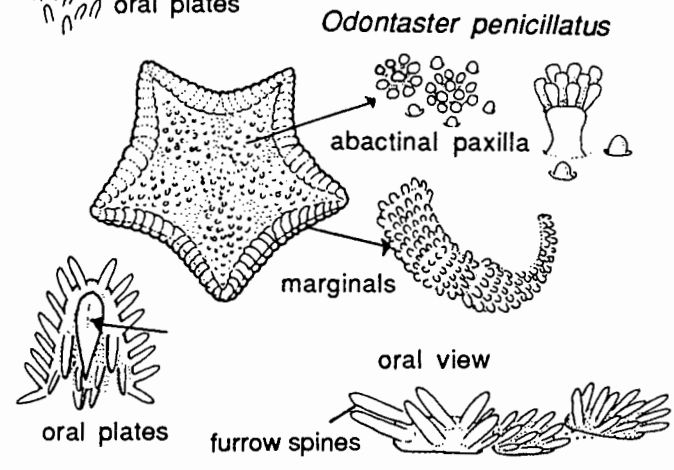
9 Marginal plates large, forming a prominent, raised border when viewed aborally; abactinal surface flat, paxillae with about 12 club-shaped spinelets; (small individuals collected at Marion Island are pentagonal with wide triangular arms). Fisher 1940 discusses the synonymy of this variable species, which shows a wide range of forms from the stellate 'forma *penicillatus*' to the pentagonal 'forma *grayi*' .
Odontaster penicillatus (Philippi, 1870)

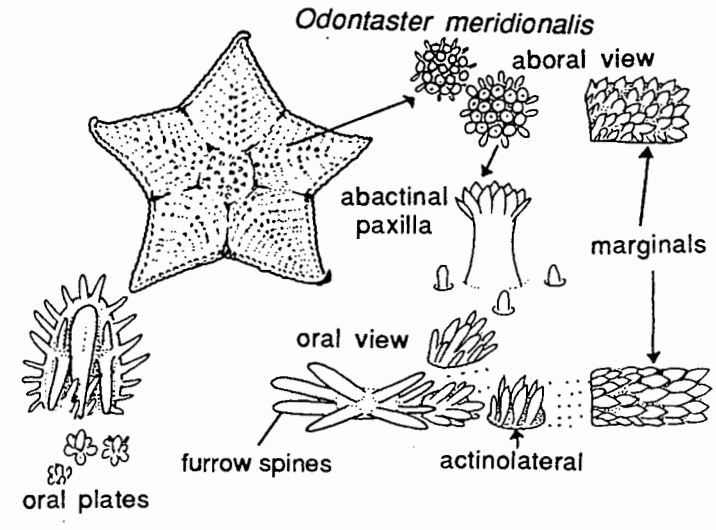
Marginal plates smaller, not conspicuous in aboral view, with the interradial ones entirely lateral in position. 10

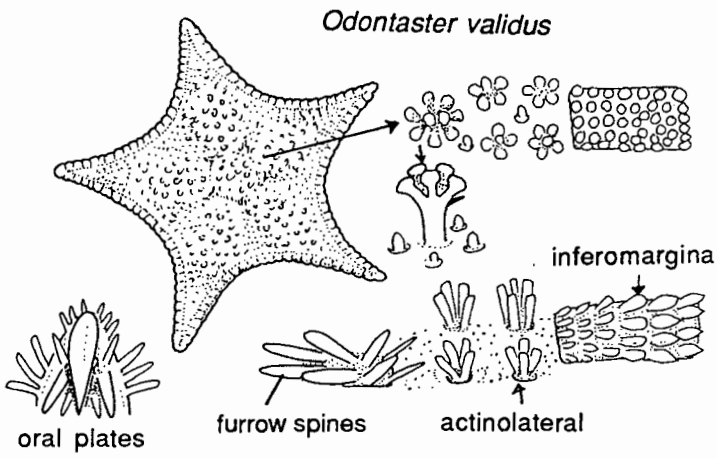
10 Radial paxillae bearing 20-30 spinelets; actinolateral plates large, more or less rectangular with many spinelets, the most central of which are robust.
Odontaster meridionalis (Smith, 1876)

Radial paxillae bearing about a dozen spinelets; actinal plates small and bearing four or five rather short spinelets.
Odontaster validus Koehler, 1906









1 1 Abactinal plates tabulate and covered with equal sized truncated spines or granules; pedicellariae absent.
..... 1 2

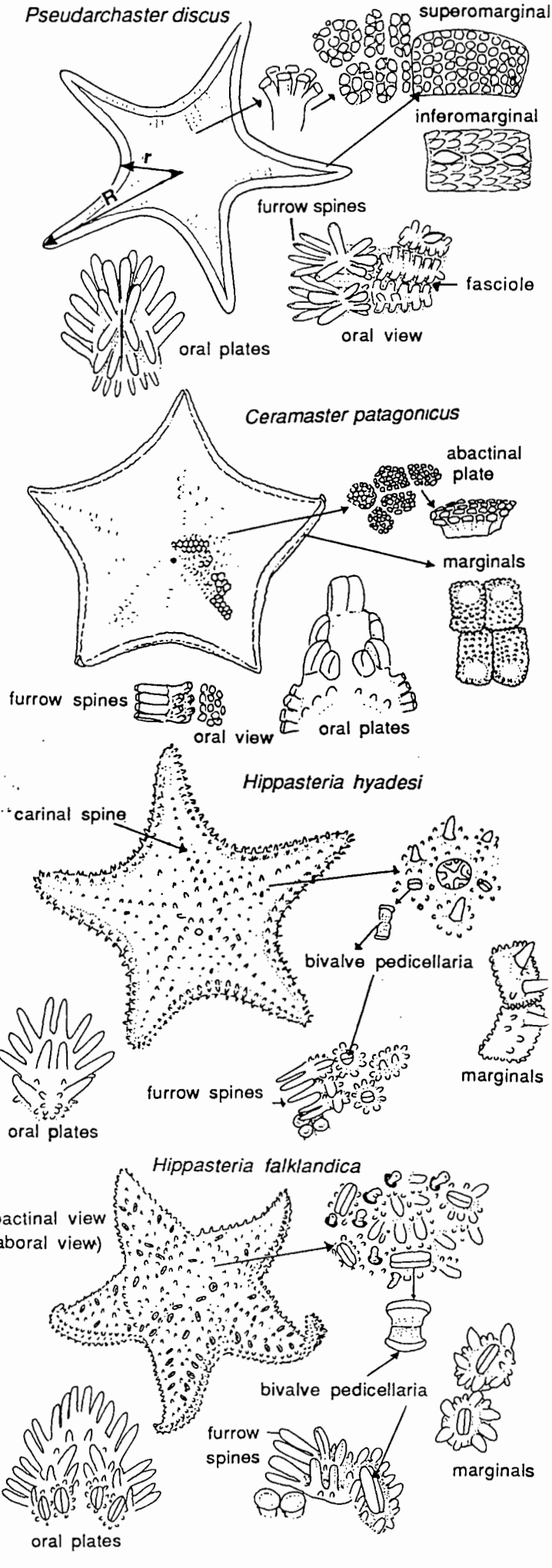
Abactinal plates flat or slightly convex, covered with both granules and spines; rectangular bivalve pedicellariae present.
..... 1 3

1 2 Body stellate; some actinolateral and inferomarginal plates with elongated granules; superomarginals largely covered with granules; postadambulacral fascioles present (furrows edged with granules - transverse actinal plates carry four rows of granules, the outer rows curve over the furrows between the plates); oral plates each with two rows of 7-12 papilliform spinelets, increase in size towards the mouth; R=20 r=3mm (up to R=30, r=12mm)
Pseudarchaster discus Sladen, 1889

Body pentagonal; marginal plates with central bare patch, otherwise covered with small uniform granules; no postadambulacral fascioles; oral plates with four large square spines; large R=68, r=43mm.
Ceramaster patagonicus (Sladen, 1889)

1 3 Marginal plates outlined by a regular series of small granules and with 1 to 3 large central spines; carinal spines larger than those of adjacent abactinal plates giving a regular arrangement; stiff, flat, regular and beautiful starfish.
Hippasteria hyadesi Perrier, 1891

No regular peripheral series of granules around marginal plates; carinal spines not larger, abactinal surface haphazardly covered with spines of the same size, small granules and large oblong bivalve pedicellariae; thick, convex untidy starfish.
Hippasteria falklandica Fisher, 1940



14 More than five arms; abactinal plates paxilliform (column crowned with spinelets). 15

Five arms; abactinal plates paxilliform or not. 17

15 Paxillae with long needle-like spinelets; abactinal network irregular; usually 9 arms.
Crossaster penicillatus Sladen, 1889

Paxillae with short spinelets having a multifid tip; abactinal network forming regular rows along the sides of the rays; usually not 9-armed. 16

16 Superomarginal paxillae clearly distinct from the adjacent abactinal paxillae; inferomarginal paxillae conspicuous; the most proximal adambulacral plates with two rows of subambulacral spinelets; 7 arms.
Solaster dianae Stampanato & Jangoux, in press

Superomarginal paxillae not distinct from the adjacent abactinal paxillae; inferomarginal paxillae conspicuous; adambulacral plates with only one row of subambulacral spinelets; usually 10 arms.
Solaster regularis Sladen, 1889

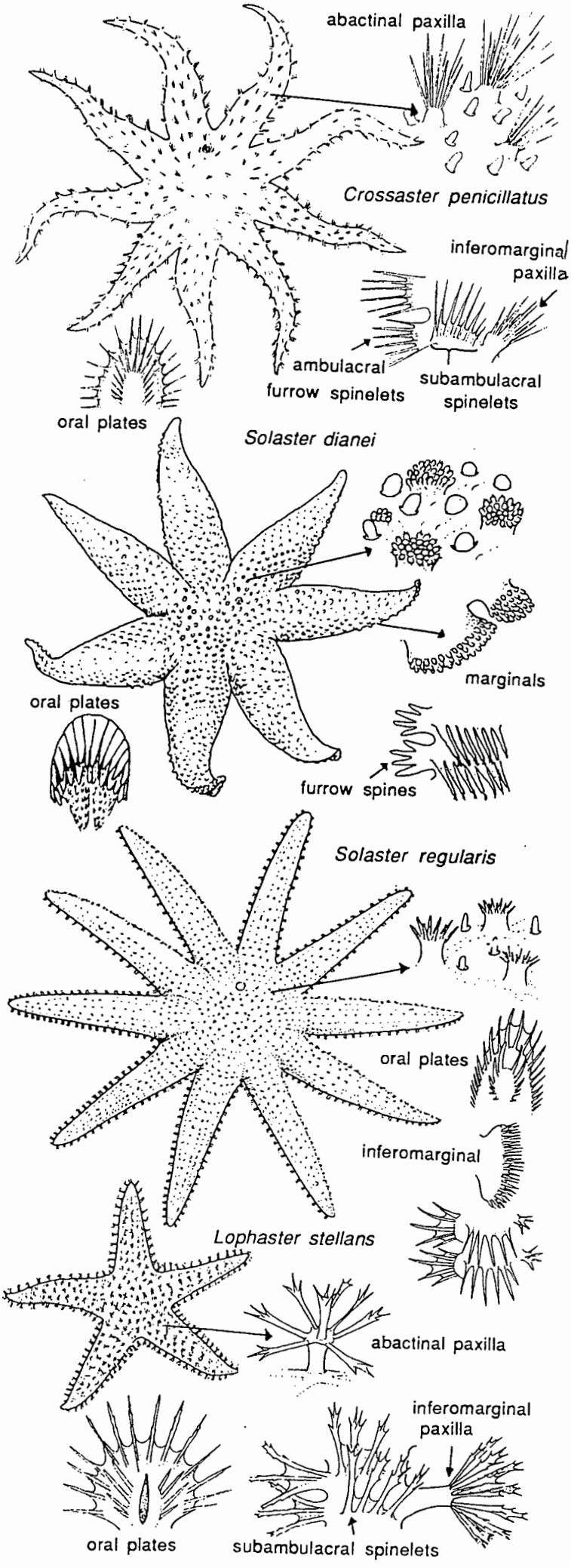
17 Small inner ambulacral spinelets lie between the tube feet, within the ambulacral groove; whole body covered with a thin skin; abactinal plates bearing distinct spinelets. 23

No inner ambulacral spinelets lie between the tube feet; spinelets paxilliform or simple, may be partly obscured by a thick skin or membrane. 18

18 Abactinal plates paxilliform with a slender pedicel, may lie beneath a supra-dorsal membrane; adambulacral spinelets partly or wholly webbed. 19

Abactinal plates not paxilliform with a slender pedicel, either spineless, or with single or grouped spinelets; adambulacral spinelets not webbed 21

19 No supra-dorsal membrane; abactinal plates paxilliform, with long pedicel and beautiful glassy spinelets with trifid tips; marginals distinct, bearing true paxillae with long pedicels; oral and adambulacral spinelets webbed at their bases.
Lophaster stellans Sladen, 1889



Supra-dorsal membrane present; adambulacral and oral spinelets wholly webbed, forming successive fans. 20

20 Body pentagonal; large adambulacral fans alternating with small ones, the largest extending over the furrow; usually 6-10 spinelets on a high pedicel beneath the supradorsal membrane; 4-5 spines on the oral plates, webbed together to form a single fan across the jaw; four rows of podia.
Diplopteraster semireticulatus (Sladen, 1882)

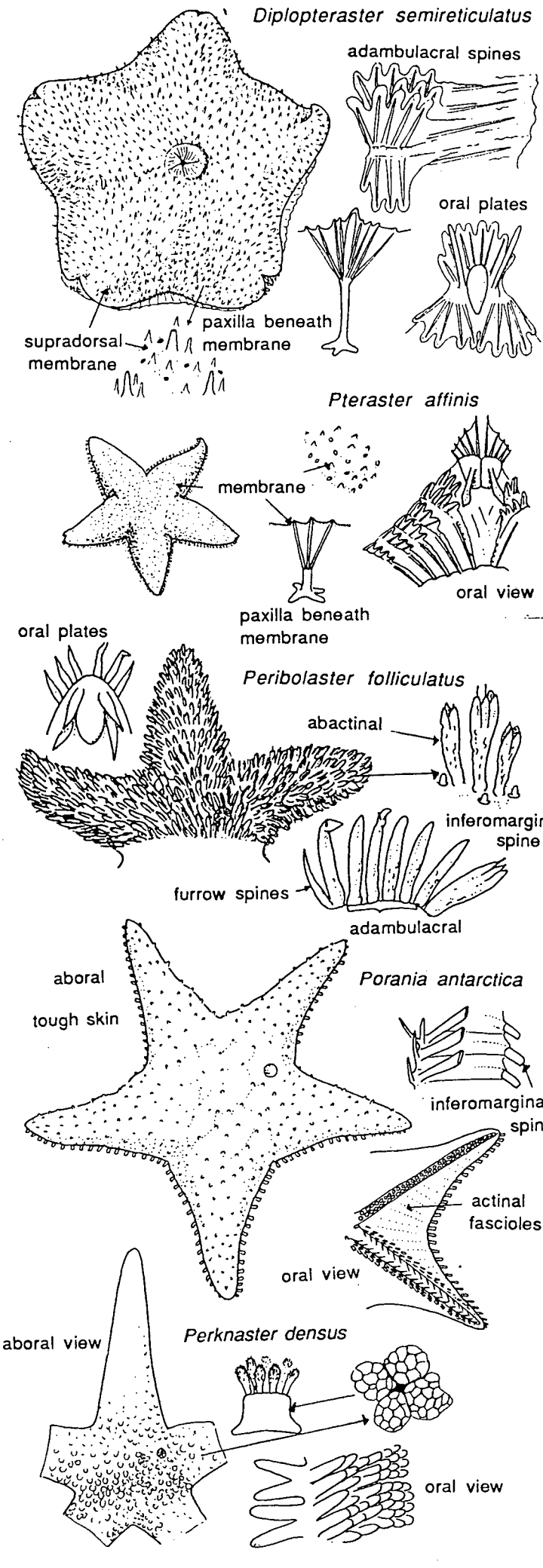
Body substellate; all fans similar; 4-6 spinelets on high pedicels lie beneath the supradorsal membrane; a separate web on the marginal spines of each oral plate 6-8 oral marginal spines; two rows of podia.
Pteraster affinis Smith, 1876
(Clark 1962, distinguishes three subspecies -
P. affinis lebruni has slender transparent spinelets and high pedicels, and 5-8 oral spines (Falkland/Magellan and Marion Is.)
P. affinis affinis has short thick opaque spinelets (Kerguelen Is.)
P. affinis aculeatus has low pedicels and slender transparent spinelets and up to five oral spines (Kemp Land and Ross Sea).

21 Four rows of podia; abactinal surface and superomarginal plates cruciform with 3-5 long spines enveloped in a membranous sheath, single inferomarginal spine; four adambulacral spines also enclosed in membranous sheaths; body stellate with thick round arms.
Peribolaster folliculatus Sladen, 1889

Two rows of podia. 22

22 Body subpentagonal, covered with a thick, leathery skin and sparse blunt spines; superomarginals unarmed; inferomarginals with one, often conspicuous, flattened spine; actinal fascioles present (furrowed spineless surface); two ambulacral spines not webbed; two prominent suboral spines; large pink starfish.
Porania antarctica Smith, 1876

Body stellate, covered with closely packed crowded paxillae, with 1-12 club-shaped spinelets; marginal plates not distinct from abactinals and densely covered with spinelets; no actinal fascioles; suboral spinelets more than two, usually seven or eight.
Perknaster densus Sladen, 1889



23 Four or five subambulacral spines, normally arranged in a single, sometimes irregular, row across the plate..... 24

Subambulacral spines more numerous, arranged in two rows or in a cluster..... 25

24 No papulae in the actinolateral area (papulae sometimes occur distally at the limit between the inferomarginal and adambulacral plates); abactinal spines very short and covered by a membrane; small-meshed abactinal skeleton; actinal and inferomarginal plates are very regularly arranged in longitudinal series; inner ambulacral spinelet small and tapering, directed actinally.
Henricia fisheri A M Clark, 1962
(Described by AM Clark from individuals collected at Crozet and Marion that were previously identified as *Henricia simplex* by Sladen (1889) and Fisher (1940))

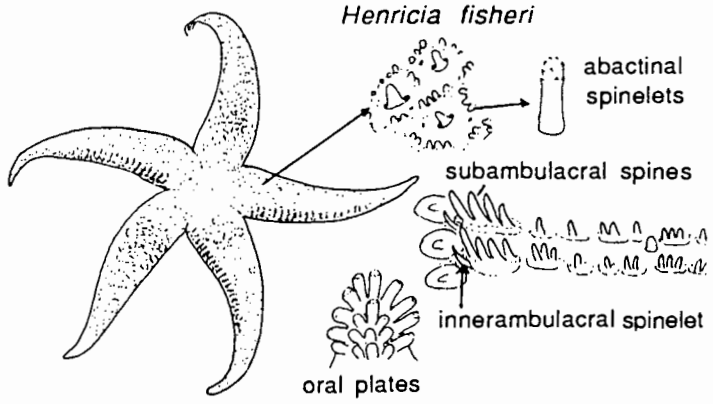
Papulae present in the actinolateral area; abactinal spines prominent, sparse and finely spined; small meshed abactinal skeleton; actinal and inferomarginal plates not regularly arranged; inner ambulacral spinelet small, knob-tipped, lying horizontally.
Henricia simplex (Sladen, 1889)

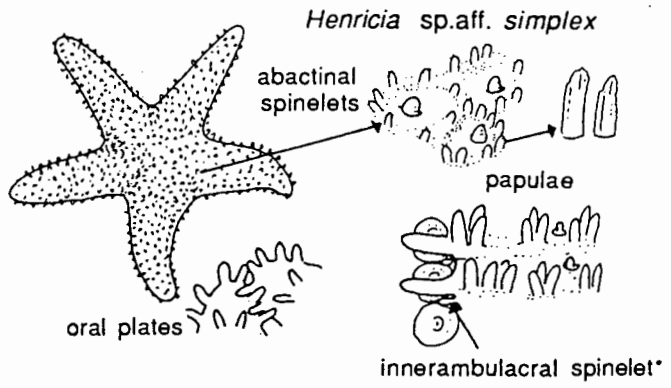
25 Abactinal spinelets with multifid tips; subambulacral spinelets usually in rows; furrow spinelets large and flattened, inner ambulacral spinelets long, slender and lying horizontally; large-meshed abactinal skeleton.
Henricia obesa (Sladen, 1889)

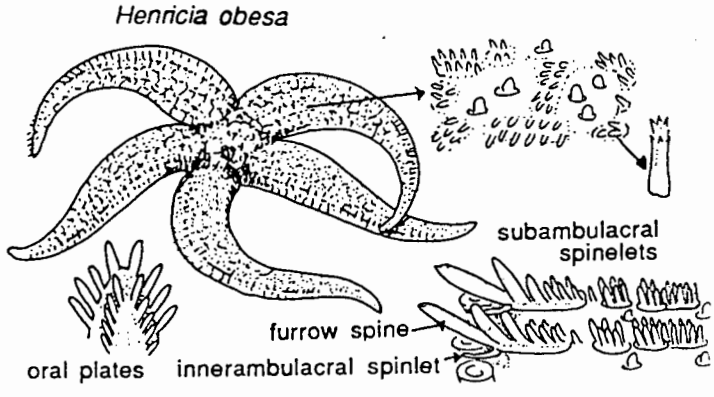
Abactinal spinelets tapering abruptly in distal half; subambulacral spinelets clustered; furrow spinelets slightly larger than adambulacral spinelets, inner ambulacral spinelets short; abactinal skeleton may be fine meshed..... 26

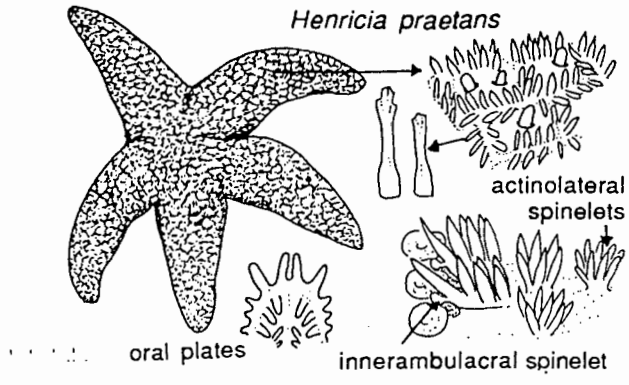
26 Abactinal reticulation subdivided, primary and secondary reticulations distinct when the plates are denuded; actinolateral plates with circular groups of about 6-8 spinelets; inner ambulacral spinelet small, knob-tipped, lying horizontally across the furrow; colour orange.
Henricia praetans (Sladen, 1889)

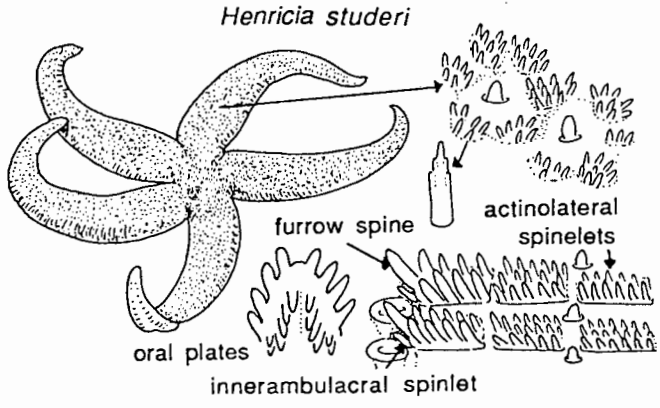
Abactinal reticulation not subdivided; actinal and inferomarginal plates form bar-like plates, giving the actinal skeleton a regular transverse arrangement; actinolateral plates elongate with about 18 spinelets; inner ambulacral spinelet small, tapering and directed actinally, colour pale.
Henricia studeri (Perrier, 1891)











27 Fifteen to fifty arms; circular disc; crossed pedicellariae forming prominent annular bands across the arms; large sun stars.
Labidiaster annulatus Sladen, 1889

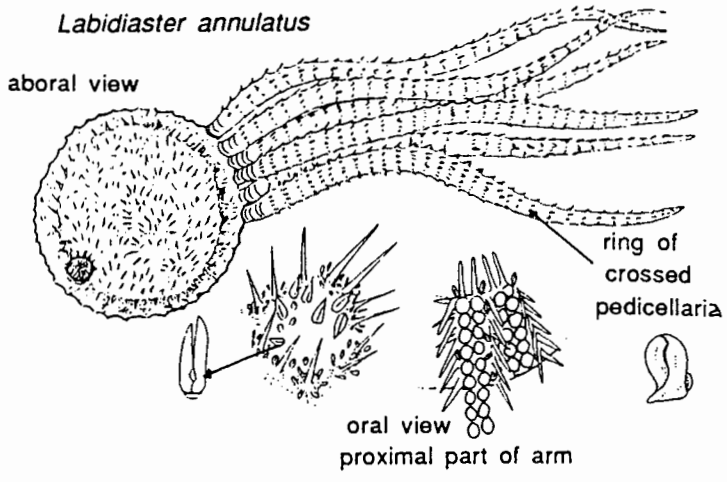
Five arms; no annular bands of pedicellariae across the arms..... 28

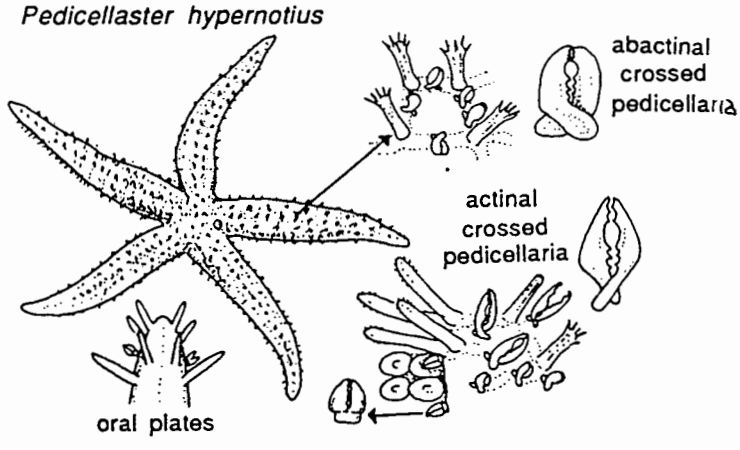
28 Actinal crossed pedicellariae enlarged, with two pairs of enlarged teeth at the distal end of each valve; some abactinal crossed pedicellariae with small terminal teeth; straight pedicellariae in the furrow.
Pedicellaster hypernotius Sladen, 1889

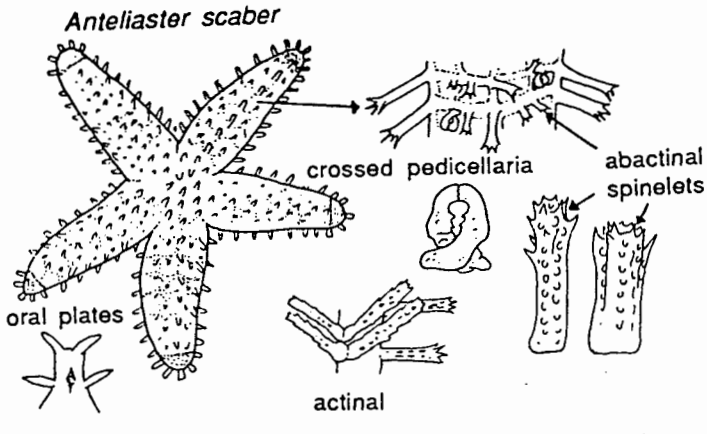
Actinal and abactinal crossed pedicellariae similiar..... 29

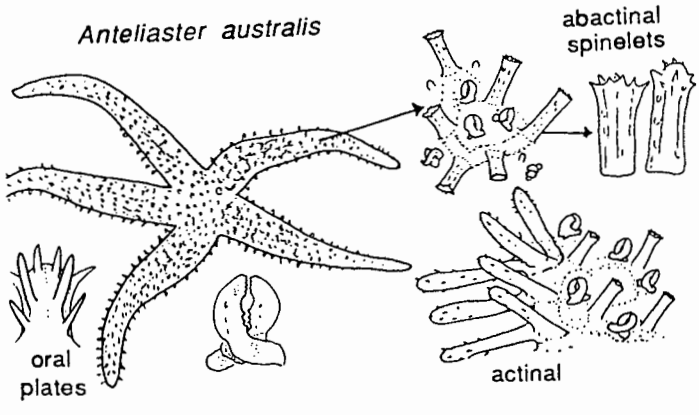
29 Most abactinal spinelets with a bush-shaped multifid tip; abactinal pedicellariae confined to the skeleton and few in number, never obscuring the skeleton. (Recorded from Kerguelen)
Anteliaster scaber (Smith, 1876)
(The specimen collected by the Discovery Expedition from Marion Island (Fisher 1940) was re-examined by A M Clark (1962) and transferred to *Anteliaster australis*. A few small specimens from this UCT collection are tentatively placed in *A.scaber*).

Most abactinal spinelets with a truncated multifid tip; pedicellariae numerous, on the skeleton and on the membrane between the reticulum and thus obscuring the skeletal reticulum. (Recorded from Falkland and S Georgia region, Marion specimens recorded by Fisher 1940 as *A. scaber* are considered to be *A. australis* by AM Clark (1962)
Anteliaster australis Fisher, 1940









Four rows of podia

3 0 Adambulacral plates predominantly with one spine (monocanthid plates); large papulae in the interradii of the oral surface and between the oral spines; most common intertidal asteroid; colour green to orange; broods young.
Anasterias rupicola (Verrill, 1876)

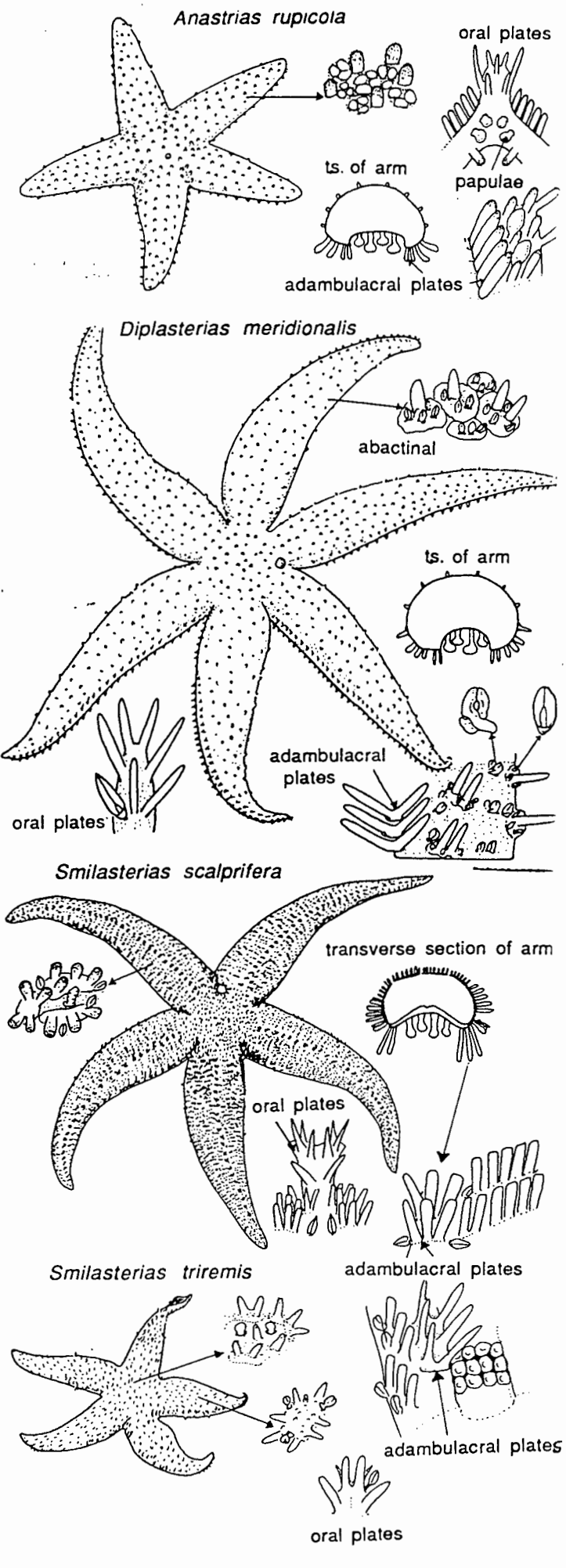
Adambulacral plates predominantly with two or more spines (diplacanthid or multicanthid plates) 3 1

3 1 Usually six arms; crossed pedicellariae associated with the abactinal and marginal spines, either in groups at their bases or in clusters around them; usually not more than one spine on each abactinal plate; supero- and inferomarginal plates distinct, bearing longer spines; common.
Diplasterias meridionalis (Perrier, 1875)

Five arms; crossed pedicellariae not associated with individual spines, but scattered between the spines or spinelets, which are usually small and may appear granuliform; marginal plates indstinct.
..... 3 2

3 2 Adambulacral plates each with a series of three or four spines, usually four when R>50mm; actinal plates extending for at least half arm length and the proximal ones each with one spine (sometimes two); abactinal spines numerous and tend to have a regular transverse arrangement on the arms; common.
Smilasterias scalprifera (Sladen, 1889)

Adambulacral plates each with a series of two spines (diplacanthid), rarely three spines on some plates when R>50mm; actinal plates few, narrow and normally spineless; abactinal spines short and scattered and less numerous than the above species; uncommon.
Smilasterias triremis (Sladen, 1889)



B Ophiuroidea - Brittle stars

1 Arms branched or not, rolled into vertical coils; disc and arms covered by a thick skin.
..... 2

Arms always unbranched, not rolled into coils but moving horizontally; disc and arms usually covered by plates.
..... 4

2 Arms branched or not, with belts of minute hooks on their aboral surface.
Family **Gorgonocephalidae**. 3

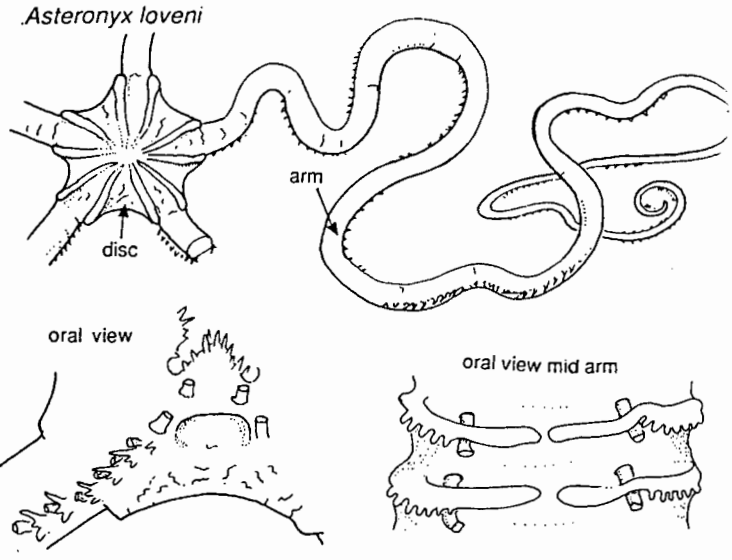
Arms unbranched, without belts of hooks on their aboral surface.
Asteronyx loveni Müller & Troschel, 1842.

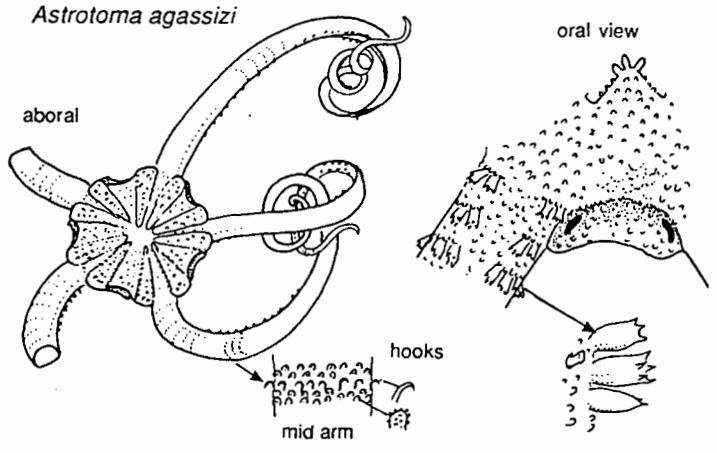
3 Arms unbranched.
Astrotoma agassizi Lyman, 1875.

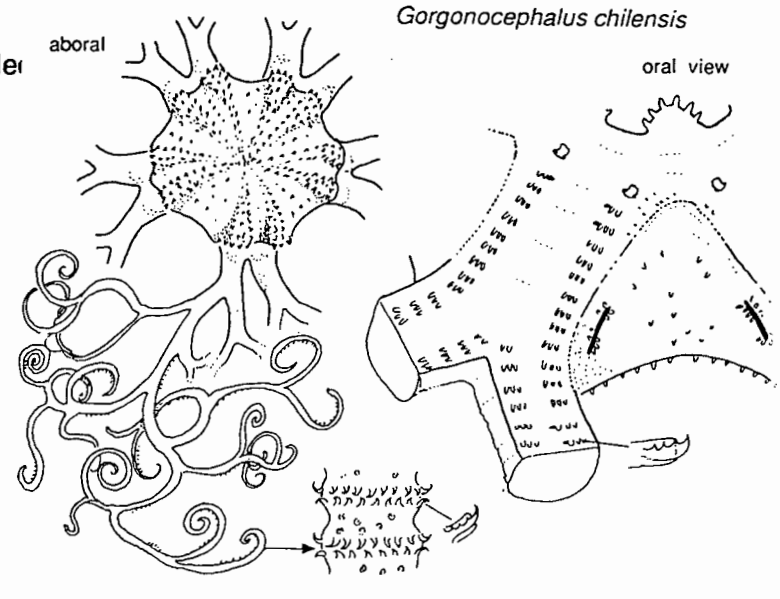
Arms branched.
Gorgonocephalus chilensis (Philippi, 1858).

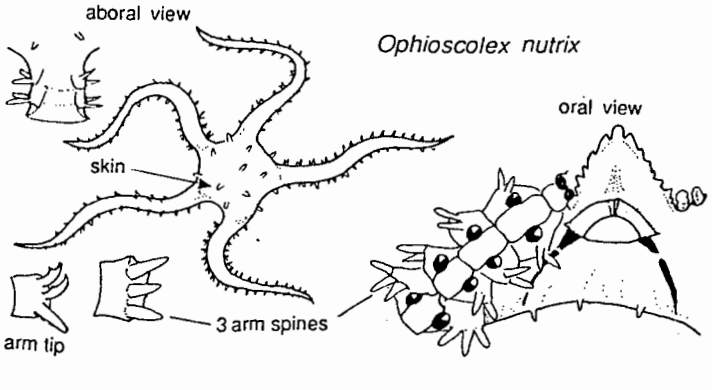
4 Disc and arm plates concealed by a thick skin aboral arm plates rudimentary and ofter fragmented.
Ophioscolex (***Ophiolycus***) ***nutrix*** Mortensen, 1936.

Disc and arm plates easily visible, not concealed by skin; aboral arm plates well developed.
..... 5









5 Two paired infradental papillae at the apex of each jaw.
Subfamily **Amphiurinae**. 6

A single unpaired infradental papilla at the apex of each jaw.
..... 9

6 Tentacle scale present.
..... 7

No tentacle scale.
Amphiura tomentosa Lyman, 1879.

7 Only one tentacle scale.
..... 8

Two tentacle scales.
Amphiura antarctica Studer, 1876.

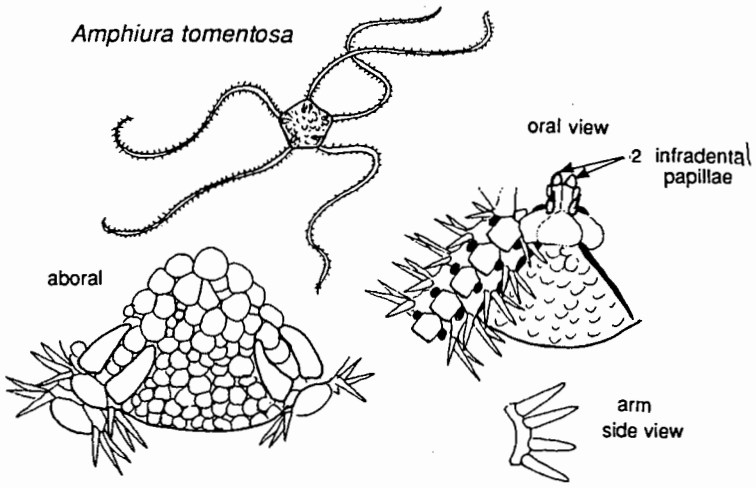
8 Oral surface of disc covered by plates.
Amphiura algida Koehler, 1911.

Oral surface of disc naked.
Amphiura angularis angularis Lyman, 1879

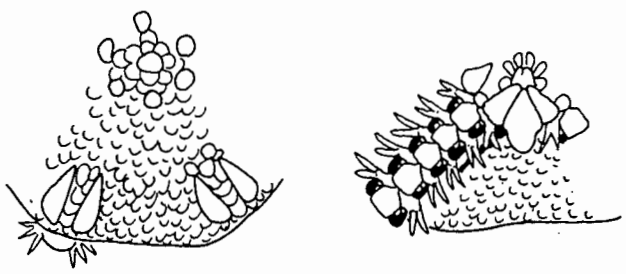
9 Second oral tentacle pore superficial, located outside the oral slit and deprived of a tentacle scale.
Amphilepis gymnopora Hertz, 1927.

Second oral tentacle pore usually inserted into the oral slit; if not, then provided with one or more scales.
..... 10

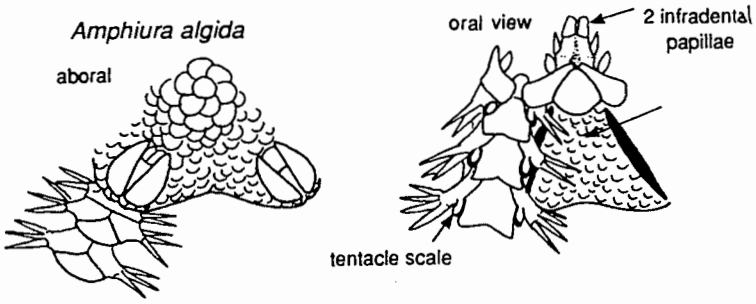
Amphiura tomentosa



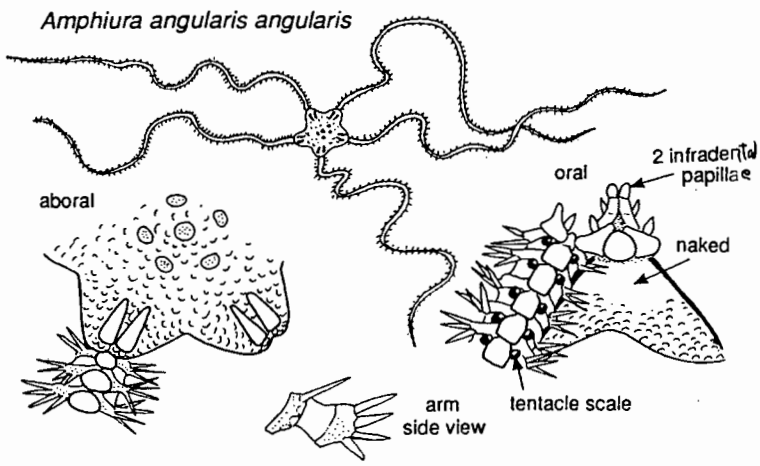
Amphiura antarctica



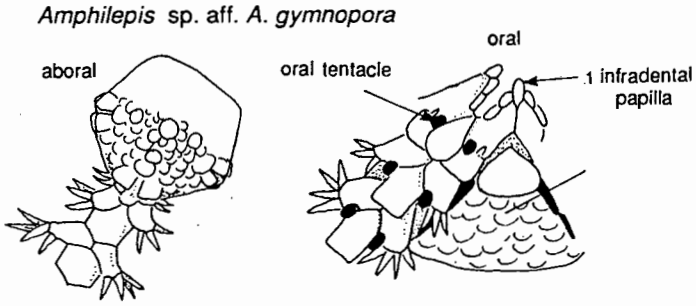
Amphiura algida



Amphiura angularis angularis



Amphilepis sp. aff. *A. gymnopora*



10 Arms inserted orally below the disc; disc plates with granules or spinelets; arm spines numerous, long and projecting.
..... 11

Arms inserted laterally to the disc; disc plates usually naked; arm spines small and adpressed (barely projecting).
Family **Ophiuridae**. 16

11 Oral shields covered by granules; arm plates with concentrical ridges.
Toporkovia antarctica (Lyman, 1882).

Oral shields naked; arm plates without ridges.
Family **Ophiacanthidae**. 12

12 Disc covered with small thin scales, some of them with granules; no radial shields; tentacle pores large and conspicuous.
Ophiocymbium cavernosum Lyman, 1880.

Disc covered by skin bearing granules and/or stumps; radial shields long and narrow, separated; tentacle pores not conspicuously large.
..... 13

13 Disc plates covered by a thin skin bearing granules and stumps; tentacle scale present.
..... 14

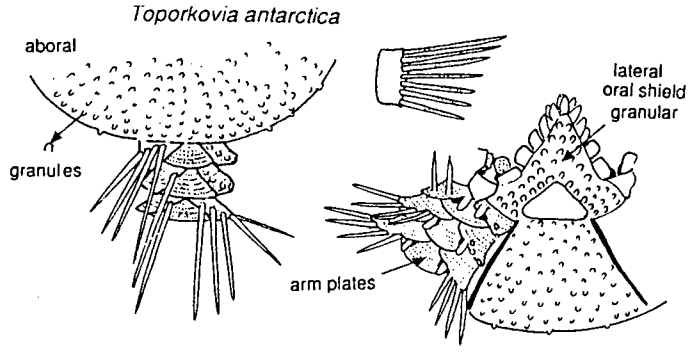
Disc and arm plates covered by a thick skin bearing scattered small granules; tentacle scale absent.
Ophiolebes scorteus Lyman, 1878.

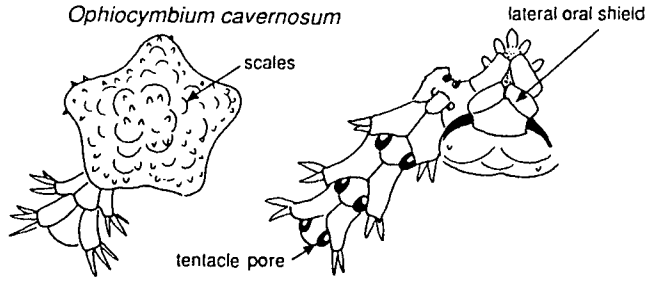
14 Six or seven arms.
Ophiacantha vivipara Ljungman, 1870.

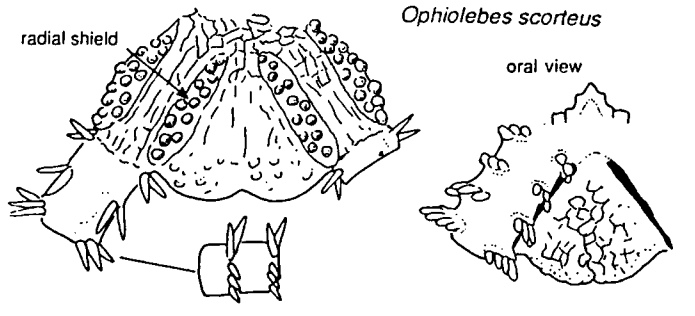
Five arms. 15

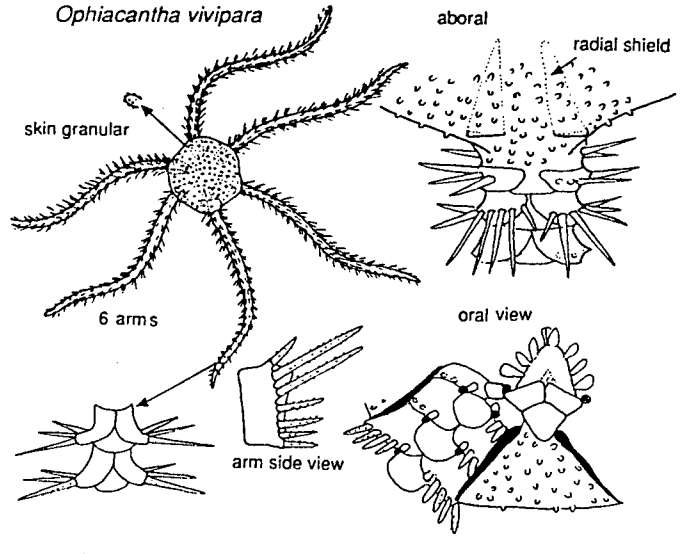
15 Ten or eleven arm spines; one large tentacle scale; oral shield rectangular-shaped.
Ophiacantha rosea Lyman, 1878.

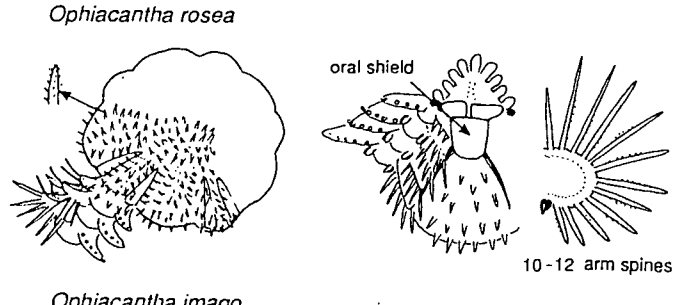
Six arm spines; One small and pointed tentacle scale; oral shield small diamond-shaped.
Ophiacantha imago Lyman 1878.

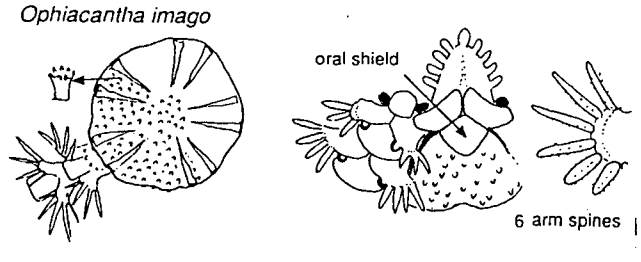












16 Basal lateral arm plates greatly enlarged; no bursal slit.
Ophiophycis mirablis Koehler, 1901

Basal lateral arm plates not enlarged; bursal slit present.
..... 17

17 Six arms; aboral arm plates fragmented.
Ophionotus hexactis (Smith, 1876).

Five arms; aboral arm plates not fragmented.
..... 18

18 Tentacle pores restricted to a few basal arm joints.
Ophiurolepis intorta (Lyman, 1878).

Tentacle pores occurring over most of the arm length..... 19

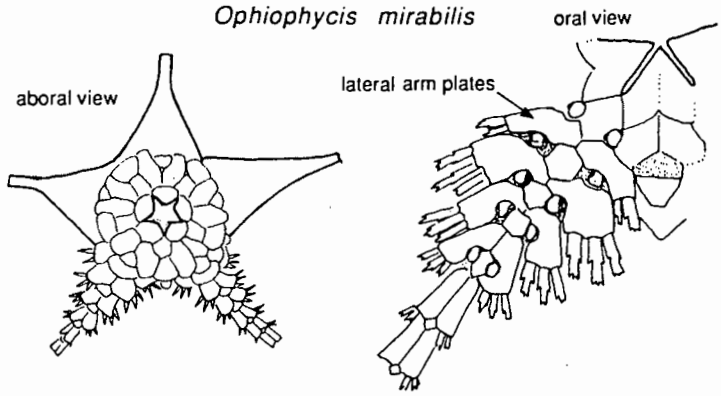
19 Disc high; arms not broader than high.
..... 20

Disc low and flat; arms broader than high.
..... 21

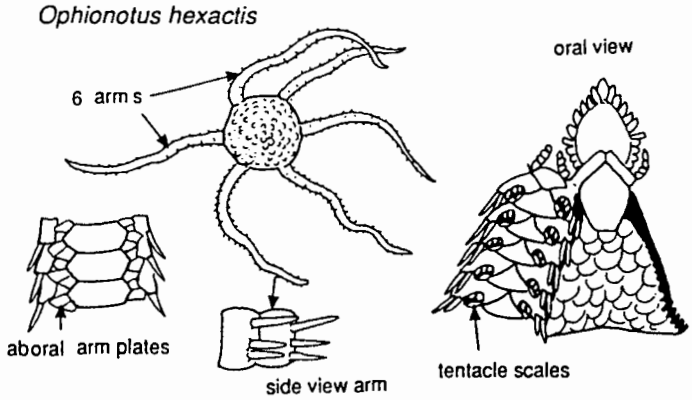
20 Arms higher than broad; dimorphic arm spines; longitudinal swelling on the oral arm plates.
Stegiophiura elevata (Lyman, 1878).

Arms cylindrical; three subequal pointed arm spines; flat oral arm plates.
Amphiophiura sp.

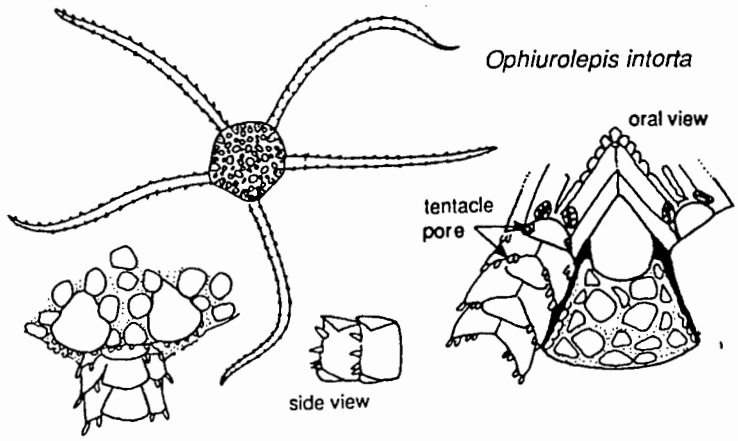
Ophiophycis mirabilis



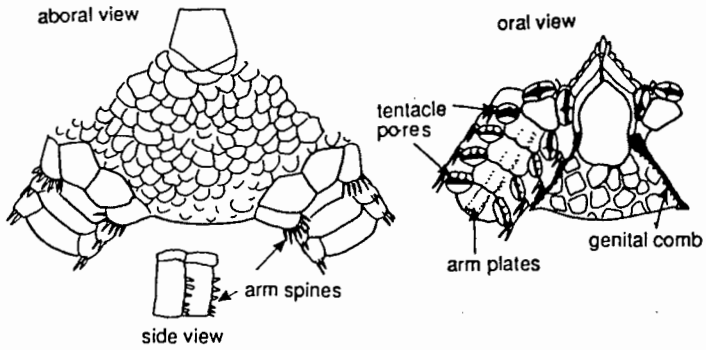
Ophionotus hexactis



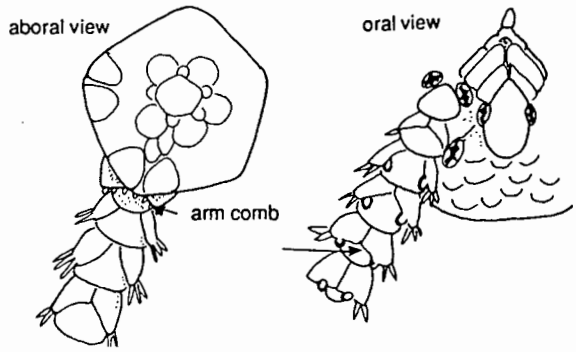
Ophiurolepis intorta



Stegophiura elevata



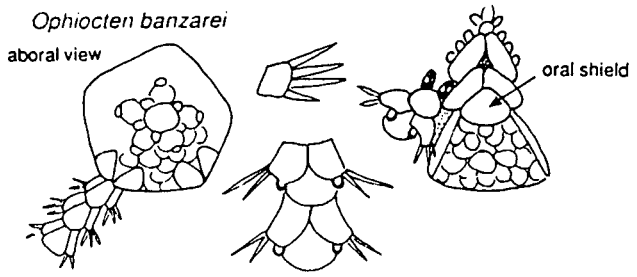
Amphiophiura sp.

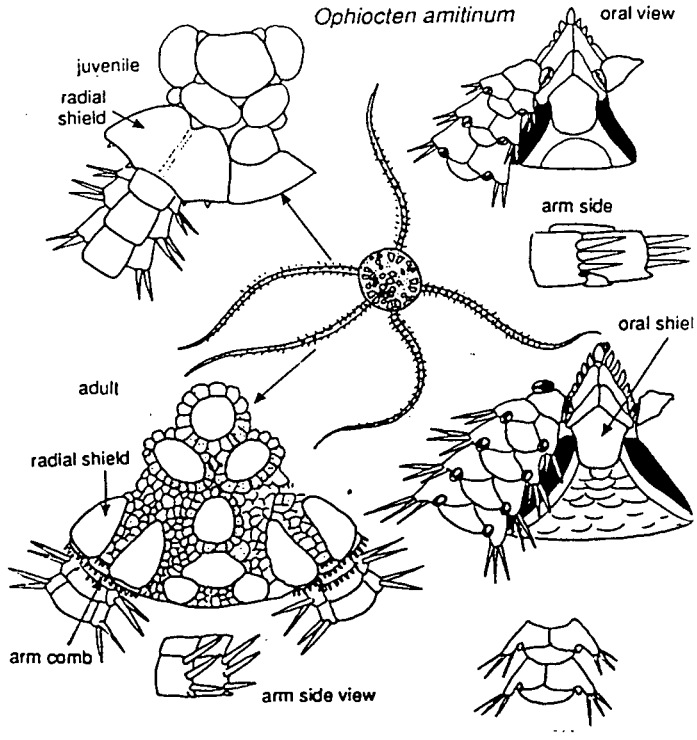


2 1 Oral shields as long as wide; arm comb not well developed; oral and aboral arm plates not wider than long.
Ophiocten banzarei Madsen, 1964.

Oral shields longer than wide; arm comb well developed; oral and aboral arm plates much wider than long.
Ophiocten amitinum Lyman, 1878.[1]

[1](Guille (1982) places *amitinum* species into *Ophiura* genus.
Records of *Ophiocten sericeum* from MPE are considered to belong to *O. amitinum*. According to Paterson et al. (1982) *O. sericeum* is a species strictly from the North Atlantic.)

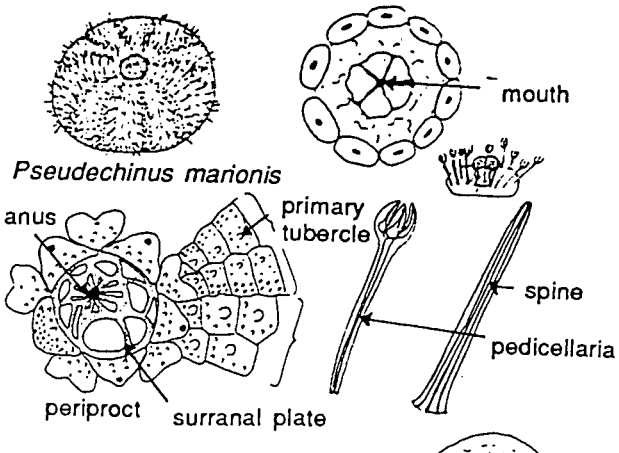


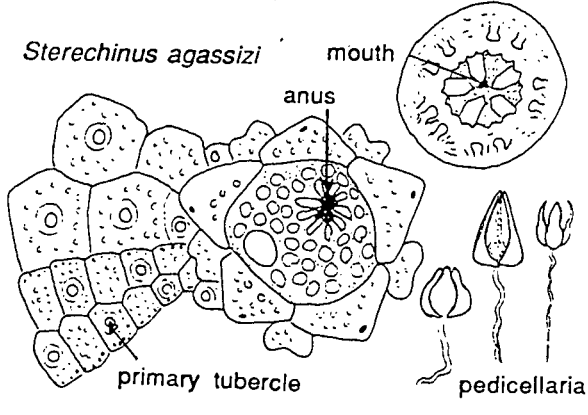


C Echinoidea - Sea urchins

1 Camarodont lantern ; test more or less sculptured (small pits); gill slits are ten shallow notches in the lowest interambulacral plates bordering the peristome. Suborder **Temnopleurina**, family **Temnopleuridae**;
one primary tubercle every ambulacral plate; buccal plates well developed (*Pseudechinus*); test greenish, spines whitish and slender; large suranal plate on periproct.
Pseudechinus marionis Mortensen, 1936

Camarodont lantern; test not sculptured. Gill slits not obvious.
Suborder **Echinina**, family **Echinidae**;
secondary spines forming a dense coat; one primary tubercle every second ambulacral plate (*Sterechinus*); test pink low, subconical; valves of tridentate (three clawed) pedicellariae not slender.
Sterechinus agassizi Mortensen, 1936





D Holothuroidea - Sea cucumbers

1. Tube feet present. 2

   Tube feet absent although papillae may be present.
   Order **Apodida**. 9

2. Up to 20 tentacles with a bunch of branches at the tip (peltate), no retractor muscles; often large to very large animals.
   Order **Aspidochirotida**. 3

   Ten dendritic (branched) tentacles, retractor muscles present; small to medium sized animals.
   Order **Dendrochirotida**. 5

3. Large animal, about 100mm x 30mm; tube feet reduced to small knobs; skin covered with a sand layer; no spicules in the skin; 20 tentacles, spicules curved rods with spines; anal slit present.
   Pseudostichopus mollis (Théel, 1886)

   Tube feet well developed; no sand adhering to the skin; skin spicules present; no anal slit. 4

4. Large, flaccid animal with thin transparent skin, about 170mm x 20mm; ventral tube feet long, in 3 rows, spicules are curved rods with short spines and flattened ends with holes; dorsal papillae, spicules are branched rods and pseudotables; skin thin, spicules sparse, four to six-spined cruciform spicules with forked or perforate tips; table-shaped spicules absent.
   Synallactes challengeri (Théel, 1886)

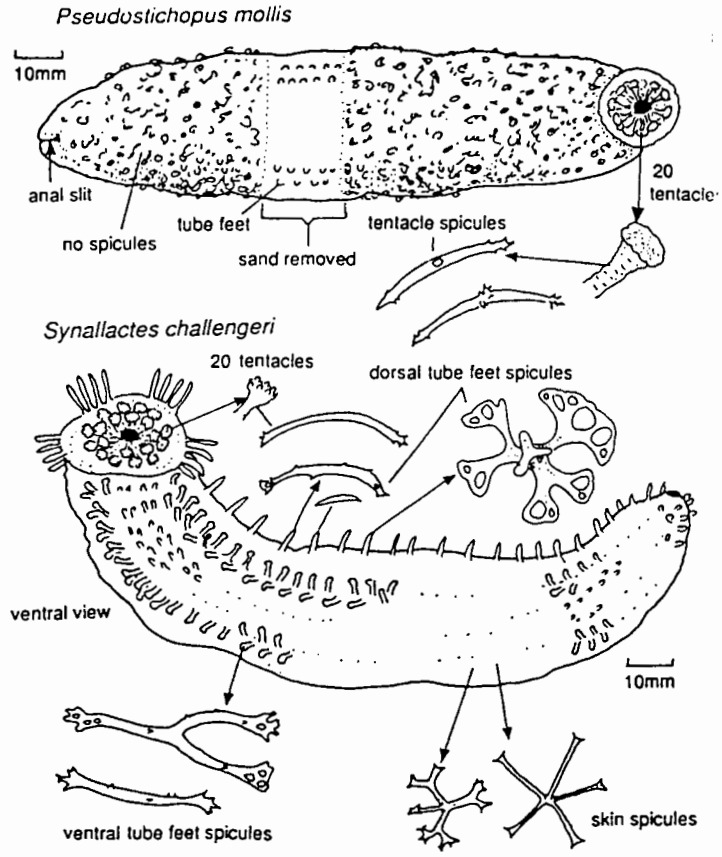
   Small, pale, less than 50mm long; ventral side without podia; lateral tube feet longer than the others, no rods in the tube feet; skin and tube feet spicules table-shaped, disc of the table with a large central hole surrounded by six to eight holes, spire of three pillars ending in short spines; 18 orange-brown tentacles.
   Mesothuria edwardensis Massin, 1992

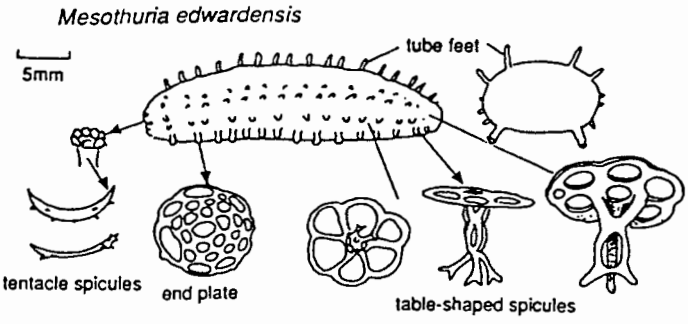
5. Body flattened with well defined ventral sole; dorsal scales present. 6

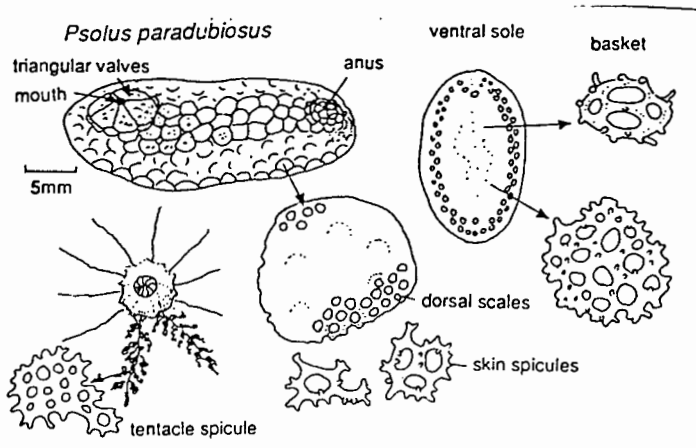
   Body more or less cylindrical, without well defined ventral sole; dorsal scales absent. 7

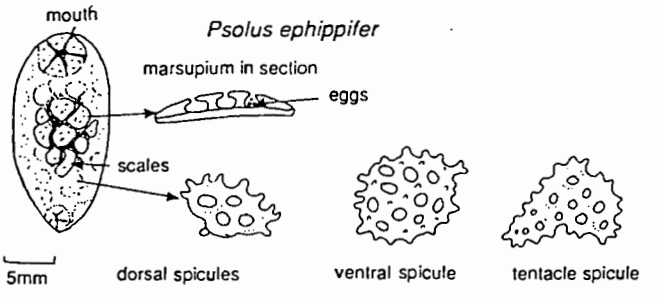
6 Five triangular valves around the mouth; ventral spicules include abundant baskets (cup shaped, with holes and small knobs on the surface); dorsal scales do not overlap and usually show large holes and small knobs; two rows of similiar sized tube feet around the margin of the sole; common.
   Psolus paradubiosus Carriol & Feral, 1985 (=partim *Psolus ephippifer* collected by the Challenger at Marion Island; Théel 1886) [1]

[1] (*Psolus ephippifer* Wyville-Thomson , 1876 recorded from Heard and Kerguelen Islands has









similiar spicules in the dorsal and ventral skin, but the holes in the spicules are smaller and more numerous than in *P. paradubiosus*. The female has a dorsal marsupium where the eggs are incubated, while there is no evidence of a marsupium in *P. paradubiosus*. The anal plates also differ. They are compared by Carriol & Feral, 1985.)

No valves around the mouth; ventral spicules scattered and flat with large holes, usually 4-8 holes, (no baskets); dorsal scales overlap; they have small holes, there are thickened radial ridges towards the centre; two rows of ventral tube feet, large in the inner row and very small near the margin of the sole.
Psolidium incertum (Théel, 1886)

7 Skin spicules, oval knobbled plates; dorsal and ventral tube feet equal-sized.
..... 8

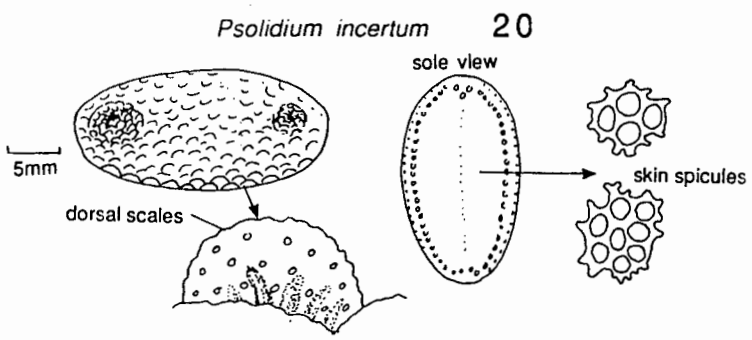
Skin spicules, smooth perforated plates; ventral tube feet much larger than the dorsal tube feet.
Cladodactyla crocea croceoides (Vaney, 1908)

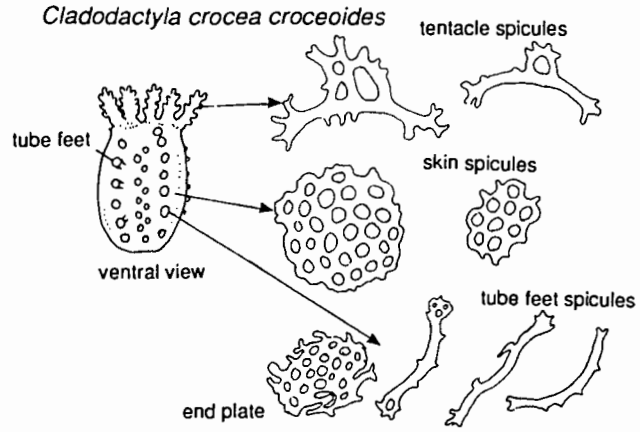
8 Small cylindrical animal (5 to 40mm), orange or white; skin spicules with oval knobbed plates with holes and bearing a hand-like process at the tip; abundant in shallow water.
Pseudocnus laevigatus (Verrill, 1876)

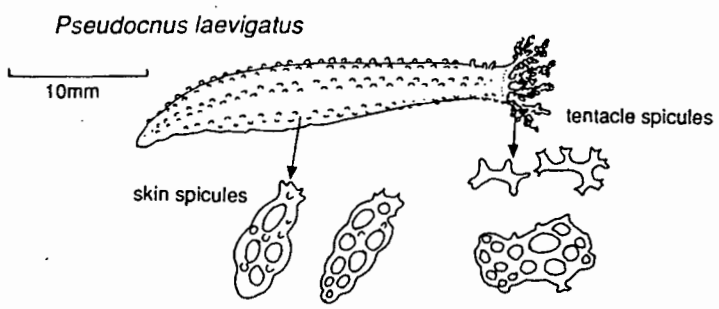
Large animal (>40mm), wide anteriorly and tapering posteriorly; skin spicules oval knobbed plates with holes but without hand-like processes; five anal papillae with tooth-like process.
Cucumaria kerguelensis Théel, 1886.

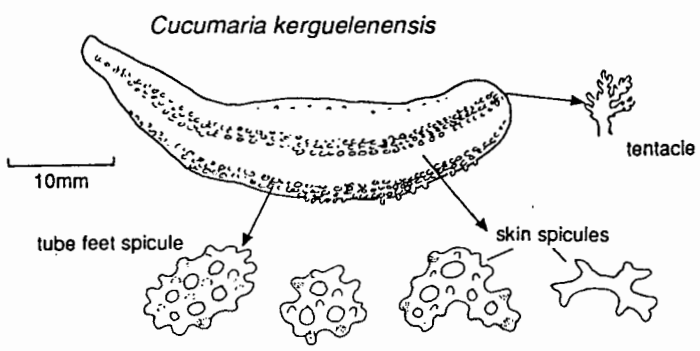
9 Skin deposits sigmoid hooks plus wheel-shaped deposits in the scattered papillae; 12 pinnately branched tentacles carrying rod spicules with branched ends; body 20-30mm long.
Taeniogyrus contortus (Ludwig, 1874)

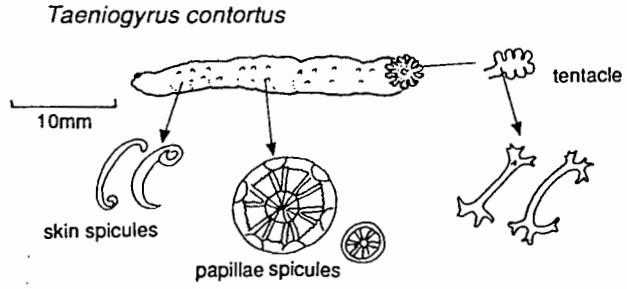
Skin without spicules, purplish-white; 12 peltato-digitate tentacles with curved rod spicules some of which are branched; body, small about 17mm long.
Paradota marionenis Massin, 1992

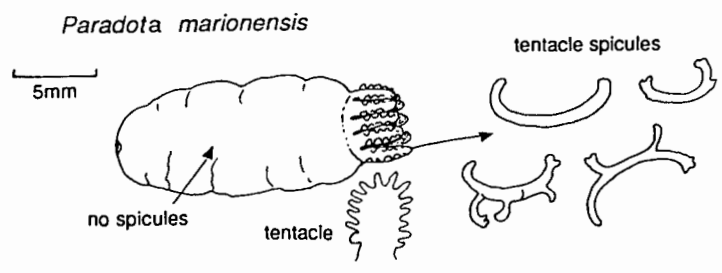












E Crinoidea - Feather stars

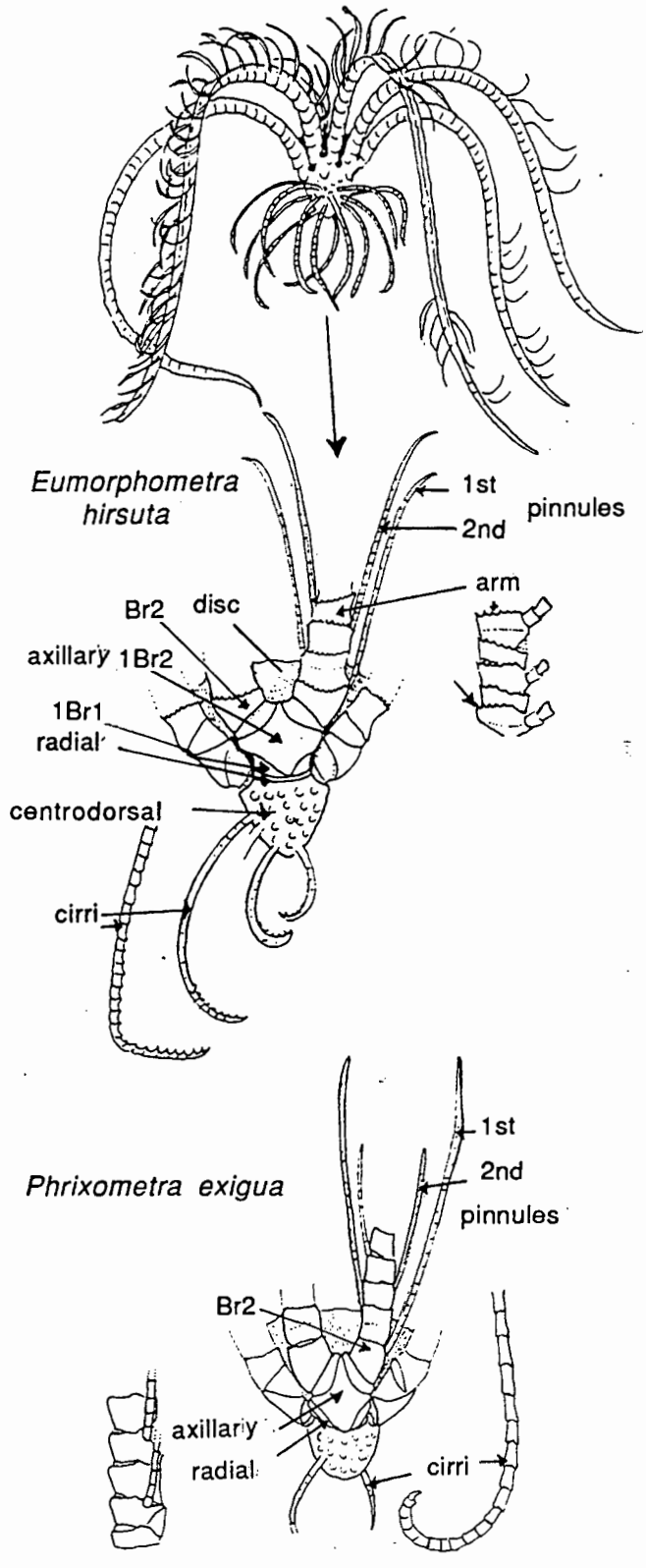
1 Stalk present in the adult.
Family **Bathycrinidae** -
(Not recorded at Marion Island.)

No stalk in adult, attached by a cluster of cirri borne on the centrodorsal plate; 10 arms; mouth more or less centrally placed on the disc; no conspicuous plates along the amblacral grove of the pinnules on arms. 2

2 Distal edge of each arm joint bears a small fringe of spines; first and second pinnules almost equal; centro-dorsal conical, bears over 35 cirri each with 25 to 30 joints; 3 ossicles of the undivided arm visible, the first (radial) is narrow, the second (1Br1) convex and the third forms a large rhombic axillary (1Br2); the second joint of the arms, after division, is large and triangular (Br2); orange to yellow; up to about 170mm across. (Challenger collected one small specimen, spread 70mm, colour in alcohol white).
Eumorphometra hirsuta (Carpenter, 1888)[1]

Distal edge of arm joints not spined; first pinnule elongated, 30 or more cylindrical joints, the second pair of pinnules much shorter with stouter joints; centro-dorsal hemispherical, almost covered by some 50 cirri of about 20 joints; 3 ossicles of basal arm partly covered, the first (radial) nearly invisible, the second (1Br1) is short and almost concealed in the middle line by the large rhombic axillary (1Br2) which has a sharp clavicular (lateral) process and extends laterally beyond 1Br1; the second joint (Br2) of arms, after division, is large and quadrate; light reddish brown; disc 6mm, spread about 170mm.
Phrixometra exigua (Carpenter, 1888)

[1]The terminology used for crinoid morphology is taken from Speel and Dearborn, 1983



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Distribution patterns

The Echinodermata are an important element in the MPE invertebrate fauna. Although they are not as species-rich (70 species) as the Crustacea (126 species), Polychaeta (91 species), Mollusca (85 species) or Bryozoa (over 100 species), many of them are large in size, and others are numerically abundant.

All the species of Echinodermata recorded from MPE during the 1982-89 surveys by the University of Cape Town are listed in table 1 and the localities and stations are shown in fig 1. The results of the 57 dredged collections are given in two ways. The first relates to the substrate types from which the samples were taken, which ranged from volcanic rock, through gravel to black volcanic sand. The second records the abundance of species within community groups which were recognised by a Brey-Curtis similarity analysis of total species composition at each station (GM Branch et al 1993). Fourty-four SCUBA-diving samples were taken, 36 being part of the quantitative survey at 5, 10, and 15m depths at Trypot Point, Transvaal Cove and Bullards Bay (Beckley and Branch, 1992). Intertidal information was obtained from 8 stations sampled in 1982 and from published intertidal surveys (De Villiers 1976, Pawson 1971, Bernasconi 1971 and Rowe & Clark 1975). The numbers of echinoderms were also recorded from remote control photographs taken at the dredge stations (GM Branch et al 1993).

The comatulid crinoid, *Eumorphometra hirsuta*, was concentrated in the deep rocky stations to the south-west of Prince Edward Island and to the south-east of Marion Island especially at stations 37, 44 and 52 (over 25 specimens). Large groups of these orange/yellow feather stars were seen in photographs of the seafloor at these sites.

There were only two species of Echinoidea. *Pseudechinus marionis* is abundant subtidally, particularly on soft substrates and occurred at 36 of the 44 dive stations and 45 of the 57 dredged samples. Beckley & Branch (1992) recorded a mean density of $50m^{-2}$ at 15m depth at Trypot Point and over 1000 were dredged at station 54. The second species, a new record, was the large pink *Sterechinus agassizi.* It was rare and confined to station 45 to the south-east of Marion Island and station 42 south-west of Prince Edward Island.

There were 10 species of Holothuroidea, of which *Pseudocnus laevigatus* was the only intertidal species. Though small, it attained densities of $1235m^{-2}$ with a biomass of $255g\ m^{-2}$ at 15m and extended to a depth of 240m. *Psolus paradubiosus* was common between 50 and 300m on soft substrata.

Several species of Ophiuroidea were abundant. *Ophiurolepis intorta* occurred from 1-750m reaching a mean density of $232m^{-2}$ at 10m depth at Transvaal Cove (listed as *O. martensi* in Beckley and Branch 1992). Photographic records showed communities between the islands dominated by small ophiuroids .

Anasterias rupicola was the only asteroid found intertidally, where it is a dominant shallow subtidal predator (Blankley, 1984). Blankley and Branch (1984) examined its ecology and showed that it feeds on the polychaete *Platynereis australis,* isopods *Dynamenella eatoni* (called *D. huttoni* in earlier papers) and *Exosphaeroma gigas,* chitons, bivalves and amphipods, but the major food source was the limpet *Nacella delesserti. Anasterias rupicola*'s habit of brooding the young for 6-9 months coupled with a slow growth rate and longevity, as well as the ability of even small starfish to feed on large limpets by cooperatively attacking them, have all contributed to the maintenance of high densities of *A. rupicola.* Blankley (1984) recorded a mean density of $57m^{-2}$ but as they were strongly aggregated they were locally even more dense.

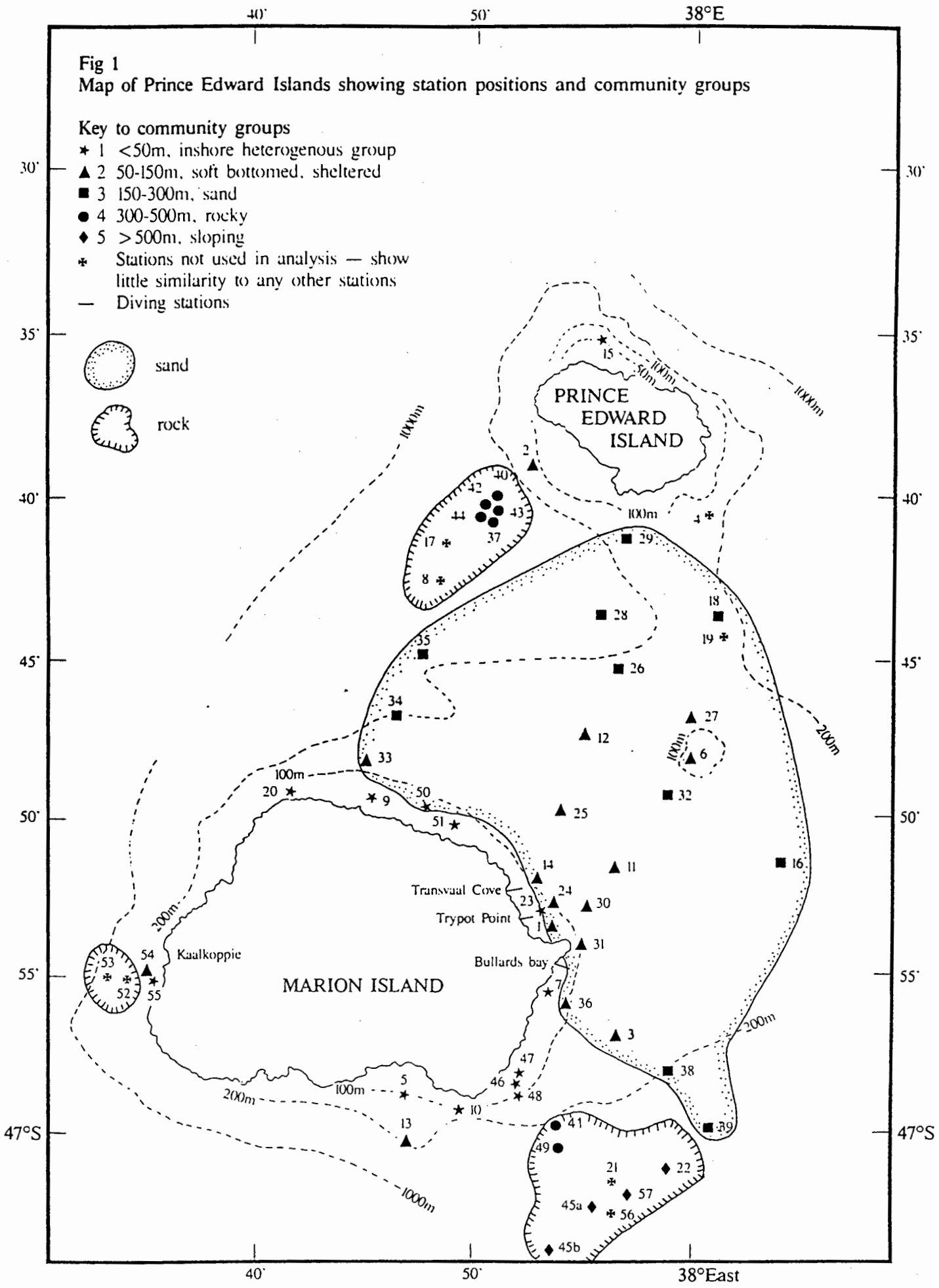


Fig 1
Map of Prince Edward Islands showing station positions and community groups

ERRANTIA

Order **Phyllodocida**

Suborder **Phyllodociformia**

Family **Phyllodocidae**

Genetyllis polyphylla (Ehlers,1897) 26
=*Phyllodoce* (*G.*)*p.* ,

Steggoa magalaensis (Kinberg,1866) 26
= *Eulalia m*
= non *Eulalia viridis* in Gillet 1991

* ?***Steggoa hunteri*** (Benham, 1921) SAM A 21276 26

?***Eteone aurantiaca*** Smarda, 1861 26

Suborder **Aphroditiformia**

Family **Aphroditidae**

Laetmonice producta Grube,1877 19

Family **Polynoidae**

Admetella longipedata McIntosh,1885 19

Polyeunoa laevis McIntosh,1885 20

* ***Eulagisca corrientis*** McIntosh, 1885 19

* ***Eucrantis mollis*** (McIntosh, 1876) 20

* ***Harmothoe crosetensis*** (McIntosh,1885) 21

Harmothoe magellanica (McIntosh,1885) 20

Harmothoe spinosa Kinberg,1855 21

Harmothoe ?kerguelensis SAM A 21328 21

Lagisca exanthema (Grube, 1856) 21

\# ***Malmgreniella fimbria*** Branch 199x in press 20

Suborder **Nereidiformia**

Family **Hesionidae**

* ? ***Hesione*** sp. SAM A 21350

Kefersteinia fauveli Averincev 1972 27
= non *K. cirrata* in Gillet 1991

Family **Syllidae**

* ***Autolytus*** sp. cf ***A. simplex*** (Ehlers, 1900) SAM A 2108 27

Exogone heterosetosa McIntosh,1885 27

* ***Branla rhopalophora*** (Ehlers, 1897) 27
=*B. oculata* Hartmann-Schröder, 1960

Pionosyllis nutrix Munro,1936 28

Pionosyllis cf ehlersiaeformis Augener, 1913 28

Typosyllis 'variegata' (Grube,1860)

Subfamily **Eusyllinae**

Ambiyosyllis granosa Ehlers 1897

* SAM A 21310 ?***Typosyllis*** sp. or 28
?*Pharyngeovalvata natalensis* Day , 1951

Eusyllis blomstrandi Malmgren, 1867 28

Eusyllis kerguelensis McIntosh, 1885 28

Family **Nereidae**

?***Neanthes kerguelensis*** (McIntosh, 1885) 22

Platynereis australis Smarda 1861 22
=*P. magalhaensis* Kinberg,1866

Pseudonerles anomalla Gravier, 1901 22

Suborder **Glyceriformia**

Family **Glyceridae**

* ***Glycerella magellanica*** (McIntosh, 1885) 23

* ***Glycera kerguelensis*** McIntosh, 1885 23
?= *G. capitata* Oersted,1843
= non *Hemipodus simplex* in Gillet 1991

* ***Protodorvillea kefersteini*** (McIntosh, 1869) 24
= *P. biarticulata* Day, 1963

Family **Goniadidae**

Goniada brunnea (Treadwell, 1906 revised Moore, 1911) 23
= *Goniada maculata* in Gillet 1991

Suborder not recognised
Family **Nephtyidae**

Aglaophamus ornatus Hartman, 1967 21
= part *A. macroura* in Hartman, 1964
= non *Nephtys hombergi* in Gillet 1991

Order **Amphinomida**

Family **Eophrosinidae**

Euphrosine cirrata Sars, 1862 25

Order **Eunicida**

Family **Eunicidae**

Eunice pennata (Muller,1776) 24
? = *E. edwardsi* (McIntosh,1885)

Family **Onuphidae**

Nothria anoculata Orensanz, 1974 24
= non Kinbergonuphis tenuisetis in Gillet 1991

Family **Lumbrineridae**

* ***Lumbrineris magalhaensis*** Kinberg, 1865 25
= non *L. gracilis* in Gillet 1991
= non *L. impatiens* in Gillet 1991

* ***Lumbrineris*** sp. *aff* ***L. fragilis*** SAM A 21132 25

?***Lumbrineris heteropoda*** Marenzeller, 1879 25

Summary of Species
Total number of species 90
New records 27
New species 3

Including 5 unconfirmed records in Gillet 1991:

Brada mammillata
Eteone aurantiaca
Lumbrineris heteropoda
Spiophanes bombyx
Spiophanes tcherniai

and 1 unconfirmed record in Knox and Lowry (1977)

Neanthes kerguelensis

Previous records that are not considered valid (see taxonomic discussion)

From Gillet 1991

Thelepus cincinatus
Thelepus plagiostoma
Thelepus extensus
Eupolymnia nebulosa
Leitoscoloplos fragilis
Micromaldane ornithochaeta
Jasmineira caeca
Scoloplos johnstonei
Nephthys hombergi
Hemipodus simplex
Keffersteinia cirrata
Lumbrineris gracilis
Lunbrineris debilis
Lumbrineris impatiens
Kinbergonuphis tenuisetus
Protodorvillea biarticulata
Eulalia viridis

From Day 1971

Spirorbis patagonicus
Spirorbis (Romanchella) perrieri marionis
Orbiniella minuta

From DeVilliers 1973

Spirorbis perrieri

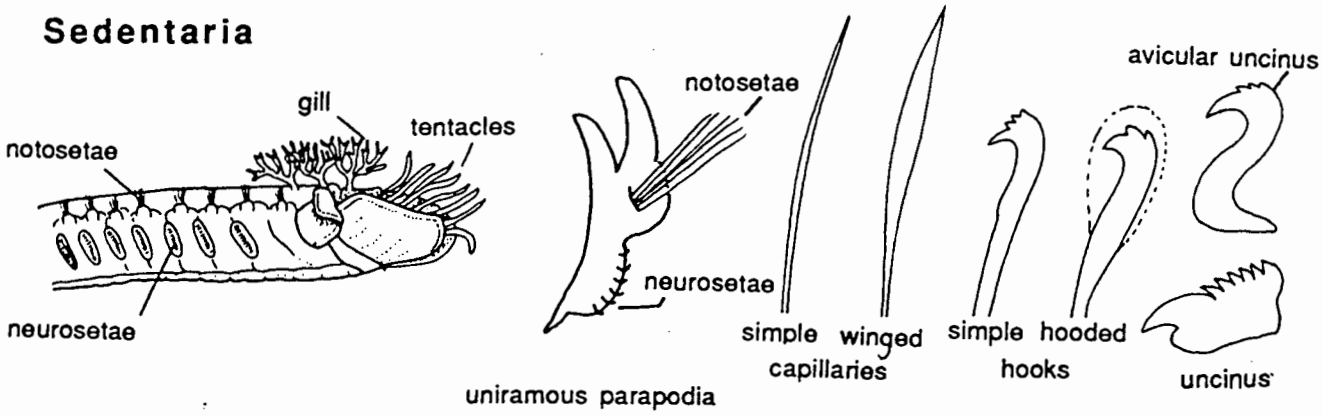
Polychaeta - Segmented worms

Key to the species from Marion and Prince Edward Islands

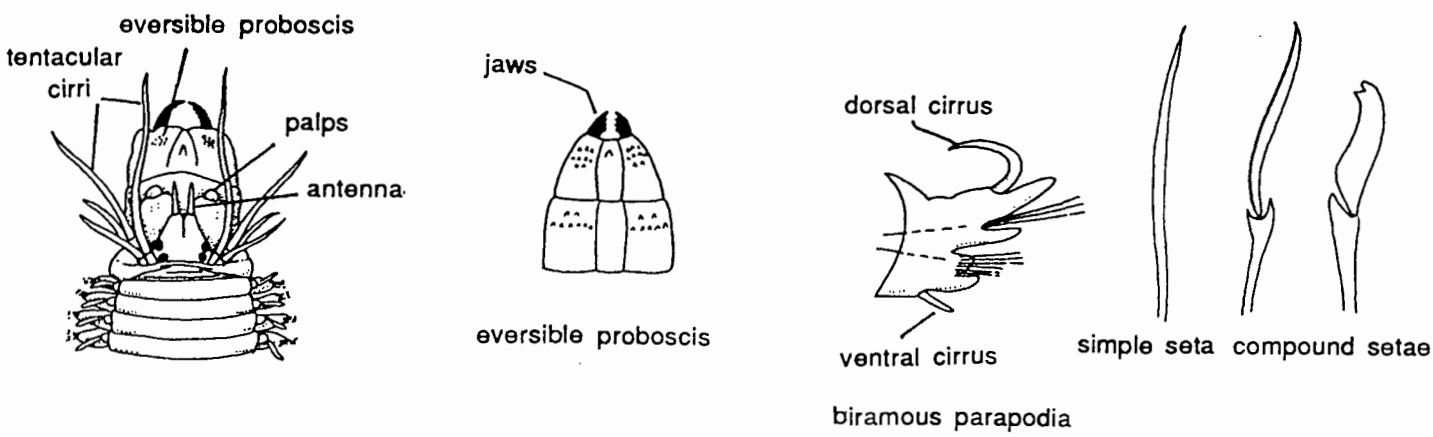
1 Tube-dwelling jointed worms, either without head appendages, or with palps, buccal cirri or a branchial crown used for particle feeding; no jaws or teeth; parapodia often reduced; body divided into regions; compound setae rare.
SEDENTARIA ..... A p.7

Active worms; head usually has sensory appendages; internal jaws present; parapodia well developed and carrying compound setae; body not divided into regions.
ERRANTIA. ..... B p.19

Sedentaria



Errantia



A SEDENTARIA

1 Head with no appendages for food gathering; prostomium usually well developed. 2

Head with a pair of adhesive palps, buccal cirri or a branchial crown; prostomium often reduced. 18

2 Middle body segments elongated and never annulated; dentate crested hooks present in the posterior segments, (Family **Maldanidae**); head often with flattened cephalic plate; anus usually surrounded by a flared funnel. 3

Segments not elongated but often annulated; dentate crested hooks present or absent; prostomium conical or 'T' shaped; anus not surrounded by a funnel. 7

3 Pygidium (terminal segment) conical, three preanal segments without setae; first four anterior segments with acicular (slender needle-shaped) spines, the rest with hooks that have a long straight shaft and dentate crested hook; red brown dorsally; cephalic plate poorly defined.
Lumbriclymenella robusta Arwidsson, 1911

Pygidium funnel- or plate-like. 4

4 Cephalic plate well defined with a raised rim. 5

Cephalic plate absent, but cephalic ridge may be well marked. 6

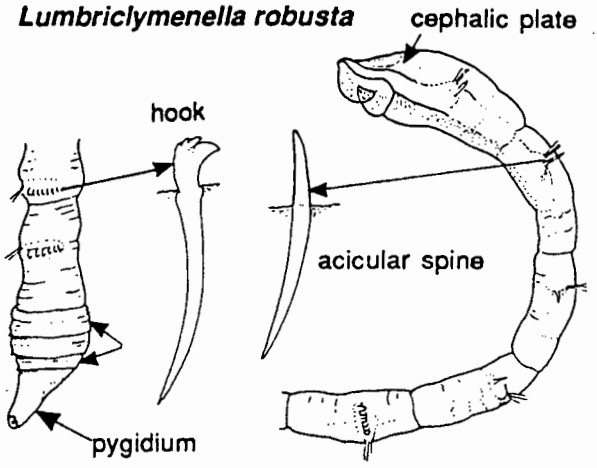
5 Cephalic plate with a low rim and two slightly curved glandular (nuchal) grooves; lateral eye spots; anus surrounded by scalloped funnel and a short preanal ring without setae; neuropodia with short S-shaped, hooked uncini, bulged at the base; 19-20 setigerous segments; body length up to 10mm; common in shallow water.
Axiothella quadrimaculata Augener,1914

Cephalic plate with raised crenulated margin; eye spots absent; four preanal segments without setae; neurosetae absent from setiger 1, from setiger 2 neuropodia with long handled hooks with a tuft of hairs; body length100-125mm; occurs in abbysal depths between Marion and Crozet Islands.
Maldanella antarctica McIntosh, 1885.

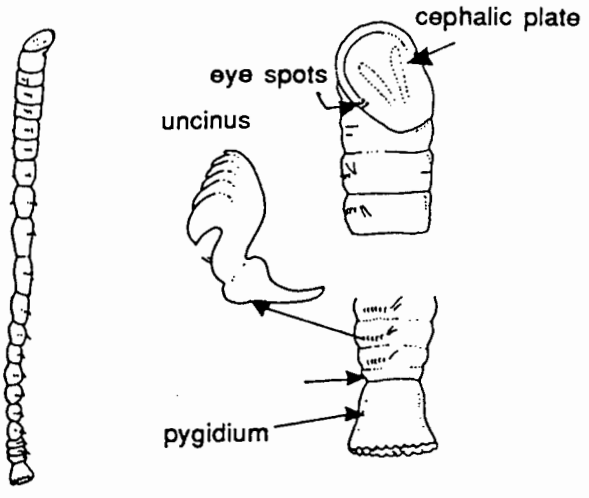
6 Neurosetae of setigers 1-3 acicular, in later segments forming hooks with long straight shafts; cephalic ridge well marked; pygidium with an asetigeous segment, a preanal ring and a shallow funnel with 15-25 marginal papillae; occurs at moderate depths.
Nichomache lumbricalis (Fabricius , 1780)

Neurosetae of all setigers are hooks with short curved shafts; anterior end of body rounded with two groups of eyes; pygidium broadly funnel-like; notosetae long and curved with serrated edge or short and spatulate.
Micromaldane ornithochaeta Mesnil, 1897
(Invalid record, SAM A 20319 of Gillet (1991), has no eyes nor spatulate setae and it seems to have some sort of cephalic region.)

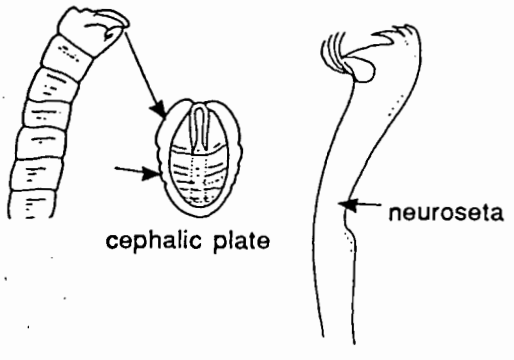
Lumbriclymenella robusta



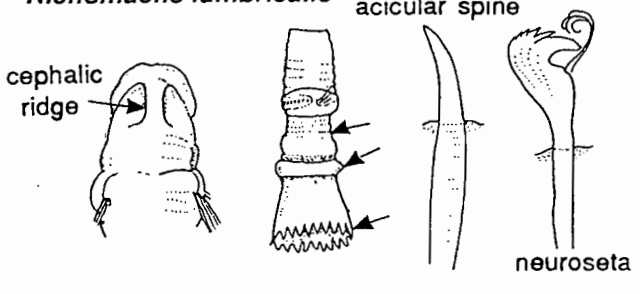
Axiothella quadrimaculata



Maldanella antarctica

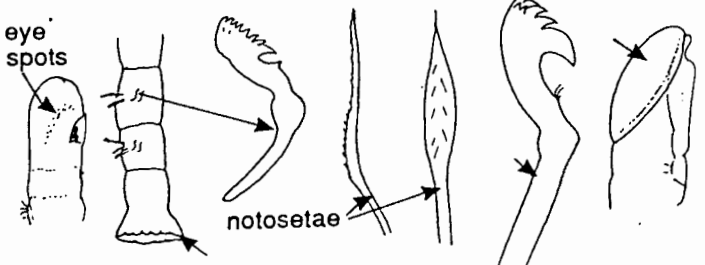


Nichomache lumbricalis



Micromaldane ornithochaeta

SAM 20319



7 Branched gills present. 8

Gills simple or absent. 9

8 Four pairs of bushy gills from segments 2 to 5; prostomium 'T' shaped; buccal segment achaetous; posterior parapodia with dorsal and ventral cirri and a few forked setae; setae mainly capillaries (simple, tapering); body swollen anteriorly, rusty brown; parapodia yellow.
Scalibregma inflatum Rathke,1843

Lug worms with 12 pairs of branched gills from segment 8; parapodia with no dorsal or ventral cirri, neuropodia on short ridges widely separated ventrally and bearing long-handled hooks with fine teeth on the crest; large, brown, thick skinned, surface epithelium with transverse and longitudinal wrinkles, 4-5 annulae to each segment; oesophageal caecae, one long and 4-5 short. (Specimen incomplete with only 19 setigerous segments).
***Abarenicola* sp.** SAM A 21383
? =***A. assimilis*** Wells, 1963 which has 20 setigerous segments, known from Crozet.

9 Dentate-crested hooks with hoods present in posterior segments; body like an oligochaete; segments with several annulae.
Family **Capitellidae**. 10

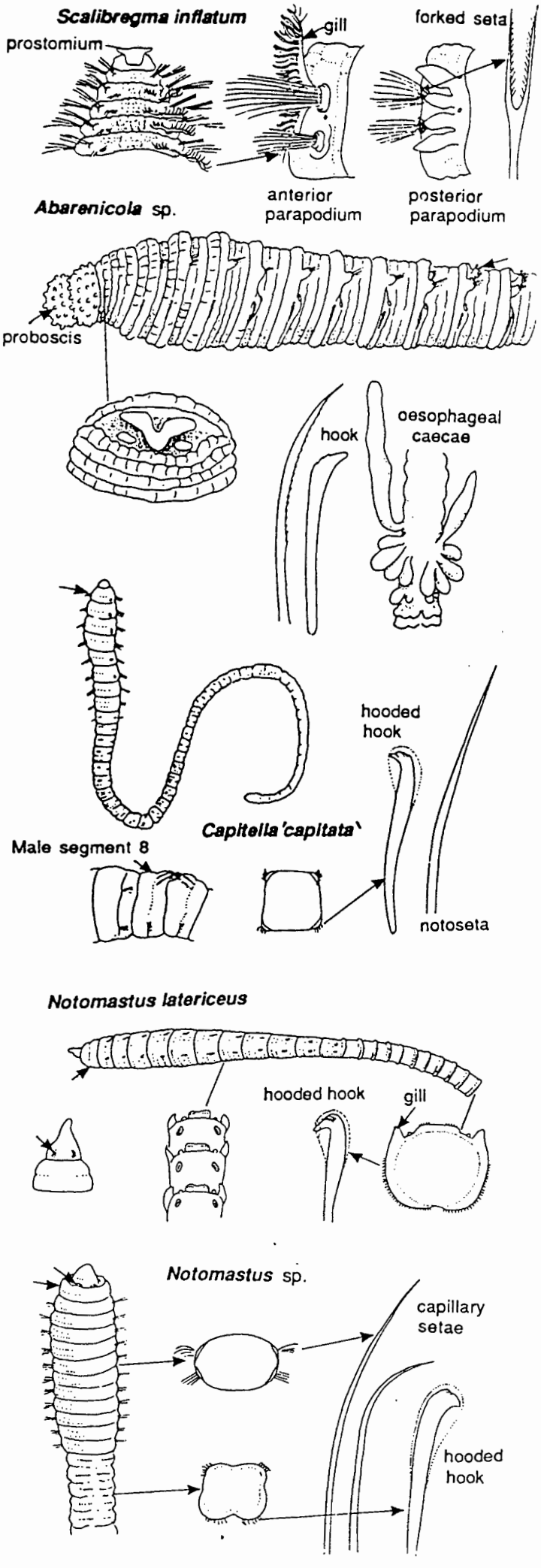
No dentate-crested hooks, capillary setae throughout. 12

10 Notosetae from segment 1; thorax consists of 9 setigers; setigers 8 and 9 lack capillary setae - all hooks in the female, but thick, spine-like setae in the male; hooded hooks present from segment 8 and extend into the abdominal parapodia; body soft and covered with mucous, red when live; prostomium a simple cone, lacks eye spots.
Capitella 'capitata' (Fabricius, 1780)
(see p.30)

Setae absent on segment 1; thorax consists of 11 setigerous segments; abdominal segments, notopodia separated by a narrow median space, neuropodia with long-handled, hooded hooks; segments with several annulations; prostomium a blunt, biannular, depressed cone with a patch of eye spots on either side. 11

11 Body up to 300mm long; rudimentary gills form triangular projection from the superior edge of the neuropodia.
Notomastus latericeus Sars,1851

Body averages15mm x 2mm; thoracic region firm; abdominal region very soft and thin-skinned, no gill projections.
***Notomastus* sp.** SAM A 20317 (see p.30)



12 Capillary setae crenulate (toothed); segments with up to one annulation; prostomium not annulated. Family **Orbiniidae**. 13

Capillary setae not crenulate; body fusiform, often grooved ventrally. 16

13 Body 2-5mm long, prostomium rounded; setigerous segments without gills; parapodia form a simple ridge with a posterior lobe and two types of setae - simple and crenulate; no setae on the first two segments.
Orbiniella dayi Branch in press
(recorded as *Orbiniella minuta* in Day, 1971 but this is smaller and lacks the posterior lobe) (See chapter 7).

Simple gills present on at least some setigerous segments; parapodia not a simple ridge; no setae on first segment 14

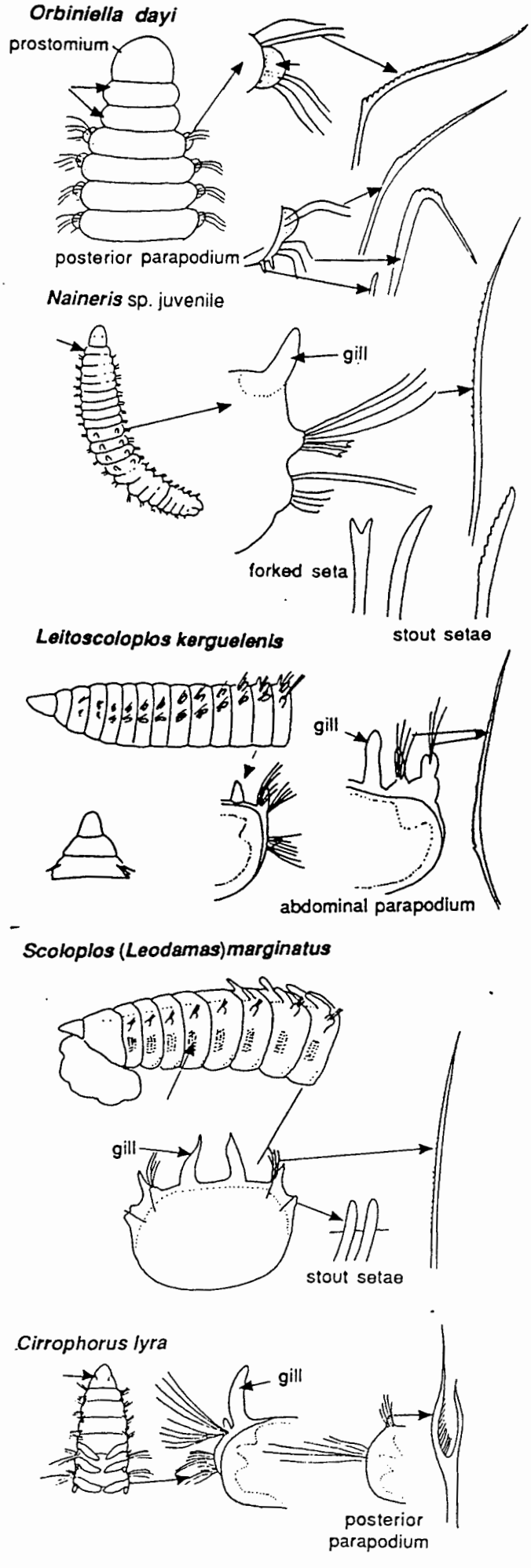
14 Abdominal and thoracic parapodia lateral; four gills from segment 10 a few forked seta in mid region of the notopodia; thoracic neuroseta include subuluncini (broad lower half and narrow tip region).
Naineris sp. juvenile SAM A 21387

Abdominal parapodia dorsal but thoracic parapodia lateral; gills on many posterior parapodia. 15

15 Setae all crenulate capillaries. Thorax with 10 to 14 slightly flattened segments, gills from 9-15 onwards; abdominal notopodia small and tapered, no interramal cirrus, neuropodia with 2 unequal lobes, no ventral cirri; body up to 20mm long; prostomium conical, pointed.
Leitoscoloplos kerguelensis
(McIntosh,1885)
(=non *Leitoscoloplos fragilis* (Verril, 1873) in Gillet 1991 SAM A 2032 (see p.29))

Several types of setae, which may include crenulate capillaries, stout aciculae and forked setae; thoracic setigers 11-19, neuropodia with at least three rows of stout setae, gills from setiger 6; abdominal parapodia dorsal with crenulate capillaries and very few forked abdominal setae.
Scoloplos (Leodamas) marginatus (Ehlers, 1897)
(= non *Scoloplos johnstonei* in Gillet, 1991, see p.30)

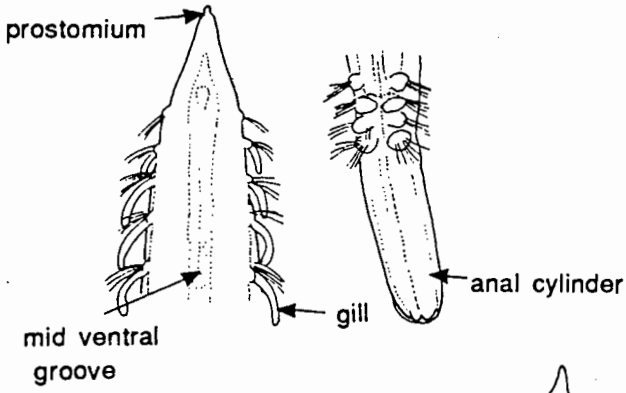
16 Small and threadlike with numerous segments; capillary setae winged in anterior region; prostomium conical with well developed nuchal slits, median antenna may be present.
Family **Paraonidae**. Gills from segments 4 to14-18; lyrate setae in posterior notopodia, neuropodia all capillaries.
Cirrophorus lyra (Southern, 1914)
(Unconfirmed record of Gillet, 1991)



Body not threadlike and may have a ventral groove. Family **Opheliidae**. 17

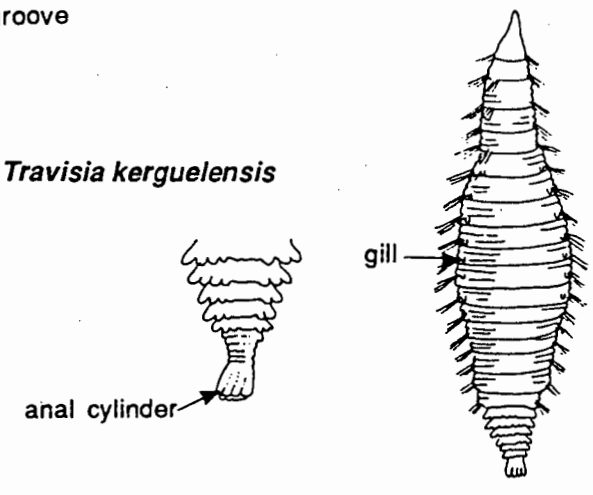
17 Body with deep midventral groove throughout length; length 17-34 mm, width 2mm, 24-28 segments; branchiae long and filamentous, present on all except first and last setigerous segments; postomium narrowly conical with small terminal palpode; anal cylinder smooth with a prominent dorsal beak.
Ammotrypane breviata Ehlers, 1913
(Unconfirmed record of Gillet, 1991)

Ammotrypane breviata



Body without deep midventral groove, 20-40mm long, 7-8mm wide, tapering at both ends; 23-27 segments, the last 10-11 with parapodia and lateral crenulations which increase towards the anus; mid- region expanded and may be filled with coarse gravel; branchiae retractile and inconspicuous; anal cylinder of fused finger-like papillae. Reported by Gillet, 1991.
Travisia kerguelensis McIntosh, 1885

Travisia kerguelensis

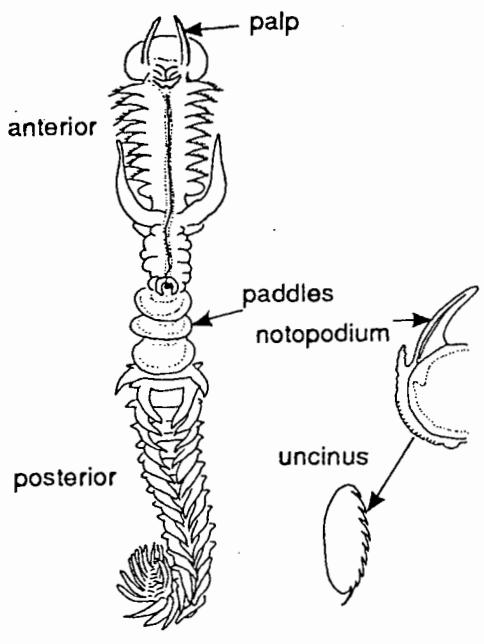


18 Head with pair of adhesive palps (often broken off) or several grooved tentacles. 19

Prostomium reduced, head armed with stout setae or modified to form a frilly membrane, buccal tentacles, a branchial crown or bipinnate radioles. 30

19 Body divided into three distinct regions; parapodia very specialised, anterior region with 8-12 uniramous segments, midregion has posterior notopodia fused across the dorsum to form paddles, posterior region with digitiform notopodia; no gills. Family **Chaetopteridae**
Chaetopterus variopedatus (Renier, 1804)

Chaetopterus variopedatus



Body fairly uniform throughout, gill filaments usually present. 20

20 A pair of long food-gathering palps anteriorly; gills short or absent; parapodia well developed with hooded hooks in the posterior region at least. Family **Spionidae**. 21

Two or more grooved tentacles dorsally; long gills for almost the entire length of body; parapodia reduced to a ridge; hooded hooks absent. Family **Cirratulidae**. 26

21 Fourth or fifth segment with enlarged modified hooks; prostomium lacks frontal horns; pygidium disc-like, lacks cirri. 22

Fourth and fifth segments with normal setae only. 23

22 Gills start on setiger 2 and continue to 74 but absent on segment 5; special bristle-topped setae on segment 5; prostomium forms a flap with a pointed keel; pygidium small, concave; body 18-33mm; creamy green with red gills.
Boccardia polybranchia (Haswell,1885)

Gills on segments 7-12; setiger 5 with thick recurved bifid spines; prostomium weakly incised and fused to first segment; eyes absent; pygidium disc-like with a median incision; body 4-5mm; orange.
Polydora armata Langerhans,1881
(=***P. monilaris*** Ehlers,1905)

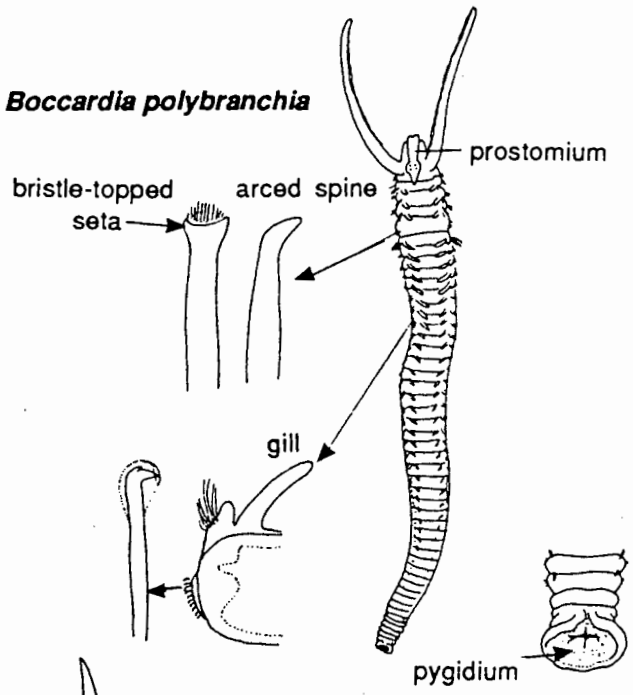
(*Polydora paucibranchis* Ehlers, 1913 - recorded intertidally from Kerguelen Island has gills from segments 5-12; setiger 4 with thick hooks with single tooth; prostomium with 4 black eyes; pygidium weakly disc-like.)

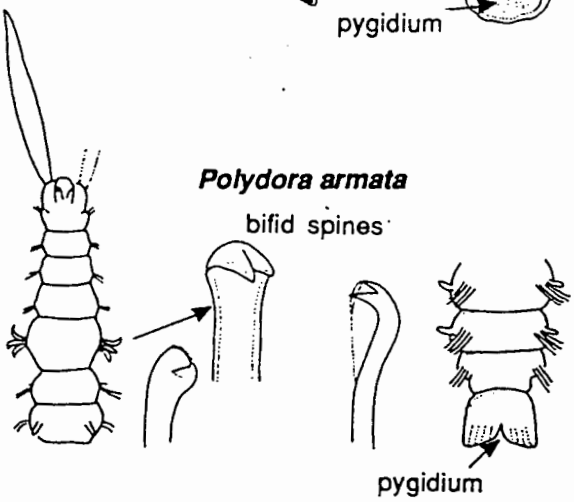
23 Gills strap-like, folded over dorsum; neurosetae of first parapoda not specialised. 24

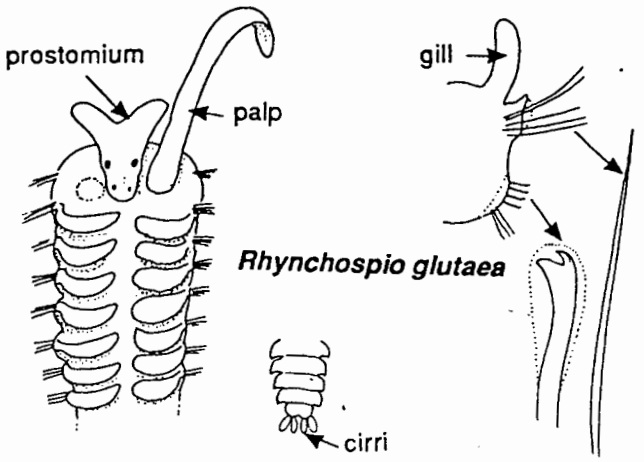
Gills absent, but dorsal lamellae of anterior notopoda long and tapering; specialised neuroseta on the first parapodia. 25

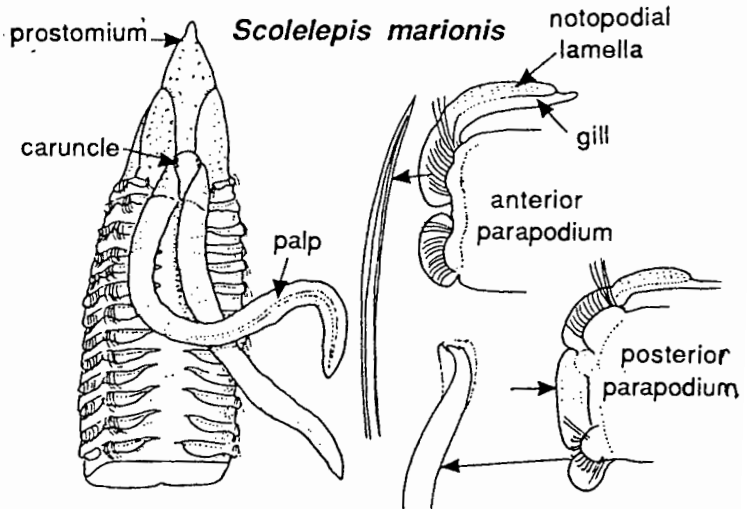
24 Prostomium with two frontal horns and a variable number of eyes, usually two pairs; strap-like gills from setiger two to end of body; neurosetae are capillaries anteriorly and from segment 16 hooded-hooks with tridentate tips appear; four anal cirri present; body 10-20mm; common in shallow water.
Rhynchospio glutaea (Ehlers, 1897)

Prostomium pointed anteriorly and posteriorly forms a small triangular caruncle between the bases of the two large dorsal palps; peristomium with lateral wings that partly cover the prostomium; gills start from setiger 2 and are fused to the notopodial lamellae; anterior parapodia each with a foliose dorsal and ventral lamella with capillary setae; posterior segments each with a long narrow interramal lamella as well as a dorsal lamella and a small rounded ventral lamella; neurosetae with bidentate hooded hooks occur from setiger 42-46 posteriorly; length over 45mm, width 3-7mm; intertidal, buried in sandy beach; the pygidium is unknown.
Scolelepis marionis Branch in press
(See chapter 7)



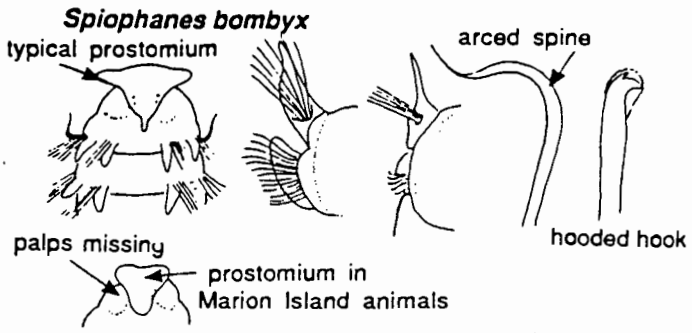


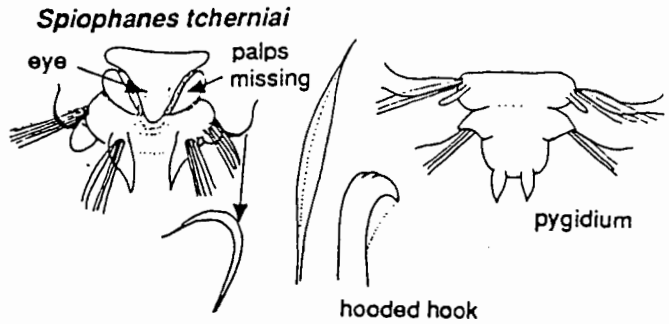




25 Prostomium triangular with a pair of lateral horns; 4 eyes, sometimes not obvious; large arced spines in neuropodia of first segment; bidentate hooded hooks in neuropodia from setiger 10-15 plus an inferior sabre-like seta; pygidium terminates in cirri. (Recorded by Gillet 1991 from one station at Marion (165 specimens), in the material examined the prostomium does not have long lateral horns, some have a central tentacle).
Spiophanes bombyx (Claparéde, 1870)

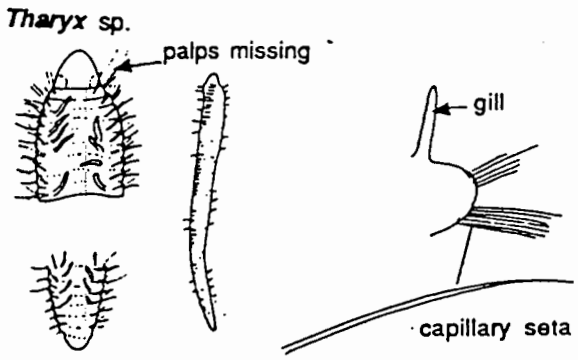
Prostomium triangular with narrow lateral horns and two small black eyes; broadly-sheathed notosetae on setigers 15-18 as well as the normal fine capillary setae, near posterior end notosetae are curved; smooth or dentate hooded hooks start from neuropodia 17; pygidium with two short conical processes. Recorded by Gillet, 1991.
Spiophanes tcherniai Fauvel, 1951





26 Two large grooved palps on a long achaetous buccal segment; filamentous gills on all segments from setiger one; setae all long, thin capillaries.
Tharyx sp. SAM A 21275
(? *Tharyx cincinnatus* Day 199? in press)
now *Apellochaeta* or *Montecellina* see Blake 1986)

Several dorsal grooved tentacles in two groups behind the second segment. 27

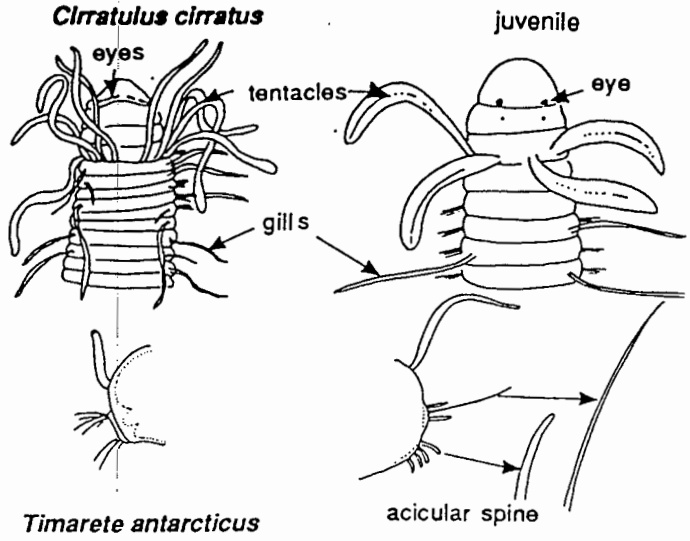


27 Blunt conical prostomium with eye spots; no gills in front of the tentacles. 28

Prostomium lacks eye spots; gills commence on setigerous segments in front of tentacle. 29

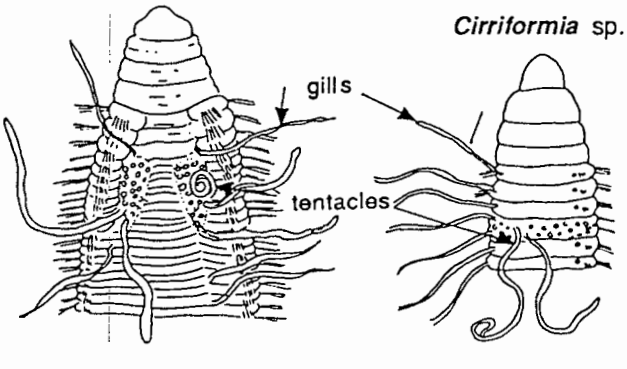
28 Prostomium with 4-8 eyes in a row on each side; three to five pairs of stout tentacles in a transverse row on the anterior edge of first setigerous segment; capillary setae and unidentate acicular hooks.
Cirratulus cirratus (Muller,1776)

Prostomium with two pairs of eyes, the anterior pair larger; four grooved tentacles; setae as above.
?***Cirratulus cirratus*** juvenile SAM A 21391



29 Gills start from third setiger and tentacles from the fourth; setae all slender capillaries.
Timarete antarcticus Monro,1930

Gills start from first setiger and tentacles occur on setigers four and five.
Cirriformia sp.

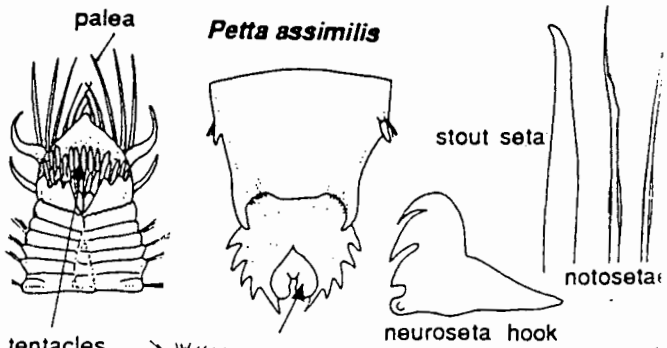


30 Head with stout setae (palea). 31

Head without setae. 33

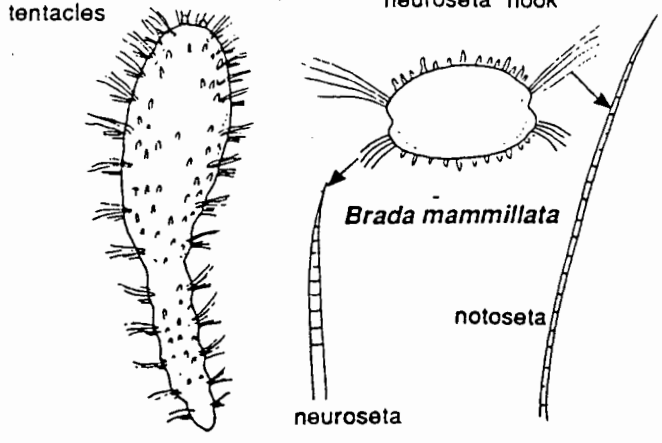
31 Capillary setae annulate; no marked body regions; head setae in the form of a cephalic cage.
Family **Flabelligeridae** 32

Capillary setae not annulated; body regions well marked; setae are one row of palea which form part of an operculum; tube free. Family **Pectinaridae**. A cephalic veil encloses the tentacles; scale-like anal plate; gills absent; tube open at both ends.
Petta assimilis McIntosh,1885



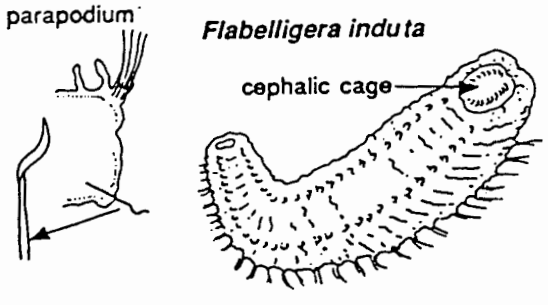
32 Not tubicolus; body stout, covered with wart-like papillae, often has sand sticking to it; setae transversely striated, neurosetae thick, shafts with simple tips; prominent nephridial papillae on fifth setiger.Recorded by Gillet, 1991.
Brada mammillata Grube, 1877

Body covered with mucilaginous sheath, segments not visible; 22mm long, 4-5mm wide, covered with long papillae with slender clavate tips; neuropodia with one or two stout compound or pseudocompound hooks; notosetae striate capillaries. Recorded by Gillet, 1991.
Flabelligera induta Ehlers, 1897



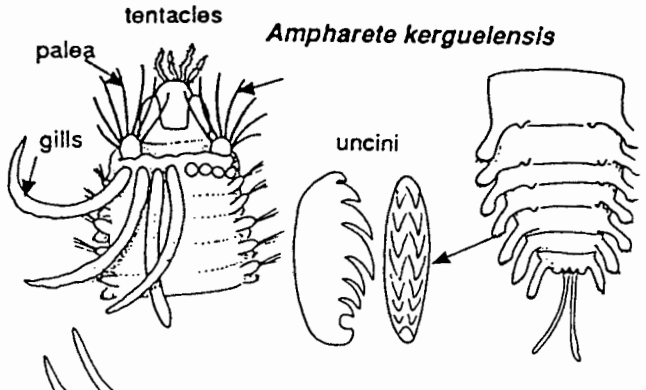
33 Head modified to form frilly membranes, buccal tentacles or a branched crown; gills often present behind head. 34

Head with crown of feathery, bipinnate radioles; no gills behind head; setal types inverted posteriorly so that neuropodia are dorsal to notopodia. 43



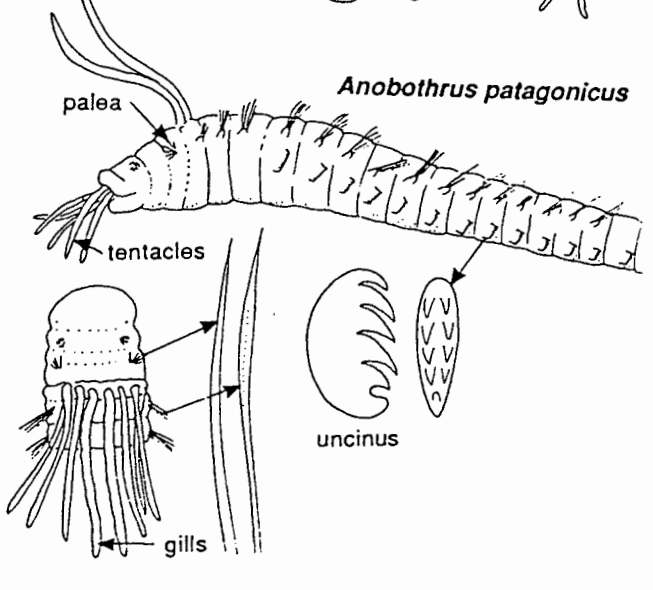
34 Head with soft tentacles that can be retracted into the mouth; stout setae (palea) on segment 3.
Family **Ampharetiidae**. 35

Tentacles on head not retractile.
Family **Terebellidae** 36



35 7-8 long, lateral palea with narrow tips; 4 pairs of gills in a straight row across the dorsum of segment 3; 14 thoracic setigers, 12 with uncini, uncini have 2 rows of vertical teeth; prostomium narrowly rounded, surrounded by lateral wings of the peristomium; oral tentacles papilose; no dorsal abdominal cirri; 11th parapodia normal; thick-walled mud tube with sponge spicules.
Ampharete kerguelensis McIntosh, 1885

Palea comprise tapering capillaries not markedly larger than notopodial winged capillary setae; 4 pairs of dorsal gills on segment 3 and 4; 15 thoracic setigers, 12 with uncini; prostomium wide with a smooth domed margin and smooth oral tentacles; no dorsal abdominal cirri; semicircular uncini with 2 rows of 4-5 teeth below the fang.
? ***Anobothrus patagonicus*** (Kinberg, 1867)
SAM A 21253 (see p.31)



36 Tentacular lobe often large and frilled; gills absent.
Subfamily **Polycirrinae**. 37

Tentacular lobe small and collar-like; gills present, branched or filamentous.
..... 38

37 30 - 34 setigerous segments; neuropodia with hooked setae (uncini), each with a short broad base and a fang and two teeth with a hood; orange-red with a paler body when live.
Polycirrus hamiltoni Benham,1921

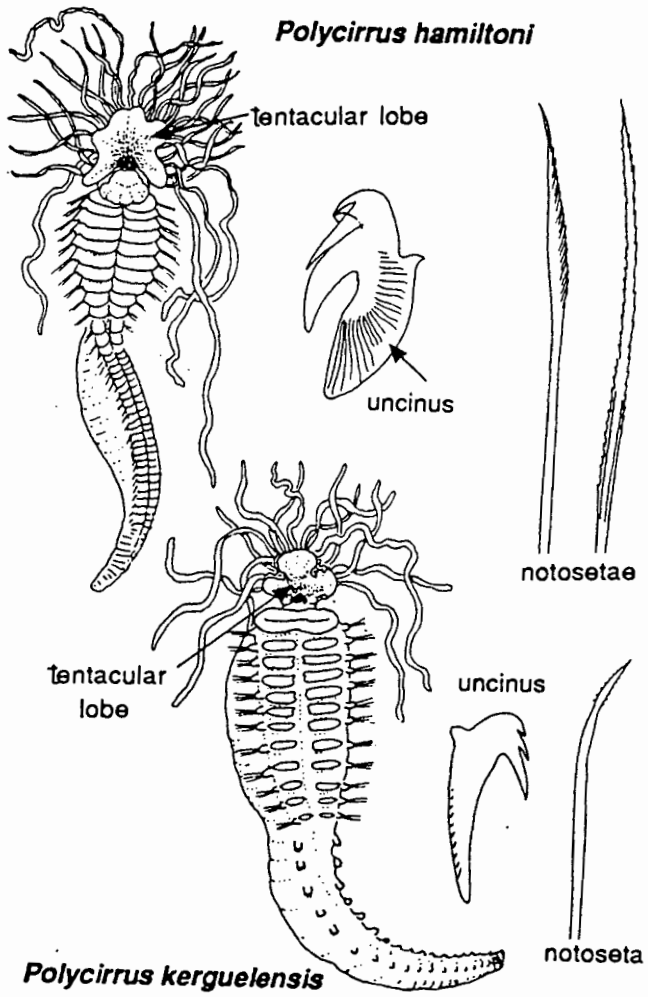
11 setigerous segments; uncini from setiger 2, not hooded and with a long narrow shaft, a fang and two teeth; buccal surface papillose; broad glandular shields on first two segments like a pair of smiling lips; orange-pink with yellow tentacles.
Polycirrus kerguelensis (McIntosh,1885)

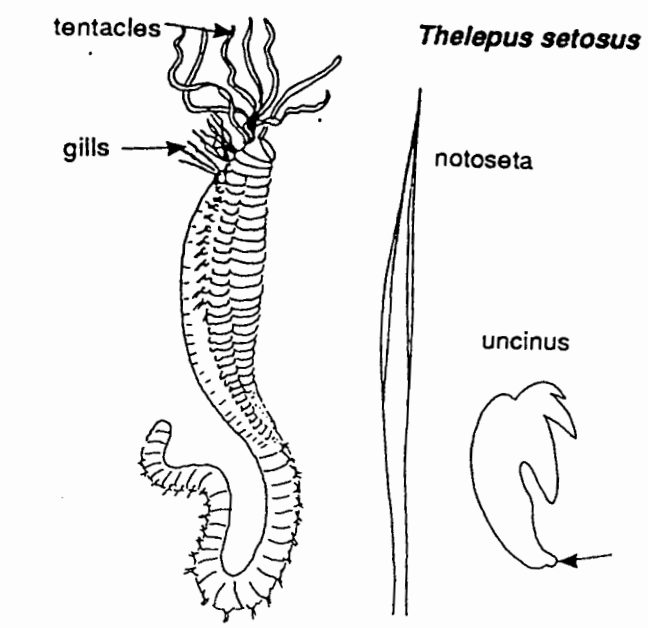
38 Gills unbranched. Subfamily **Thelepinae**.
Body up to about 150m long with about 100 segments, light brown with red branchiae and orange tentacles when live; three branchiferous segments behind the head, bearing numerous gill fillaments, a narrow gap mid-dorsally between the left and right groups; notosetae stop half way along abdomen; uncini on conspicous pinnules along abdomen; button on uncinus above small prow with a slight notch between them; wide cartilaginous tube with pieces of sand and shell stuck to it; common.
Thelepus setosus (Quatrefages,1865)
(See p.31)

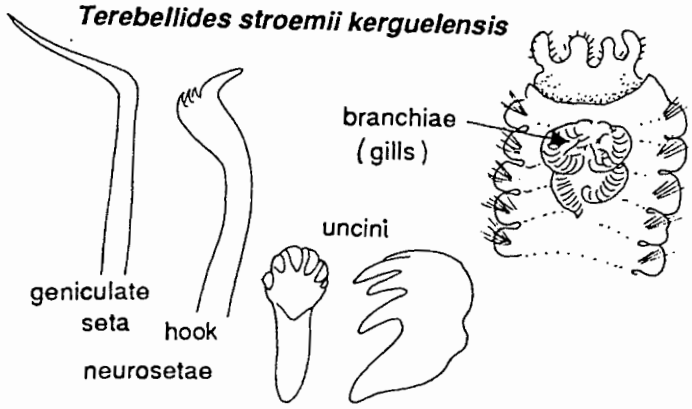
Gills branched, sometimes a tuft of filaments on a short stalk. 39

39 Thoracic neurosetae long shafted hooks (Subfamily **Trichobranchinae**).
Branchiae fused to form a single trunk with four pectinate branches; first neuropodia with geniculate setae; abdomen very thin-walled and filled with sand.
Terebellides stroemii kerguelensis
McIntosh, 1885

Thoracic neurosetae are uncini in double or alternating rows for at least some setigers; gills not fused into a single group.
(Subfamily **Amphitritinae**). 40







40 Three pairs of branched gills; cartilaginous sand-covered tube with a fan-like extension of fine branches at opening; head with large lateral flaps extending over tentacles on buccal segment 1 and large lateral flap on segment 3; posterior thoracic neuropodia with uncini in two rows of 20-35 placed back to back; common.
Lanice flabellum (Baird,1864) (see p.32)

One or two pairs of branched gills. 41

41 Notosetae denticulate, some with winged shafts; 17 thoracic setigers, notosetae start from segment 3, uncini a large fang surmounted by several rows of small teeth; no eye spots.
Neoleprea streptochaeta (Ehlers,1897)
(= non *Amphitrite kerguelensis* in Gillet, 1991)
(see p.33)

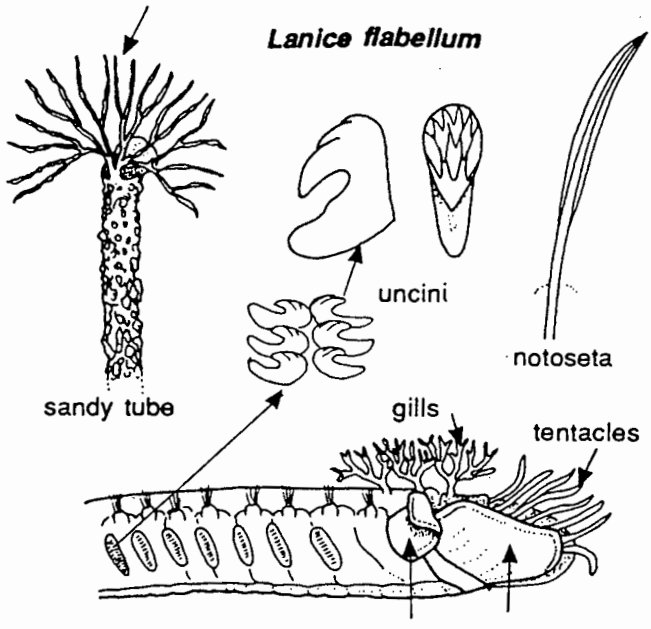
Notosetae smooth limbate; collar groove with many eye spots. 42

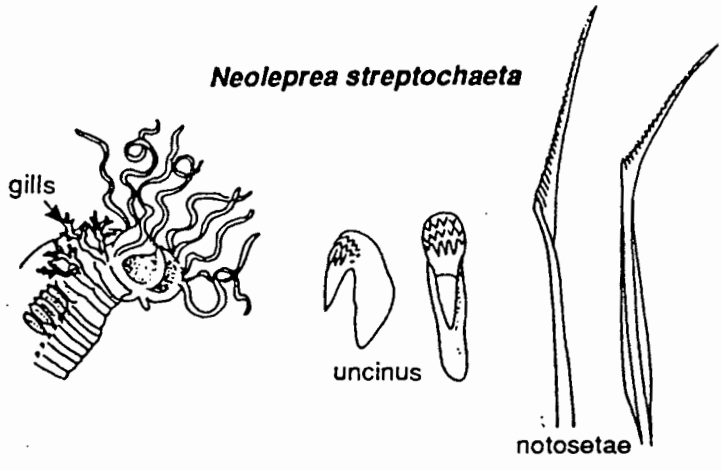
42 One pair of branched gills; 12 long and three short grooved tentacles; undulating tube covered with sand and sponge spicules; 16 thoracic setigers, neurosetae from setiger 2; notosetae from segment 3. (Gills less tufted than shown in Hartman,1966)
Axionice godfroyi (Gravier, 1911)
=*Pista goldfroyi* (Gravier, 1911)

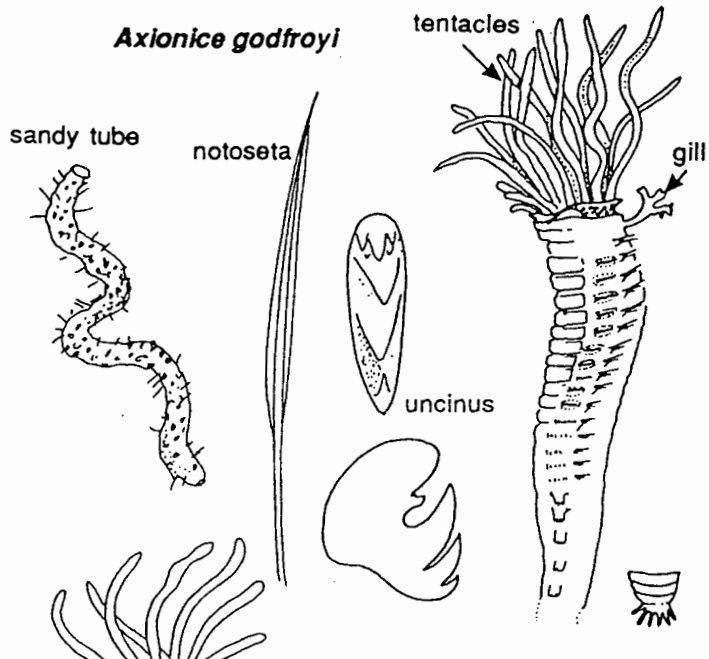
Two pairs of gills, simple when young but branched in older animals; 17 thoracic setigers, starting from segment 4; uncini avicular starting from setiger 2.
Nicolea venustula (Montagu,1818)
(= non *Eupolymnia nebulosa* in Gillet, 1991)

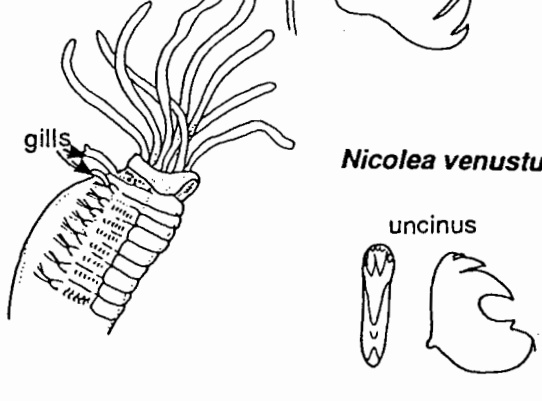
43 Tube sandy or muddy; operculum absent.
Family **Sabellidae**.
..... 44

Tube calcareous; stalked operculum usually present.
..... 45









44 Long-shafted, hooked setae on thorax.
Sub-family **Fabriclinae**.
Eight thoracic and 5 or 6 abdominal setigers; abdominal uncini avicular with short stem and many denticles in several rows; three pairs of tentacular radioles each with a border of seven pairs of pinnules and a long free tip, distinctly ridged.
Oriopsis limbata (Ehlers,1897)

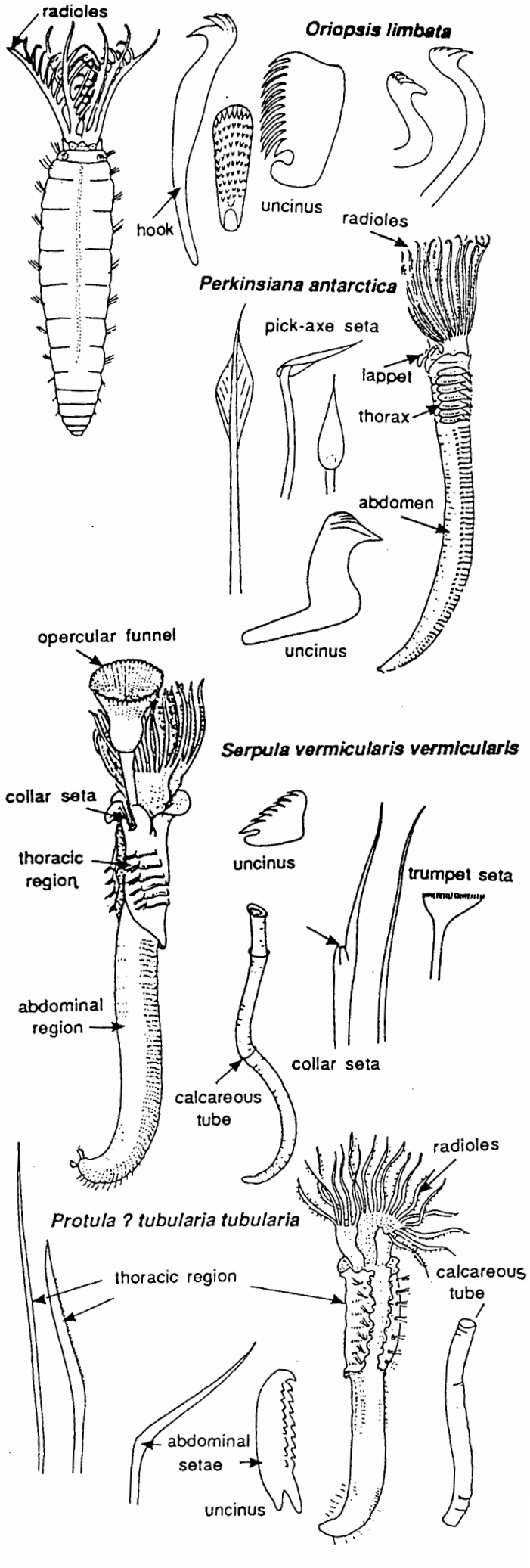
Short avicular uncini in thorax and abdomen; Subfamily **Sabellinae**.
15 long and 3 short pairs of radioles; collar with long ventral lappets; thoracic neuropodia bear avicular uncini and smooth pick axe setae; notopodia have spatulate, limbate setae.
Perkinsiana antarctica (Kinberg,1867)
(= non *Jasmineira caeca* in Gillet, 1991)
(see p.33)

45 Thorax symmetrical; 5-12 thoracic setigers.
Family **Serpulidae**. 46

Thorax asymmetrical; 3-4 thoracic setigers; tube coiled spirally; small 2-5mm.
Family **Spirorbidae**. 47

46 Operculum always present and never has pinnules on the stalk; 6-7 setigerous segments. Subfamily **Serpulinae**. Opercular funnel with scalloped margin, composed of 40 fused papillae; some collar setae dentate with a swollen boss; abdominal setae trumpet-shaped; uncini with 7 teeth and large anterior peg; calcareous tube shows definite flared growth zones.
Serpula vermicularis vermicularis
Linnaeus,1767

Operculum absent or poorly developed and retains pinnules on its stalk; 5-12 thoracic setigers.
Subfamily **Filograninae**
Collar setae simple, limbate; thoracic setae capillary, on setiger 6 and 7 there are special large setae with a finely toothed edge; thoracic and abdominal uncini with 20-25 teeth in two rows and a very long anterior peg; single whorl of long widely flanged radioles; calcareous tube smooth with a few ridges for growth zones.
Protula ? tubularia tubularia (Montagu, 1803) SAM A 21180



47 Tube smooth or faintly ridged.
..... 48

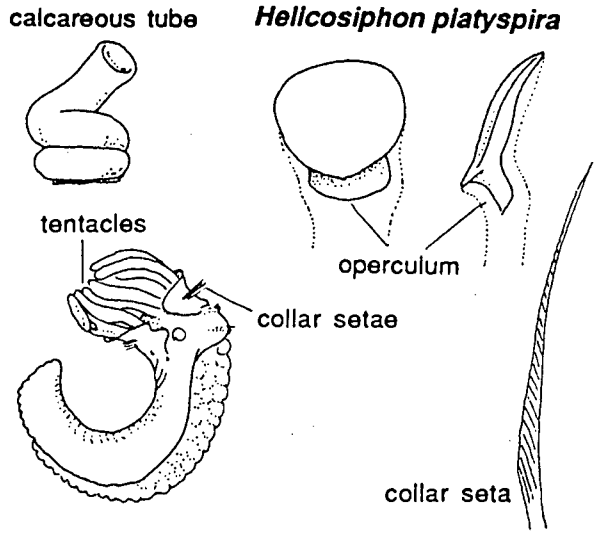
Tube strongly ridged.
..... 49

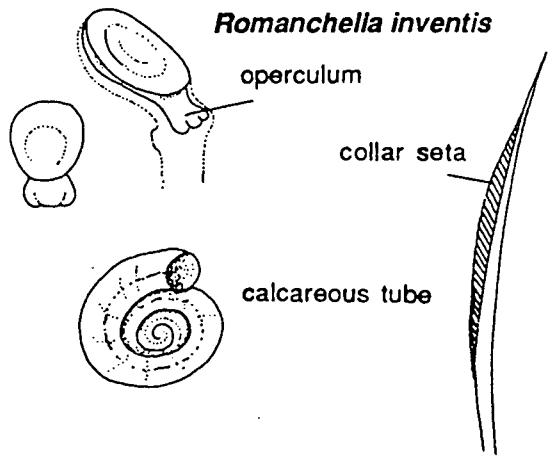
48 Operculum very oblique, slightly concave with sub-quadrangular talon; 15 tentacles, smooth coiled tube, 5mm in diameter; collar setae with a single series of teeth at tip; 25-35 setae in first three segments; common under rocks.
Helicosiphon platyspira (Knight-Jones, 1978)

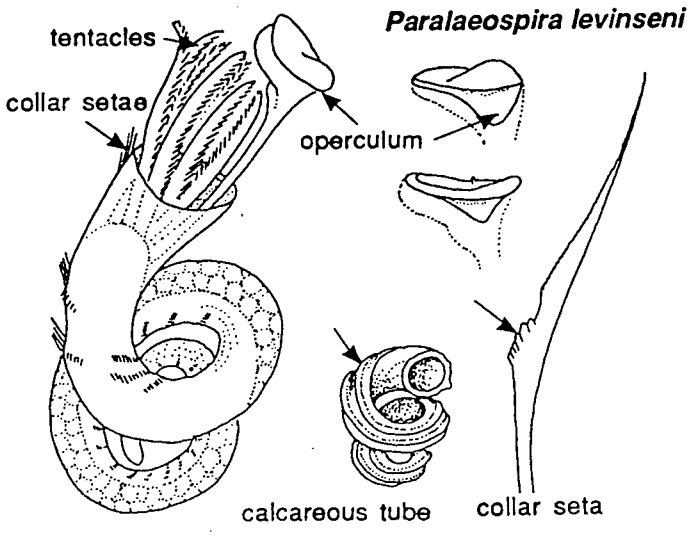
Operculum talon composed of three fused lobes; 7 tentacles; tubes aggregated, loosely clockwise coiled with three poorly marked ridges; collar setae almost smooth without a separate dentate lobe at base.
Romanchella inventis (Harris, 1969)
(=non *Romanchella perrieri marionis* in Day, 1971) (See p.34)

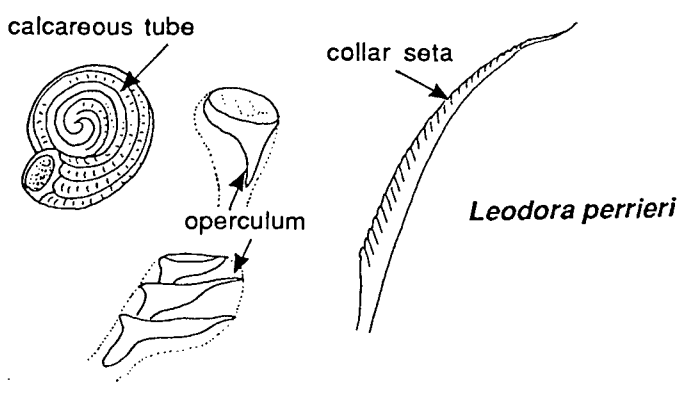
49 Collar setae with denticulate tip region, base with a group of lobes; tube longitudinally ridged; smooth operculum with pointed talon beneath; tubes white and often densely aggregated under intertidal rocks, body orange red .
Paralaeospira levinseni (Caullery & Mesnil,1897)
(= non *Spirorbis patagonica* in Day 1971)
(See p.34)

Collar setae simple, toothed; young tube smooth, then longitudinally ridged (1-4mm diameter), and finally with transverse knotches as well.
Leodora perrieri (Caullery and Mesnil, 1897)
= *Romanchella perrieri* (See p.33)









B. ERRANTIA

1 Many body segments covered by dorsal scales (elytra). 2

Body without dorsal scales. 13

2 Head with single median antenna; ocular facial tubercle present; eversible pharynx without horny jaws; dorsum sometimes covered with felt; harpoon setae present.
Family **Aphroditidae**. 3

Head with 1, 2 or 3 antennae; eyes sessile if present; eversible pharynx with four horny jaws; dorsum not covered with felt; no harpoon setae.
Family **Polynoidae**. 4

3 Ventrum densely papillose; 18-20 pairs of elytra not covered with delicate felt; large facial tubercles with very small eyes; body large, 80-180mm long; harpoon setae with 5-6 fangs; slender bipinnate neurosetae on first four setigers; common at 35-640m depth.
Laetmonice producta Grube,1877

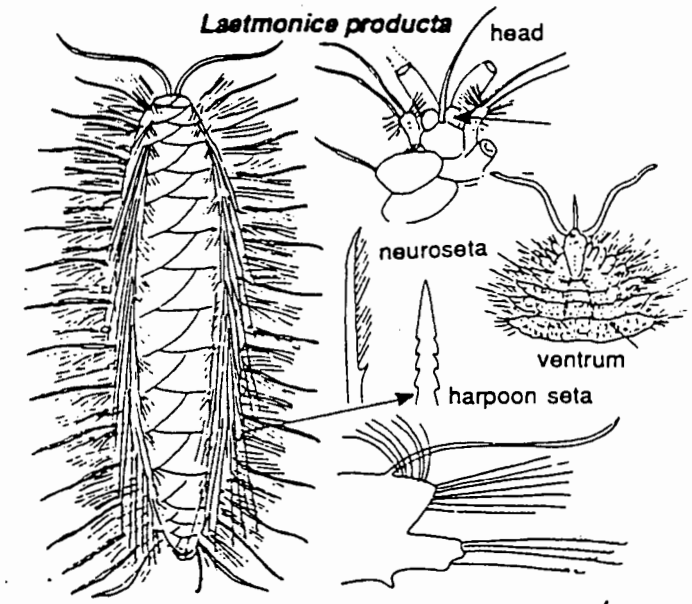
Ventrum smooth; 15 -18 pairs of elytra covered with a delicate felt; harpoon setae present; small facial tubercles; medium length palps; body small, 30-35mm long; abyssal depths.
Laetmonice producta benthaliana
(McIntosh,1885)

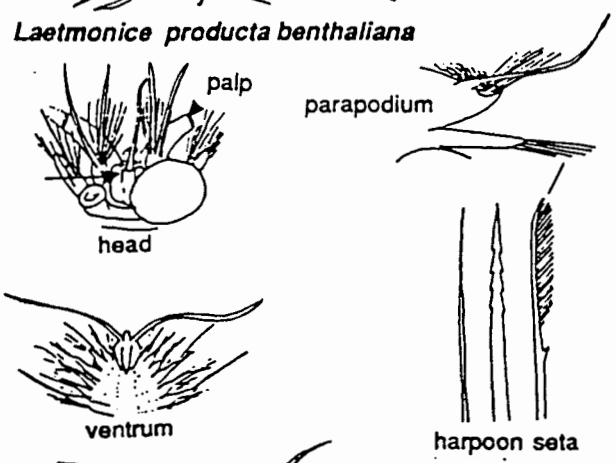
4 Lateral antennae attached distally on prostomium (ceratophores continuations of the prostomium); elytra often absent from posterior end of body.
Subfamily **Lepidonotinae** 5

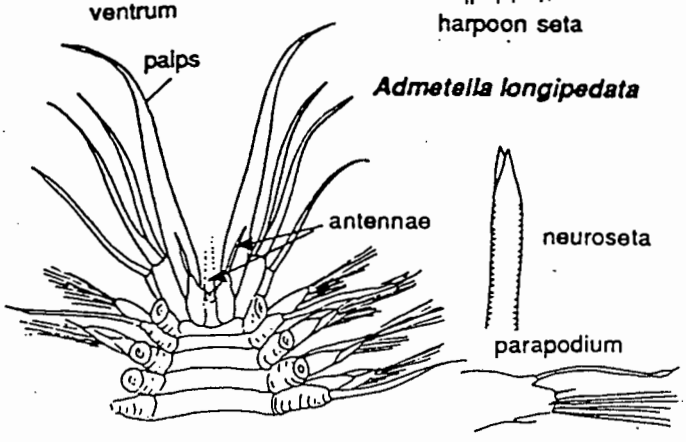
Lateral antennae attached sub-distally or ventrally on the prostomium (ceratophores below anterior points of prostomium which may be produced into cephalic peaks); elytra usually extend almost to end of body.
Subfamily **Harmothoinae** 6

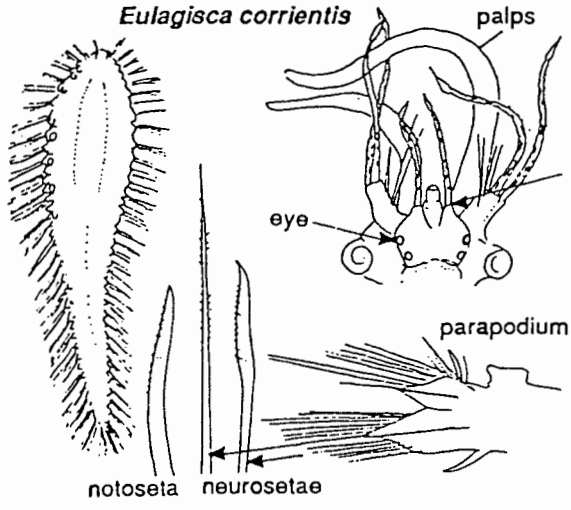
5 Eyes absent; 24 pairs of elytra cover anterior part of body; notosetae absent; neurosetae long, flattened, marginally finely serrated with a pair of dagger-like tips; antennal scales at bases of lateral antennae; abyssal depths between Marion and Crozet Islands.
Admetella longipedata (McIntosh,1885)

Two pairs of eyes; 15 pairs of elytrae occur over more than half of body; notosetae present; neurosetae with uni-dentate tips; long slender terminal antennae; parapodia long with long golden setae and narrow ventral cirrus; body elongate with swollen anterior region.
Eulagisca corrientis McIntosh, 1885









6 16 or more pairs of elytra. 7

15 pairs of elytra. 8

7 Antennae with short, broad terminal cirri; 16 pairs of soft, fleshy elytra, almost smooth with a few fine spines, cover all except a short posterior end of the body; 45 body segments; parapodia with fleshy ventral cirrus, densely covered with long hairs; notosetae thicker than neurosetae both bidentate with a slender secondary tooth and finely toothed surface; body broad, 50x20mm; elytra remain attached on death.
Malmgreniella fimbria Branch in press
(Chapter 7)

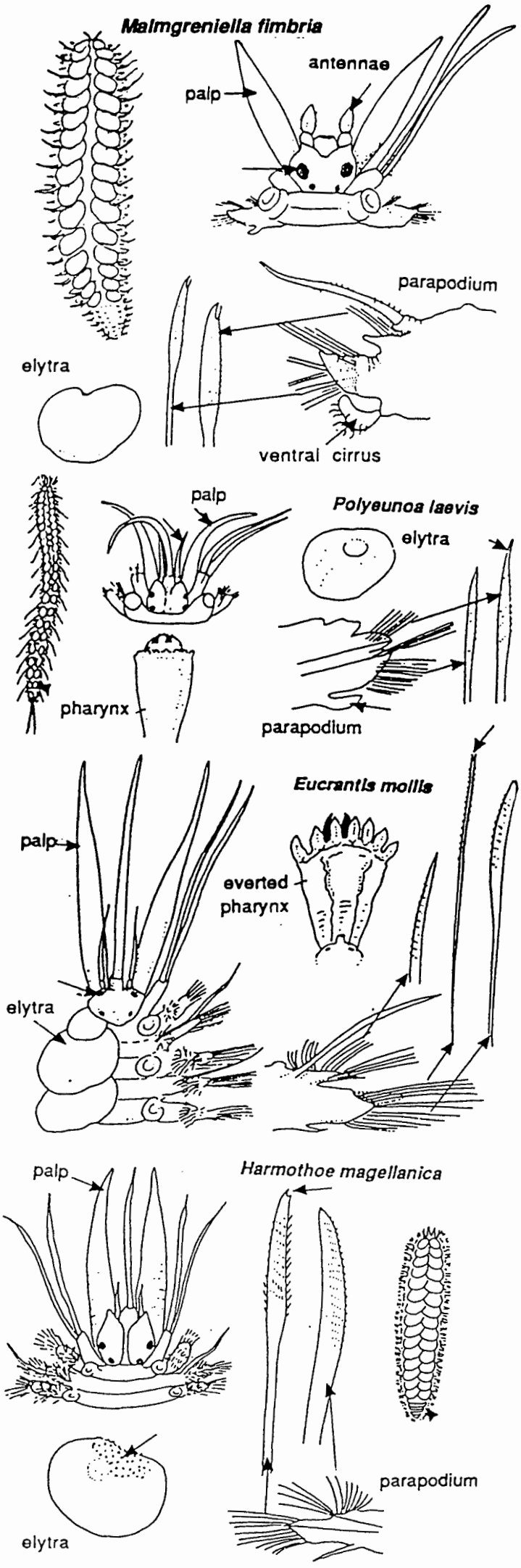
Antennae with long slender terminal cirri; 18 - 20 pairs of elytra with entire margins and glabrous surfaces; parapodia with smooth ventral cirrus; neurosetae with unidentate blade-shaped tips; notosetae weakly serrated with long naked tips; body long and slender; elytra easily lost on death.
Polyeunoa laevis McIntosh,1885

8 Some neurosetae deeply cleft with both teeth the same length, superior neurosetae slender and capillary with minutely bifid tips; inferior neurosetae with broadened bifid tips; eyes set below the surface in a rectangular arrangement with anterior pair very far forward; small crest on either side of median antenna; body elongate and tapering to tail with long parapodia and long golden setae; four pairs of stout notopodial setae with unidentate tips; elytra very thin, white, smooth and soft.
Eucrantia mollis (McIntosh, 1876)

Bidentate neurosetae with main fangs much larger than secondary tooth, body short and flattened; elytra smooth or with spines and tubercles. 9

9 Elytra mainly smooth with a group of small tubercles near point of attachment; elytra pale to brown flecked, clearly overlapping across the dorsum; over 40 body segments, last 7 not covered by scales; setae pale yellow, all neurosetae bidentate; dorsum very light brown, ventrum pale; length 32mm x10mm; palps less than 3x prostomium length.
Harmothoe magellanica (McIntosh,1885)

Elytra entirely covered with spines, hairs or vesicles - not mainly smooth. 10



10 Margin of elytra with fine hair-like papillae. 11

Elytra papillate, with large spines and globular vesides..... 12

11 Palps long, greater than three times length of prostomium; eyes dark; body tapers posteriorly; elytra whitish and papillate; abyssal.
Harmothoe crosetensis (McIntosh,1885)

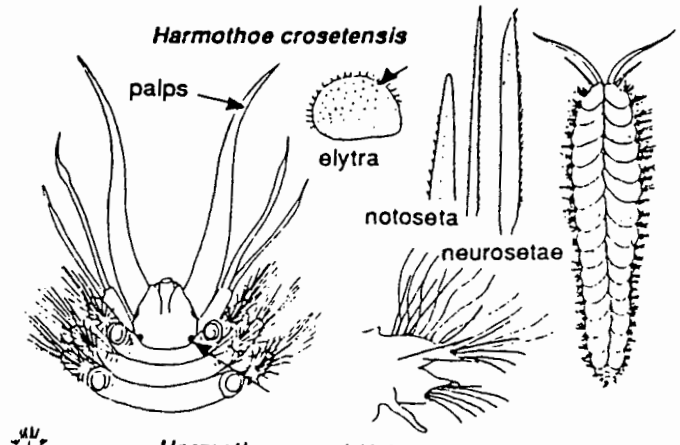
Palps usually less than three times length of prostomium; eyes pale in the centre; body light pinkish brown dorsum, pale ventrum; elytra with dark conical spines and a fringe of fine hairs; superior neurosetae with longer spines, may be unidentate; inferior neurosetae with shorter spines; body 28-32 segments, length 12 x 3.5mm.
Harmothoe sp. cf.***H. kerguelensis*** (See p.35)

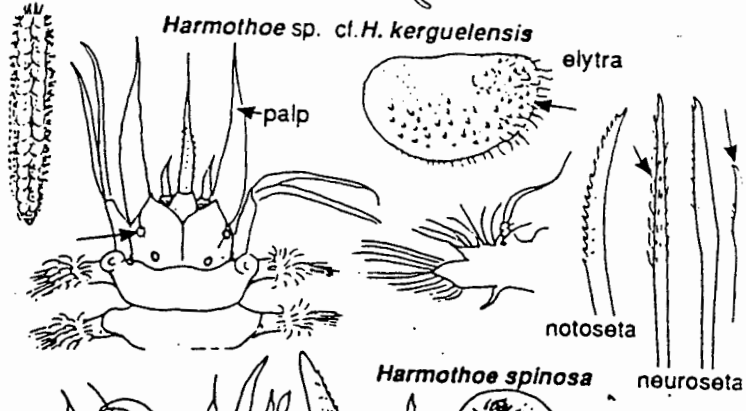
12 Approximately 40 body segments; elytra usually overlap dorsally and extend at least to last 6 segments, with large pointed spines and globular vesicles, mottled or banded reddish-brown; notosetae thicker than neurosetae; parapodia banded with brown; body up to 120mm long. A very variable species discussed by Hartman-Schroder (1988).
Harmothoe spinosa Kinberg,1885 (See P.35)

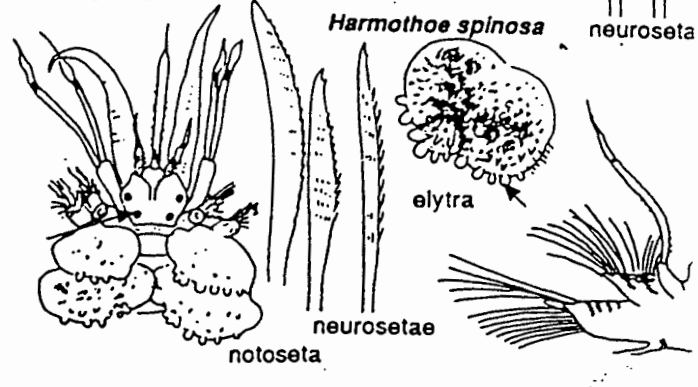
Approximately 50 body segments, elytra do not meet across dorsum and do not cover last 9-10 segments; elytra with small pointed tubercles and large globular vesicles with a granular surface, mottled reddish-brown with a dark spot in the centre; notosetae and neurosetae about equally thick; eyes large.
Lagisca exanthema (Grube, 1856)(See p.35)

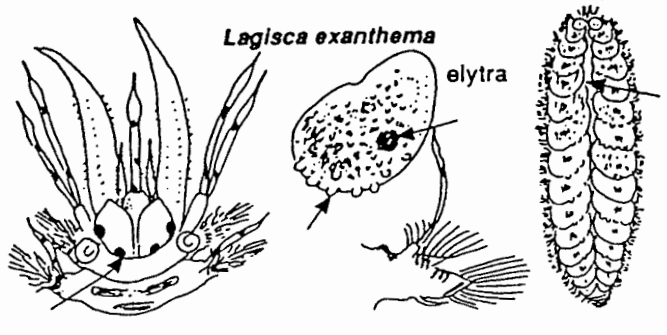
13 Body square in section; parapodia biramous with flattened, leaf-like lamellae; gills curled and lie between dorsal and ventral parapodial lobes.
(Family **Nephtyidae**).
Branchiae curl inwards; no eyes; pharynx tip with a ring of about 20 bifid papillae, followed by 13-14 rows of 4-5 papillae which are replaced by a triangular patch of smaller papillae proximally; ventral cirri long; post setal lamellae large and foliose; post setal lobes of neuropodia have crenulate margin in postmedian segments, anterior acicular lobes deeply incised and rounded in median segments.
Aglaophamus ornatus Hartman, 1967
(= *A.macroura* partim. in Hartman, 1967)
(= non *Nephtys hombergi* in Gillet 1991)
(See p.38)

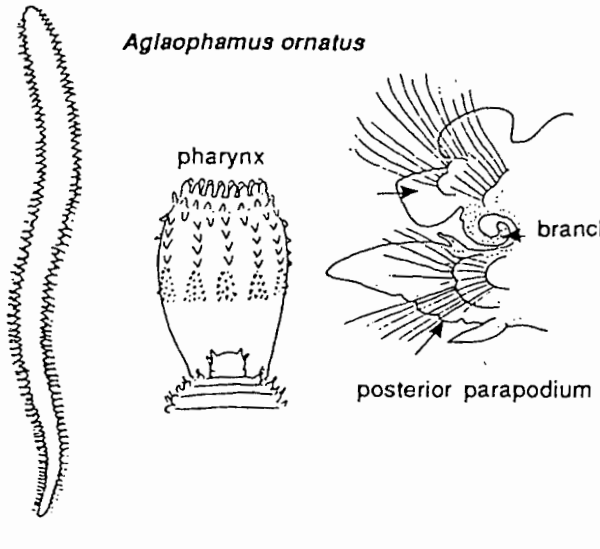
Body usually cylindrical or flattened; parapodia uni- or bi-ramous; gills if present are dorsal to the parapodia 14











14 Two or more pairs of chitinous jaws on eversible pharynx; often large, cylindrical worms. 15

Proboscis lacks chitinous jaws, may have a large tooth; often small flattened worms but may be large with foliose dorsal cirri. 26

15 Palps biarticulate, capped with a nipple-like tip; two antennae; four pairs of tentacular cirri; eversible pharynx with a pair of jaws plus horny denticles; parapodia biramous.
Family **Nereidae**. 16

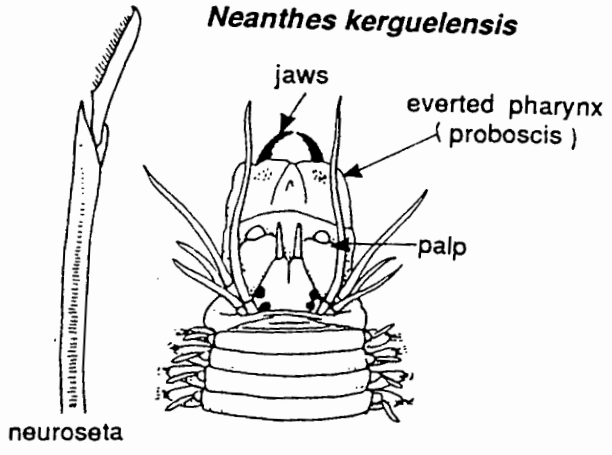
Palps absent or simple; head and pharynx not as above..... 18

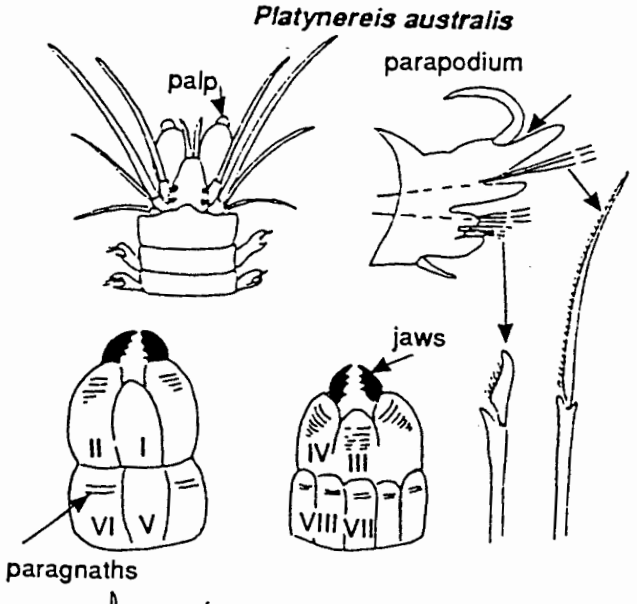
16 Cones and transverse or pectinate paragnaths (denticles) present on the pharynx. 17

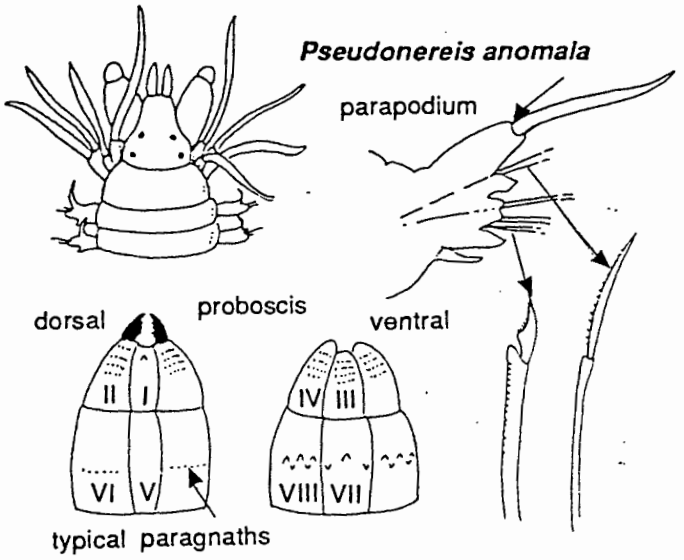
All paragnaths conical; arrangement of paragnaths on proboscis areas: I has one cone, II, III and IV have concentric patch of small points, V bare, VI with one cone, VII and VIII with a row of about 5 cones; a common shallow-water nereid recorded from Magellan and Kerguelen areas; recorded for Marion by Knox and Lowry (1977)
Neanthes kerguelensis (McIntosh, 1885)

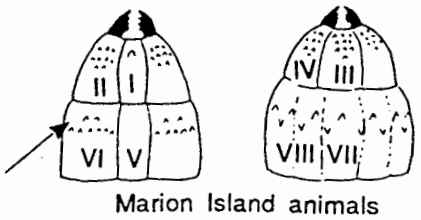
17 Notopodial lobes of posterior parapodia long and tapering, dorsal cirrus arises half way along the lobe; arrangement of paragnaths on the proboscis areas : I bare; II, III and IV with a compact series of six rows of denticles; V bare; VI with short double rows of small paragnaths; VII and VIII with five short double rows of paragnaths equidistant from one another; prostomium long and broad, conical; common.
Platynereis australis (Schmarda, 1861)

Superior lobe of posterior parapodia expanded and dorsal cirrus arises terminally on the lobe; arrangement of paragnaths on proboscis areas: I has 1-2 paragnaths in a line, II, III and IV have 4 comb-like rows of points, V is bare, VI has 6 short bars in a transverse row, VII and VIII a single row of about 14 points pointing alternately forward and back; prostomium pear-shaped. Recorded by Gillet, 1991.
Pseudonereis anomala Gravier, 1901









Marion Island animals

18 Prostomium a pointed cone with two pairs of antennae at tip; parapodia bi- or uniramous, 2-4 jaws.
Suborder **Glyceriformia**. 19

Prostomium, broad, distinct, with or without appendages; parapodia with strongly developed neuropodia and reduced notopodia; musclar pharynx with at least one pair of jaws.
Order **Eunicida**. 21

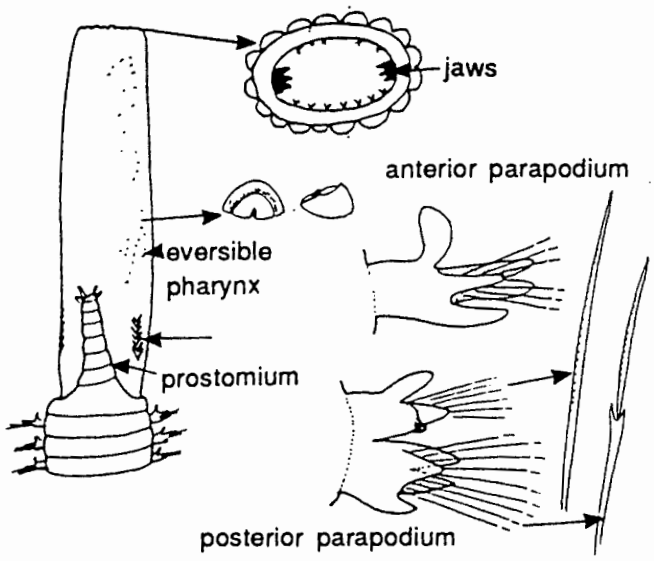
19 Eversible pharynx with four jaws in a cross; parapodia biramous throughout with simple and compound setae.
Family **Glyceridae**. 20

Eversible pharynx with a circle of smaller and larger jaw pieces Family **Goniadidae**.
Anterior parapodia uniramous, posterior ones biramous; body divided into two regions; pharynx with 7 v-shaped chevrons at the base, and numerous low semicircular papillae with a flared margin; mouth with 2-4 small dorsal and seven small ventral teeth and two large lateral macrognaths with 3 teeth. Dorsal cirri foliose.
Goniada brunnea Treadwell 1906 revised
(= non *G. maculata* in Gillet 1991) (See p.37)

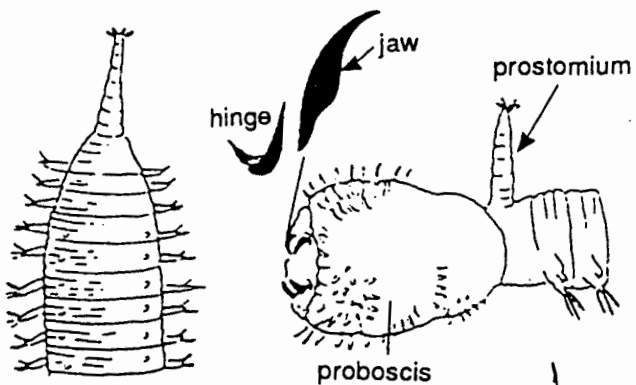
20 Prostomium long, with about 8 rings and 4 small antennae; body 20-45mm long, segments triannulate; proboscis with long slender papillae on the surface and four black jaws on a winged hinge support; parapodia biramous with two anterior and one posterior lobe, distally brown; dorsal cirrus small, set high above the parapodium.
Glycera kerguelensis McIntosh, 1885
(=non *Hemipodus simplex* in Gillet 1991) (See p.37)

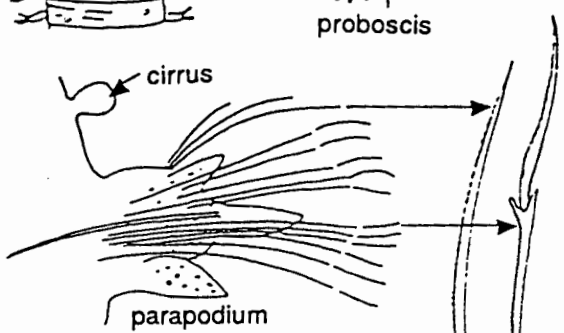
Prostomium short, with 4 rings and a pigmented crest on dorsal and ventral sides, 4 relatively long antennae; body 40 -60mm; proboscis short, densely covered with long slender papillae; parapodia biramous, with 2 posterior lobes; dorsal cirrus close to parapodium.
Glycerella magellanica (McIntosh, 1885)

Goniada brunnea

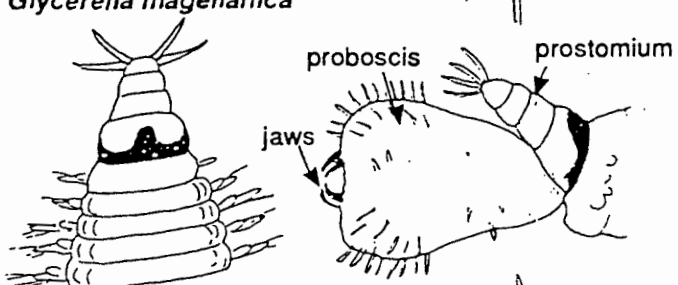


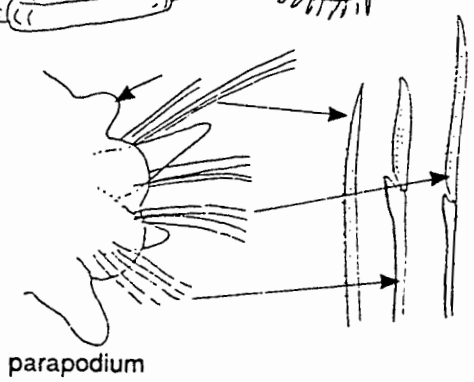
Glycera kerguelensis





Glycerella magellanica





21 Prostomium with appendages; dorsal and ventral cirri present on parapodia. 22

Prostomium broad and rounded, lacks tentacles and eyes; parapodial dorsal cirri absent.
Family **Lumbrineridae**. 24

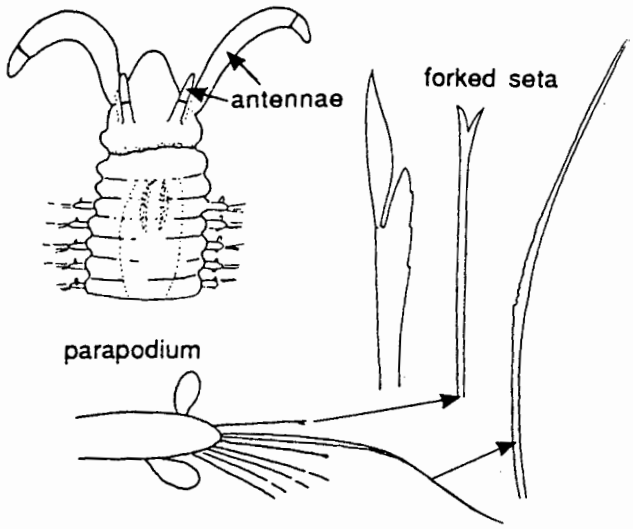
22 Prostomium with two pairs of biarticulate antennae, anterior pair well developed and referred to as palps; parapodia long, uniramous and, from the fourth segment, with small rounded dorsal and ventral cirri near the tips; setae include capillaries, compound setae with long and short tips and, in anterior parapodia, some forked setae.
Protodorvillea kefersteini (McIntosh, 1869)
(= *P. biarticulata* Day, 1963)

Prostomium with at least 5 antennae; comb setae present 23

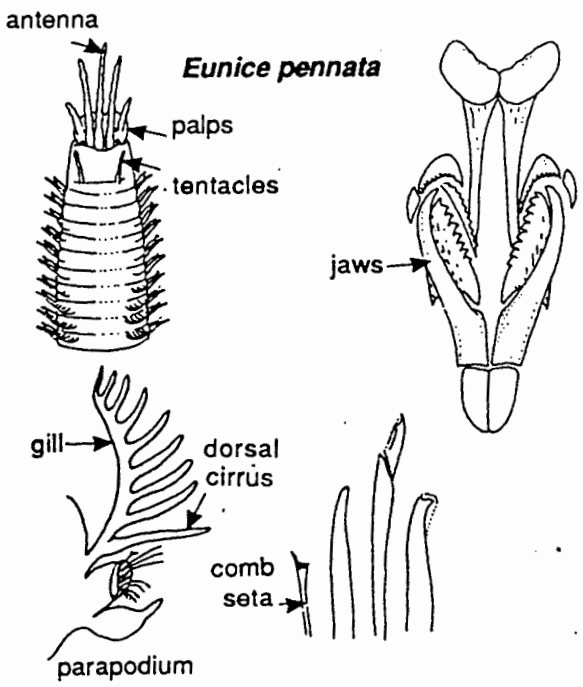
23 Prostomium with five occipital antennae, constricted at regular intervals; pair of dorsal tentacles on second segment; simple branchiae from third segment, becoming pectinate posteriorly; simple and comb setae dorsally on the parapodia; characteristic pale brown set of 5 pairs of jaws; common.
Eunice pennata (Muller,1776)
(?= *Eunice edwardsi* McIntosh,1885)

Prostomium with 2 frontal and 5 occipital antennae with 3-4 ringed ceratophores at base; tubiculous.
Family **Onuphidae**.
Body less than 50 setigers; tube equal to body length, flattened, covered with large shell fragments; parapodia of setigers 1 enlarged and pointing forwards; parapodia with foliose presetal lobe; subacicular hooks absent; pectinate setae scoop-shaped (*Nothria*).
Eyes absent, antennae long, reaching to setiger 6; ventral cirri tapering in first 3 setigers but in later setigers become swollen and cushion-like; simple strap-like brachiae from setiger 9-13; from setiger 1-3 stout pseudocompound or simple hooks, from setiger 4 onwards smooth winged capillaries, about 6 fine comb setae; bidentate acicular setae after segment 10.
Nothria anoculata Orensanz, 1974
(= non *Kinbergonuphis tenuisetis* in Gillet 1991)
(See p.39)

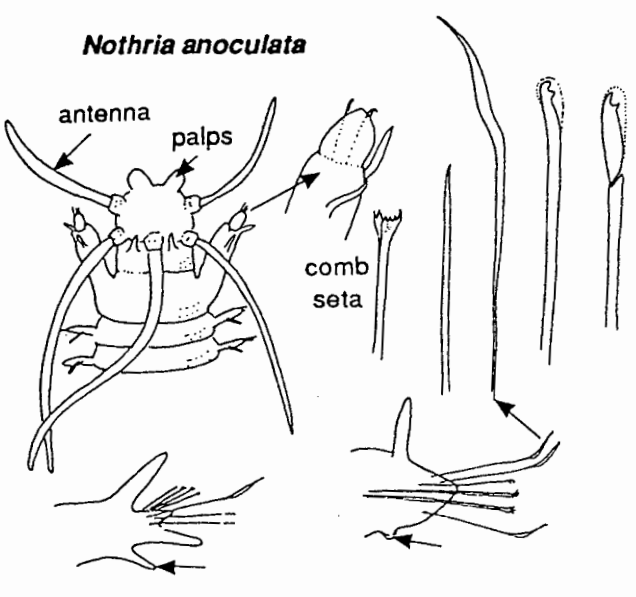
Protodorvillea kefersteini



Eunice pennata



Nothria anoculata



24 Hooded hooks all simple, start at about setiger 40; capillary setae only in anterior regions; maxillae III with 2 teeth. 25

Compound hooded hooks start in first 5 setigers and and together with winged capillaries extend to about setiger 15; capillaries and simple hooks in parapodia from the middle region; posterior parapodia have only simple hooks; maxillae III with one tooth with an irregular edge (2 teeth in the juvenile); prostomium conical, rounded in juvenile; setae golden; common Antarctic species.
Lumbrineris magalhaensis (Kinberg, 1865) (= non*Lumbrinereis gracilis* and non *L. impatiens* in Gillet 1991) (See p.39)

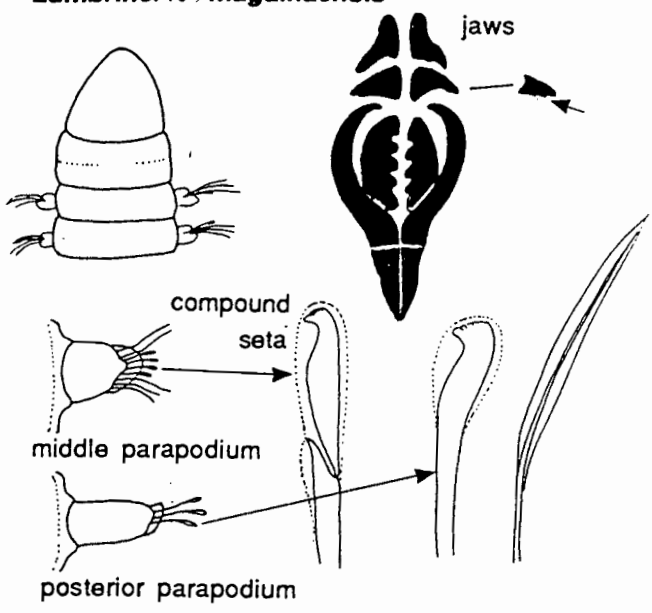
25 Aciculae black; postsetal lobes shorter than setae in the posterior setigers; prostomium conical.
Lumbrineris* sp. aff *L. fragilis Müller 1776 (See p.40)

Aciculae pale; in middle parapodia pre- and postsetal lobes both small, subequal; in posterior parapodia postsetal lobe obviously longer than presetal lobe but shorter than setae. Unconfirmed record of Gillet, 1991.
Lumbrineris heteropoda Marenzeller, 1879

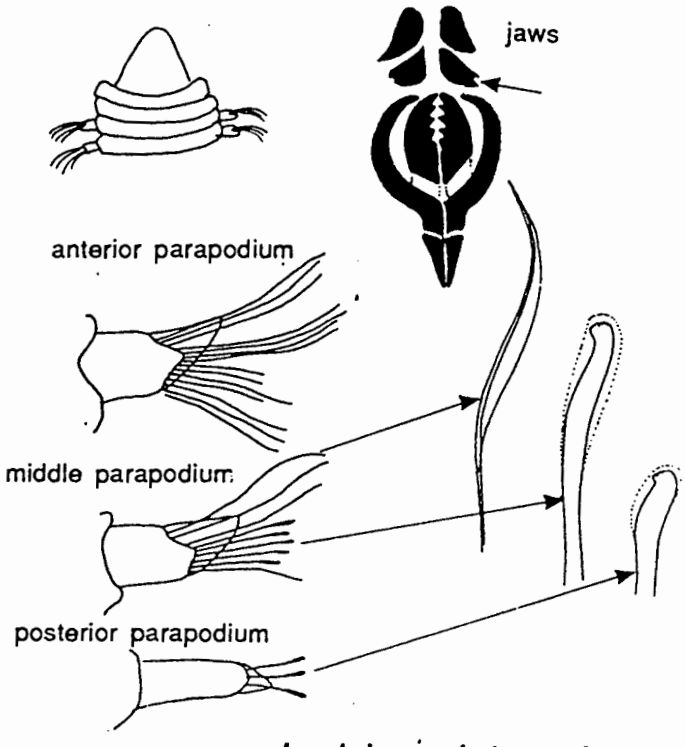
26 Short hairy worm; 11-13 setigers; neurosetae in tufts; notosetae in transverse rows across dorsum but not meeting in the mid region; setae long and bifurcate; branchiae cirriform, in rows between the rows of notosetae.
Euphrosine cirrata Sars, 1862

Elongate worms; parapodia uniramous, lateral, often with long cirri but not 'hairy' in appearance.
..... 27

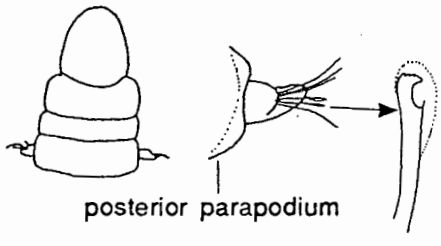
Lumbrineris magalhaensis



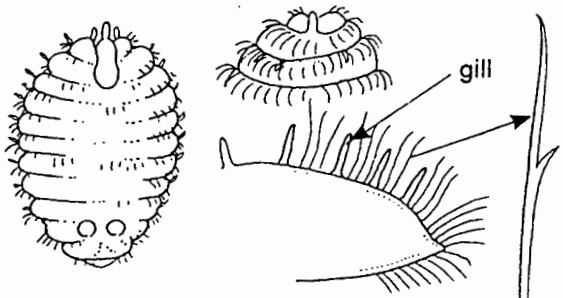
Lumbrineris* sp. aff *L. fragilis



Lumbrineris heteropoda



Euphrosine cirrata



27 Dorsal and ventral cirri leaf-like; no gizzard follows the pharynx which is usually long and papillose; prostomium with one pair of eyes and 4 or 5 antennae, but these may be reduced; benthic forms; often green or orange in colour.
Family **Phyllodocidae** 28

Dorsal parapodial cirri (if present) cirriform; gizzard usually present, lined with rows of teeth.
..... 31

28 Prostomium with four antennae; first and second segments fused and reduced dorsally; 4 pairs of cylindrical tentacular cirri on first two segments; small, short worms 20mm long, pale with orange cirri; parapodial dorsal cirri rounded and asymmetric and lie over the dorsum, ventral cirri round; eversible pharynx diffusely papillated.
Genetyllis polyphylla (Ehlers,1897)

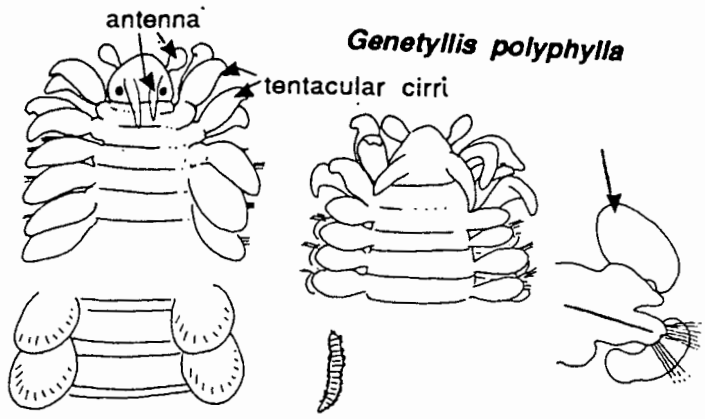
Prostomium with five antennae; large worms up to 100mm; usually brown or green with dark leaf-like cirri; segments one and two distinct.
..... 29

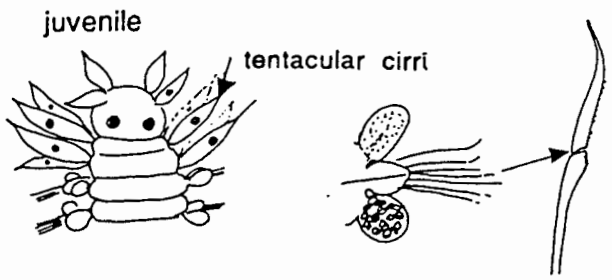
29 Two pairs of tentacular cirri all similiar but dorsal cirri two-thirds as long as ventral ones; dorsal cirri of median parapodia asymetrical, slighty longer than broad; ventral cirri distal blunt; prostomium narrow, triangular; length up to100mm, about 215 segments. Unconfirmed record of Gillet 1991.
Eteone aurantiaca Schmarda, 1861

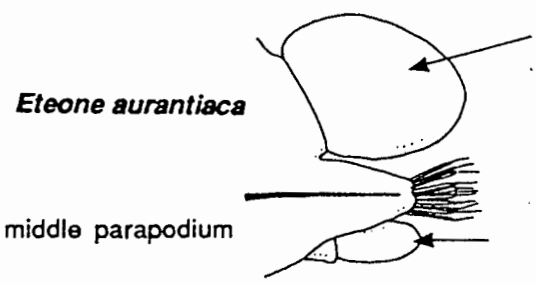
Four pairs of tentacular cirri on first three segments, ventral cirrus on segment 2 foliose.
..... 30

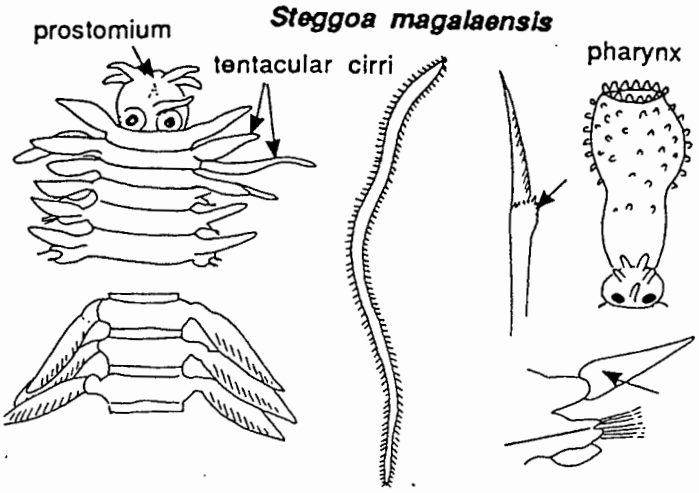
30 Creamy green with brownish cirri when live; length up to 100mm, 70-350 segments; ventral tentacular cirri of segment two flat and foliose; parapodial dorsal cirri long and lanceolate; prostomium rounded with a straight posterior margin and two large eyes; all setae composite with simple articulations, eversible pharynx papillose with 14 marginal papillae; setae start on segment 3.
Steggoa magalaensis (Kinberg,1866)
(?= non *Eulalia viridis* in Gillet, 1991)
(See p.34)

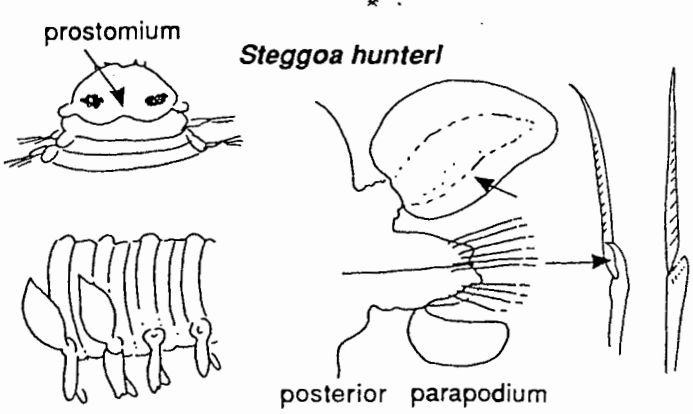
Purplish brown with brown cirri and dark quadrate patches on the dorsal surface; length to 280mm, up to 800 segments; prostomium triangular with a notched posterior margin and two large irregularly-shaped eyes; postmedian parapodia with modified compound setae with cuspid articulations.
?***Steggoa hunteri*** (Benham, 1921)
SAM A 21276 (See p34)



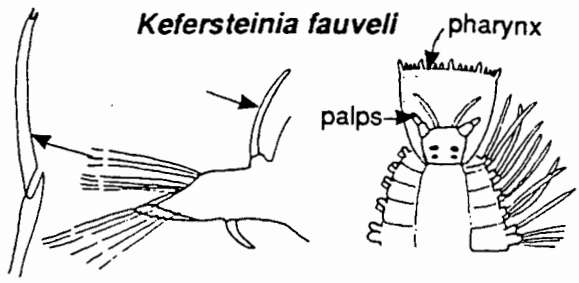




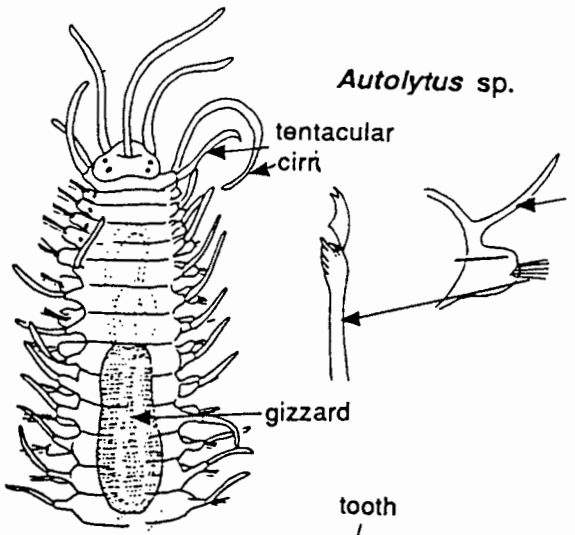




31 Prostomium with pair of biarticulate palps, 2 antennae and 4 eyes; 8 pairs of tentacular cirri; Family **Hesionidae**
Parapodia uniramous, dorsal cirri slender, smooth ; first 4 segments each bear two pairs of smooth tentacular cirri; posterior setal lobe long and triangular; neurosetae smooth; pharynx with 10 large and 30 small marginal fimbriae;
jaws absent.
Kefersteinia fauveli Averincev, 1972
(= non *Kefersteinia cirrata* in Gillet 1991, Fauvel 1951 and Hartman 1964)(See p.36)

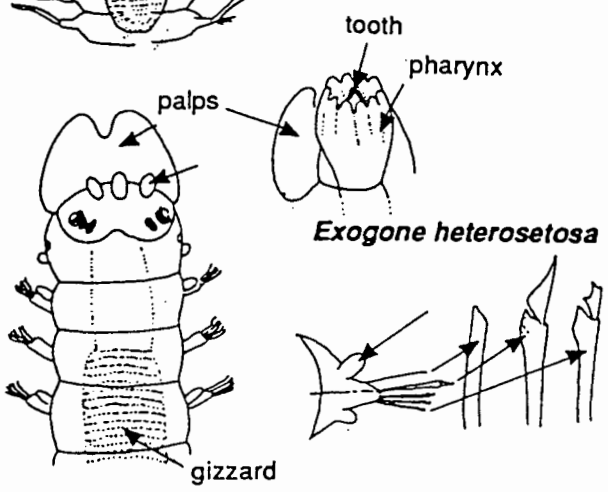


Prostomium rounded with unjointed palps, 1-3 antennae and 4-6 eyes; parapodia uniramous often with jointed dorsal cirri; barrel-shaped gizzard follows the pharynx; at maturity sexual buds may develop posteriorly or the whole body may develop gonads and natatory setae; small narrow worms.
Family **Syllidae.** 32



32 Ventral cirri absent; palps bent ventrally and partly or completely fused (Autolytinae). Dorsal cirri on most setigers, cylindrical, not jointed; compound setae present with a short bidentate terminal joint; pharynx margin armed with about 25 teeth in a large, small, small, large arrangement; body small, pale, about 10mm long.
Autolytus* sp.?*Autolytus simplex

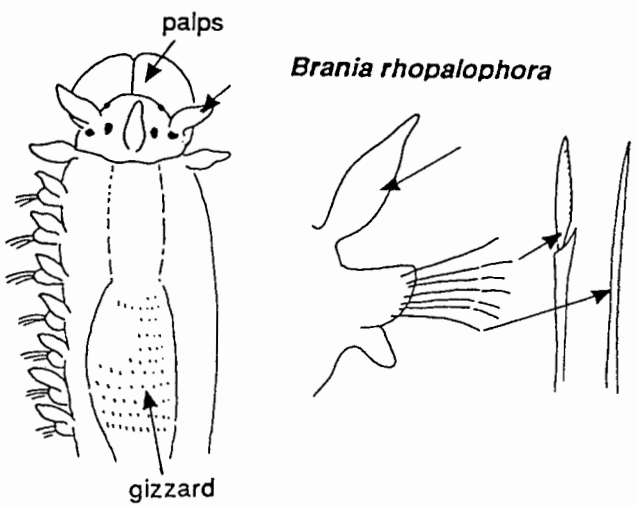
Ventral cirri present. 33



33 Palps fused for at least half their length; dorsal cirri usually short, absent on segment two; one to two pairs of tentacular cirri; less than 8mm long.
Sub-family **Exogoninae** 34

Palps separate or fused for less than half their length; dorsal cirri long; larger forms. 35

34 Antennae reduced to three small knobs on anterior margin of head; two pairs of eyes on posterior prostomium; superior compound setae with a swollen shaft and a triangular distal joint, other compound setae with a short toothed distal joint, one simple blunt superior seta; large bifid palp cushion; small slender thread-like worm with fairly long segments and short setae; one pair of tentacular cirri.
Exogone heterosetosa McIntosh,1885



Antennae and dorsal cirri short, bottle-shaped, median antennae far back on the head between the eyes; three pairs of eyes, a very small anterior pair and two larger posterior pairs; setae mainly compound but an inferior and superior pointed simple seta present in posterior segments.
Brania rhopalophora (Ehlers, 1897)

35 Dorsal cirri jointed; palps free to the base
Sub-family **Syllinae** 36

Palps fused basally; dorsal cirri smooth, or irregularly wrinkled. 37

36 Antennae and cirri with 20-40 annular constrictions; prostomium with 4 small eyes; palps much larger than head; pharynx long, reaching to setiger 12, with a large yellow tooth; compound seta terminal joint bifid, length less than 4 times width.

Typosyllis 'variegata' (Grube,1860)

Antennae with up to about 12 annular constictions; prostomium with two pairs of large brown eyes almost fused; palps smaller than head; no chitinous tooth to pharynx; chitinous longitudinal and lateral ridge in pharynx; compound seta terminal, joint length more than four times width.
?***Typosyllis* sp.** SAM A 21310
? ***Pharyngiovalvata* sp.**

37 Pharynx eversible, anterior margin smooth and with a single tooth; antennae and dorsal cirri smooth and cylindrical; compound setae with unidentate tips..... 38

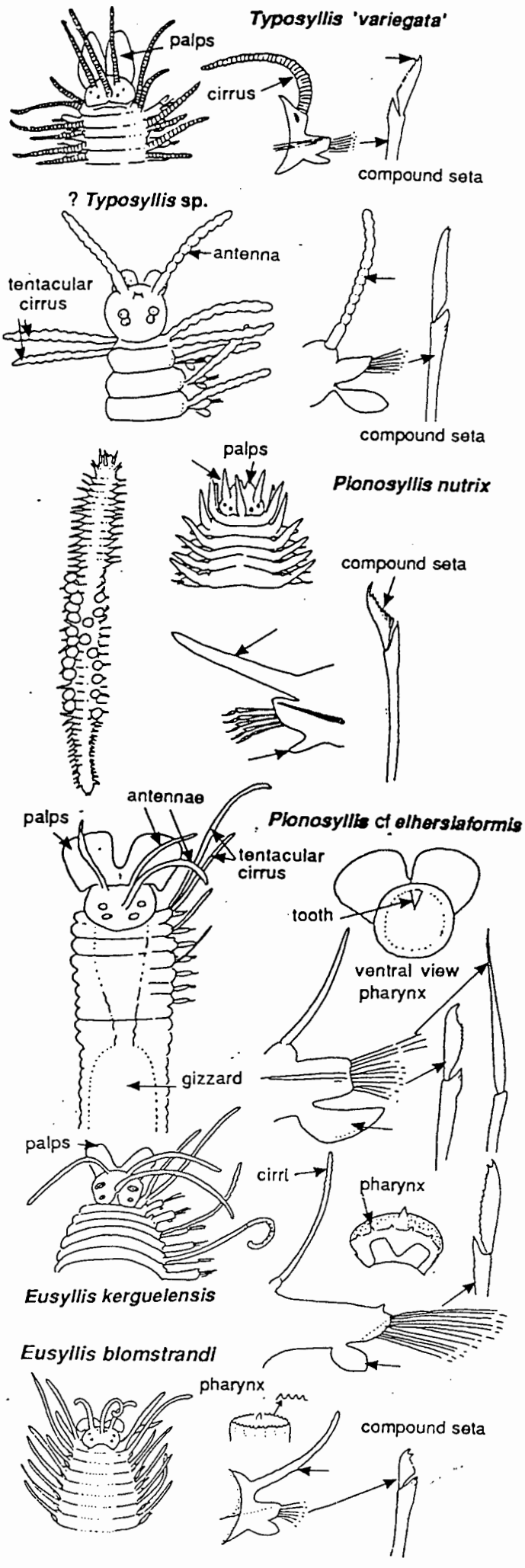
Pharynx eversible, with denticulate margin and a middorsal tooth; dorsal cirri wrinkled to smooth; bidentate tips to blades on compound setae. ... 39

38 Palps narrower than head, tapering anteriorly, fused for half length; antennae smooth, fairly short and tapering distally; compound setae with a long distal joint bearing many long teeth; ventral cirrus shorter than setal lobe.
Pionosyllis nutrix Munro,1936

Palps very large, fused basally, bases expand to side of the head; antennae smooth, long and uniform throughout; pharynx red with single dorsal tooth; gizzard orange and bears about 50 rows of fine denticles; compound notosetae with long slender appendages, neurosetae compound with finely toothed, bidentate curved appendage, a few simple neurosetae in posterior parapodia; ventral cirrus broad and longer than truncated setal lobe.
Pionosyllis* cf *ehlersiaeformis
Augener, 1913 (See p.36)

39 Chitinous pharynx margin with well spaced papillae and a single dorsal tooth; antennae almost smooth; dorsal cirri annulated near tip; eyes separate, anterior pair larger than posterior pair; ventral cirrus shorter than the long setal lobe; compound setae with long bidentate blades.
Eusyllis kerguelensis McIntosh, 1885

Chitinous pharynx with a denticulate rim with about 40 minute teeth and a single anterior dorsal tooth; tentacular and dorsal cirri indistinctly ringed; prostomium broad with four eye spots; compound setae with short, strongly bidentate blades.
Eusyllis blomstrandi Malmgren 1867



Taxonomic notes and discussion

Three new species from the recent collections (UCT collections) are described in Chapter7. These are *Orbiniella dayi* (Family Orbiniidae) which occurred to depths of 15m and was previously referred to as *O. minuta* by Day (1971)(key p10). Several large but incomplete specimens of *Scolelepis marionis* (family Spionidae) were buried in the sandy beach and were the only species of polychaete collected there (key p12). The third new species was named from a single large specimen: *Malmgreniella fimbria* (family Polynoidae) (key p20). It did not fit perfectly into any known genus, although it had many features, particularly the parapodia, antennae and setae in common with *Malmgreniella* it differed in having 16 pairs of elytrae (not the typical number of 15 pairs). Its large eyes and heavily fimbriated ventral parapodial cirri were similiar to *Lepidofimbria oculata* (subfamily Lepidonotinae) but its prostomium with cephalic peaks above the lateral attachment of the antennae was characteristic of the subfamily Harmothoinae. It was tentatively placed in the genus *Malmgreniella.*

Several other species recorded in previous collections were found to be incorrectly identified and the reasons for omitting them from the species list and key are discussed below. In addition, more complete descriptions of *Lanice flabellum* and *Thelepus setosus* are given because of inadequate early descriptions. Other specimens which differed from the type descriptions are discussed. They are illustrated in the key, with the reference pages given as 'key pxx'.

Order Orbiniida

FAMILY ORBINIIDAE Hartman 1942

Orbiniella dayi Branch in press (key p10)
non *Orbiniella minuta* Day 1971
Material examined: SAM A 21364 from Fuller's collection (Day 1971)
UCT collection SAM A 21272, SAM A 21273 (Type), SAM A 21388.
Records: Trypot Point, Transvaal Cove and Bullards Bay at 5, 10 and 15m depths, common (Beckley and Branch 1992)
Diagnosis: Prostomium narrow with rounded tip, first two segments without setae, the following setigerous segments without gills, parapodia a low ridge with a distinct posterior lobe, notosetae are long crenulate capillaries, neurosetae are crenulate capillaries and in the posterior segments stout simple hooks.
Comments:This species is very like *Orbiniella minuta* Day, 1954 from Tristan da Cunha but differs in the size of the animal, which is larger (3-5mm with 29-35 segments), and in the size of the parapodial ridge, which has a distinct parapodial lobe, especially posterior to the notosetae. *O. minute* is 2-3mm with a maximum of 33 segments, and its parapodia are reduced to a simple ridge.

Leitoscoloplos kerguelensis (McIntosh, 1885) (key p10)
Scoloplos kerguelensis McIntosh, 1885 p.355 pl. 43, figs 6-8: pl. 22A, fig 19.
Haploscoloplos kerguelensis Hartman 1964 , p. 9 pl. 2, fig 1,2
non *Haploscoloplos fragilis* Gillet 1991 SAM A 20302
UCT collection SAM A 21266, 10 m depth at Tripot Point
Diagnosis: Body up to 20mm long; prostomium conical and pointed; thorax with 10-14 slightly flattened segments, gills from 9-15 onwards; abdominal notopodia small, tapering, no interramal cirri; neuropodia with two unequal lobes, no ventral cirri.
Comments: Gillet (1991) misidentified SAM A 20302 as *L. fragilis.* In *L.fragilis* (Verrill 1873) the abdominal parapodia have one or two ventral cirri and an interramal cirrus between the neuro- and notopodia on the segment at the junction of the thorax and abdomen.
Distribution: Falkland and Kerguelen Islands, abundant in shallow waters.

Scoloplos* (*Leodamus*) *marginatus (Ehlers 1897) (key p10)
Aricia marginata Ehlers, 1897 pp 95-97, pl.6 figs 150-156.
Scoloplos (Leodamus) marginatus Hartman 1964, p.11 pl. 2 figs 6,7
non *Scoloplos johnstonei* Gillet 1991 SAM A 20275
UCT collection SAM A 21248 (station 24), SAM A 21249 (Tripot Point 10m depth), SAM A 21250 (station 12)
Description: Length of body about 80 mm, dorsum flattened; 102 segments; thoracic setigers 11-19; gills from setiger 6; thoracic neuropodia with three rows of stout aciculae with a rounded point; capillary notopodial setae; change from thorax to abdomen abrupt, abdominal notopodia dorsal with crenulate capillaries and very few forked abdominal setae.
Comment: Differs from *S. johnstonei* Day 1934, from Southern Africa and Madagascar, which has 21-24 thoracic setigers; thoracic neuropodia with three to five rows of stout aciculae which are pointed, serrated, flanged and bent near the tip. The specimen SAM A 20275 of Gillet (1991) was incorrectly identified as *S. johnstonei.*
Distribution: Soft substrata at 15-150m depths. Falkland, Kerguelen, S. Georgia, Cape Adare - common in shallow water.

Order Capitellida
FAMILY CAPITELLIDAE

Capitella 'capitata' (Fabricius, 1780) (key p9)
Lumbricus capitatus Fabricius, 1780: 279
Capitella capitata Hartman, 1964: 55
Capitella capitata Day, 1967: 595, fig 28.2 i-m,
UCT collection SAM A 21389 (station 51) depth 50m
Diagnosis of Marion Island material: This species is placed tentatively in the *Capitella 'capitata'* complex which is impossible to split just using morphological characters. Body thread-like, 15x2mm with over 60 segments, each with up to three annulations; soft, covered with mucus, red when live; prostomium a simple cone, lacks eye spots; notosetae from segment one, 9 thoracic setigers, 1-7 with capillary setae, 8-9 lack capillary setae but have hooks in the female and thick spine-like setae in the male; hooded hooks present from segment 8 with an arc of three to four hooks above the main fang.
Distribution: Cosmopolitan from Arctic to Antarctic in shallow water.

Notomastus* sp. ? *N. lineatus (Claparéde, 1870) (key p9)
SAM A 20317 Bullards Bay 5-10m
Diagnosis of Marion Island material : Body thoracic region firm, abdominal region very soft and thin-skinned, length average 15x2mm, segments with several annulations; prostomium rounded with 2 eyes; 12 thoracic segments, the first is asetigerous, 11 are setigerous with capillary setae only; 45 abdominal segments, notopodia each a simple ridge with long-handled hooded-hooks. This shows affinities to *N. lineatus* with the narrow midventral space between the anterior abdominal neuropodia but there were no obvious vesicular organs in the lateral space between the neuro- and notopodia as is typical of that species. This feature was difficult to examine because the abdominal region is very soft and in the Marion specimens was usually damaged or lost.

FAMILY MALDANIDAE

? ***Micromaldane ornithochaeta*** Mesnil, 1897 (key p9)
SAM A 20319 Recorded by Gillet (1991) from MD/08 station 22 at 30m depth was examined. It differed from *Micromaldane ornithochaete* in that it had a weakly developed cephalic region; no eyes; no spatulate setae. It was also incomplete with the pygidium missing. The specimen may be *Axiothella quadrimaculata* but its s-shaped neurosetae

had longer broader shafts. *A. quadrimaculata* is extremely common at Marion Island between 5-15m depths and reached densities greater than 300 m^{-2} yet it was not recorded by Gillet.

Order Terebellida

FAMILY AMPHARETIDAE

?Anobothrus patagonicus (Kinberg, 1867) (key p14)
Ampharete patagonica Kinberg, 1867: 343
Anobothrus patagonicus Hartman 1966; 79, Pl. 25, fig.14.
UCT collection SAM A 21253 (Station 54) 70-135m depth
Diagnosis: Soft membranous, mucous tubes; body average 10x1mm, very soft; 15 thoracic setigers and about 18 abdominal setigers; palea tapering capillaries about as long as winged notosetae capillary notosetae; prostomium with a broad smooth median lobe, oral tentacles smooth; a pair of pale eyes; four pairs of branchia, three in a straight row across segment three and a fourth pair on segment four; 15 thoracic setigerous notopodia starting from segment four; setae are long smooth capillaries; 12 pairs of thoracic neuropodia with about 22 uncini each with a double row of teeth; abdominal segments with neuropodia only.
Comment : The 11th thoracic setiger was not markedly thrust dorsally, as described for *Anobothrus patagonicus*, but this was the only feature that was not typical for the species. *Ampharete kerguelensis* McIntosh, 1885 also from Marion Island differs in that the four pairs of branchia lie in a straight row on the dorsum of segment three; the palea are long; the body is larger (20x3mm) and firm and yellow/pink in colour. *Amphicteus gunneri* (Sars, 1835) recorded from Kerguelen Islands, but not found at Marion Island, also has four pairs of unbranched gills but these are placed two each on segments three and four. There are17 thoracic setigers, thoracic uncini from the fourth setiger each with a single row of five teeth. It has a thick-walled mud tube over a membranous lining.

FAMILY TEREBELLIDAE

Subfamily Thelepinae Thoracic uncini in single rows, branchiae present.

Genus *Thelepus*
Thelepus setosus (Quatrefages, 1865) (key p15)
Thelepus setosus Fauvel, 1927: 273, fig 95 a-h; Day 1971: 387 (SAM A 21359)
UCT collection SAM A 21188- SAM A 21202 (Stations 1, 6, 7, 14, 15, 20, 21, 24, 25, 30, 31, 47, 48, 51) On soft substrata to depths of 350m.
Diagnosis and comment: Hutchings and Glasby, 1987 examined material from Australia, previously identified as *Thelepus setosus* and renamed it *Thelepus extensus.* Both species have groups of unbranched gills in three pairs; notopodial setae start opposite the second pair of gills and extend half-way along the body; there are no lateral lobes on the head; the neurosetal uncini form a single row. The gills of *T. extensus* are small and have a wide gap in the mid-dorsum; a 95mm specimen has about 35 notopodia. Quatrefages' material of *T. setosus* from France, of the same size, had about 55 notopodia and the gills had a narrow gap in the mid-dorsum. On examining the material from MPE the gills had a narrow gap and the specimens averaged between 30 and 55 notosetae and 20-22 ventral gland-shields in the thoracic region, and 30-50 abdominal segments without notosetae. I therefore place the MPE material as *Thelepus setosus.*
Gillet, 1991 lists *Thelepus extensus, Thelepus cincinnatus* and *Thelepus plagiostoma* from Marion and Crozet. When samples housed in the SA Museum from his collection (SAM A 20329, SAM A 20327 and SAM A 20328 respectively) were examined they were all found to be *Lanice flabellum* in which there are three pairs of branched gills, the head has two large lateral flaps extending over the tentacles and neuropodial uncini in two rows placed back to back. In *Thelepus plagiostoma* the notosetae continue almost to the end of the body. *Thelepus cincinnatus* has only two pairs of gills. I therefore

consider that the records of *T. plagiostoma* and *T. cincinnatus* to be invalid.

Subfamily Amphitritinae Thoracic uncini in double or alternating rows in at least some setigers, branchiae present.

***Lanice flabellum* (Baird, 1864)** (key p16)
Material examined: From UCT collection Marion Island SAM A 21204-21220 (Stations 3, 8, 12, 15, 17, 21, 26, 27, 30, 32, 33, 36, 38, 43, 49, 54, 55) (non *Lanice conchilega* in GM Branch et al 1992). In depths of 5-475m predominantly on soft substrata.
SAM A 20329 non*Thelepus extensus,* SAM A 20327 non *Thelepus cincinnatus* and SAM A 20328 non *Thelepus plagiostoma* from Marion and Crozet from the MD/08 cruise.
Compared with *Lanice conchilega* (Pallas, 1766) in Day 1967 p 743 fig 36.8.n-r specimen SAM A 20350 from South Africa.
Diagnosis of Lanice flabellum: Tube cartilaginous, covered with shell fragments and coarse sand with a characteristic fringe of chitinous filaments forming a fan with a narrow base arising from the dorsal side of the opening. The ventral side of the opening forms a smooth semicircular flap. *L. flabellum* was originally named from empty tubes. *L. flabellum* from East Africa has the same tubes (Ehlers, 1908). The present material consists of tubes and animals and a description of SAM A 21205 follows (see illustrations on pxx). Body large and soft with a swollen thorax and slender abdomen, length 40mm. Prostomium compact with numerous grooved buccal tentacles and a broad projecting ventral lip. The buccal segment with large, broad ventro-lateral lobes which are thick and fleshy and meet at the ventral base. There are no lobes on segment 2. Large, square lateral lobes on segment 3 which cover segment 2 and curl outwards at the tip. Three pairs of branching gills with short trunks, and many dichotomous branches. Notosetae consist of winged capillaries from segment 4 to 20 in groups of about 20. Thoracic neurosetae from segment 5 to 20 lie in a single row anteriorly but form a double row placed back to back in posterior thoracic region (2 x 20-35 to a neuropodium). Uncini avicular with a large fang surmounted by 3-4 rows of smaller teeth arranged with usual dental formula MF:3:2:1:5. The neuropodial ridges are raised and glandular but do not extend to the ventral glandular pads. Abdominal uncini borne on long pinnules. About 20 ventral glandular pads form a continuous glandular area which tapers to a glandular streak.

As there are no original 'Type' specimens containing animals of either *L. flabellum* or *L. conchilega*, Hutchings and Glasby (1988) described a specimen of *L. conchilega* from the type locality, Netherlands, as having a narrow rectangular lobe on segment three with a dorsolateral flag-like extension. Day (1967) described *L. conchilega* from South Africa. Hutchings and Glasby 1988 separated the smaller Australian *L. bidewa* (formerly known as *L. conchilega*) which has tubes with smooth margins from *L. conchilega* which has frayed margins. I examined Day's SAM A 20350 from South Africa. The tube was also covered with sand and shell fragments but differed from that of *L. flabellum* in that it was flattened and expanded at the opening with fringe extensions on both the dorsal and ventral edge of the margin. The ventro-lateral flaps on the buccal segment were longer and more triangular, while the flap on segment 3 was broader than in *L. flabellum.* The thoracic neuropodia were much longer with 2 rows of 40-50 uncini in raised glandular patches which extended almost to the ventral pad. The uncini also had fewer teeth.
Variation : Large numbers of *L. flabellum* were collected from the soft substrate area between Marion and Prince Edward Islands. Size up to about 40mm with 25-35mm being common. In some samples the lateral flaps were very thick and swollen.
Distribution: Antarctica, East Africa

Eupolymnia ?nebulosa in Gillet 1991
Material examined IRFA TER 021 from MD/08 expedition
Diagnosis. This specimen had three pairs of branched gills. It was not typical of *E. nebulosa* in that the lateral flaps on the third segment were large and there was a

smaller flap on the fourth segment. The tentacular lobe also lacked ocelli and had small lateral extensions. *E. nebulosa* has numerous ocelli on the tentacular lobe and small lateral lobes on segments 2, 3 and 4. This may be *Lanice flabellum* although the lateral lobes on the buccal segment were not as large as is typical for the species.

Neoleprea streptochaeta (Ehlers, 1897) (key p16)
N. streptochaeta Day 1971 p. 388
non *Amphitrite kerguelensis* partim Gillet 1991 IRFA TER 019
Material examined UCT collection SAM A 21288 from 10m at Bullards Bay
SAM A21358 from Transvaal cove mid-tide (Day, 1971)
IRFA TER 019 MD/08 expedition
Diagnosis: Two pairs of branching gills; no lateral lobes on segments 2-4; notosetae start on segment 3 and extend for 17-18 segments, all the notosetae have denticulate tips, and the uncini have a large fang surmounted by several rows of small teeth; eye spots absent. Differs from *Amphitrite kerguelensis* and *Eupolymnia nebulosa,* both of which have three pairs of branched gills, but they have small lateral lobes on segments 2 to 4. The winged notosetae of *Amphitrite kerguelensis* have finely denticulate tips but those of *Eupolymnia nebulosa* are smooth. The sample IRFA TER 019 contained 9 specimens of *N. streptochaeta*, one *Lanice flabellum* and two *Ampharete kerguelensis* with distinctive stout palea on segment 3 (see p14). I do not consider the records of *Eupolymnia nebulosa* and *Amphitrite kerguelensis* (Gillet, 1991) to be valid.

Order Sabellida

FAMILY SABELLIDAE

Subfamily Sabellinae

Perkinsiana antarctica (Kinberg, 1867) (key p17)
Laonome antarctica Kinberg, 1867: 354
Potamilla antarctica Fauvel, 1916:74, pl.8 figs 4-7; Hartman, 1966:125, pl.41. figs 10-12; Day 1971: 389 (SAM A 21357)
Perkinsiana antarctica Knight-Jones, 1983: 277, fig 14
non *Jasmineira caeca* in Gillet, 1991 SAM A 20331
non *Potamilla torelli* in Gillet, 1991 SAM A 20332
UCT collection SAM A 21262 (intertidal), SAM A 21274 from Bullards Bay at 5m depth.
Diagnosis: Head with 15 long and 3 short pairs of radioles; collar has long ventral lappets; thoracic neuropodia bear avicular uncini and smooth pickaxe setae; notopodia with spatulate limbate setae; colour orange brown with pale branchiae; tubes sandy.
Comment: This differs from *Jasmineira caeca* which has long-shafted thoracic uncini. Gillet's SAM A 20331 is *P. antarctica.* The name *Potamilla torelli* is not valid for Southern Ocean species (Knight-Jones, 1983). Day in his personal notes considered *P.torelli* from South Africa (Day, 1967) to be *Demonax krustensterni* (Kinberg, 1867) in which the pickaxe setae have small striated blades with pointed curved tips. Gillet's specimen SAM A 20332 has smooth pickaxe setae and long ventral lappets to the collar - the radioles are missing. It is considered to be *Perkinsiana antarctica.*
Distribution: Common at 5-10m depths at Bullards Bay and and Transvaal Cove reaching $26m^{-2}$ among rocks in the kelp beds.

FAMILY SPIRORBIDAE

The Spirorbidae previously recorded from Marion Island have been re-examined by Day and Knight-Jones resulting in the following name changes:

Leodora perrieri (Caullery & Mesnil, 1897) see Rullier, 1973 (key p18)
= *Spirorbis (Romanchella) perrieri*

Romanchella inventis (Harris, 1969) (key p18)

=*Spirorbis (Romanchella) perrieri marionensis* Day,1971
Revised by Day in his personal notes. *R. inventis* was originally described from Tristan da Cunha.

Paralaeospira levinseni (Caullery & Mesnil, 1897) (key p18)
=*Spirorbis patagonicus* in Day,1971 SAM A 21382

Order Phyllodocida (from Fauchald 1977)
Suborder Phyllodociformia
FAMILY PHYLLODOCIDAE

? Steggoa hunteri (key p26)
Material: UCT collection SAM A 21276 (Station 38)
Diagnosis of Marion Island material SAM A 21276: Body length 280mm, 800 segments purplish brown when preserved, prostomium triangular with a notched posterior margin and two large irregularly shaped eyes. Parapodia with ventral cirri foliose and dorsal cirri broad and foliose. Postmedian parapodia with modified compound setae with cuspid articulations and long blades. This specimen is tentatively identified as *Steggoa hunteri* which has all the above characters but in addition has four pairs of tentacular cirri on the first three segments. There was only one tentacular cirrus remaining on the specimen from MPE which had shed the other tentacles and several cirri.

Steggoa magalaensis (Kinberg, 1886) (key p26)
Steggoa magalaensis Day, 1971 SAM A 21378 (intertidal)
? non*Eulalia viridis* in Gillet, 1991 IRFA PHY O22
Material: UCT collection SAM A 21306 (from 5m depth at Bullards Bay)
Diagnosis of IRFA PHY 022: Body 120mm with 100 segments and light brown in colour. Most of the antennae, tentacular cirri and dorsal cirri were missing from the specimen. The prostomium was triangular with a pair of large diffuse eyes and two anterior antennae present (typically *Steggoa* and *Eulalia* have four anterior antennae and a dorsal antenna). The single tentacular cirrus present was lanceolate. A few anterior parapodia few with flattened lanceolate dorsal cirri and none with ventral cirri. Posterior parapodia with flattened ventral cirri, some with rounded tips and some pointed; dorsal cirri lost; compound setae long with short blades, some swollen near the tip of the shaft. Prostomium with 14 marginal papillae, surface papillose. Gillet considered this material to be *Eulalia viridis* originally described from Europe. The genus *Eulalia* has all tentacular cirri cylindrical but as most of the tentacular cirri are missing and the only tentacular cirrus present was slightly lanceolate the genus cannot be confirmed. The structure of the proboscis, parapodia and compound setae are similiar to *Steggoa magalaensis* collected from Marion Island and figured in the key (SAM A 21306 and SAM A 21378). I therefore provisionally allocate Gillet's specimen to *Steggoa magalaensis.*
Distribution: Reported from eastern and western sectors of Antarctica, in intertidal depths to 800m.

Suborder Aphroditiformia
FAMILY POLYNOIDAE
Specimens of the Harmothoinae were extremely difficult to identify, despite the fact that each specimen was preserved in a separate container so that its scales were not lost, since they were usually shed on death. Specimens in the British Museum of Natural History were examined by myself and Dr S Chambers for comparison. Only *Harmothoe magellanica* and *Harmothoe crosetensis* were distinctive.

Harmothoe magellanica (McIntosh, 1885) (key p20)
This was quite distinctive: the elytrae were smooth apart from a small group of

tubercles near the point of attachment.

Harmothoe crosetensis (McIntosh, 1885) (key p21)
Elytrae pale with fine hair-like papillae along the margins and small papillae on the surface. The palps were very long and the eyes were dark and placed on the lateral margin of the prostomium.

?***Lagisca exanthema*** (Grube, 1856) (key p21)
= *Harmothoe bergstromi* Day, 1971 p 384 SAM A 21353
Harmothoe exanthema var. bergstroemi Monro, 1936 BMNH 1936.2.8.110
UCT collection SAM A 21348 (station 30), SAM A 21339 (station 25)
Diagnosis of specimens from UCT collection: Prostomium with the anterior pair of eyes large, lateral in position and well back. Palps broad, about 3x length of prostomium; antennae and dorsal cirri minutely papillose with subterminal swelling and two brown bands. Elytra mottled reddish brown often with a dark central spot, almost meet dorsally and do not cover the last 9 segments, with small pointed micropapillae and 5-20 large globular vesicular macropapillae with a granular surface; notosetae stout, closely serrated with a fairly long blunt tip; superior neurosetae unidentate, slightly narrower than notosetae; inferior neurosetae have a secondary tooth and a large broadened terminal region and are almost as stout as the notosetae: all neurosetae markedly serrated. These specimens are tentatively identified as *Lagisca exanthema* but their macropapillae lack the distinct short stalk to the vesicle found in Monro's *Harmothoe exanthema var. bergstroemi* (see Bergstrom 1916). They also lack the apical papillae which are typical of *L. exanthema*.

Harmothoe* cf *kerguelensis McIntosh 1885 (key p21)
UCT collection SAM A 21328 -21332 & SAM A 21343 (Stations12, 14, 16, 17, 18, & 22)
Diagnosis of specimens from UCT collecton: Prostomium with pointed antero-lateral peaks and an angular fold over the anterior eyes; eyes with pale centres, set in from the margin of the prostomium; palps short, <3x prostomium; antennae pale, tapering; body up to 15x5mm, 29-34 segments, pale pinkish brown dorsally and paler ventrally; elytra pale, slightly darker down the centre of the animal, micropapillae dark, conical, surface-spines and a fringe of fine hairs along the margin, macropapillae absent. Notosetae stout curved and coarsely toothed; superior neurosetae had very long spines and a tapering tip, inferior neurosetae finely serrated with a bifid tip, the lowest are short with unifid tips. The structure of the elytra and setae are similiar to those of *H. kerguelensis* in Hartman, 1964 (plate VII fig 1-3) although the description of the species is inadequate and the original material (from McIntosh, 1885) could not be found for comparison.
Distribution: Dredged at MPE from depths of 110-475m. *H. kerguelensis* from Kerguelen Island occurs at 60-100m.

Harmothoe spinosa Kinberg, 1855 (key p21).
UCT collection SAM A 21319-21323, SAM A 21333-21337, 21344, 21345 & 21349 (Stations 2, 6, 14, 20, 31, 36, 48, 49, 53, 54, 57
There was a series of *Harmothoe* polychaetes in which the elytra were papillate with large spines and globular vesicles and extended to at least the last six segments. The antennae and dorsal cirri were spinose and bulged subterminally with a fine attenuated tip. The antennae and parapodia were usually banded with brown. Large specimens (120mm) had mottled reddish brown elytra that overlapped across the dorsum and extended to the tail. Some smaller specimens (about 30mm) with very long palps had mottled brown elytrae that did not overlap dorsally and ended six segments from the tail. Other small specimens had short, broad palps and elytra which were either mottled brown or with a distinct dark band. The notosetae were thicker than the neurosetae. These were all considered to be *H. spinosa*.
Hartmann-Schroder (1988) included *Harmothoe monroi* Uschakov, 1962 as a variety of *H. spinosa*. She described four groups:

Group A was like *H. monroi* with partially serrated notosetae and bifid neurosetae, the elytra had humps and cylindrical macro- and micro-papillae.
Group B had weakly serrated notosetae and neurosetae with bifid tips, the elytra lacked macropapillae and had short thin micropapillae.
Group C was the 'typical' *H. spinosa* with markedly serrated notosetae and single-tipped neurosetae, the elytra had long spines and the macropapillae were short and cone shaped.
Group D the notosetae weakly serrated, neurosetae single-tipped, elytra without frills, macropapillae cylindrical on warty humps, micropapillae thin spines.
Most of the animals in this collection belonged to Group A (as illustrated in the key) with a smaller percentage like Group C.
Distribution: Around MPE islands in depths 10-350m on rocky and sandy substrates. South Chile, East Patagonia, Falkland islands, southern Australia, New Zealand, subantarctic islands and Antarctica.

Suborder Nereidiformia

FAMILY HESIONIDAE

Kefersteinia fauveli Averincev, 1972 (key p27)
non *K. cirrata*; Fauvel, 1951 and Hartman, 1964.
non *K. cirrata* Gillet, 1991 (specimen IRFA HES 010)
Antarctic specimens are considered to be *K. fauveli.*
Diagnosis: Body has 8 pairs of slender smooth tentacular cirri arranged 2,2,2,2 on first 4 segments. Parapodia uniramous, dorsal cirri short and smooth, posterior setal lobe long and triangular and neurosetae smooth. Pharynx with 10 large and 30 small marginal fimbriae.
Distribution: Weddel Sea, (Hartman, 1978) and Marion Island.

Keffersteinia cirrata (Kefferstein, 1862) is distinguished by the 8 pairs of articulated tentacular cirri which are arranged 3,3,2 on first 3 segments. The parapodia are uniramous but the dorsal cirri are long, slender and articulated. The posterior setal lobe is not long and triangular and the neurosetae have saw-edged blades. Pharynx with a distal circlet of 40 fimbriae. Recorded from South Africa.

FAMILY SYLLIDAE

Pionosyllis ehlersiaeformis Augener, 1913
Material examined: SAM A 20289 in Gillet, 1991
UCT material SAM A 21291 from Tripot Point in 15m depth
Compared with *Pionosyllis capensis* Day in press = *P.* cf *ehlersiaformis* in Day, 1967
Comment: In *Pionosyllis ehlersiaeformis* Augener, 1913, from western Australia, the bidentate blades of the compound setae have an apical tooth that is smaller than the secondary tooth. Inferior simple seta occur in the posterior parapodia, and are bidentate, also with the apical tooth smaller than secondary tooth.
Hartmann-Schroder (1974) and Day in his revision (in press) considered *Pionosyllis* cf *ehlersiaeformis* (in Day 1967) to be a separate species (*P. capensis* in press). In this species the bidentate blades have a secondary tooth that is smaller than the apical one and there are no inferior simple setae on the posterior feet.
Diagnosis of material from Marion Island (SAM A 21291): The specimens have very characteristic large square palps and broad prostomiums with two pairs of eyes. The antennae are smooth long and uniform throughout. Pharynx red with a smooth margin and a single dorsal tooth; gizzard orange with about 50 rows of fine denticles. Compound notosetae with long slender appendages; neurosetae all compound, short terminal blade with a large secondary tooth, a small apical tooth and small serrations. Dorsal cirrus long and slender, ventral cirrus broad and longer than setal lobe. All the material consisted of incomplete animals; one had a few inferior simple setae in the posterior feet the rest consisted of anterior ends only.
In conclusion the MPE material conforms to *P. ehlersiaeformis,* the only difference is

that the MPE material has larger, more square palps than is typical of *P. ehlersiaeformis*. It is different from the South African material proposed as a new species by Day (in press).

Suborder Glyceriformia

Pyllodocida with two pairs of antennae; palps and tentacular cirri absent. Proboscis either armed with four jaws or a circlet of jaws. First parapodia lateral

FAMILY GLYCERIDAE

Glycera kerguelensis McIntosh, 1885 (key p23)
non *Hemipodus simplex* in Gillet, 1991 (IRFA GLY 059)
UCT material SAM A 21225-21233 (stations 16, 17, 27, 33, 39, 40, 43, 52, 54). In depths of 110-475m
Diagnosis : Body 20-45mm long, segments triannulate. Prostomium long with about 8 rings and four small antennae. Proboscis with long slender papillae on the surface and four jaws with a winged hinge support. Parapodia are biramous with two anterior lobes and one posterior lobe, they contain simple and compound setae. The dorsal cirri are small and are set high above the parapodium on the body .
The specimen IRFA GLY 059 is considered to be *Glycera kerguelenensis* and not *Hemipodus simplex* (as in Gillet, 1991). *H. simplex* has uniramous parapodia and all its setae are compound.
There is some question as to whether *Glycera kerguelensis* is in fact a valid species or a synonym of *G. capitata* Oersted, 1843 - the latter differs in the shorter more rounded prostomium, the proboscidal papillae which are orbicular to oval and the unsegmented parapodial tips.

FAMILY GONIADIDAE

Gonlada brunnea (Treadwell, 1906 revised by Moore 1911) (key p23)
G. maculata Hartman, 1940
G. brunnea Hartman, 1950 pp 17-19, pl 1.
non *G. maculata* in Gillet, 1991 (IRFA GON 001 from the MD/08 collection off MPE)
Material examined: SAM A 20482 *G. maculata* collected at 93m depth off South Africa in Day 1967
Diagnosis: Specimen IRFA GON 001 body about 40 mm long, dark. Prostomium fairly broad, with 8 rings and two pairs of biarticulate antennae. Everted proboscis with 7 lateral chevrons and covered with small flat scale-like papillae which are semicircular with a slightly flared margin. About 17 terminal papillae. Mouth with pair of large lateral macrognaths (jaws) with three teeth, 7 small ventral teeth (micrognaths) and 2-4 dorsal micrognaths. Parapodia characteristic of the species with 55 uniramous anterior segments and about 75 biramous posterior segments. The dorsal cirri are fairly large and flat with a narrower base. The notopodium in the posterior feet has a long presetal lobe and a short postsetal lobe and long simple setae. The neuropodia are longer and heavier than the notopodia, they have two long triangular presetal lobes and a shorter post setal lobe and ventral cirrus. The neurosetae are all compound.
Comment: IRFA GON 001 is very similiar to *G. maculata* (SAM A 20482) and Gillet (1991) assigned it to this species. However the latter is smaller and lacks the presetal lobe in the notopodium, the dorsal cirri are not as broad and their are always only three ventral micrognaths and four dorsal ones. Hartman (1950) noted that in *G.brunnea* the micrognaths and chevrons were more variable in number than in other species and the specimen IRFA GON 001 falls with in its range. The papillae on the proboscis of *G. maculata* also differ being cordiform (their attachment appears pointed, not semicircular, when viewed from the front) and the margin is as not flared. Its dorsal cirri are finger-like and not foliose as in *G. brunnea*.

FAMILY NEPHTYIDAE
Body square in section; parapodia biramous with flattened, leaf-like lamellae; gills curled and lie between the dorsal and ventral parapodial lobes.

Aglaophamus ornatus Hartman, 1967 (key p21)
= *A. macroura* partim in Hartman, 1964
non *Nephthys hombergi* in Gillet, 1991 IRFA NEP 029
UCT collection SAM A 21137-21146 (stations 5, 6, 9, 12, 15, 31, 47, 48, 54)
Diagnosis: Branchiae involute (curl out then down with the tip inwards); no eyes; pharynx tip with a ring of about 20 bifid papillae, followed by 13-14 rows of 4-5 papillae which are replaced by a triangular patch of smaller papillae proximally; ventral cirri long; post setal lamellae large and foliose; postsetal lobes of neuropodia have crenulate margin in postmedian segments, anterior acicular lobes deeply incised and rounded in median segments. Antarctic records were previously identified as *A. macroura* (Schmarda, 1861) in which the postsetal lobe of the notopodium is split into two and that of the neuropodia has a smooth margin. This is an intertidal New Zealand species. Roxbaczylo & Castilla (1974) working on the Nephtydae of Chile examined material from the Shetland Islands, they commented on the considerable variation in the parapodia along the length of the body and considered the material from Chile to be the same as that from the Weddel Antarctic and southern South America and called it *Aglaophamus macroura*. The postsetal lamellae in post median segments of their figures 2e and 3a have distinctly crennulate margins which would place them as *A. ornatus*.

In *Nephthys* species the interramal branchiae are recurved (curl down then outwards). The specimen IRFA NEP O25 had involute branchiae and parapodia typical for *Aglaophamus ornatus* and Gillet's record of *Nephthys hombergy* Savigny, 1820 is thus invalid.
Distribution: *Aglaophamus ornatus* is known from subantarctic Marion, Crozet and Kerguelen islands as well as the Antarctic Peninsular, South Sandwich Islands, Bransfield Strait and the Scotia Sea from 25-1400m depths. *Nephthys hombergy* is known from the northern hemisphere and southern Africa. *Aglaophamus macroura* (Schmarda, 1861) as emended by Hartman, 1967 is recorded only from the intertidal sandy shores of New Zealand.

Order Eunicida

FAMILY EUNICIDAE
Genus *Eunice* (See Fauchald, 1992)

Eunice pennata (Müller, 1776)(key p24)
Material examined: UCT collection SAM A 21149-21164. Depth range 49-697m.
Diagnosis: *Eunice pennata* was originally described from Norway by Müller (1776) but the types were lost. Two specimens from the type localitiy were described in detail by Fauchald (1992). She commented that *E. pennata* was widely reported and appeared at one time to have a bipolar distribution but that the southern hemisphere and antarctic species of Hartman (1964 and 1967) have yet to be confirmed. Hartman considered it to be the same as *Eunice antarctica* Baird, 1870. Day, 1967 recorded *E. pennata* from South Africa. According to Fauchald's (1992) revision of the genus, *Eunice pennata*'s most unique feature is the presence of ring-shaped bases in posterior notopodia reminiscent of the onuphids. The present specimens from MPE have swollen ring-shaped bases. Two closely related species, and possible synonyms of *E. pennata* are *E. edwardsi* McIntosh, 1885 which was collected off Prince Edward Island by the Challenger Expedition and *E. antarctica* Baird 1869 from the Antarctic seas (=*E. pennata* in Hartman 1964). According to Fauchald *E. pennata* can be distinguished from *E. edwardsi* and *E. antarctica* by the peristomial cirri which are articulated and reach to middle or anterior end of the peristome in *E. pennata* but are not articulate and longer in *E. edwardsi* and *E. antarctica* extending to the middle or front of the prostomium. In the present collection this was not a reliable feature, for although the peristomial cirri were articulated and usually short there were some small specimens in which they

reached the prostomium. In *E. pennata* the first 5 and last two branchiae are moniliform those in the middle are pectinately branched with up to 12 filaments, the branchiae are much longer than the notopodial filaments. In *E. antarctica* the branchiae have up to 5 filaments and are shorter or the same length as the notopodial filaments while *E. edwardsi* has up to 6 filaments and are as long as the notopodial cirri. In the present material the many branchiae were definitely longer than the notopodial cirri and there were up to ten branchial filaments. The degree of articulation of the notopodial cirri was also not a reliable feature as there was considerable variation. In the present collection from MPE the anterior and posterior cirri had more definite articulations especially at the base of the posterior ones while in the mid region there were some indistinct articulations. According to Fauchald in *E. antarctica* the cirri are articulate throughout the body but in *E. pennata* the mid region cirri are smooth. In *E. edwardsi* the anterior notopodial cirri are basally inflated whilst those of *E. antarctica* are medially inflated and of *E. pennata* are digitiform and tapering. All three species have light yellow, bidentate subacicular hooks present after setiger 28 (in *E.edwardsi* and 35-43 in *E. pennata* and 31-44 in *E. antarctica*). The branchiae start from setiger 3 and terminate at about setiger 40, and are on less than 55% of the total number of setigers.
I have decided the present collection is *E. pennata* because of the swollen ring at the base of the parapodia, and the condition of the branchiae which are longer than the notopodial cirri and have more than 5 cirri. I think that the single known collection of *E. edwardsi* (McIntosh, 1885) is probably the same. If *E. antarctica* is a separate species then the branchiae (being short and less branched) is the most constant feature separating it from *E. pennata*. The length of the peristomial cirri and the degree of articulation of the cirri is not considered reliable for distinguishing them.

FAMILY ONUPHIDAE

Genus *Nothria* (See Fauchald 1982)
Body with less than 50 setigers; tube equal to body length; first parapodia enlarged and pointing forwards; parapodia with foliose presetal lobe; subacicular hooks absent; pectinate setae scoop-shaped.

Nothria anoculata Orensanz, 1974 (key p24)
non *Kinbergonuphis tenuisetis* in Gillet, 1991 SAM A20298
UCT material: SAM A 21126 -21128 (station 12, 39, 41). Depth range 90-370m.
Diagnosis: Eyes absent, ceratophores short with 3-4 rings, antennae long and tapering reaching setiger 6; setiger 1 enlarged and projects forward, first three setigers each with a stout, foliose presetal lobe and shorter dorsal and ventral cirri; ventral cirri tapering in first 3 feet but in later feet become swollen and cushion-like; simple strap-like brachiae from setiger 9-13; from setiger 1-3 stout pseudocompound or simple hooks, from setiger 4 on smooth winged capillaries, about 6 fine comb setae, scoop-shaped; bidentate acicular setae after segment 10; characteristic flattened tube covered with large shell fragments.
Comment: The specimen SAM A 20298 identified by Gillet as *Kinbergonuphis tenuisetis* was the same as the UCT material. It was identified as *Nothria anoculata* on the basis of the enlarged first parapodia with foliose presetal lobes and pseudocompound hooks, the presence of scoop-shaped pectinate setae and the absence of subacicular hooks but presence of intrafascicular hooks. Eyes absent. In *Kinbergunophus* the first parapodium is not enlarged and the pectinate setae are flat.

FAMILY LUMBRINERIDAE

Lumbrineris magalhaensis (Kinberg, 1865) (key p25)
Lumbrineris magalhaensis Kinberg, 1865: 568; Hartman, 1964; 123 pl. 37 fig 9,10; *Lumbrineris magalhaensis* in Day, 1967: 432 fig 17.15 a-g. SAM A 2056 from S. Africa.
non *Lumbrineris gracilis* in Gillet, 1991 SAM A 20276
non *Lumbrineris impatiens* in Gillet, 1991 SAM A 20300 , part IFRA LUM 031

UCT collection SAM A 211311 from Bullards Bay at 15m depth
Diagnosis: Body uniform fairly stiff up to 50 x 2.5mm with golden setae; prostomium conical, rounded in the juvenile; maxilla III with one tooth with an irregular edge (2 teeth in the juvenile); parapodia postsetal lobes slightly longer than presetal lobes, compound hooded hooks start in first 5 setigers with winged capillaries to about setiger 15; capillaries and simple hook in the middle region posterior parapodia elongate with short post setal lobes and only simple hooks.
Comment: Gillet's SAM A 20276 (non *L. gracilis* Ehlers, 1868 =*L. latrielli* Audouin & Milne Edwards) and SAM A 20300 (non *L. impatiens* Claparéde, 1868) compare well with Day's South African *L. magalhaensis* SAM A 202561 and with the UCT material from MPE. They differed from Day's South African *L. latrielli* (=*L. gracilis*) SAM A 20259 which was larger, more grey with a more pointed prostomium, longer parapodia and longer post setal lobes on the abdominal parapodia, and two teeth on maxilla III in the adult. The sample IFRA LUM 031 contained two animals, the larger was *L. magalhaensis* with compound hooded hooks starting in the first 5 setigers. In the smaller specimen only simple hooded hooks were found but many setae were missing or damaged making a positive identification impossible although this may be *L. tetraura* (=*L. impatiens*).
Distribution: *L. magalhaensis* is a common subantarctic species, abundant on the shores of Kerguelen. Collected from five stations at 15m depth in *Macrocystis* kelp at Marion Island.

Lumbrineris* sp. aff *L. fragilis Müller 1776 (key p25)
UCT collection SAM A 21132 & SAM A 21133 (stations 19 & 28)
=? *L. heteropoda* recorded by Gillet, 1991
Diagnosis: Body large (about 100mm), firm brownish; stiff black setae with pale flattened tips; prostomium conical; maxilla III with two teeth; all hooded hooks are simple and appear first at about setiger 40; parapodia postsetal lobes large but not longer than setae.
Comment: This material is close to *L. fragilis* which has black aciculae and postsetal lobes slightly shorter than the setae. It is also close to *L. difficilis* Day 1963 (= *L. heteropoda difficilis*) which has black aciculae but differs in that the posterior parapodia have postsetal lobes much longer than the presetal lobes and longer than the setae. It is not *L. heteropoda* which has pale aciculae, and its middle parapodia have pre-and postsetal lobes which are small and subequal, posterior parapodia with postsetal lobes markedly longer than the presetal lobes and setae. Perkins (1979) redescribed the types of *L. dubeni* (Kinberg, 1865) (= *L. heteropoda heteropoda* in Day, 1967) which have pale setae, parapodia along the whole length of the body with postsetal lobe longer than presetal lobe and subequal to the setae in the posterior segments. The present material is clearly not *L. dubeni*.

Distribution patterns

The Polychaeta, with 79 confirmed species, is one of the main groups of macrobenthic animals occurring at MPE. They are particularly abundant in the soft-sediment shallow zones (15-100m depths) and were the most species-rich invertebrate group in the intertidal and shallow subtidal with 26 and 35 species respectively. They were also the most numerically abundant group in the SCUBA surveys making up 32% of the total of number of animals collected (Beckley and Branch, 1991).

The records of the polychaetes from 1982-89 surveys by the University of Cape Town are listed in Table 1 and the localities and stations are shown in fig 1. The intertidal records were from 8 stations sampled in 1982 and from published surveys (Day, 1971 & De Villiers, 1976). Fourty-four SCUBA-diving samples were taken, 36 being part of the quantitative survey at 5, 10 and 15m depths at Trypot Point, Transvaal Cove and Bullards Bay (Beckley & Branch, 1991). The results of the 57 dredged collections are given in two ways. The first relates to the substrata from which the various species were collected, which ranged from volcanic rock, through gravel to black volcanic sand and mud. The second relates to the abundance of species within five community groups which were recognised by a Brey-Curtis similarity analysis of total species composition at each dredge station (GM Branch et al, 1993).

Four species dominated the dredge collections. *Lanice flabellum*, with its sandy fan-tipped tubes, *Serpula vermicularis vermicularis*, with calcareous tubes, and the errant *Eunice pennata* were indicator species of communities between 50 and 350m depths where the brachiopod *Magellania kerguelensis* was abundant. *Thelepis setosus* was an indicator species of the shallow (15-50m depths) soft substratum communities in the kelp understory where bryozoans are common. Scale worms were spread through the dredge samples with *Harmothoe magellanica* and *Polyeunoa laevis* being abundant on deep rocky substrata and *Harmothoe spinosa* and *Lagisca exanthema* more common in the shallower soft substrates.

The composition of the species within the community groups (**1-5** in Table 1 and Fig.1) recognised from the dredge survey (GM Branch et al, 1993) are detailed as follows:

Group 1 The heterogenous inshore community around the islands to a depth of 50m was not particularly rich in polychaetes. There were 12 species but only *Lanice flabellum*, *Thelepus setosus* and *Aglaophamus ornatus* were common.

Group 2 This shallow (50-150m) community favoured soft sediment which was prevalent between Marion Island and Natal Bank (Station 6). Twenty five species were found in this community and buckets full of *Lanice flabellum* and *Serpula vermicularis vermicularis* tubes and worms were collected. *Harmothoe spinosa*, *Lagisca exanthema*, *Aglaophamus ornatus* and *Thelepus setosus* were also common.

Group 3 The deeper (150-300m) soft-sediment community between and to the east of MPE was also dominated by the tubiculous *Lanice flabellum* and *Serpula vermicularis*. A third species with a smooth calcareous tube, *Protula tubularia tubularia* was commonly collected. *Eunice pennata* was still abundant at this depth and several individuals of the large scale worm *Laetmonice producta* were present. There were 20 species including the only records of *Scalibregma inflatum*, *Petta assimilis* and *Lumbrineris magalhaensis*.

Group 4 The deep rocky-bottomed stations dominated by octocorals and hydrozoans yielded 15 species of polychaete but only three of these were abundant, *Lanice flabellum* and the scale worms *Polyeunoa laevis* and *Harmothoe magellanica*. *Eunice pennata* and *Axionice godfroyi* were common. Two glycerids, *Glycera kerguelensis* and *Glycerella magellanica*, and a new species of the family Polynoidae were collected.

Group 5 A small community was found on a deep sloping shelf to the south east of Marion Island (depth over 500m) in which polychaetes were rare and made up of small samples of the seven common species *Platynereis australis*, *Eunice pennata*, *Harmothoe magellanica*, *H. cf. kerguelensis*, *Polyeunoa laevis*, *Lanice flabellum* and *Serpula vermicularis*.

Twenty species were confined to the intertidal and shallow subtidal, and a further 22 species were found in both deep and infralittoral areas.

Group 6 In this intertidal community extensive areas on the sides of boulders were matted with sandy tubes of the sabellid *Oriopsis limbata*. *Pionosyllis nutrix*, *Typosyllis variegata* and *Boccardia polybranchia* commonly sheltered in these mats or under rocks. *Platynereis australis* lived in mucous tubes among ascidians and other growths. Three serpulids were found commonly on rocks and shells, i.e., *Helicosiphon platyspira*, *Paralaeospira levenseni* and *Romanchella inventis*. *Polycirrus hamiltoni* and *Cirratulus cirratus* were also common in rocky mid-tide gulleys.

Group 7 These samples from the diving surveys in 5-15m depths were collected from dense algal beds. The alga *Durvillea antarctica* formed a narrow fringe in the infralittoral between 3-6m depths and merged into a *Macrocystis* zone at over 5m depths. The holdfasts of the kelp *Macrocystis laevis* provided shelter for many species of polychaete and led to the highest biomass values at 10m and 15m at the three sites sampled by diving. The polychaete component in these communities was the most species rich (34 species) and numerically abundant (37%) of the zoobenthic groups. At Bullards Bay and Transvaal Cove polychaetes accounted for more than half of the total wet biomass. *Thelepus setosus*, *Neoleprea streptochaeta*, *Boccardia polybranchia*, *Axiothella quadrimaculata*, *Rhynchospio glutaea*, *Oriopsis limbata*, *Polycirrus hamiltoni* as well as *Notomastus* sp. and *Orbiniella dayi* were common or abundant sedentary polychaetes. The large *Platynereis australis* and small syllids *Exogone heterosetosus* and *Typosyllis variegata* were abundant errant polychaetes (Beckley and Branch, 1992).

On examining the modal abundances on different substrata clear patterns emerged for the abundant tubiculous polychaetes, which favoured soft substrata with gravel, sand or mud in which they could bury their tubes. Only the feathery fan-like openings of the tubes of *Lanice flabellum* were exposed above the surfaces of these substrata. In all,18 species of the sedentaria occurred on sand and sand mixtures. Only eight sedentary polychaetes occurred on rocky substrata. These included four small spirorbids as well as *Oriopsis limbata* and *Axionice godfroyi* which attach their tubes to rocks and firm substrata. Errant polychaetes were less substrate-selective, *Polyeunoa laevis* and *Harmothoe magellanica* definitely favoured rock but the majority occurred on both firm and soft substrata.

Gillet (1991) reported on the polychaetes of Marion, Prince Edward and Crozet Islands collected during the MD/08 benthos expedition of the Marion Dufresne in 1976. The most abundant species he recorded for MPE were *Eunice pennata*, *Harmothoe magellanica*, *Anobothrus patagonicus*, *Notomastus latericeus*, *Nothria anoculata* (misidentified as *Kinbergonuphis tenuisetis*), *Exogone heterosetosus*, *Pionosyllis elhersiaformis*, *Laetmonice producta* and *Eusyllis kerguelensis*. Gillet did not list the species from Crozet and MPE separately, but merged the islands for the discussion and analysis which makes comparisons with the present results difficult, as there are dstinct differences between the species from the two localities. When the cluster analysis of Gillet (1991, Fig. 4) is compared with the present results, he also found a shallow and deep fauna with few species occurring on hard substrata. His deep fauna is similiar to Groups 3 and 4 in this analysis with some extra species recorded, presumably from Crozet. Of his shallow fauna the soft substratum cluster (2_2) combines elements of my groups 1 and 2 and the dive samples, group 7. Two of the species from his group 1 on hard substrata , *Amphitrite kerguelensis* and *Thelepis plagiostoma*, I consider invalid records, as discussed above. Several species from Gillet's soft substrate groups 2_1 and 2_3 were not recorded in the UCT sampling and this may be accounted for by the greater variety of sampling methods used for the MD/08 collection, which included a trawl, Lithodes nets, Charcot dredge and Okean grab. However, on examining material from this collection, I found that some of the specimens had been misidentified (see taxonomic discussion). Gillet also seems to have lumped all the *Harmothoe* species together as *H. magellanica* whereas the UCT collection recorded *H. spinosa*, *H. kerguelensis* and *Lagisca exanthema* as well as *H. magellanica*. The absence of records of *Thelepus setosus* may be due to misidentification.

Geographical distribution of MPE Polychaetes

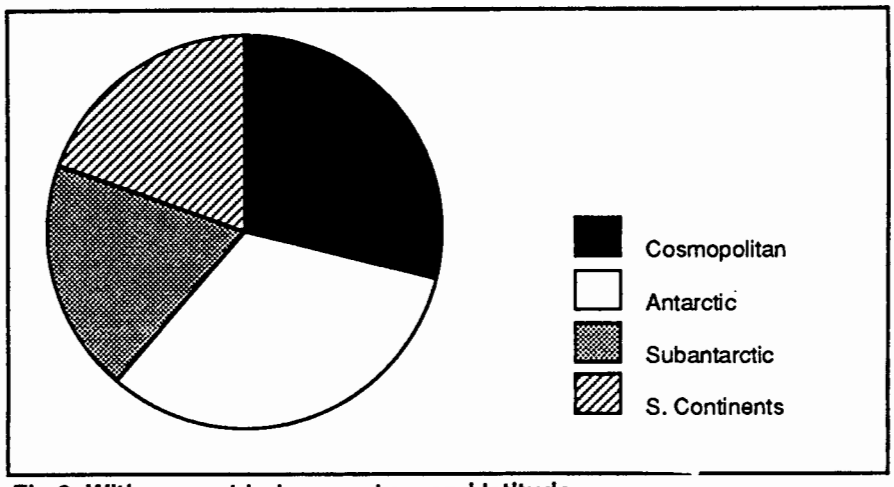


Fig 2 With respect to temperature and latitude
Cosmopolitan = occurring in Antarctic, subantarctic and southern continents (24)
Antarctic = species occurring in Antarctic and subantarctic (27)
Subantarctic = species confined to subantarctic (16)
S. continent = occurring in the subantarctic and the southern continents (16)

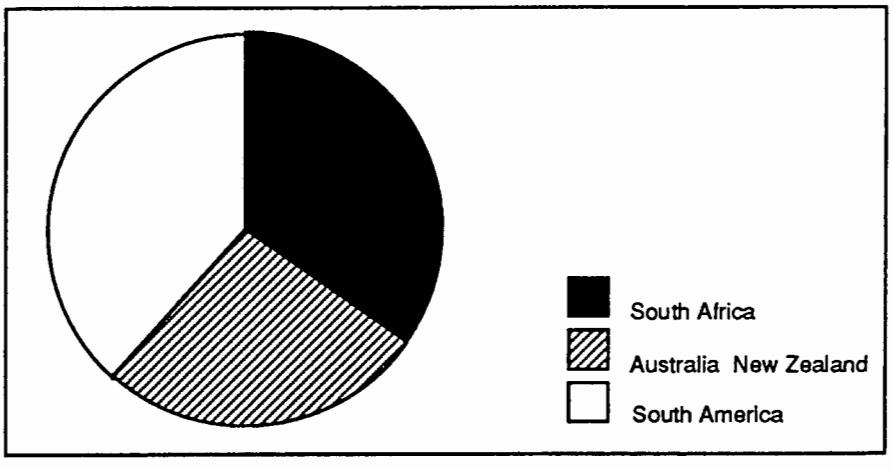


Fig 3 In the southern continents
20 species are shared with South America, 18 with Southern Africa and 14 with Australia and New Zealand

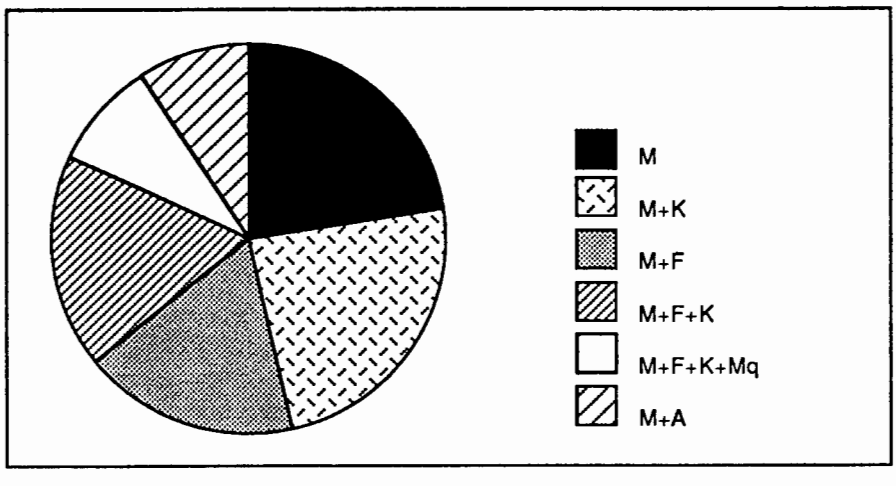


Fig 4 Between the subantarctic islands and Antarctica
Excluding the cosmopolitan species the polychaete species were divided into those that occurred:
1) Only at Marion (M) (15)
2) At Marion and Kerguelen (M+K) (16)
3) At Marion and Falkland and Magellan Straights (M+F) (12)
4) At Marion, Falkland and Kerguelen (M+F+K) (13)
5) At Marion, Falkland, Kerguelen and Macquarie (M+F+K+Mq) (6)
6) At Marion and Antarctic peninsular but not other subantarctic islands (M+A) (6)

Geographical distribution

The geographical distribution of confirmed species of Marion and Prince Edward (MPE) polychaetes is summarised in table 2. Distribution is shown for the four quadrants of the Antarctic and subantarctic regions: namely Weddell, Enderby, Victoria and Ross Quadrants. The Antarctic Convergence forms the boundary between the Antarctic and subantarctic waters. The northern boundary of the subantarctic is marked by the subtropical convergence. There are steep temperature and salinity gradients at the convergent zones which can act as physical barriers to dispersal of species. The Faulklands, MPE, Crozet and Macquarie are true subantarctic Islands. Kerguelen lies on the Antarctic convergence, while Heard, Bouvet and South Georgia are south of the Antarctic convergence.

The geographical distributions of MPE species were analysed with respect to temperature and latitude and are summarised in Fig. 2. There were 24 cosmopolitan species occurring in the Antarctic, subantarctic and north of subantarctica, 16 confined to the subantarctic, 27 to the subantarctic and Antarctic and 16 species that occurred in subantarctic islands and the southern continents. This pattern is similiar to that shown for the asteroids (chapter 5) in which there is a relatively low percentage of species confined to the subantarctic when compared with the ophiuroids and holothuroids. Further separation of the cosmopolitan and southern continent species are shown in Fig. 3. The MPE polychaetes have 20 species shared with South America, 18 species shared with South Africa and 14 with Australia and New Zealand.

The distribution was tested to show grouping between the subantarctic islands. The numbers of species shared with the Falklands, Kerguelen and Macquarie were recorded. Cosmopolitan species were excluded from this analysis (Fig. 4). There were 15 species endemic to MPE, 16 shared with Kerguelen, 12 with Falkland and Magellan Straits, but not even one exclusively with Macquarie. Thirteen were found at both Falkland and Kerguelen and 6 species at all four island groups including Macquarie. A surprisingly large number of species (6) occurred at Marion and the Antarctic Peninsular but not at any other subantarctic islands. These findings do not agree with those of Knox and Lowry (1977) who reviewed the biogeographical schemes for Antarctic fauna and grouped Marion and Macquarie together as a subantarctic region and linked Kerguelen and Heard with the Antarctic. These findings are, however, closer to those proposed by Kusakin (1967) and Averinstsev (1972) as outlined below.

Andriashev (1965) proposed a scheme based on coastal fish, which included an Antartic region, a South Georgian province and a Kerguelen subregion comprising Prince Edward, Crozet, Kerguelen, Heard and Macquarie islands. Knox in 1960 considered the littoral flora and fauna and divided the Antarctic zone into subprovinces such that the Scotian Subprovince included the Antarctic Peninsular, Bouvet Island, Heard Island and all the islands of the Scotia Arc except South Georgia. The latter belonged the South Georgian province. The Subantarctic Region in his scheme included the Kerguelen Province which was composed of only MPE, Kerguelen and Macquarie Islands. The islands south of New Zealand were part of the Antipodean Province and southern South America formed the Magellanic Province.

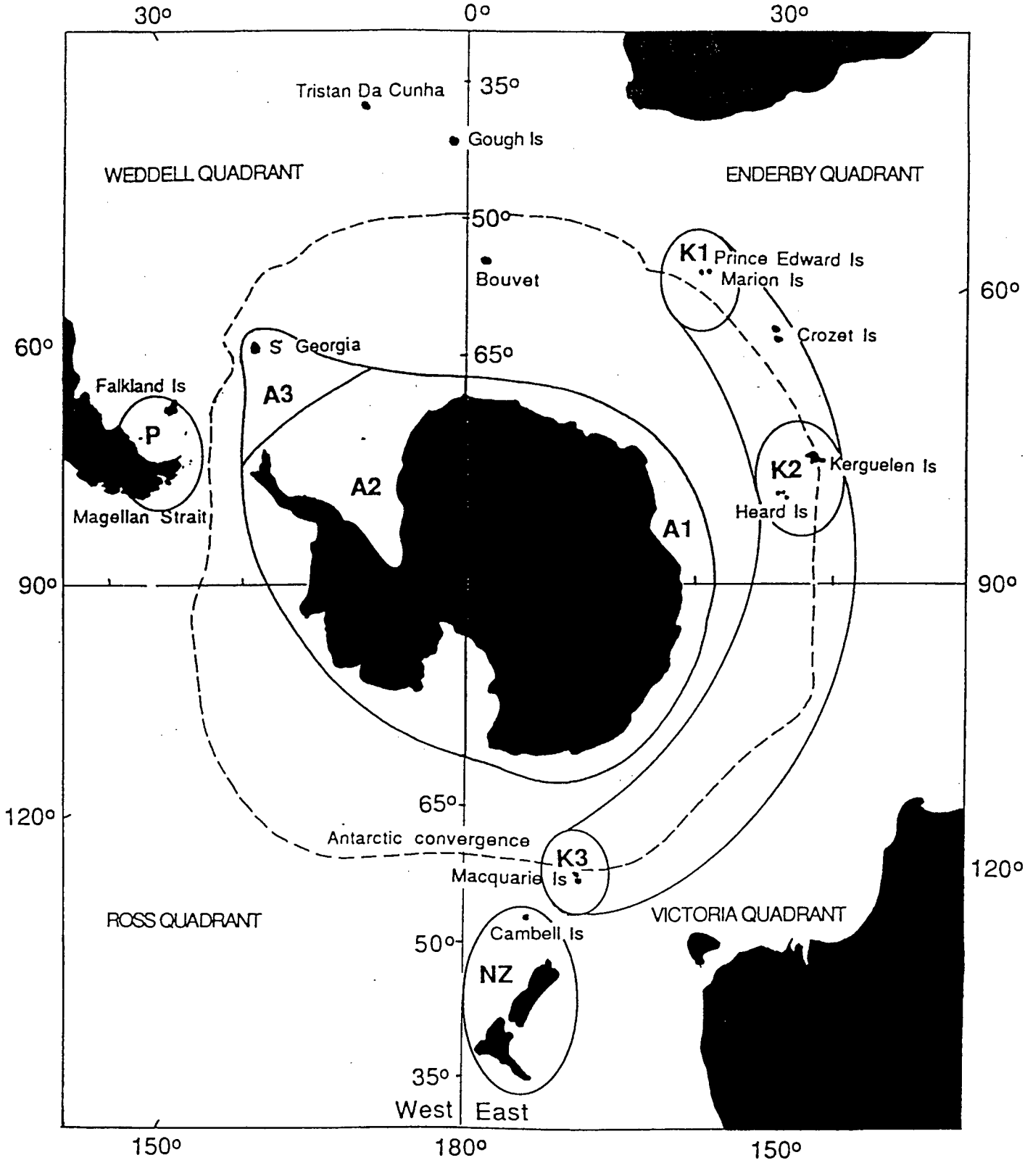
Kusakin (1967) used Preston's resemblance equation to calculate the affinities of genera and species between localities and came up with three regions; the Antarctic, Kerguelen and Patagonian Regions. In the Kerguelen Region he gave the three island groups (MPE, Kerguelen and Heard Islands, and Macquarie Island) the status of Provinces. Averintsev (1972) proposed a scheme based on errant polychaetes which was very similiar to that of Kusakin (1967) and supported the type of distribution patterns found in fish, isopods and amphipods as described by Kusakin (1967), Knox and Lowry (1977) and Branch et al (1991) (see Fig. 5).

	ANTARCTIC				SUBANTARCTIC						NORTH OF SUBANTARCTIC
	W	E	V	R	W	E			V	R	
					Fk	M	Cr	Kg	Mq		
SEDENTARIA											
Abarenicola ? assimilis	x				x	m	c				
Ammotrypane breviata	x	x	x	x		m					
Ampharete kerguelensis	x	x	x	x		m		k			S Africa (Cos)
Anobothrus patagonicus	x	x	x	x	x	m	c	k			S America (Cos)
Axionice godfroyi	x					m					
Axiothella quadrimaculata						m		k			S Africa, Australia, N Zealand
Brada mammillata						m		k			
Boccardia polybranchia					x	m		k	mq		S America Australia
Capitella capitata	x					m		k			S Africa , Australia (Cos)
Chaetopterus variopedatus	x					m		k			S Africa (Cos)
Cirratulus cirratus					x	m		k			S Africa, Atlantic, Pacific
Cirriformia sp						m					
Cirrophorus lyra						m					S Africa, Northern hemisphere
Helicosiphon platyspira						m		k			
Lanice flabellum		x			x	m					S America, E Africa ?
Leitoscoloplos kerguelensis	x				f	m		k			S America, S Africa, Australia (Cos)
Leodora perrieri					x	m			mq		S America
Maldanella antarctica	x	x	x	x		m					S America (Cos)
Neoleprea streptochaeta	x				f	m		k	mq		S America(Cos)
Nichomache lumbricalis	x				x	m					S Africa (Cos)
Nicolea venustula	x				x	m					
Notomastus latericeus	x	x			f	m	c	k			S Africa (Cos)
Notomastus sp.						m					
Orbiniella dayi						m					
Oriopsis limbata	x				f	m					S America (Cos)
Paralaeospira levinseni	x				f	m					
Perkinsiana antarctica	x				x	m	c	k	mq		S America (Cos)
Petta assimilis						m					
Polycirrus hamiltoni					f	m			mq		
Polycirrus kerguelensis	x					m		k			
Polydora armata	x				x	m			mq		S America, N Zealand, Equador (Cos)
Protula tubularia tubularia						m					S. Africa, N. Hemisphere
Rhynchospio glutaea	x				x	m		k	mq		Chile (Cos)
Romanchella inventis						m					
Scalibregma inflatum	x				x	m					S Africa, N Zealand, Australia (Cos)
Scoloplos (Leodamas)marginatus	x				f	m		k			S America (Cos)
Scololepis marionis						m					
Nainereis sp.						m					
Serpula vermicularis vermicularis	x				x	m		k			
Spiophanes bombyx					f	m		k			S America , N & S Atlantic
Spiophanes tchernai	x					m		k			
Terebellides stroemii kerguelensis	x				x	m		k			
Tharyx sp.						m					
Thelepus setosus	x					m	c	k			Atlantic, Indian, Pacific (Cos)
Timarete antarcticus						m		k			S America
Travisia kerguelensis	x				f	m		k			

Fig 5

Antarctica showing the Biogeographical scheme proposed by Kusakin (1967) and Averintsev (1972)

The Antarctic Convergence where Antarctic and subantarctic waters converge lies between 50°S and 60°S. Kusakin recognised three regions, i.e., Antarctic (A), Kerguelen (K) and Patagonian (P), and these were further divided into provinces, A1 the eastern, A2 the western and A3 the South Georgian provinces of the Antarctic region. Prince Edward Islands (K1), Kerguelen and Heard (K2) and Macquarie (K3) were provinces of the Kerguelen region. Southern South America and the Falklands, the Magellan region of the Patagonian province (P). Cambell and Auckland Islands linked with New Zealand (NZ).



Knox and Lowry (1977) considered that the polychaetes do not follow these previous schemes very closely. They believed that the zoogeographic affinities of the polychaetes suggest that there is only one distinguishable large Antarctic area which includes not only the whole coastline of Antarctica and the Scotia Arc but Kerguelen and Heard islands as well. They recognised a smaller Magellanic area which is not very convincingly separated from the Antarctic area. In their opinion the Subantarctic area included only Macquarie and Marion islands, which show some relationship with the Antarctic area. Auckland and Campbell did not align with the Antarctic but were more closely related to New Zealand. The records used for their analysis were taken from Hartman's historical summaries of the Antarctic polychaetes (1964,1966 &1967), Augener (1924) and Benham (1909 & 1950) for the New Zealand subantarctic, Rullier (1966) for Kerguelen, Day (1971) for Marion Island and Averintsev's (1970 &1972) report on the Soviet expeditions to the Antarctic and subantarctic. Knox and Lowry's scheme was based on only 29 species for Marion Island, 22 for Macquarie and 105 for Kerguelen and Heard. The present records increase the number for Marion to 83 species and thus permit a more rigorous examination of the zoogeographic status of Marion Island. The data for distribution was updated with reference to Bellan (1972 & 1974), Blake (1981), Desbruyéres (1977), Desbruyéres & Guille (1977), Duchéne (1984), Gillet (1991), Hartman (1978) and Hartmann-Schröder (1986 &1988).

Knox and Lowry provided an affinity matrix for the Polychaeta of the Southern Ocean based on the 'coefficient of community' index, $C/(N_1+N_2 - C) \times 100$ where C= number of taxa common to two localities (1 & 2), N_1 and N_2 = number of taxa from localities 1 and 2 (Peters, 1968). Their matrix (fig 7 p 444) was updated here to include the 83 confirmed species from the MPE area and is shown in Fig. 6. Knox and Lowry showed 34% coefficient of community between Marion and Macquarie and 22% with Kerguelen, 13% with Tierra del Fuego and 12% with the Falklands. The present results show only 14% affinity between Marion and Macquarie, but 28% between Marion and Kerguelen and 10% and 14% between Marion and Tierra del Fuego and the Falklands respectively. Areas recording "coefficient of community" values for polychaete species greater than 25% are linked graphically to compare the results of Knox and Lowry (Fig. 7) with the present results (Fig. 8).

My results show that the affinity between Marion and Kerguelen is much greater than was indicated by Knox and Lowry while that between Marion and Macquarie is much less. This change is explained by the former paucity of sampling from Marion and Macquarie (only 29 and 22 known species respectively, by 1977). These islands shared largely cosmopolitan species which gave a falsely high percentage affinity. No attempt has been made at the mammoth task of updating the records from all the areas in the Antarctic but because the numbers of known species from most of the other areas was fairly high by 1977 (105 , 163 and 127 from Kerguelen, Tierra del Fuego and Falkland Islands respectively), any additional records would have little overall influence on the patterns.

Conclusions to be drawn from the present results are that MPE and Kerguelen Islands may be linked together into a Kerguelen province but Macquarie should not be included in this province as the coefficient of community is low and cosmopolitan species account for most of the shared species. Kerguelen also shows close links with the Faulklands, South Georgia and the Antarctic whereas MPE has lower links with these areas. The polychaetes show much greater affinities between the subantarctic regions of South Georgia and Magellan and Kerguelen and also higher affinities between Antarctic and subantarctic regions, than do other major taxa. Marion Island also has more polychaete species in common with the southern continental land masses (at least 17 with S. Africa, 20 with S. America and 14 with Australia and New Zealand) than do the other taxa (see chapters 1 for Crustacea, 2 for Mollusca, 4 for Cnidaria and 5 for Echinodermata).

The polychaetes also have a high percentage of cosmopolitan species and generally show a very low degree of endemism (5% genera and 57% species endemic to the Antarctic and only 5% of species endemic to the subantarctic) according to Knox and Lowry (1977). They are considered to be an old group originating from the break up of Gondwanaland

Fig 6

Affinity matrix for the Polychaeta of the Southern Ocean based on the "coefficient of community" index.

Values along the diagonal are the number of species per locality; values on the lower left side are the "coefficient of community" values expressed as a percentage. The upper right side is a visual representation of the grouped localities, where black represents 25%, shaded 10-24% and unshaded are areas with less than 10% coefficient of community". (Updated from Knox and Lowry 1977 fig7).

	NZ S	Mq	Kerg	Mar	T del F	Falk	SG	W Ant	E Ant.
N. Z Subantarctic Is.	67								
Maquarie I.	11	22							
Kerguelen & Heard Is.	15	15	105						
Marion I.	5	14	28	78					
Tierra del Fuego	11	11	28	10	163				
Falkland is	11	11	27	14	41	127			
South Georgia	7	11	34	14	30	35	127		
Weddell Antarctic	7	9	28	28	22	23	38	127	
Enderby Antarctic	6	6	21	6	20	22	36	35	99

Fig 7

Map to show the affinities between the polychaete fauna of subantarctic islands as proposed by Knox and Lowry 1977.

Areas with "coefficient of community" values greater than 25% are linked graphically. Marion Island (MPE) and Maquarie islands (Mq) are linked as a subantarctic region distinct from Kerguelen Island (K)which is linked to South Georgia (SG), the Falklands (F), Tierra del Fuego (TF) and the Arctic peninsular (AP).

Fig 8

Map to show the affinities between the polychaete fauna of subantarctic islands indicated by the present results.

Marion Island (MPE) is linked to Kerguelen Island (K) with a 28% "coefficent of community" value and neither have a close affinity with Macquarie Island (Mq).

Fig 7

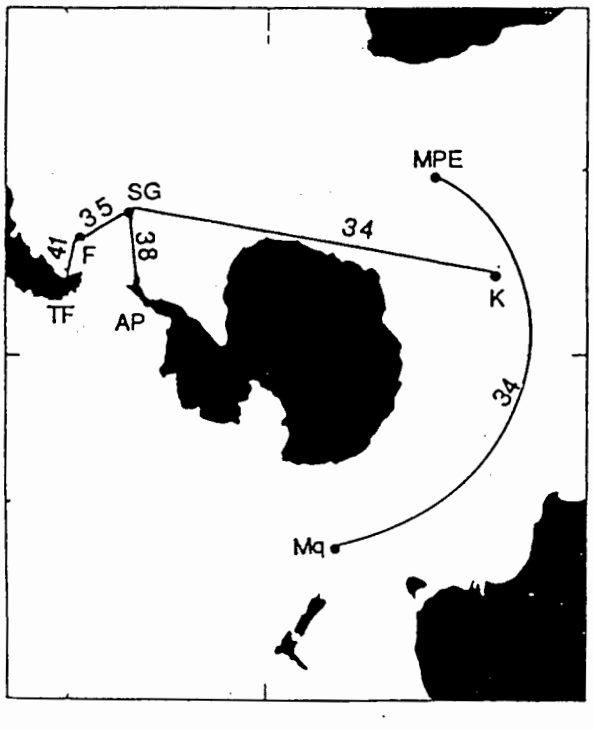
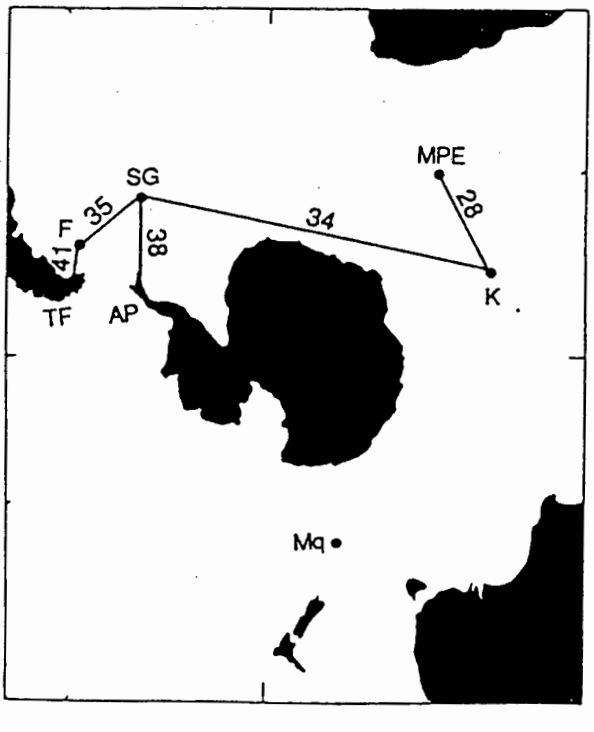


Fig 8



with low evolutionary change. Since then there have been significant migrations along the Scotia Arc and other ridges surrounding Antarctica. Abyssal basins are also considered to be donor areas to shallow inshore regions and would explain some of the link between the Antarctic and subantarctic regions such as Kerguelen Islands and Antarctica.

The volcanic summits of Marion and Prince Edward Islands, however, are extremely isolated and geologically young (c 2million years old) and so they are more likely to have been colonised by species (particularly as larvae) carried in the West Wind Drift currents from the Magellanic regions. Antarctic species could have migrated up the Scotia Arc and then been dispersed by the currents. This is supported by the fact that all the species found at both Marion Island and the Antarctic Peninsula also occur in the Magellanic/ South Georgia region, the only exception being *Axionice godfroyi*. The drift mechanism for colonisation may also explain the absence of certain common Kerguelen species from MPE, such as *Hermadion magalhaensi, Nereis kerguelensis, Amphicteis gunneri* and *Euchone pallida*, because Kerguelen is older and species that migrated in from Antarctica via an abyssal ridge could not migrate westward to Marion against the prevailing wind and current.

Gillet (1991) treated the Prince Edward and Crozet Islands together. He found 48 species in common with the Antarctic fauna, 36 with the South African fauna and 26 with the Kerguelen Islands' fauna. He explained the occurrence of South African and subtopical species by the presence of the Prince Edward fracture zone and Malagasy fracture zone which cause the Antarctic Front and Subtropical Front to coalesce into a single convergence zone eliminating any subantarctic zone in the region of Crozet between 41°S and 43°S (Gamberoni et al, 1982). This would allow the introducion of warmer water species to the islands. This may be true for Crozet island but on examining MPE species shared with southern Africa in Gillet's material I found that six were not valid identifications, three were questionable identifications (see taxonomic discussion p X), eight were cosmopolitan species and almost all of the rest also occurred in the Magellanic, South Georgia regions and are more likely to have arrived at Marion Island in the West Wind Drift. Exceptions were *Eusyllis blomstrandi, Pionosyllis ehlersiaformis* and *Cirrophorus lyra.* A reconsideration of Gillet's records thus suggests that Marion Island has closer affinities to Kerguelen and the Antarctica than to southern Africa.

In conclusion, when regarding the polychaetes, MPE and Kerguelen Island may be linked together into a Kerguelen Province. Kerguelen however is also closely linked to the Faulklands, South Georgia and the Antarctic but MPE has fewer species shared with these areas. The polychaetes are considered to be an old group with low evolutionary change and have a low degree of endemism and show much higher affinities between subantarctic, Antarctic and southern continental regions and have more cosmopolitan species than do the other major taxa.

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CHAPTER 7: NEW SPECIES OF POLYCHAETA

Abstract

Three new species of Polychaeta collected at subantarctic Marion Island are described. *Orbiniella dayi* (family Orbiniidae) occurs from mid-tide levels to depths of 15m and is separated from *Orbiniella minuta* Day, 1954 from Tristan da Cunha by its larger size and the presence of a small postsetal lobe to the parapodia. *Scolelepis marionis* (Family Spionidae) was buried up to 0.5m in sandy substrata in shallow subtidal depths. It is closely related to *Scolelepis lamellicincta* Blake and Kudenov, 1978 from Australia but can be distinguished by its notosetae, which are all capillaries and neurosetae of bifid hooded hooks which occur from setigers 42-46 and posteriorly. *Malmgreniella fimbria* (family Polynoidae) is tentatively placed in the genus *Malmgreniella* because of the general structure of the parapodia, short antennae, smooth soft elytra, and bifid neurosetae with a slender secondary tooth. The presence of a sixteenth pair of elytra distinguishes the speces and requires an expansion of the definition of the genus. *M. fimbria* was dredged from a depth of 410-644m between Marion and Prince Edward Islands.

Introduction

The polychaete fauna of subantarctic Marion and Prince Edward Islands (MPE) (46° 54' S, 37° 45'E) has been sampled by a number of expeditions. The benthos of these isolated volcanic islands was first sampled by the H.M.S. Challenger expedition in 1873 and McIntosh (1885) reported on the 11 species of polychaete collected. Further collections were made by dredging from Discovery II in 1935 (Monro, 1936). Day (1971) reported on 25 species and de Villiers (1976) conducted a thorough study of the intertidal community finding 21 polychaetes. The French ship Marion Dufresne sampled the offshore benthos during it's MD/08 expedition in 1976 and listed 77 species from Marion, Prince Edward and Crozet Islands (Gillet, 1991). During the period 1982-89 the University of Cape Town undertook an extensive dredging program (GM Branch et al, 1993) and, in 1988, a quantitative SCUBA diving survey to a depth of 15m at three sites (Beckley & Branch, 1992). D. Glassom examined the intertidal beach fauna in 1989.

The author has analysed these recent collections and provided illustrated keys to the 90 species of polychaetes now recognised from MPE as well as data on species abundance and distribution (Branch in press). The collections described therein include three polychaete forms that could not be fitted to any known species and therefore they are described as new species below.

Systematics

ORDER ORBINIIDA

Family **Orbiniidae** Hartman, 1942
Orbiniella Day, 1954

Orbiniella dayi sp. nov.
Fig. 1

Material examined

Holotype. SAM-A21273, worm 5mm long x 0.4mm wide, 35 segments, from Bullards Bay, Marion Island at 5m depth, collected by SCUBA diving by L. Beckley on 10 April 1988.

Paratypes. SAM-A21393, 2 specimens 3mm and 5mm long, from the same sample as the type specimen.

Other material. SAM-A21364 non *Orbiniella minuta* Day 1971: 386 from Transvaal Cove, Marion Island under rocks at mid-tide level, collected by N. Fuller January 1965.
SAM-A21272, 3 specimens from Cabbage point, Marion Island collected by SCUBA at 5m depth by G.M. Branch

Etymology

Named *dayi* after Professor J.H. Day from the University of Cape Town, who was well known for his significant contributions to marine biology in Southern Africa and particularly for his work on polychaetes.

Description (of holotype,)

Body length 5mm, width 0.4mm, 35 segments, separated by deep intersegmental constrictions. Prostomium bluntly triangular with rounded tip and no eyes or appendages. Proboscis never extruded. First two segments asetigerous. Following setigerous segments separated from one another by deep intersegmental constrictions. Gills absent. Parapodia lateral ridges near the anterior margin of each segment with a small foliose post setal lobe, largest at the origin of the notosetae. Anterior 10 segments shorter and broader than the posterior segments, which are slightly biannular. Four or five notosetae project from the upper margin of the anterior parapodia, which is elongated into a small posterior lobe. Notosetae crenulate capillaries with distinct teeth and long curved tapering tips. Notosetae of posterior segments similiar but shorter. Neurosetae arise from the lower edge of the parapodial ridge. Anterior neurosetae similiar to the notosetae but posterior neurosetae are of two types, one or two inferior simple acicular setae, which are short, stout and blunt-tipped, and two crenulate setae which become progressively shortened posteriorly. Pygidium simple with a small terminal slit.

Remarks

Very like *Orbiniella minute* Day, 1954 from Tristan da Cunha but differs by being larger and in the size of the parapodial ridge, which has distinct parapodial lobes especially posterior to the notosetae. In *O. minute* the parapodium is reduced to a simple ridge. *Orbiniella aciculata* Blake, 1985 from the Galapagos rift at 2730m depth, differs

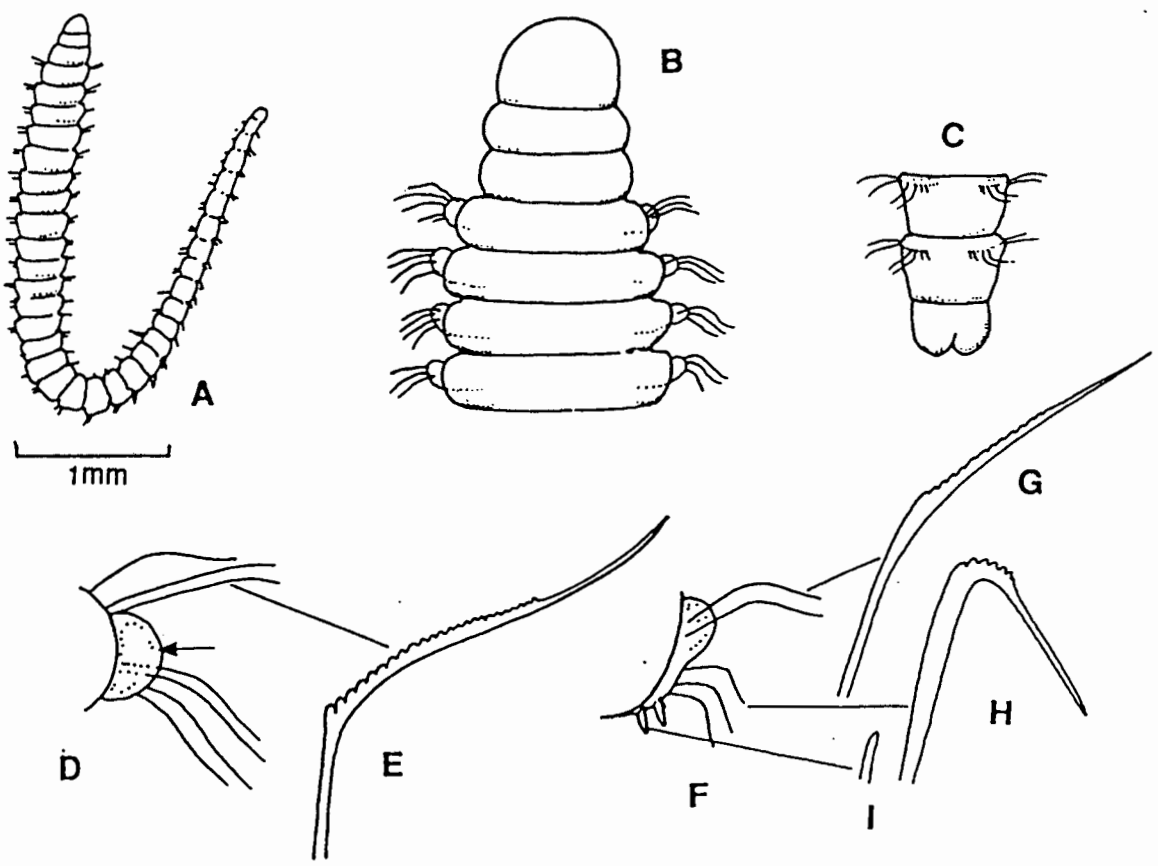

Fig. 1. *Orbiniella dayi* sp. nov., holotype, 5mm. A. Entire worm. B. Head and anterior 6 segments. C. Posterior end, ventral view. D. Anterior parapodium, postsetal lobe arrowed. E. Notoseta. F. Posterior parapodium. G. Notoseta. H. Capillary neuroseta. I. Neurosetal hook.

by having prominent acicular spines in both the noto and neuropodia. *O. nuda* Hobson, 1974 from off British Columbia has several acicular spines and capillaries in the neuropoda and lacks the small post parapodial lobe of *O. dayi*. Hartman (1967) described three species of *Orbiniella*. *O. uniformis* was exceedingly plain and unadorned of similiar size to *O. dayi* with similiar setae but the segments are uniannulated throughout and there are no post setal lobes to the parapodia. *O. drakei* and *O. branchiata* have been moved to another genus (see Blake, 1985).

Distribution

Subantarctic Marion Island intertidal to 15m depth. A quantitative SCUBA survey by Beckley at depths of 5, 10 and 15m at Transvaal Cove, Bullards Bay and Trypot Point produced a total of several hundred specimens of *Orbiniella dayi* at all three stations and depths, with up to 75 m^{-2} at 5m depth at Bullards Bay (Beckley and Branch, 1992).

ORDER SPIONODA

Family **Spionidae** Grube, 1850

Scolelepis Blainville 1828

Type-species: Lumbricus squamatus Müller, 1806 by monotypy
For synonomy and diagnosis see:
Blake and Kudinov, 1978: 175
Pettibone, 1963: 91

Scolelepis marionis sp. nov.
Fig. 2

Material

Holotype. SAM-A21254 Incomplete worm 73 setigers, 43m long x 6mm wide, from sandy shore buried to depth of 0,5m in shallow sub-tidal depths, Marion Island 46° 54'S 37° 45'E. Collected by David Glassom in April 1989.

Paratypes. SAM-A21392 Six incomplete worms, anterior regions only; 70 setigers, 45mm x 6mm; 63 setigers, 35mm x 5mm; 33 setigers, 33mm x 7mm; 35 setigers, 25mm x 6mm; 14 setigers, 10mm x 5mm; 11 setigers, 7mm x 3mm width. From the same sample as the type specimen.

Etymology

Named *marionis* after Marion Island the type locality.

Description (of holotype)

Body very regular, firm, vermiform, rectangular in cross section, incomplete anterior region of 73 segments length 45mm, width 5-6m. Body regions not marked except by the shape of the parapodia. Red-brown in alcohol. Prostomium projects anteriorly to narrow point and extends posteriorly as a narrow, attached lobe (caruncle) between the palps. Caruncle bears two pairs of small eyes laterally and obscured by the anterior base of the palps. Proboscis unarmed, a ventral cushion. Peristomium well developed with lateral wings partially overlapping the prostomium. A pair of large grooved palps arise dorsally from the posterior margin of the peristomium, extend back to the 17th segment and have a lateral membrane at the base

Setiger 1 reduced with a leaf-like dorsal lamella and rounded ventral lamella. Dorsal branchiae from setiger 2. Dorsal lamellae from setiger 2, swollen, foliose, folded over

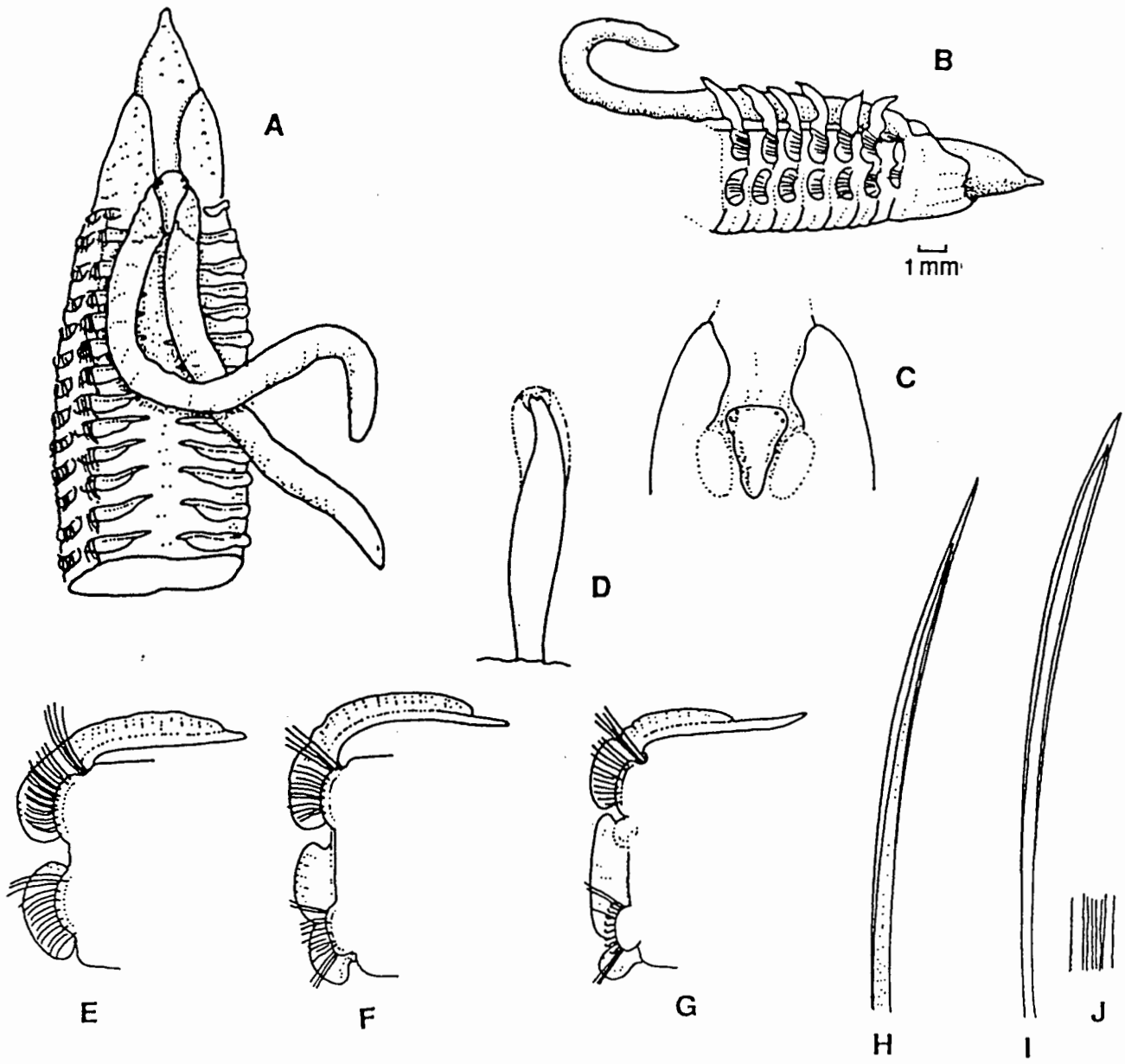

Fig. 2. *Scolelepis marionis* sp. nov., holotype, 43mm. A. Anterior end, dorsal view. B. Anterior end, lateral view. C. Dorsal view of head caruncle with palps removed. D. Nuerosetal hook from posterior setiger. E. Setiger 10. F. Setiger 30-40. H. Capillary neuroseta. I. Notoseta. J. Detail of notoseta.

the dorsal body, branchia fused along the outer margin of each lamella for whole length except near the tip where the free lamella is narrow and pointed. Postsetal neuropodial lamellae in the anterior region form a single rounded lobe, swollen and foliose. Neuropodial lamellae increase in size posteriorly and become notched at about segment 30 and after segment 41 are bilobed with a long narrow interramal lamella and a small rounded ventral lamella. There are low swollen presetal ridges. Notosetae all capillaries in the anterior setigers, about 40 in two to three series. In later setigers the numbers diminish to about 20-30 at setiger 60 and in two groups, those in the dorsal fascicle are longest. Anterior neurosetae similiar to notosetae, about 40.
Hooded hooks appear in the neuropodia from setiger 42 with three hooks and increase to about 9-11 by setiger 70. Hooded hooks bilobed with a smooth, circular, funnel opening to the hood.
Pygidium unknown.

Remarks

Scolelpis marionis is closely related to *S. lamellicincta* Blake and Kudenov, 1978 from Australia. The structure of their parapodia is very similiar, especially with the presence of long interramal lamellae in the middle and posterior segments. This feature separates these two species from all the other species (see Audouin Milne Edwards, 1833, Mesnil, 1896, Day, 1967, Blake and Kudenov, 1978, and Blake, 1983). The two species are distinguished by their setae; *S. marionis* has bifid hooded hooks from setiger 42-46 increasing from 3-11 per ramus, and the notosetae are all capillaries. *S. lamellicincta* has unidentate hooded hooks from setiger 25-38 with only 5-6 to a ramus and has hooded hooks in notopodia from setiger 75-80. The posterior lobe, or caruncle, of the prostomium in *S. marionis* is a flat and slender triangle about 1mm thick while that of *S. lamellicincta* is a blunt lobe that projects from the surface. *S. eltaninae* has triangular interradial lamella and an occipital tentacle.

ORDER PHYLLODOCIDA (from Fauchald 1977)

Family **Polynoidae** Malmgren, 1867

Malmgreniella Hartman, 1967 emended

Malmgreniella Hartman, 1967: 37, emended by Pettibone, 1993: 9-10

Malmgreniella fimbria sp.nov.
Fig. 3

Material

Holotype. SAM-A21346, body 50mm, from Marion Island, dredged from Station 44, 46° 40.58'S, 37° 50.20'E, 410-644m depth, collected by D Gianakouras on 3 September 1988.

Etymology

From the Latin *fimbria* (fringe) an allusion to the ventral cirrus which carries a dense fringe of hairs.

Description, (of holotype)

Body entire, length 50mm, width 20mm, 46 segments. Dorsum smooth and convex, ventrum with a deep neural groove, otherwise smooth. Elytrae 16 pairs on segments 2,

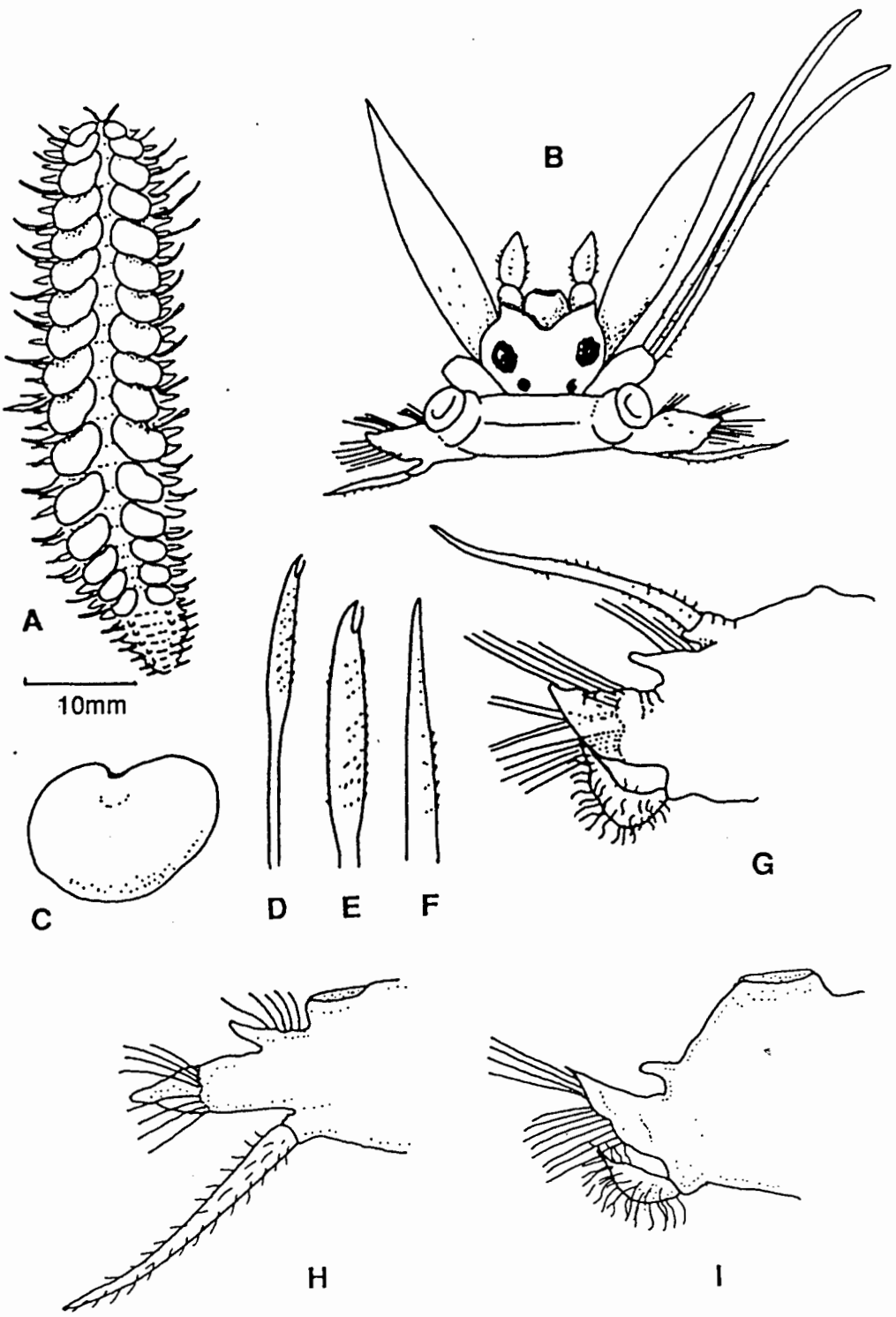

Fig. 3. *Malmgreniella fimbria* sp. nov., holotype, 50mm. A. Entire worm. B. Head. C. Elytra. D. Neuroseta. E. Detail of neuroseta. F. Notoseta. G. Parapodium 6. H. Elytral parapodium 2. I. Elytral parapodium 17.

4, 5, 7, then alternate segments and 23, 26, 29, 32 and 33. Posterior 13 segments naked. Elytra subreniform soft, fleshy and almost smooth apart from a few microtubercles on the posterior region. Elytrae do not overlap in the mid-dorsum and are not easily shed.

Prostomium bilobed, wider than long with an anterior 'v' notch and anterior lobes produced into cephalic peaks. Two pairs of eyes, anterior pair large and anterolaterally placed, posterior pair small, close to the posterior margin. Ceratophore of median antenna large, in anterior notch, style missing. Ceratophores of single pair of lateral antennae inserted anteriorly, below cephalic peaks of prostomium, styles short, broad, tapering. Palps large, stout, tapering 3x length of prostomium. Tentaculophores on segment 1, lateral to prostomium with a pair of dorsal and ventral long, slender tentacular cirri. Antennae and tentacles covered with fine fleshy papillae.

Segment 2, first pair of elytrophores with small elytrae, biramous parapodia with long narrow ventral cirrus with a short cirrophore. Remaining parapodia also biramous but with unusual short, fleshy, curved ventral cirri covered with a dense matt of long hairs and a short, cirrophore; cirrus broad at the base but with a narrow attenuated tip. Dorsal cirri have a thick, short cirrophore and a long fleshy, hairy style, alternate with elytrae. Notopodia small with a projection on the lower side. Neuropodia larger with subconical presetal lobes with digitiform tip, short rounded postsetal lobes. Notosetae form dorsally radiating bundles present in first eight parapodia, missing from most of the middle parapodia and present as small bundles in the posterior, naked parapodia; slightly stouter than neurosetae, with simple tips and a few fine lateral teeth. Neurosetae in two groups; long shafted with an expanded terminal third and bifid tips, with a very narrow secondary tooth, surface finely serrated.

Remarks

This species does not fit perfectly into any genus. The genus *Malmgreniella* Hartman 1967 was emended by Pettibone 1993 to include *Malmgrena* and in the new definition its lateral antennae may be inserted subterminally, subventrally or ventrally. On the strength of this the genus *Malmgreniella* was moved to the subfamily Harmothoinae (Fauchald, 1977 placed it in the subfamily Lepidonotinae in which the antennae are terminally inserted). *Malmgreniella* spp. have fifteen pairs of elytrae that are delicate and almost smooth with microtubercles. They differ from *Harmothoe* spp., in which the 15 pairs of elytrae are tough and spined. *Malmgreniella* have up to 46 segments; the prostomium is bilobed, usually without distinct cephalic peaks; notosetae similiar width to neurosetae; neurosetae bifid, or unidentate or both. The major difference in the present specimen is that there are 16 pairs of elytrae with an additional insertion on segment 33, the prostomium also has cephalic peaks, the anterior pair of eyes are large and the ventral cirri are unusual being fleshy and fimbriate.

These unusual characters of large eyes and fimbriate ventral cirri are shared with *Lepidofimbria occulata* the only member of the genus *Lepidofimbria* Hartman, 1967 . However the prostomium of the latter species does not have cephalic crests and the ceratophores of the antennae are continuations of the prostomium (characteristic of the subfamily Lepidonotinae). The parapodia are also different with reduced notopodia and no notosetae and the neurosetae are smooth with a smooth unidentate tip. *L. occulata* was collected at abbyssal depths in the Weddel Sea and described from a disconnected anterior end and six antero-median segments. No elytra were described. *L. oculata* also differs in that it has three ventral papillae on the body segments.

Four genera of the subfamily Harmothoinae with 16 pairs of elytrae and ventral insertion of the lateral antennae were considered as possible links with the present species:-
In the genus *Subadyte* Pettibone, 1969, the notosetae and neurosetae have semilunar pockets of spines which were not evident in the present material.

The genus *Scalisetosus* McIntosh, 1885, differed from the present specimen in that the notosetae are much coarser than the neurosetae; neurosetae are slender and distally entire; and the notopodia as well as the neuropodia have long lobes.
In the genus *Austrolaenilla* Bergström, 1916, there are 15 to 16 pairs of elytrae; 40-43 segments; notosetae thicker than neurosetae with transverse rows of teeth; neurosetae unidentate or bidentate with the distal end penicillate (brushlike); ventral cirri are digitate and the ventrum is usually smooth. (The present specimen dffered with 45 segments, the ventral cirrus curled, fleshy and broad and the neurosetae not distally pencillate but it does seem to be close to *Antinoella antarctica fulgens* (Fauvel 1936) from Western Antarctica in which the neurosetae are less plumose in their distal ends than in the stem species).
The single speces *Leucia nivea* (Sars 1863) of the genus *Leucia* is short bodied; notosetae are coarser than the neurosetae and serrated; neurosetae are long, slender, unidentate and serrated and so differs from the present specimen.

Malmgreniella fimbria has been tentatively placed in the genus *Malmgreniella* on the strength of the similarity in the basic structure of the parapodia, the short antennae, the smooth elytrae and the bifid neurosetae with a slender secondary tooth. The definition of the genus needs to be expanded to give the number of elytrae as 15-16 pairs.

Malmgreniella fimbria can be distinguished from all other species of *Malmgreniella* by the presence of 16 pairs of elytrae, the unusual fimbriate ventral cirri and the large anterior eyes.

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CONCLUSION

Conclusion

The benthic fauna of subantarctic Marion and Prince Edward Islands is now well documented for the Crustacea, Mollusca, Brachiopoda, Pycnogonida, Cnidaria, Echinodermata and Polychaeta. A total of 440 species from these groups have been identified and illustrated and their abundance and distribution patterns analysed. Of these 191 are new records. Six new species have been described and 41 unidentified species await description. In addition there are at least 135 species from MPE which are not reported in detail here; these include the minor worms, Platyhelminthes 6, Nematoda 10, Nemertea1, Oligochaeta 2 and Sipunculida 1 (*Golfingia margretacea*), about 6 species of Anthozoa including several Actinaria and two Zoanthidea and five speces of Ascidiacea. Two major phyla that contribute significantly to the fauna of MPE, and are still to be finalised, are the Bryozoa with at least 93 species and the Porifera with about 10 species.

The total number of species for MPE is lower than for most of the other Antarctic and subantarctic islands, which is a reflection of the relative youth of the islands, their extreme isolation, small size and generally unbroken and exposed coastline. The islands rise steeply from the ocean floor with a narrow shelf on the west and south coasts of Marion Island and the north coast of Prince Edward Island. The area between the Islands is more sheltered and shallow (50-300m) with a soft substratum and sampling was relatively easy, resulting in an extensive grid of stations with well replicated samples. On the exposed western shore with deep water and enormous onshore swells it was both dangerous and difficult to sample. The few stations sampled by dredging yielded a wide variety of fauna but with little replication. It was too inaccessible and dangerous to dive off the exposed shores and many of the cliffs could not be sampled intertidally.

A summary of the total number of species for each of the main taxa is given in Table 1 and is further broken down to give the numbers of intertidal, shallow subtidal (sampled by SCUBA) and deeper water (greater than 50m depth collected by dredging) species.

A summary of the zonation, distribution patterns, numbers of individuals and the mass of the zoobenthic taxa in these three regions has been provided by DeVilliers (1978) for the intertidal, Beckley and Branch (1992) for the SCUBA collection and GM Branch et al (1993) for the dredged collection.

Intertidal fauna

The intertidal fauna is depauperate with low densities and low numbers of species (99). This is an indication of the instability of MPE's littoral environment. This may have been caused by the drastic effects of glacial and volcanic activity in relatively recent times (100 000 - 15 000 years before present) but is also influenced by present conditions. The islands have a simple, unbroken shore line dominated by sheer cliffs and with virtually no bays. Wave conditions are moderate to very exposed with huge swells, the tidal range is small with a maximum amplitude of 72 cm and in addition, moveable, abrasive boulder substrata are common. These conditions combine to produce a small range of niches and a very harsh environment. There were no littorinid or barnacle zones. The small sandy beach yielded only two macrobenthic species, an isopod and a new species of polychaete, *Scolelepis marionis*.

1.

Summary of the Faunal species Recorded from Marion and Prince Edward Islands

	Intertidal	SCUBA	Dredge	Total	New records	New spp	Endemic	Phyla spp.
Porifera	9	5		*10				10
Hydrozoa	9	9	21	31	18	2	2	
Octocorallia			14	14	8	3	4	
Scyphozoa	1			*1				
Scleractinia			6	6	4	1	4	
Anthozoa	3	2		*6				
Cnidaria total								58
Platyhelminthes	?	6		*6				6
Nematoda		10		*10				10
Nemertea	1	1		*1				1
Sipunculida	1	1		1				1
Oligochaeta	2	1		*2				2
Polychaeta	28	35	43	90	27	3	4	90
Cirripedia			2	2	2	1		
Tanaidacea	1	10	2	10	8		0	
Isopoda	5	18	18	32	19	4	4	
Amphipoda	11	24	30	71	17	8	18	
Decapoda	2	2	11	11	4		0	
Crustacea total								125
Pycnogonida	1	3	15	17	14	1	1	17
Brachiopoda		2	3	3			0	3
Polyplacophora	2	2	4	4	1	1		
Gastropoda	6	19	32	46	24	4		
Bivalvia	6	14	19	32	13	3		
Scaphopoda			1	1				
Solenogastres			1	1	1	1		
Cephalopoda		1	1	1				
Mollusca total								85
Asteroidea	1	10	33	33	11	1	1	
Ohiuroidea	3	3	22	22	13		2	
Echinoidea		1	2	2	1		1	
Holothuroidea	1	1	10	10	6	2	3	
Crinoidea			2	2			2	
Echinodermata								69
Ascidiacea	5	1		5				5
Bryozoa	4	15		*93	*60			93

* Species number not confirmed, phyla are not treated in detail in this report

Sublittoral fauna

The sublittoral fauna was sampled quantitatively by SCUBA diving at three stations and 196 species of zoobenthic animals were recorded. This band was dominated by algae with the kelp *Durvillea antarctica* at the infralittoral fringe, encrusting corallines on the rocks, *Desmarestia rossi* in the mid region and the kelp *Macrocystis laevis* between 1-20m depths, plus a dense understory of algae. The algae provided food, and calm seas for the many species sheltering in this zone east of Marion Island. Significantly higher densities were recorded at Bullards Bay than at Trypot Point and Transvaal Cove. This is attributed to the increased nutrient as guana run-off from the nearby macaroni penguin rookery (with 200 000 pairs) .

In this sublittoral fringe there is a trend for the overall zoobenthic biomass to increase with depth and 93% was made up of Polychaeta, Bryozoa, Crustacea, Mollusca, Echinodermata and Porifera. The Crustacea was the most abundant taxon comprising 29.3% of animals sampled and with a maximum density of 9442 m^{-2} at 5m depth at Bullards Bay. The amphipod, isopod and decapod biomass was highest at 5m at Bullards Bay, but the tanaids were highest at 15m depths with 43g m^{-2}, 21g m^{-2}, 8g m^{-2} and 11g m^{-2} respectively. All the tanaids were confined to 0-15m depths and the only species of crab, the small *Halicarcinus planatus,* was common in the kelp holdfasts. Bryozoa also provided a greater proportion of the biomass at the shallow 5-10m depths.

Polychaetes increased with depth where they sheltered amongst the kelp holdfasts and reached 216g m^{-2} mass and 15 982 m^{-2} density at 10m at Bullards Bay. The overall echinoderm biomass also increased with depth and of particular interest is the abundant endemic echinoderm *Pseudechinus marionis* with maximum mass of 141g m^{-2} and density of 50 m^{-2} at 15m depth at Trypot Point. The holothurian, *Pseudocnus laevigatus* obtained a wet mass of 255g m^{-2} and density 1235m^{-2} at 15m and the ophiuroids, particularly *Ophiurolepis martensi,* reached densities of 232m^{-2} and a mass of 16g m^{-2}. There were fewer asteroids and their numbers diminished with depth although there were some large specimens.

Of the Mollusca, the amphineuran *Hemiarthrum setulosum* was plentiful on coralline crusts in shallow water, attaining 27g m^{-2} mass and density 3760 m^{-2}. Gastropods increased with depth and included the very small *Jeffreysia edwardiensis,* the whelk *Trophon declinans* and the limpet *Nacella delesserti.* Several species of pink bivalve were very commonly attached to specific algae notably *Kidderia minuta* at densities of 2315 m^{-2} on Rhodophyta and *Gaimardia trapesina* attached to kelp with an average of 73 to a frond (Beckley and Branch, 1992).

Deep water fauna

The deep water communities were sampled at 57 stations over a depth range of 30-750m using an epi-benthic sled. Species richness in dredge samples, which were not quantitative, was not particularly high with a total of about 390 species and 0 to 72 species collected from individual dredge samples. Richer samples have been taken elsewhere on the Antarctic continental shelf (Richardson and Hedgepeth, 1977) and in deep water (Hessler and Saunders, 1967) although it is difficult to make comparisons as the collecting methods are in no way standardised.

Three major communities were identified by similarity analyses of the species collected at MPE and were found to be dictated by the depth, substrata and to a lesser extent the exposure at the various stations. These were a uniform soft sediment community, a deep rocky bottom community and a heterogenous inshore community

to depths of 50m. The soft sediment community occurred between Marion and Prince Edward Islands and was subdivided into a shallow component (50-150m depth) at 16 stations with 43% similarity and a deep water component (150-300m depth) from 11 stations with 40% similarity. The second major group was the deep rocky stations between 300-500m depths and at exposed positions to the east and south of MPE. They grouped into a cluster South East of Prince Edward Island and south west of Maron Island which were dominated by octocorals and bryozoans (6 stations with 33% similarity) and a community on deeper sloping substrate south west of Marion island (4 stations 32% similarity). The third community, from an inshore group of 9 stations with only a 25% similarity could be further subdvided into the exposed and sheltered communities. The species in each of these cluster groups are discussed in the relevent chapters and overall patterns are further detailed by GM Branch et al. (1993). A brief summary of the main characteristics is given below.

Filter feeders dominated all the benthic groups as is the case in Antarctic waters. Sponges, bryozoans, and cnidarians were common in the rocky stations, while the soft sediments were dominated by the brachiopod *Magellania kerguelensis*, the tubiculous polychaetes *Serpula vermicularis* and *Lanice flabellum* (non *L. conchilega* in GM Branch et al., 1993) and several species of bivalve. Detrivorous echinoderms were particularly common in these communities with large numbers of ophiuroids (9 speces), echinoids (1 species), holothuroids (5 species) and asteroids (22 species). In shallow communities algae were present and Crustacea were more important. The shrimp *Nauticaris marionis* was abundant throughout. The dominant errant forms were echinoderms and polychaetes.

Food webs

The intertidal and shallow subtidal food-web at Marion Island was investigated by Blankley and Grindley (1985). Trophic dynamics of the off shore benthic community are still unknown. Islands are the site of an "island mass effect" resulting in high local production of planktonic diatoms (Boden, 1988), and guana off-run increases the algal and phytoplankton growth. The benthic community and particularly *Nauticaris marionis* are believed to play an important roll in sustaining the avifauna (Perissinotto and McQuaid, 1990). The present thorough taxonomic analysis of the community structure will open the way for more detailed investigation of the trophic dynamics of the benthic community.

Geographical distribution

The zoogeographic affinities of all the species are given in the relevant chapters. Three phyla, the Crustacea, Echinodermata and Polychaeta have large numbers of species and are well ducumented for the entire Southern Ocean region and have been selected to test current theories of provinces within the Antarctic and subantarctic (as summarised by Knox and Lowry, 1977).

In the Crustacea, the most species-rich phylum, all the orders showed strong affinities with records from both Crozet and Kerguelen Islands with a total of 57% of species from Marion shared with these two islands (amphipods 39%, isopods 82%, tanaids 82% and decapods 55%). The 49 new records reinforce the placement of MPE in the Kerguelen Province, which can be loosely linked with other subantarctic islands into a Subantarctic Region as proposed by Knox and Lowry (1977), Shiino (1978), Kensley (1980) and Kussakin and Vasina (1982). The Amphipoda is the most species rich order with higher endemism (25%) than the Isopoda (12% endemism), the Tanaidacea (0%) and Decapoda (0%). This is low however when

compared with the amphipod endemism for the subantarctic region as a whole where 92% of the 445 species are endemic to the Antarctic and 53% are endemic to the subantarctic. This high degree of endemism is probably due to their habit of brooding young and to the short time span of their life cycle and their ability to inhabit a wide variety of niches. The lower percentage endemism at MPE may be a reflection of these Islands youth and their limited variety of niches, although their extreme isolation would favour endemism.

The echinoderm fauna also indicates that MPE belongs to the greater Subantarctic Region but the Asteroidea share a higher percentage of species with the Falkland Islands to the west than they do with the Kerguelen archipelago to the east. Those species occurring in the deep rocky stations were in general shared with the Falklands while the majority of those from soft sediments were in common with Kerguelen. This may be a reflection of the conditions at Falkland being more rocky while at Kerguelen there are large calm enclosed bays. The ophiuroids and holothuroids on the other hand were more closely allied to the Kerguelen fauna. The asteroids and ophiuroids exhibit a low degree of endemism (3% and 9% respectively) while the Holothuroidea were 30% endemic and the Echinoidea had one rare species and a very common endemic *Pseudechinus marionis* which is closely related to *Notechinus magellanicus* from both Kerguelen and the Falklands.

The polychaete fauna of MPE showed the closest affinity to Kerguelen and does not form a separate subantarctic province with Maquarie Island, as proposed by Knox and Lowry (1977). The polychaetes also showed greater affinities to the Magellanic, Antarctic and southern continents than do the other taxa and have a higher percentage of cosmopolitan species. They have a low degree of endemism (4%) which is in keeping with that of the subantarctic generally. It is in marked contrast to the Antarctic which has 57% of its species endemic to the Antarctica. The polychaetes are considered to be an old group with low evolutionary change.

Origins of MPE fauna

Marion and Prince Edward Islands are too young to have been colonised before the breakup of Gondwana (Newman 1991). Their extreme isolation, the lack of any benthic ridges, as well as the physical barriers imposed by the antarctic convergence to the south and the subtropical convergence to the north makes migration directly from the Southern continents or Antarctica unlikely. The main route of colonisation is considered to be from the Magellanic regions westward via the West Wind Drift. Species such as Crustacea and epiphytic bivalves could either have been carried on floating rafts of algae, or their pelagic larvae could be transported in the currents. Species from the Antarctic can generally be traced through the Antarctic Peninsula and then eastwards on the West Wind Drift. Others migrated south down South America and thence eastwards. This would account for the extremely few species shared with South Africa and Australia apart from cosmopolitan species. As might be expected with such a young island the number of species is lower than in neighbouring older islands, South Africa, or Antarctica. For example if the number of species of the amphipods, isopods and polychaetes are compared for the different areas, Marion has only about 87% the number of amphipods found in Kerguelen, Falkland or the Weddel Antarctic, has between 35 and 56% of the Isopods and 61 to 74% of the polychaetes from any of these three regions. When compared with South Africa MPE has only 71 amphipods to South Africa's over 300 species and 78 polychaetes to South Africa's 800 species.

In conclusion MPE has been colonised by a diverse and interesting benthic fauna that was carried to the islands on the West Wind Drift. The youth of these islands and their small range of habitats and general exposed position explains the low number of species when compared to their neighbouring older islands, which are also less isolated. The composition of the fauna confirms the placement of MPE in the Kerguelen Province of the Subantarctic Region with certain taxa showing stronger affinities to the Falkland Islands.

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