THE POLYCHAETE WORMS

DEFINITIONS AND KEYS TO THE ORDERS, FAMILIES AND GENERA

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By Kristian Fauchald

NATURAL HISTORY MUSEUM
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Preface

THE STUDY of polychaetes used to be a leisurely occupation, practised calmly and slowly, and the presence of these worms hardly ever penetrated the consciousness of any but the small group of invertebrate zoologists and phylogeneticists interested in annulated creatures. This is hardly the case any longer.

Studies of marine benthos have demonstrated that these animals may be wholly dominant both in numbers of species and in numbers of specimens. In some areas they are even dominant in biomass. If any statements are to be made about the biology of the benthic environments, some note must be taken of the polychaetes. Furthermore, the keeping of some of these animals in culture has proved feasible, and some polychaetes even have become famous for their value as test animals in polluted areas. The development of some polychaetes appears to be genetically interesting, and studies of evolutionary rates and genotypic and phenotypic adaptations in these worms may prove very illuminating to our understanding of the benthic environment.

All of these developments make it important that the major morphological and anatomical features be well understood, and preferably that the terminology and taxonomic categories be agreed upon by most workers. This review is an attempt at summarizing current information about the taxonomy and morphology of these animals. During the reviewing process, it became painfully obvious to me how exceedingly poorly known the group is and how few generalizations can be made on the ecology and evolution of the polychaetes. I hope this review will bring forth a spate of investigations, by persons wishing to prove me wrong in my phylogenetic speculations, but also by persons willing to put in the hard work needed to fill in the gaps in our knowledge.

I apologize to my fellow polychaete workers for introducing a complex superstructure in a group which so far has been remarkably innocent of such frills. A great number of *very* sound partial schemes have been suggested from time to time. These have been only partially considered. The discussion is complex enough without the inclusion of speculations as to how each author would have completed his or her scheme, provided that he or she had had the evidence and inclination to do so.

Kristian Fauchald

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Acknowledgments

THIS REVIEW is a direct outcome of a lecture I gave during a class in polychaete biology at Santa Catalina Marine Biological Laboratory in 1973. It has benefited greatly from discussions with all of the students in the class, but perhaps especially Bill Kennedy was instrumental in pushing me into giving the lecture in the first place. I have also discussed parts of the paper with Ray Emerson, Tom Kauwling, Fred Piltz and Bob Smith. My co-teacher at Catalina, Paul C. Schroeder, was a great help in formulating some of these ideas. Some of the ideas presented here were also discussed with the late Dr. Olga Hartman, whose sound advice was always valued by me. Dr. Pat Hutchings advised me of some errors in the terebellid key, for which I am grateful. The good illustrations were made by Ms. Catherine Link; the others I am responsible for. Ms. JoAnne Woodcock expertly typed most of the manuscript, prepared the index and cleaned up my English where needed, for which I am grateful. I am also very grateful to Mr. R. Edward Ostermeyer for seeing the paper through.

I would wish to thank Dr. Robert J. Lavenberg, Natural History Museum of Los Angeles County, for prodding me into writing this book in this format and for his constant encouragement and enthusiasm for what grew from a moderately long key to families to a rather more massive offering. I am also *very* grateful to Dr. Bernard C. Abbott, Allan Hancock Foundation, University of Southern California, for his support and enthusiasm and for letting me have the time to do the writing on this paper.

THE POLYCHAETE WORMS

DEFINITIONS AND KEYS TO THE ORDERS, FAMILIES AND GENERA[1]

By KRISTIAN FAUCHALD[2]

ABSTRACT: A review of the classification of the Class Polychaeta (Annelida) with comments on the characters used to identify the different included taxa has led to the recognition of seventeen orders. All taxa down to the generic level are defined and a phylogenetic sequence suggested. Keys are presented to the families and genera of the Polychaetes.

INTRODUCTION

Polychaeta is part of the old, diffuse concept Vermes, a group that perhaps can best be defined as comprising all animals that are longer than wide and non-vertebrate. For the last seventy years or so, the polychaetes have been grouped with the oligochaetes and hirudineans and a few smaller groups into the phylum Annelida. This phylum contains segmented, coelomate worms in which a secondary loss of segmentation may have taken place, but in which traces of such segmentation at least can be recognized internally. Other, more formal definition of the phylum can be found in standard text-books. Definition of the annelid classes has varied, however, everyday recognition of members of the three major classes has never been a problem: The Hirudinea contains the leeches, the Oligochaeta the earthworms and their allies, and the Polychaeta marine worms, such as the sandworm (nereids) and bloodworms (glycerids) used for bait in parts of the world. The three classes appeared also, at least grossly, to be separated ecologically in that the leeches were supposed to be parasitic, the earthworms terrestrial and the polychaetes were most common in the marine environment. This separation is obviously unsatisfactory and as information about these animals accumulated towards the end of the last century, most workers settled on a grouping which associated the leeches and the earthworms with each other in one group opposed to the polychaetes. Members of both the former classes are hermaphroditic and have various complex glands associated with reproduction. Furthermore, both leeches and earthworms lack parapodia (fleshy unjointed segmental appendages) and the setae, if present, only rarely occur in bundles. These two groups were considered more advanced than the marine, dioecious polychaetes. The polychaetes have been defined for the last seventy years as dioecious, marine annelids with parapodia bearing numerous setae. They also should have anterior appendages of various sorts (antennae, palps, tentacular cirri) and the gonadal ducts should be simple.

These definitions work if some of the smaller groups are disregarded. If these groups are taken into account, as they must, the only separation that consistently can be made between the oligochaetes/leeches and the polychaetes, is the presence in the former grouping of hermaphroditic gonads limited to a few segments. Some hermaphroditic polychaetes are known, but these usually have gonads in a large fraction of the total number of segments. It is then difficult to give a good, consistent and practically useful definition of what is meant by a polychaete, but a definition along the lines suggested below, should separate them from the other annelids with reasonable accuracy.

The polychaetes are multi-segmented annelids with parapodia; setae are present in distinct fascicles. They are dioecious and have simple exit ducts from the

[1] REVIEW COMMITTEE FOR THIS SCIENCE SERIES
ROBERT J. LAVENBERG
DONALD REISCH

[2] Allan Hancock Foundation, University of Southern California, Los Angeles, California, 90007. Contribution Number 358 of the Allan Hancock Foundation.

gonads. They are usually marine, more rarely freshwater and only rarely terrestrial or parasitic in habitat. Any of these features need not be present and none of them is essential for the recognition of an animal as a polychaete.

This topic has been treated in considerably greater detail by Clark (1969) and to a lesser extent by Fauchald (1974a).

A key morphological feature and at the same time one of the most important taxonomic characters of the polychaetes is the setal (chaetal) construction. The setae are ectodermal derivatives, formed by ectodermal cells that during the development have migrated to a position well below the rest of the ectodermally derived epidermis. Each seta consists of a bundle of filaments laid down by a basal chaetoblast and up to several lateral cells. The material in the setae is a glycoprotein, consisting of chitin (a polysaccharide) and a protein cross-linked at the time of formation. The formation of structural details in the setae is *very* well controlled, but exactly how this takes place has only partially been clarified. The best current review of this topic was made by O'Clair and Cloney (1974) from which most of the above information has been gleaned.

Polychaetes traditionally are separated into two large orders, ERRANTIA and SEDENTARIA (Audouin and Milne Edwards 1834, pp. 24-26). The separation is based on the development of the anterior end and the life habits of the included species.

The errants are supposed to have a large number of equal body-segments. The anterior appendages are few in number and differentiated into palps, antennae, tentacular cirri, etc. These worms are considered free-living and, generally, should be rapacious in habits. All polychaetes with jaws are included in this order; thus the onuphids, despite their tubicolous habits, are considered errants since their large jaw-apparatus resembles the jaw-apparatus in other, non-tubicolous eunicidlike animals.

The sedentaries are supposed to have a limited number of body segments. The body may be separated into different regions. Anterior appendages may be absent or a few to many similar appendages may be present. The sedentaries have short parapodia associated with their tubicolous or burrowing habits and are usually deposit- or filter-feeders.

These definitions have not changed much over time (cf. Grube 1850, p. 281 and tables; Fauvel 1923a, pp. 27-29; Hartmann-Schroder 1971, p. 29). The advantage of the system is that the bulk of the 8,000+ described species of polychaetes separates into two roughly similar groups in terms of numbers of species and genera as well as families. The separation is otherwise unsatisfactory since neither order can clearly be defined. Several attempts have been made to subdivide the polychaetes in a more acceptable manner (Dales 1962, pp. 424-425; Clark 1969, p. 47). Polychaete taxonomists have tended to disregard these attempts and have continued to treat the polychaetes as if the class consisted of two orders (Fauvel 1958, pp. 166-190; Hartmann-Schroder 1971, p. 29) or subclasses (Uschakov 1955a), or have treated the group as if it consisted of about 75 distinct and unrelated families (Hartman 1968, 1969). The problem with all proposed schemes is that they are internally inconsistent. Furthermore, they give no better solutions to classificatory problems than the old, admittedly artificial, separation into two orders.

The three most ambitious recent proposals were by Dales (1962), Storch (1968) and Clark (1969). Dales used the variable structures of the eversible stomodeal region (pharynx) to separate different groups. The arrangement of the body-wall musculature was used by Storch. Clark used a variety of different structures to characterize his eight orders. These authors gave no formal definition of any taxon above the family level (except by inference from contained taxa) and it has been difficult to evaluate their schemes.

CHARACTERS USED TO DEFINE HIGHER TAXA

Major anatomical and morphological features were reviewed during a study of the phylogenesis of the polychaetes (Fauchald 1974a). Below is given a survey of the findings with an expanded discussion of their taxonomic aspects.

A. Prostomium. The prostomium usually is distinct and may have or lack appendages. In several families it is more or less fused with the peristomium and the first segments. The degree of fusion is difficult to determine even in an examination of the nervous system so the degree of distinctness of the prostomium is a character that can have no great taxonomic value (see Benham 1894, 1896). Prostomial appendages include antennae and palps. Antennae are innervated through single roots directly from the brain; palps always have double roots, either from the brain or from the circumesophageal ring (Akesson 1963; Orrhage 1966). Antennae are always sensory; palps may be sensory or may be used as feeding appendages. The presence of either one or both categories of appendages is considered here of great importance. The position of the palps varies from ventral to dorsal, from frontal to occipital. The position and function of the palps furnish important taxonomic characters. It is impossible to distinguish any other classes of prostomial appendages either on morphological or anatomical grounds.

B. Peristomium. The larval peristomium is the immediate prototrochal region of the trochophora larva;

it may persist as the adult peristomium at least in some forms and it appears to be completely pre-segmental in nature, at least in some forms (Akesson 1967). However, the structure called the peristomium in most taxonomic studies consists of a fusion of this larvally derived structure and one or more true segments. The larvally derived peristomium may carry a single pair of dorsal cirri called peristomial cirri. The fused segments may carry parapodial remnants called tentacular cirri. The number of tentacular cirri vary from one to four pairs in the hesionids; other families tend to have

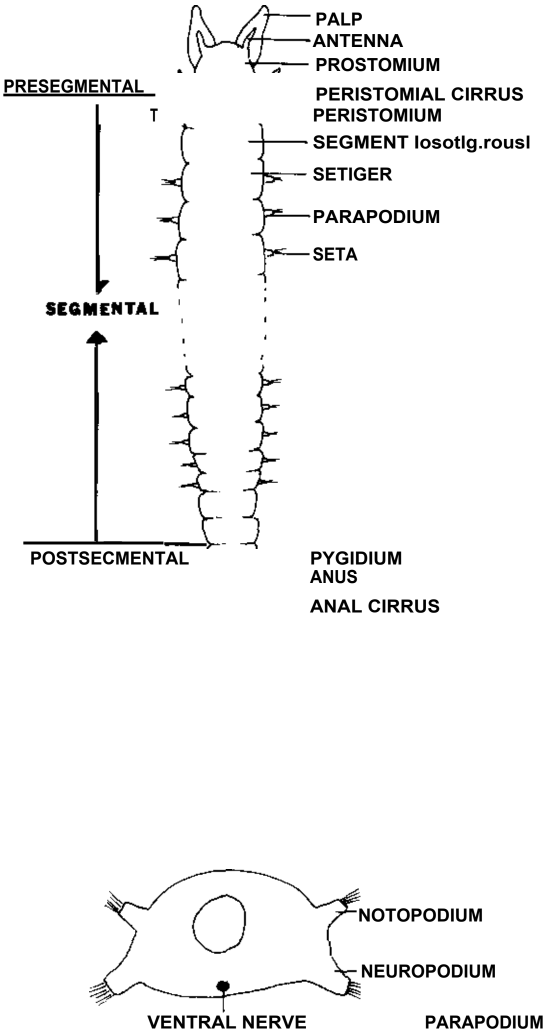


FIGURE 1. Diagrams showing the major morphological features of a generalized polychaete.

a constant number, or at least only a few alternative numbers (nereids, syllids, phyllodocids, etc.). Fused segments are often present, even if tentacular cirri are absent.

It would be valuable to distinguish the two kinds of peristomia, but current usage seems ingrained and little would be gained by coining a new term; it should, however, be remembered that the current term may cover two very different structures.

C. Eversible pharynx. Most polychaetes can everse a part of the anterior digestive tract. Two different constructions can be recognized (Dales 1962). A ventral plate-muscle pharynx is present in several forms (Eunicea, Amphinomida, etc.); others have an axial pharynx that is developed symmetrically, or at least nearly symmetrically. The axial pharynx may be followed by a strongly muscular region (nereids, nephtyids, glycerids, etc.) or this musculature may be absent (arenicolids, maldanids, etc.). Usually each family has a characteristic kind of pharynx, but in some families (e.g., Spionidae) both plate-muscle and axial pharynges are present (Orrhage 1966). Some plate-muscle pharynges are poorly muscularized and may be difficult to distinguish from weakly developed axial pharynges so the apparent overlap in distribution of the two kinds of pharynges may in part be due to definitory problems. This problem suggests that the structure of the pharynx cannot be used as the single definitory character for higher taxa. The detailed structure of the *pharynx*, especially the equipment of jaws, teeth and other chitinized structures associated with the anterior end, are very important characters at the generic and specific levels. The variability of the jaw-apparatus of several members of the super-family Eunicea is presently under investigation. Preliminarily, it appears that the detailed structure of the jaws is correlated very precisely to other variable morphological features and to environmental variables (Fauchald and Smith, in preparation).

D. Parapodia. Polychaete parapodia can be biramous, with both noto- and neuropodia developed, or uniramous with only the neuropodia developed. In the latter case, the notopodia are considered secondarily reduced (Fauchald 1974a). The presence of notopodia is a very important character at the supra-familial and ordinal levels as is the presence of acicula and setae. The detailed development of each ramus with the various parapodial lobes and cirri is *very* important at the generic and specific levels. The presence of branchiae associated with the parapodia is of variable importance. The presence of branchiae may not even be considered a specific character (Fauchald 1970 on *Eunice (Nicidion) cariboea* and *Palola* spp.); in other cases the presence may be used as a generic character *(Asychis* and *Branchioasychis).* Generally, however, the presence of branchiae is a specific character, but with generic importance where warranted by evidence. Branchiae are of sufficient biological importance, so fairly good evidence must be presented to demonstrate that these structures are of less than specific importance.

E. Setae. Numerous kinds of setae have been described (uncini, limbate setae, pectinate setae, subacicular hooks, composite spinigers and falcigers, etc.). The basic kind of setae in each parapodial ramus is usually a family character, but not uniquely so. Thus, all phyllodocids have composite setae, but not all polychaetes with composite setae are phyllodocids. The detailed construction of the setae is important at the specific level. The importance of accurate examination of the setae still is underestimated by most taxonomists; precise observations require close microscopic work to elucidate them and this kind of work may be necessary even in routine identifications. Moreover, recent studies with scanning electron microscope have demonstrated clearly the importance of accurate work on the setae (Thomassin and Picard 1972).

F. Nephridia. The structure and distribution of nephridia have been used at the subfamilial and generic levels (Hessle 1917 on terebellids). The character may be of wider usefulness at higher levels, but the variation in these features has been too little studied in most families to make the character useful at the present time.

Most polychaete families are characterized by a complex set of features and cannot be identified by reference to a single structure. The proposed taxonomic schemes have failed because they did not take this into account. They all were based on two or perhaps three manifestations in one important structure. By defining each manifestation precisely, apparent "intermediate" forms appeared and had to be included in one or another category as an exception or be left outside the proposed system. Usually, the "intermediate" form would be loosely appended to one taxon or another; the definition of the taxon would then be left intact. It became impossible to find these "hidden" taxa in the system.

SOME USEFUL TECHNIQUES

The following comments are necessarily incomplete and are meant only as a first-hand guide to work on polychaetes, especially the handling necessary to perform identifIcatory work, excluding the handling necessary for other kinds of investigations on either live or dead polychaetes. The main topics covered are collection, screening, fixation and preservation and the most common techniques in laboratory handling.

Collection. -Polychaetes are found nearly everywhere in the marine environment and thus can be caught with every kind of gear imaginable. They are soft-bodied animals, and hand-collected specimens tend to be rather poorly treated. The most complete, and thus most easily identifiable specimens will be caught with gear that takes chunks of the environment and in situations where the animals are allowed to crawl out, or where the material is gently screened. Even in S.C.U.B.A. collection it is advisable to collect masses of material, rocks, seaweed tufts, sand-samples, etc. and put them in separate plastic bags or similar waterproof sample bags for later treatment. Most polychaetes are small and active animals; it is therefore useless to put a bottom sample in the ordinary game-bags used in diving, since most of the worms will escape before the sample can be treated further.

Shipboard sampling can be done with any of several kinds of a series of gear, quantitative as well as qualitative. If dredges are used, I recommend hauls as short as practicable, since the churning of the material in the dredge will tend to grind up the polychaetes or disturb them enough to make them autotomize appendages and, often, the whole posterior end.

Samples of hard substrates, algal mats, rubble, etc. should be put in a large container of some sort, covered completely with sea water and be left standing undisturbed for several hours. The samples should be placed in the dark or at least in the shade and should be kept cool, though not necessarily refrigerated below the ambient temperature at the sampling site. It is especially important to leave the sample in the dark if it contains algae in quantity. As the oxygen concentration in the water decreases, the polychaetes will leave the substrate and congregate around the rim of the vessel at the air-water interface. They can easily be scooped from the surface with either a small screen (0.5 mm mesh-size) or simply a spoon. If the sample contains a large number of motile, large animals, such as crabs or brittle-stars, it is best to remove most or all of these as soon as possible.

The samples should be left standing for several hours (2-12 hours) depending on the lighting, the quantity of water in relation to sample size, the temperature, etc. After the samples have been treated in this manner, the substrate should be carefully sorted through-plucked to pieces if necessary-and the water screened for animals that left the substrate but did not reach the surface. This whole process should be done as quickly as possible, since polychaetes deteriorate very rapidly after death. The method will not quantitatively remove polychaetes, since some polychaetes are unable to leave their tubes or burrows and others generally do not approach the surface, even when the water becomes very foul. The process can be speeded up by adding 7% $MgCl_2$, but we have not found this to be any great advantage.

Screening.-Samples of soft substrates, such as sands and muds, must be screened. Quantitative benthic studies now routinely use t mm screens, but these undersample the polychaetes badly, both in numbers of species and in specimens. The use of 0.75 mm screens does not improve matters greatly, but 0.5 mm screens appear to catch most polychaetes quantitatively. In inshore areas, the sands and gravel will make the use of 0.5 mm screens rather impractical, but if a complete survey of the fauna is contemplated, this cannot be avoided. Thus, the objective of the study undertaken must be considered carefully. I would generally recommend that, for each area studied, at least some samples be screened with a double set of screens, both I .0 and 0.5 mm, and the results compared so that the level of inaccuracy engendered by the use of 1.0 mm screens can be estimated. This has to be done for every major sediment type and cannot be guessed at from one sediment type to the next, nor from one geographical location to the next. This is because the fraction of small species appears to vary geographically.

Samples should under any circumstances be washed gently with very large quantities of water. It is useful to have the water prescreened so that pelagic organisms can be avoided, and deep-water samples should be treated with water as cold as possible. Nothing is gained by hurrying the screening process, but each sample should be screened as soon as possible after getting it on deck. Deep-water samples that cannot be screened immediately should be refrigerated. It is of the utmost importance for good results that the screening process be done carefully; poorly screened samples contain a large number of mangled specimens, and such specimens usually cannot be identified. The net result will be a waste of sampling time and effort and, not least, loss of time needed for identification of the specimens after the samples have been returned to the laboratory. In terms of the time and effort needed for the different parts of the processing of a single sample, we now generally calculate that on the average it takes about 50 minutes of shipboard time to take and process a single shelf sample with a box-core and about three weeks of manhours to adequately treat and interpret this sample in the lab. Thus, the few minutes of ship time to be gained in preparing the samples poorly will be offset by the need for a larger number of replicate samples to get adequate numbers for mathematical treatments in the lab.

Once the sediment has been removed from the screens as completely as possible, the retained material should be chased down to one side of the screen with the help of a gentle stream of water applied to the outside of the screen. Do not sort or pick through the material on the screens: non-preserved polychaetes should be handled as little as possible and never moved at all except with the help of a gentle stream of water applied to the outside of screens or elsewhere.

Fixation and Preservation. -For *the* last few years we have routinely narcotized the whole sample as retained on the screens. The material on the screens is washed down onto a large enamel pan with as little sea water as possible. The pan is then flooded with a solution of 7% MgCl, in sea water and allowed to stand for about half an hour. Then the contents of the pan are poured carefully through a screen and transferred, with as little water as possible, to a sample jar. The narcotizing solution can be used several times if so desired.

Standard fixating agent for polychaetes is 10% neutralized formalin in sea water. The most commonly used neutralizing agent is borax (Na,B_4O_7, technical grade). The sample should fill no more than one-third of the sample jar and the jar should be completely filled with the formalin solution. The jar should be capped and gently but thoroughly inverted several times to get complete mixing. Allow the sample to settle, decant off about one-half of the solution and fill the jar with fresh formalin solution. It is much better to split a sample into several jars than to fill one jar completely with the entire sample and get incomplete and unsatisfactory fixation.

Histological fixatives can also be used on bulk samples, and in general such fixation is better on small, fragile polychaetes if done prior to any sorting. If such fixatives are used, the ratio between sample and fixative must be even lower than the one indicated above, and the fixative should be changed twice in rapid succession to avoid dilution effects.

Samples should be left in formalin for at least 24 hours and can be left in the fixative for several weeks. However, after 24 hours, the samples are ready to be transferred to the preservative, usually 70% isopropyl or ethyl alcohol in distilled water. Before transfer, the samples must be washed in fresh water once or twice to remove the salt; if this is not done, setae and other details will become the crystallization sites for salt crystals, and these are difficult to remove after they have formed. One change of preservative is necessary to ensure full strength.

DO NOT ATTEMPT TO USE ETHYL ALCOHOL AS A FIXATIVE, even if sensitivity to formalin becomes a problem. The specimens become completely unusable after a short period of time, and again the fraction of unidentifiable specimens goes up drastically. Postfixation with formalin of material originally fixed in alcohol does not work.

Specimens treated as recommended above usually retain most of their appendages, and a large fraction of complete specimens is usually present. However, a certain number of incomplete specimens are to be expected in any treatment, especially with standard narcotizing time as suggested above. The treatment suggested is rather more elaborate than usual, but we have found that we are amply rewarded by a much higher than usual fraction of identifiable specimens. Thus, less replication of samples is needed in benthic surveys and this in itself represents a savings in both time and money.

Laboratory Treatment of Samples, Identificatory Techniques. -The equipment needed to identify polychaetes includes one stereo microscope per person and one compound microscope per two persons, as the minimum. The compound microscope must be capable of magnifications up to 1100 times, and the stereo microscopes should have magnifications to about 100 times. A focusable microscope lamp is necessary for use with the stereo microscope. Each person will also need two pairs of watchmaker's forceps, two needles (we use insect pins glued to applicator sticks with epoxy glue), fine scissors, a small scalpel (we use pieces of razor blades glued to applicator sticks with epoxy glue), a small bottle of glycerol alcohol mixed with one-half glycerol and one-half 70% alcohol, a bottle of immersion oil, depression slides and flat slides, cover slips, petri dishes of various sizes (preferably with tight-fitting lids), cotton, paper, and #2 pencils (HB or F works well).

The sorting and identification of polychaetes is a two-step operation. Each sample should first be sorted to family under a stereo microscope. The samples must be sorted while completely submerged in alcohol, and since light from the microscope lamp is apt to evaporate the alcohol it should be refreshed from time to time. Polychaetes always have to be treated while completely submerged, and after being transferred to alcohol cannot be left dry for more than a few minutes at a time. Small polychaetes tend to dry out very quickly, and dried out polychaetes are largely unidentifiable.

Sorting can be done directly into vials completely filled with alcohol, and each vial receives a label with the name of the contained taxon, as well as with the station number for that particular sample. It is imperative to do this immediately rather than having to remember the content and position of each vial later. Use good, high-rag-content paper of sufficient weight (20 pound or higher) and a good pencil. The labels should be big enough to stand up in the vial unsupported, but not so large as to cover the contents, and they should end up well below the upper margin of the vial. We prefer to use straight-sided vials, capped with cotton plugs, and to store these in jars filled with alcohol. Screw-capped vials almost invariably have a shoulder which makes it difficult to remove specimens and labels when needed. Screwcaps normally are not air tight, so the vials will have to be stored within a larger jar regardless.

After the sample has been sorted to family, we collect the members of each family in a single jar. Thus, the sample is no longer intact as such, but has been distributed taxonomically among families. It is thus of very great importance that careful and accurate notes be taken on the numbers of vials for each station, so that later the station can be reconstructed accurately on paper. This is done because we have found it considerably more efficient to identify the polychaetes family by family in larger numbers. It is much easier to compare specimens from different samples, and the number of dubious identifications can be decreased drastically by this means. If the samples are to be stored as units, the vials can always be reunited afterwards if desired.

When polychaetes are being identified, certain standard observations should always be made. Always find the anterior end and take note of the number and arrangement of anterior appendages. Scan the body for obvious differences in parapodial structures and for such features as the position and number of branchiae. Most specimens preserved as indicated above will be relatively easy to handle with two pairs of forceps, and it is usually much easier to move the specimen than to move the dish. This sort of scan is usually all that is needed to get a polychaete to family.

To identify the animals to genus and species, more accurate observations are usually necessary and various dissections must be performed. It is always necessary to remove a parapodium, if nothing else, because a good look at the setae is needed. This can be done with the use of two pairs of forceps, a scalpel or iris scissors. For most medium-sized polychaetes in good condition, just pulling off a parapodium with a pair of forceps is the easiest method. Care must be taken that both parapodial rami and associated cirri and branchiae come off. Some workers find it easier to use scissors or scalpel, and these instruments must be used on poorly preserved specimens or on larger animals. The parapodium should be mounted on a slide; larger ones must be mounted on depression slides, but normally a flat slide is better, since depression slides cannot be used with high-power compound microscopes. Generally, the parapodium should be mounted with the anterior side facing the observer; however, in certain families and genera, a posterior view may be more informative. Before mounting the parapodium, look at some appropriate parapodial illustrations showing the features to be observed. A parapodium mounted in a dorso-ventral position gives no more information than does looking at the whole animal, so a mount showing both notopodium and neuropodium is necessary. We use glycerol-alcohol for these mounts and only rarely make permanent mounts.

Which parapodium should be removed depends on which family is being studied. Generally, a median parapodium from a long series of similar-looking parapodia will be best, but in special cases the anteriormost or one specific parapodium will have to be removed to study some specific detail of importance in that taxon. Thus, in members of the genus Pista, for example, anterior, median and posterior thoracic parapodia must be removed, and in the genus Magelona the ninth parapodium must be detailed. Again, it is worthwhile to look through the key to be used before deciding which parapodium and, in some cases, how many parapodia, should be removed. It is also worthwhile to scan the body of the animal carefully before deciding on a specific parapodium, to see that the setae are as complete as possible so no extra mounts of setae become necessary. Setal distribution varies from one group of polychaetes to another; if it is possible to remove one single parapodium and *get* all setal types represented at once, this saves wear and tear on the specimens and also saves time in preparation.

Generally, parapodial structures are most easily observed at relatively low magnifications under the compound microscope, but critical decisions, especially on structures on top of a thick preparation, may be most easily followed at higher magnifications. Setal structures, especially the presence of fine hairs along the cutting edge of simple setae, are best seen under oil immersion with 100x objectives. It does not help much to use very high oculars; generally, a lOx ocular is more than adequate. If available light is insufficient for using the immersion objective, attempt to put immersion oil also between the condensor and the lower side of the slide. Be sure to adjust the lighting of the compound microscope every time the magnification is switched; it gives a much more satisfactory picture of the structure and will also, in the long run, save the eyesight of the worker.

Dissection of the anterior end of the polychaete may also be necessary for observation of the structure of the eversible pharynx or jaw structures. Important structures are situated in the midline, dorsally or ventrally or both; thus, a dissection should avoid cuts into the midlines of the animals. We generally make a longitudinal slit on the dorsal side, well lateral to the midline. The length and position of the slit will depend on the purpose of the dissection and on the relative position of the eversible pharynx. The pharynx may be preserved in the completely retracted position or in various stages of eversion; jaw structures are usually situated anterior in the body, even in forms with a long pharynx. If the purpose of the dissection is observation of the lining of the pharynx in one of the forms with a long pharynx, the slit can be made farther back than usual.

We usually continue by making transverse slits at both ends of the longitudinal one. This makes it possible to lift a flap of tissue containing the body-wall proper. We have found it most useful to leave the pharynx and the jaws in situ as much as possible; they are almost invariably lost if removed. Especially in the case of the complex jaw structures of the eunicean polychaetes, it is important to treat them in a similar manner in all specimens, so that they are all flattened to a similar degree when the observations are being made, etc. The jaws in these forms are always observed from the dorsal side and the jaw formulae are given from the posterior to the anterior end, the left jaw being mentioned first in each formula.

The pharyngeal lining has characteristic structures in members of several families; it is usually not necessary to remove the lining in nephtyids and phyllodocids, but in order to characterize the lining of members of glycerids and goniadids, this must be done. It is of great importance that the lining be well oriented in the goniadids, since the position of the different kinds of pharyngeal organs is considered of taxonomic importance. The fine structure of the glycerid pharyngeal organs cannot be seen except in oil immersion, and critical lighting is of the utmost importance for a clarification of these structures.

Parts that have been dissected out are best put in a small, separate vial stored within the larger vial with the specimens. Leaving small parts loose in the vial will invariably lead to their loss.

CLASSIFICATION OF POLYCHAETES

The scheme proposed below left. also Table 1), is based on phylogenetic ideas presented elsewhere (Fauchald 1974a). The sequence of families indicates an increasing morphological distance from the ancestral polychaete as this was defined on that occasion, but since the several orders and families are considered the results of a rapid radiation in Pre-Cambrian to Cambrian times (Fauchald 1974a), this sequential arrangement can only poorly represent the phylogenetic pattern.

Major anatomical as well as morphological features were used to define the orders. This may make them difficult to use in practical taxonomic work. The framework formed by including the anatomical features is more satisfactory in that each order now can be defined to exclude all non-members.

Theoretically different evidence should be used to define each taxonomic level. One feature (e.g., the structure of the eversible pharynx) once used at one taxonomic level, should not be used at another (lower) level within the same classificatory plan. This sort of separation was attempted here, but was only partially successful, in that one feature (e.g., the structure of the eversible pharynx) may have been used at the family level in one order, but at the sub-ordinal or superfamilial levels in other orders.

Suborders have been recognized only where warranted; no attempts were made to create intermediate categories in all orders. Families not included in any intermediate category are listed alphabetically at the end of each order. The sequence of families otherwise indicates phylogenetic relationships within each order.

TABLE I

Survey of Polychaete Orders, Suborders, Superfamilies and Families.

1. O. ORBINIIDA	7. O. OPHELIIDA	SO. Glyceriformia	12. O. STERNASPIDA
F. Orbiniidae	F. Opheliidae	F. Glyceridae	F. Stemaspidae
F. Paraonidae	F. Scalibregmidae	F. Goniadidae	13. O. OWENIIDA
F. Questidae	8. O. PHYLLODOCIDA	F. Lacydoniidae	F. Oweniidae
2. O. CTENODRILIDA	SO. Phyllodociformia	Suborder not	14. O. FLABELLIGERtDA
F. Ctenodrilidae	F. Phyllodocidae	recognized:	F. Flabelligeridae
F. Parergodrilidae	F. Alciopidae	F. Iospilidae	F. Poeobiidae
3. O. PSAMMODRILIDA	F. Lopadorhynchidae	F. Nephtyidae	15. O. FAUVELIOPGIDA
F. Psammodrilidae	F. Pontodoridae	F. Sphaerodoridae	F. Fauveliopsidae
4. O. COSSURIDA	SO. Aphroditiformia	F. Tomoptendae	16. O. TEREBELLIDA
F. Cossuridae	SF. Aphroditacea	F. Typhloscolecidae	F. Sabellariidae
5. O. SPIONIDA	F. Aphroditidae	9. O. AMPHINOMIDA	F. Pecunarudae
SO. Spioniformia	F. Polynoidae	F. Amphinomidae	F. Ampharetidae
F. Apistobranchidae	F. Polyodontidae	F. Euphrosinidae	F. Terebellidae
F. Spionidae	F. Pholoididae	10. O. SPINTHERIDA	F. Trichobranchidae
F. Magelonidae	F. Eulepethidae	F. Spintheridae	F. Bogueidae
F. Trochochaetidae	F. Sigalionidae	11. O. EUNICIDA	17. O. SABELLIDA
F. Poecilochaetidae	SF. Chrysopetalacea	SF. Eunicea	F. Sabellidae
F. Heterospionidae	F. Chrysopetalidae	F. Onuphidae	F. Sabellongidae
SO. Chaetopteriformia	F. Palmyridae	F. Eunicidae	F. Caobangidae
F. Chaetopteridae	SF. Pisionacea	F. Lumbrineridae	F. Serpulidae
SO. Cirratulifonnia	F. Pisionidae	F. Iphitimidae	F. Spirorbidae
F. Cirratulidae	SO. Nereidiformia	F. Arabellidae	Families of uncertain
F. Acrocirridae	F. Hesionidae	F. Lysaretidae	affinities:
6. O. CAPITELLIDA	F. Pilargiidae	F. Dorvilleidae	F. Dinophilidae
F. Capitellidae	F. Syllidae	Super-family not	F. Nerillidae
F. Arenicolidae	F. Calamyzidae	recognized:	F. Polygordiidae
F. Maldanidae	F. Nereidae	F. Histriobdellidae	F. Protodrilidae
	F. Antonbmunidae	F. Ichthytomidae	F. Saccocirridae

All known taxa to the generic level have been defined. Some taxa can be characterized by a single unique structure. The absence of this structure in all other taxa at that level has been left unstated to save space.

Preferably, keys should have been made first to order and within each order, to family. For several reasons, this approach was abandoned. Identification of orders may be possible only after a detailed anatomical study; the orders are justifiable scientifically, but rather difficult in practical taxonomic work, as mentioned above. The general approach to keys taken here is that they are tools to make it possible to identify the taxa swiftly and easily and with as little damage to the specimens as possible. For that mason one master key to families is proposed. Furthermore, all keys were made reversible. If one has a fairly good idea of what kind of animal one has at hand from an illustration or otherwise, one can work backwards into the key to check the identification. The keys were made strictly dichotomous; trick wording was avoided. However, as in all other keys, the usage of adjectives and adverbs is rather different from common English usage. The family key was intended to discriminate between specimens that had lost deciduous features such as branchiae or antennae, etc., in addition to complete specimens. Because of this and because of the general variability of key features within each family, several families key out at different points.

The generic keys are dependent on the presence of deciduous features. Most of these keys are short enough to allow scanning of the total key for necessary corrections if such features have been lost.

Under all circumstances, identifications made through the key should be checked by using the definitions of genera given. Introduction of a genus into the faunal lists should not be attempted based on identifications made through the keys in this paper. For publication purposes, the original literature must be consulted. A name erroneously introduced in the literature for any area is in practice indelible. Sloppiness has been the cause of mom errors in the polychaete literature than all other causes combined.

The keys and definitions given are wholly inadequate as a base for description of new genera, especially in the larger families. The keys are intended as aids in getting a first approximation in identification. Once achieved, a series of very valuable regional handbooks are available. Such include Uschakov (1955a and 1972), Hartmann-Schrdder 1971), Hartman (1968, 1969), Imajima and Hartman (1964), Fauvel (1953), Day (1967) and Banse and Hobson (1974). Older, but still indispensable are the handbooks by Fauvel (1923a, 1927), Friedrich (1938) and Berkeley and Berkeley (1948, 1952). These books can be used for a second approximation to the identificatory problems. However, before publication, the original research papers must be consulted.

The review below is separated into several distinct parts. The family key is followed by an order by order review of all the families. For each family, a definition may be followed by a brief note, especially noting features useful in field identification. Major recent reviews are also mentioned at this point. Then comes a key to genera and definitions of all contained genera; followed by taxonomic notes. These explain new taxonomic combinations and taxa and specific positions taken in this paper. The type-species is named for all genera and an approximate number of species is given. Finally, a list of invalid genera has been added.

Illustrations are given for one member of each family: as much as possible, identification features have been illustrated.

A glossary contains most of the terms used, except those in general usage in invertebrate zoology; where necessary, small line drawings have been added to the glossary to illustrate idiomatic usage, etc.

The literature cited contains references to the original descriptions of all genera listed, except the invalid ones and to major revisions and handbooks.

It should be noted that this paper contains little that is wholly new; in most cases I have followed the most recent major revision of any family, or followed clues indicated by revisions currently under way. It is hoped that this compilation of information may make it simpler to get more complete revisions made for each family where needed. However, such a revision must be based on materials, not on descriptions. A major revision is a long and very laborious process, but must be undertaken; it is wholly unsatisfactory to base such revisions on previous descriptions only, since interpretation of descriptions frequently is dependent on poorly understood and used terminology; a fact that frequently has obscured close similarities in structure (cfr. Fauchald and Belman 1972; Blake 1975).

Ultimately, one would hope that by organizing and defining each known taxon as clearly as possible, it will be easier to debate the classification and phylogeny of polychaetes sensibly; as stated by Clark (1969), the polychaetes do present an intractable problem of phylogeny for the time being.

ORDERS OF POLYCHAETES

The following polychaete orders are recognized: ORBINIIDA, CTENODRILIDA, PSAMMODRILIDA, COSSURIDA, SPIONIDA, CAPITELLIDA, OPHELHDA, PHYLLODOCIDA, AMPHINOMIDA, SPINTHERIDA, EUNICIDA, STERNASPIDA, OWENI DA, FLABELLIGERIDA, FAUVELIOPGIDA, TEREBELLIDA, SABELLIDA.

Members of the old order ERRANTIA are separated into three orders, PHYLLODOCIDA, by far the largest with most of the well-known families, AMPHINOMIDA and EUNICIDA. In addition, the small ectoparasitic spintherids have been assigned to their own order.

The bulk of the recognized orders thus comes from the old collective group (or order) SEDENTARIA. This group was never adequately defined, because two very disparate subgroups had to be included; the highly modified species now included in the orders STERNASPIDA, OWENIIDA, FLABELLIGERIDA, TEREBELLIDA and SABELLIDA, and the simple-bodied forms now included in the orders ORBINIIDA, CTENODRILIDA, PSAMMODRILIDA, COSSURIDA, SPIONIDA, CAPITELLIDA and OPHELIIDA. The latter seven orders contain structurally rather simple forms, but this should not be taken to indicate that the orders for that reason are related closely to each other. These forms are about as far apart as any other grouping of polychaetes that might be proposed, judging from differences in tagmatization, parapodial development and setal distribution. They could have been included under the old concept DRILOMORPHA (cfr. Uschakov 1955a, Dales 1962; Clark 1969), but defining this concept would have been very nearly impossible. The approach taken here, was that major different body constructions were given the rank of order and that modifications on these major body plans were given familial rank. Intermediate taxa were employed only where appropriate.

KEY TO FAMILIES

1a.	External segmentation and setae absent	2
1b.	External segmentation and/or setae present	4
2a (1a).	Paired antennae on the prostomium	3
2b (1a).	Paired antennae absent; tactile hairs along the body; small interstitial forms	DINOPHILIDAE
3a (2a).	Body long and slender; interstitial forms	PROTODRILIDAE (in part)
3b (2a).	Body short and saclike, pelagic	POEOBIIDAE
4a (1b).	Body a flattened disc with indistinct segmentation; ectoparasitic	SPINTHERIDAE

4b (lb). Body not a flattened disc; segmentation usually distinct, if indistinct, then body clearly longer than wide 5

5a (4b). Dorsum with series of elytrae (scales) or distinct elytral scars present at the dorsal side of notopodial bases in several segments; felt of matted notosetae may be present 6

5b (4b). Dorsum without elytrae, elytral scars or felt 11

6a (5a). Neuracicula distally hammer-headed EULEPETHIDAE

6b (5a). Neuracicula distally pointed 7

7a (6b). Prostomium with a single median antenna; dorsum with felt, or notosetae harpoon-shaped or held erect over the dorsum APHRODITIDAE

7b (6b). Prostomium with one to three antennae; dorsum without felt; notosetae usually distinctly lateral in position, never harpoon-shaped 8

8a (7b). Neurosetae composite 9

8b (7b). Neurosetae simple 10

9a (8a). All posterior segments with elytrae; prostomium with one to three antennae SIGALIONIDAE

9b (8a). Elytrae alternate with dorsal cirri along the whole length of the body; one antenna present PHOLOIDIDAE

l0a (8b). Spinning glands present; median antenna, if present, attached near the posterior or middle of the prostomium; notosetae absent POLYODONTIDAE

l0b (8b). Spinning glands absent; median antenna attached at the anterior margin of the prostomium; notosetae usually present POLYNOIDAE

I I a (5b). Notopodia with expanded, golden or brassy setae that more or less cover the dorsum 12

11b (5b). Notosetae otherwise (may be absent) 13

12a (I Ia). Prostomium with large facial tubercle and a median antenna; notosetae in rosettes .. PALMYRIDAE

12b (11 a). Prostomium without a facial tubercle; paired lateral and a median antenna present; notosetae in transverse rows CHRYSOPETALIDAE

13a (I lb). Posterior end covered ventrally by a chitinized shield STERNASPIDAE

13b (lib). Posterior end not covered by a shield 14

14a (13b). Prostomium completely retracted between the first parapodia which have three pairs of tentacular cirri, partially supported by acicula PISIONIDAE (in part)

I4b (13b). Prostomium not completely retracted between the first parapodia which are otherwise equipped .. 15

I5a (14b). Anterior end with one or several series of long, specialized setae either covering the retractable anterior end or forming an operculum or a series of long protective spines (paleae) 16

15b (14b). Anterior end without exceptionally long, specialized setae (NOTE: Short, strong hooks may be present) 20

16a (15a). Specialized setae long and chambered, forming a protective cage around the retractable anterior end; body with numerous epithelial papillae FLABELLIGERIDAE (part)

16b (15a). Specialized anterior setae do not form a protective cage; anterior end not retractable; skin-papillae few and small, or absent; setae otherwise 17

17a (16b). Specialized setae slender, distally curved, often spinous; prostomium with seven antennae ONUPHIDAE (part)

17b (16b). Specialized setae stout, smooth and not distally curved; prostomium without appendages or with numerous tentacles 18

18a (17b). Specialized setae in a transverse row; tube conical, usually formed of closely fitted sand-grains PECTINARIIDAE

18b (17b). Specialized anterior setae either as a fan-shaped group of paleae on either side of the anterior end or as an operculum to the tube 19

19a (18b). Specialized setae form paleae; anterior end with two to four pairs of branchiae . AMPHARETIDAE (part)

19b (18b). Specialized setae form an operculum; anterior end without branchiae SABELLARIIDAE

20a (15b). Anterior end, including in part the prostomium, transformed into a tentacular crown 21

20b (15b). Anterior end not transformed into a tentacular crown (NOTE: Antennae and tentacular cirri may be crowded near the anterior end) 25

2Ia (20a). Tube calcareous; thoracic membrane present 22

21b (20a). Tube mucoid or horny, often covered with sand-grains; thoracal membrane absent 23

22a (21 a). Tube irregularly twisted or straight, sometimes coiled near base; body symmetrical; more than four thoracic setigers SERPULIDAE

22b (21a). Tube completely coiled; body asymmetrical; four thoracic setigers present SPIRORBIDAE
(Usually considered a sub-family of the SERPULIDAE)
23a (21b). Parapodia with uncini in one or a few distinct rows; tentacular crown with smooth or pennate radioles 24
23b (21b). Small uncini massed in dense fields in the neuropodia only; short tentacular crown with branching tentacles OWENIIDAE (part)
24a (23a). Digestive tract recurved with anus far anteriorly; thorax without hooks except in the first setiger CAOBANGIIDAE
24b (23a). Digestive tract straight with far posterior or terminal anus; thorax with hooks in most setigers SABELLIDAE
25a (20b). Setiger 4 with one or a few thick spines; some median parapodia strongly modified, usually fan-shaped; tubes parchmentlike, or, if horny, distinctly annulated CHAETOPTERIDAE
25b (20b). Setiger 4 without thick spines (NOTE: Other setigers may have modified setae); no parapodia fan-shaped; tubes never parchmentlike, if homy, then without annotations 26
26a (25b). Numerous tentacles on the lower side of the prostomium or on the peristomium; branchiae, if present, limited to a few pairs of anterior setigers 27
26b (25b). Anterior end with a limited (10 or fewer pairs, usually) number of antennae and tentacular cirri, or without appendages 29
27a (26a). Branchiae in a transverse or oblique row or grouped in two groups on either side of the anterior dorsum, usually digitiform and smooth, more rarely bipinnate or lamellate (NOTE: Branchiae are often lost, but scars remain); buccal tentacles retractable; uncini with teeth in one or a few rows AMPHARETIDAE (part)
27b (26a). Branchiae, if present, on two-three successive segments, stalked or sessile, branched or as numerous filaments, rarely smooth; buccal tentacles non-retractable; uncini with several teeth in one or more transverse rows above the main fang (crested) 28
28a (27b). Thoracic uncini long-handled, abdominal ones short-handled TRICHOBRANCHIDAE
28b (27b). Both thoracic and abdominal uncini short-handled; sometimes with a posterior prolongation in thoracic uncini TEREBELLIDAE
29a (26b). Prostomium with at least one pair of antennae; peristomium usually with paired palps or tentacular cirri 30
29b (26b). Prostomium without appendages or with a single antenna; peristomium with paired dorsal palps, maximally two pairs of tentacular cirri or without appendages 58
30a (29a). Prostomium continued posteriorly in a caruncle; large notosetae furcate; others smooth or serrated . 31
30b (29a). Caruncle absent; furcate notosetae, if present, small, or furcate setae only kind of setae present . 32
31a (30a). Notosetae arranged in transverse rows on dorsum; branchiae shorter than setae . EUPHROSINIDAE
31b (30a). Notosetae in tufts on the notopodial lobes; branchiae conspicuous branching tufts AMPHINOMIDAE
32a (30b). Palps absent 33
32b (30b). Palps present, sometimes as ventrolateral pads on the peristomium or fused to the anterior end of the prostomium so that the latter appear cleft, but usually free and digitate 49
33a (32a). Setae absent; acicula present only in the prolonged acicular lobes of the second segment (first *seg-*ment in juveniles); otherwise absent TOMOPTERIDAE
33b (32a). Setae or acicula or both present in most segments 34
34a (33b). Prostomium long and conical; usually annulated, with two pairs of antennae at the tip 35
34b (33b). Prostomium no more than twice as long as wide, never annulated; antennae long or short 36
35a (34a). Eversible pharynx with four jaws in a cross; parapodia either all uniramous or all biramous GLYCERIDAE
35b (34a). Eversible pharynx with more than four jaws; parapodia uniramous anteriorly and biramous posteriorly GONIADIDAE
36a (34b). Jaws present 37
36b (34b). Jaws absent 40
37a (36a). Each jaws consisting of a series of denticles in a row DORVILLEIDAE (part)
37b (36a). Each jaw consisting of a single piece 38
38a (37b). Four or five pairs of jaws LYSARETIDAE
38b (37b). A single pair of jaws present 39
39a (38b). Both composite and simple setae present, parasitic in decapod crustaceans IPHITIMIDAE
39b (38b). All setae composite, parasitic in fish ICHTHYOTOMIDAE

40a (38b). One pair of antennae; interstitial forms PROTODRILIDAE
40b (36b). More than one pair of antennae 41
41 a (40b). Eyes larger than the rest of the prostomium, with well defined lenses and pigment layers ALCIOPIDAE
41b (40b). Eyes, if present, smaller than the prostomium proper, usually small pigment cups, but lensed eyes occur 42
42a (41b). Series of large epithelial capsules on the dorsum; two or three pairs of lateral antennae and one median, unpaired antenna SPHAERODORIDAE
42b (4tb). Epithelial capsules absent (NOTE: Dorsal cirri of phyllodocids may be inflated, but are associated with the parapodia rather than situated on the dorsum) 43
43a (42b). Dorsal cirri large and foliose PHYLLODOCIDAE
43b (42b). Dorsal cirri, if present, cirriform 44
44a (43b). Setae absent; with a few pairs of appendages anteriorly and posteriorly, parasitic in lobsters HISTRIOBDELLIDAE
44b (43b). Setae present; several pairs of appendages along the body 45
45a (44b). All setae composite, pelagic LOPADORHYNCHIDAE
45b (44b). At least some setae simple, benthic or parasitic forms 46
46a (45b). With ciliary bands on the dorsum of each segment in addition to a large ciliary organ on the prostomium; minute interstitial forms NERILLIDAE
46b (45b). External clliation limited mostly to small patches in sensory and respiratory organs, small or large forms 47
47a (46b). Five prostomial antennae, inquilines in bivalved mollusks ANTONBRUUNIDAE
47b (46b). Four antennae, free-living benthic forms 48
48a (47b). Interramal cirri between the noto- and neuropodia in most forms, all setae simple .. NEPHTYIDAE
48b (47b). Interramal cirri absent; notosetae simple, neurosetae composite LACYDONIIDAE
49a (32b). Palps bi- or multiarticulated 50
49b (32b). Palps simple, sometimes fused to the prostomium so the latter appears cleft or forming ventrolateral pads on the peristomium 52
50a (49a). Palps multiarticulated; tentacular cirri absent DORVILLEIDAE (part)
50b (49a). Palps biarticulated; at least one pair of tentacular cirri 51
51a (50b). Pharynx with paired jaws; paragnaths or soft papillae or both on the surface of the everted pharynx or pharynx smooth, parapodia usually biramous *NEREIDAE*
51b (5ob). Pharynx usually without jaws; paragnaths or pharyngeal papillae always absent; everted pharynx often with a circlet of distal papillae or lappets, parapodia often sub-biramous or uniramous HESIONIDAE
52a (49b). Palps ventrolateral pads on the peristomium; five occipital and two frontal antennae .... ONUPHIDAE (part)
52b (49b). Palps either fused anteriorly to the prostomium or as free ventrolateral projections; maximally five antennae 53
53a (52b). Palps free ventrolateral projections, sometimes fused to each other 54
53b (52b). Palps fused to the prostomium so that the latter appears anteriorly cleft 57
54a (53a). Prostomium longer than wide, with a pair of antennae at the tip PISIONIDAE (part)
54b (53a). Prostomium no longer than wide (NOTE: Fused palps may make it appear longer than it is) 55
55a (54b). Jaws present DORVILLEIDAE (part)
55b (54b). Jaws absent 56
56a (55b). Parapodia strongly prolonged, with long supportive acicula; anterior part of the digestive tract not visibly separated into distinct parts, pelagic PONTODRRIDAE
56b (55b). Parapodia not strongly prolonged; acicula short; anterior part of the digestive tract with a visible proventriculus in most species SYLLIDAE
57a (53b). Eversible pharynx, if present, unarmed PILARGIIDAE
57b (53b). Eversible pharynx with four pairs of upper and one pair of lower jaws EUNICIDAE
58a (29b). Anterior end, including both pro- and peristomium without appendages (NOTE: Appendages may be present on some anterior setigers) 59
58b (29b). Prostomium with a single median antenna, or peristomium with paired palps or tentacular cirri or both pro- and peristomium equipped as indicated 85
59a (58a). Paired palps on the first or one of the first postperistomial segments 60
59b (58a). Paired palps absent 61

60a (59a). Both composite falcigers and simple setae present ACROCIRRIDAE (part)
60b (59a). All setae simple, distally curved or straight, sometimes acicular CIRRATULIDAE (part)
61a (59b). With a single mid-dorsal palp on one of the first setigers (setigers 3-6 usually) .... COSSURIDAE
61b (59b). Mid-dorsal palp absent 62
62a (61b). With series of long, slender branchial filaments and tentacular and dorsal cirri along the body (often lost, scars remain) CIRRATULIDAE (part)
62b (61b). Branchial filaments and tentacular cirri absent or limited to a few segments 63
63a (62b). Parapodia strongly reduced so that the setae appear sessile on the body-wall; all setae simple, true capillary setae absent 64
63b (62b). Parapodia usually well developed or at least present as low folds; setae usually of several different kinds, including in most cases true capillary setae 68
64a (63a). Thorax with series of long dorsal cirri supported by acicula PSAMMODRILIDAE
64b (63a). Body usually not clearly regionated; apart from papillae and reduced parapodia, other appendages absent 65
65a (64b). At least some setae with an internal structure of small chambers FLABELLIGERIDAE (part)
65b (64b). No setae chambered 66
66a (65b). With a papilla between the rami of each parapodium; setae smooth and slightly recurved .... FAUVELIOPSIDAE
66b (54b). Without papillae between the rami; setae otherwise 67
67a (66b). Setae in four fascicles on each segment (biramous condition) CTENODRILIDAE
67b (66b). Setae in two fascicles on each segment (uniramous condition) PARERGODRILIDAE
68a (63b). Prostomium an oblique plaque, usually bordered by a flange 69
68b (63b). Prostomium pointed, rounded or blunt 70
69a (68a). Setae include anterior spines, rostrate long-shafted uncini and spinose or smooth capillaries; segments usually elongated (bamboo-worms) MALDANIDAE
69b (68a). Setae include bilimbate and spatulate kinds, long-handled uncini and companion-setae; segments not prolonged SABELLONGIDAE
70a (68b). Body separated into two regions with different kinds of setae in a thoracic and abdominal region (NOTE: Regions may sometimes also be definable on parapodial features) 71
70b (68b). Body not separated into regions; setal distribution and parapodial shapes grade along the body . . 73
71a (70a). Thorax with lateral parapodia, abdomen with both noto- and neuropodia in dorsal positions .... ORBINIIDAE
71b (70a). Parapodia lateral in all parts of the body; notopodia often reduced in posterior segments and neuropodia may form nearly complete cinctures 72
72a (71b). Slender capillary setae in thorax and sometimes in the first few abdominal segments only; branchiae, if present, retractable filaments on the abdomen CAPITELLIDAE
72b (71b). Slender capillary setae present on anterior, median and sometimes posterior parts of the body, including the branchial region; branchiae non-retractable, bushy or simple filaments ARENICOLIDAE
73a (70b). Anterior end with complex jaw-apparatus 74
73b (70b). Jaw-apparatus absent 76
74a (73a). Each jaw consisting of a series of small denticles DORVILLEIDAE
74b (73a). Each jaw consisting of a single piece 75
75a (74b). Hooded hooks present in at least some setigers; one pair of maxillary carriers .. LUMBRINERIDAE
75b (74b). Hooded hooks absent; three maxillary carriers ARABELLIDAE
76a (73b). Branchiae present on maximally 15-20 segments, starting from one of setigers 4-10 .... PARAONIDAE (part)
76b (73b). Branchiae, if present, either limited to the extreme anterior end, or found scattered over a large part of the body 77
77a (76b). Setae include anterior spines, rostrate long-shafted uncini and spinose or smooth capillaries; segments usually elongated (bamboo-worms) MALDANIDAE
77b (76b). Setal distribution otherwise; segments rarely elongated 78
78a (77b). Setae include simple capillaries and simple bifid falcigers in both noto- and neuropodia in a long region of the body QUESTIDAE
78b (77b). Simple bifid falcigers absent 79
79a (78b). Prostomium an elongated cone, usually more than twice as long as wide, nearly always articulated 80

79b (78b). Prostomium less than twice as long as wide, may be bluntly conical, rounded or truncate, never articulated 81

80a (79a). Eversible pharynx with four jaws; parapodia either all uniramous or all biramous .... GLYCERIDAE (part)

80b (79a). Eversible pharynx with more than four jaws; anterior parapodia uniramous, posterior ones biramous GONIADIDAE

8la (79b). Parapodia rounded lobes with large, easily dehiscent cirri; pelagic TYPHLOSCOLECIDAE

81b (79b). Parapodia low folds or blunt, button-shaped projections; cirri, if present, cirriform 82

82a (81 b). Composite falcigers present in anterior setigers ACROCIRRIDAE (part)

82b (81b). All setae simple 83

83a (82b). Neurosetae uncinal in structure BOGUEIDAE

83b (82b). Unciniabsent 84

84a (83b). All setae simple capillaries; branchiae cirriform, pectinate or absent; prostomium entire, pointed or rounded OPHELIIDAE

84b (83b). Furcate and acicular setae usually present; branchiae, if present, limited to the anterior end and strongly arborescent; prostomium T-shaped or bifid SCALIBREGMIDAE

85a (58b). Prostomium with a median antenna 86

85b (58b). Prostomium without appendages 88

86a (85a). Branchiae present on maximally 15-20 segments first starting from one of setigers 4-10 .... PARAONIDAE (part)

86b (85a). Branchial distribution otherwise or branchiae absent 87

87a (86b). Notopodial cirri flask-shaped in some setigers, plumose setae present POECILOCHAETIDAE

87b (86b). Notopodial cirri cirriform or foliose, plumose setae absent SPIONIDAE (part)

88a (85b). With two pairs of tentacular cirri; setae composite 89

88b (85b). Without tentacular cirri; setae simple 90

89a (88a). Setal appendages long and slender; pelagic IOSPILIDAE

89b (88a). Setal appendages short; parasitic CALAMYZIDAE

90a (88b). With multiple series of small, long-shafted uncini in the neuropodia OWENIIDAE (part)

90b (88b). Uncini in single rows or absent 91

91 a (90b). Prostomium flattened and spatulate; as wide as the widest part of the body MAGELONIDAE

91b (90b). Prostomium not flattened; distinctly narrower than the widest part of the body 92

92a (91 b). Parapodia inconspicuous; abdominal segments prolonged with setae forming complete cinctures around the body HETEROSPIONIDAE

92b (91 b). Parapodia well developed; abdominal segments usually not prolonged; setae limited to lateral tufts 93

93a (92b). All parapodia biramous, except possibly the first one 94

93b (92b). Median parapodia uniramous TROCHOCHAETIDAE

94a (93b). Uncini absent; notopodia with acicula, but without setae; true branchiae absent APISTOBRANCHIDAE

94b (93b). Uncini normally present, at least in the neuropodia; notopodia with setae in addition to acicula; branchiae present or absent SPIONIDAE (part)

ORDER ORBINIIDA

Prostomium without appendages; maximally two asetigerous anterior segments present; no additional cephalized segments present. Palps absent; eversible pharynx either an axial sac or a ventrolateral pad. Parapodia biramous; all setae simple, including capillary setae and usually acicular spines and serrated or spinose setae.

FAMILY ORBINIIDAE HARTMAN 1942

Orbiniida with lateral parapodia in a thoracic region and, usually, dorsal parapodia in an abdominal region. Prostomium without appendages, one or two asetigerous segments present anteriorly; no peristomial appendages. A saclike proboscis present. All setae simple, including capillaries, simple hooks and sometimes brush-topped, bifid or furcate setae.

The orbiniids have been the subject of several comprehensive studies, including Hartman (1957), Pettibone (1957a) and Day (1973). The major generic groupings appear clear and were reviewed by Day (1973) for the subfamily Orbiniinae. The subfamily Protoariciinae has yet to be reviewed in detail.

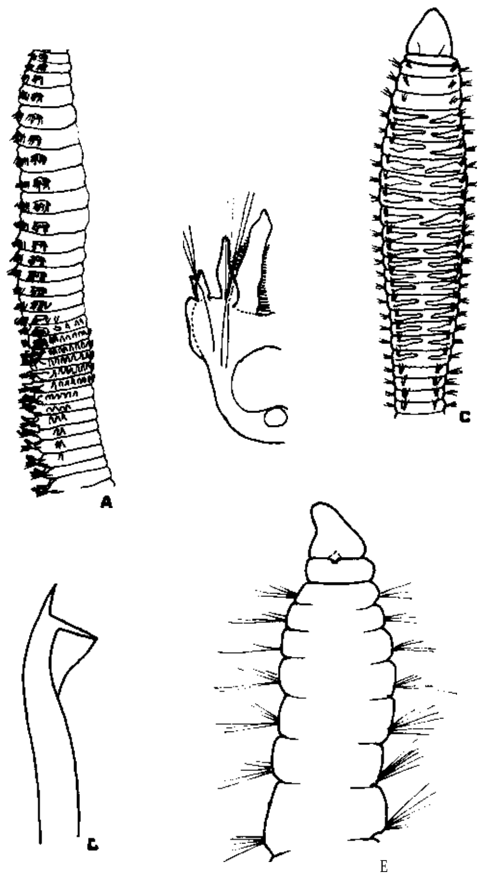


FIGURE 2. (A), Family ORBINIIDAE, *Orhinia johnsoni,* anterior end, after Hartman 1969, 5x; (B), transverse section of the abdomen of the above, 18x; (c), Family PARAONIDAE, *Cirrophores sp.,* anterior end, diagrammatic, about 22x; (D), Family QUESTIDAE, *Questa caudicirra,* posterior seta, after Hartman 1966, 54x; (E) anterior end of the above, 24x.

KEY TO GENERA

Ia.	Two asetigerous anterior segments	2
lb.		
	Branchiae absent	*Orbiniella*
2b (la).	Branchiae present	3
3a (2b).	Branchiae present on all but a few anterior segments	*Protoariciella*
3b (2b).	Branchiae limited to abdominal segments	4
4a (3b).	Only crenulated capillaries present	*Scoloplella*
4b (3b).	Crenulated capillaries and other kinds of setae present	5
5a (4b).	Abdominal neurosetae include swan-shaped hooks	*Proscoloplos*
5b (4b).	Swan-shaped hooks absent	6
6a (5b).	Abdominal neurosetae all crenulated capillaries; prostomium rounded	*Protoaricia*
6b (5b).	Abdominal neurosetae include acicular hooks; prostomium pointed	*Schroederella*
7a(lb).	Branchiae absent	*Microrbinia*
7b (lb).	Branchiae present on at least some segments	8
8a (7b).	Prostomium rounded or truncate	*Naineris*
8b (7b).	Prostomium more or less pointed	9
9a (8b).	All thoracic parapodia with only slender, pointed setae	10
9b (8b).	Some thoracic neuropodia with setae of another kind	11
l0a (9a).	Abdominal neuropodia with acicular spines	*Berkeleya*

lob (9a). Acicular spines absent in abdominal neuropodia *Haploscoloplos*
I la (l0b). Thoracic neuropodia of two abruptly different kinds 12
I lb (l0b). Thoracic neuropodia not abruptly different 13
12a (1l a). Anterior three thoracic neuropodia with bristle-tipped setae *Califia*
12b (11 a). Posterior thoracic neuropodia with thick, modified spines associated with a glandular pouch .. *Phylo*
13a (I 1b). Some thoracic segments with rows of papillae along the ventrum, papillae sometimes also on parapodial postsetal ridges *Orbinia*
13b (I lb). Without rows of papillae on the ventrum 14
14a (13b). Median and posterior abdominal neuropodia with thick acicula, projecting from the parapodial lobes; branchiae usually present from fifth or sixth segment *Scoloplos (Leodamas)*
l4b (13b). Thick projecting acicula absent; branchiae usually not present before tenth segment .... (Scoloplos)

Generic Definitions

Berkeleya Hartman 1971, *B. profunda* Hartman 1971; only species.

ORBINIINAE with pointed prostomium, abdominal branchiae and all thoracic setae crenulated capillaries. Twelve thoracic segments; transition from thorax to abdomen abrupt. Abdominal notopodia with crenulated capillaries and furcate setae; abdominal neuropodia with crenulated capillaries and acicular spines.

Califia Hartman 1957, C. *candida* Hartman 1957; 4 species.

ORBINIINAE with pointed prostomium, branchiae not present before segment 8; posterior thoracic neuropodia with two or fewer papillae; ventral papillae absent. Thoracic neurosetae include anterior brush-topped setae, crenulated capillaries and in some cases blunt hooks.

Haploscoloplos Monro 1933, *Scoloplos cylindrifer* Ehlers 1905; 13 species.

ORBINIINAE with pointed prostomium, branchiae not present before setiger 9; posterior thoracic neuropodia with two papillae and maximally two ventral papillae *present;* never more than four papillae combined. All *neurosetae* crenulated capillaries; notosetae crenulated capillaries and in some cases furcate setae.

Microrbinia Hartman 1965, *M. linea* Hartman 1965; only species.

ORBINIINAE with conical prostomium; branchiae and accessory papillae absent. Separation between thorax and abdomen indistinct. First notosetae smooth capillaries; other notosetae camerated capillaries and posterior notosetae curved and serrated acicular spines. *Neurosetae* similar.

Naineris Blainville 1828, *Nais quadricuspida* Fabricius 1780; 18 species.

ORBINIINAE with rounded or truncate prostomium, branchiae first present from any segment from 2-23. Maximally two accessory papillae on posterior parapodia, ventral papillae absent. Thoracic neurosetae include crenulated capillaries, hooks and intermediate forms. Abdominal notosetae crenulated capillaries and sometimes furcate setae.

Orbinia Quatrefages 1865, *Aricia cuvierii* Audouin and Milne Edwards 1833c; 16 *species.*

ORBINIINAE with pointed prostomium and first pair of branchiae on setiger 5-9. Posterior thoracic parapodia with several accessory papillae and numerous ventral papillae; with a combined total of at least five papillae on each segment. Thoracic neurosetae include hooks (or subuluncini) and crenulated capillaries. Furcate and capillary setae present in abdominal notopodia.

Orbiniella Day 1954, O. *minuta* Day 1954; 4 species.

PROTOARICIINAE with rounded or pointed prostomium and without branchiae. Thoracic setae all camerated or crenulated capillaries; abdominal setae include crenulated capillaries, acicular setae and sometimes furcate setae.

Phylo Kinberg 1866b, *P. felix* Kinberg 1866b; 19 species.

ORBINIINAE with pointed prostomium and branchiae first present from setiger 5-7. Posterior thoracic parapodia with several accessory papillae; numerous ventral papillae present. At least five papillae in combined total present on a segment. Thoracic neurosetae include crenulated capillaries, heavy hooks and heavy spear-shaped setae.

Proscoloplos Day 1954, *P. cygnochaetus* Day 1954; 2 species.

PROTOARICIINAE with rounded prostomium and stout branchiae present from setiger 8. Transition from thorax to abdomen indistinct. Setae include crenulated capillaries and one or two swan-shaped hooks in posterior neuropodia.

Protoaricia Czerniavsky 1881a, *Aricia oerstedii* Claparede 1864; 2 species.

PROTOARICIINAE with rounded prostomium and branchiae limited to abdominal segments. Thoracic neurosetae include crenulated capillaries, hooks and subuluncini; abdominal neurosetae all crenulated capillaries.

Protoariciella Hartmann-Schroder 1962, *P. uncinata* Hartmann-Schroder 1962; 3 species.

PROTOARICIINAE with pointed prostomium and branchiae present on all but a few anterior segments (from setiger 3 in type species). Thoracic notosetae all are crenulated capillaries; acicular setae present in posterior notopodia. Neurosetae include thick hooks with three teeth; slender acicular setae with flat teeth, crenulated capillaries and thick smooth spines in posterior segments.

Schroederella Laubier 1962, *S. pauliana* Laubier 1962; 2 species.

PROTOARCIINAE with strongly pointed prostomium and branchiae present on the abdomen. Notosetae include crenulated capillaries and acicular spines in far posterior segments. Neurosetae include crenulated capillaries and acicular hooks.

Scoloplella Day 1963, S. *capensis* Day 1963; only species.

PROTOARICIINAE with pointed prostomium and branchiae present on the abdomen. All setae crenulated capillaries.

Scoloplos Blainville 1828, *Lumbricus armiger* O.F. Muller 1776; 38 species.

ORBINIINAE with pointed prostomium and branchiae first present from setiger 5 or later. Accessory papillae never exceeding four, including both ventral and parapodial kinds. Thoracic neurosetae include blunt hooks and crenulated capillaries (may be absent). Abdominal notosetae include crenulated capillaries, furcate setae and spines.

Subgenus *Scoloplos:* Species with first branchiae on setigers 8-10 or later; without emerging notacicula in posterior setigers.

Subgenus *Leodamas:* Species with first branchiae on setiger 5-6; with heavy emerging notacicula in posterior setigers.

Invalid Genera

Alcandra Kinberg 1866b, see *Scoloplos (Leodamas)*
Anthostoma Schmarda 1861, see *Naineris*
Aricia Savigny 1820, see *Orbinia*
Branchetus Chamberlin 1919c, see *Scoloplos (Leodamas)*
Clytie Grube 1855, indeterminable
Gisela MUller 1858, indeterminable
Labotas Kinberg 1866b, *see Scoloplos*
Lacydes Kinberg 1866b, see *Naineris*
Naidonereis Malmgren 1867, error *for Naineris*
Theodisca Muller 1858, see *Naineris*
Theostoma Eisig 1914, see *Protoaricia*
Venadis Castelnau 1842, see *Orbinia*

Incertae Sedis

Falklandiella Hartman 1967, *F. annulata* Hartman 1967; only species.

Resembles the orbiniids in setal structures, but appears to differ in other features. Prostomium a simple triangular lobe; two asetigerous segments present. Parapodia biramous with very strongly reduced parapodial lobes. Notosetae all slender and camerated; most neurosetae similar, but shorter; in addition heavy acicular spines present in posterior neuropodia.

FAMILY PARAONIDAE CERRUTI 1909

Body long and slender with lateral parapodia. Prostomium with a single antenna or antennae absent. Branchiae present on a limited number of median setigers in most species. All setae simple, including capillaries and various, usually postbranchial, hooks or otherwise modified setae.

The key given below is based on the important revision by Strelzov (1973); some features are taken from Fauchald (1972). Strelzov recognized only two genera with prostomial antennae, *Cirrophorus* and *Aricidea;* the latter with a series of subgenera; these subgenera are here considered distinct genera.

Key to Genera

Ia.	Setae present from the first segment	*Aparaonis*
lb.	Setae present from the second segment	2
2a (1 b).	Modified setae notopodial	*Cirrophorus*
2b (Ib).	Modified setae, if present, neuropodial	3
3a (2b).	Prostomium with a median antenna	4
3b (2b).	Prostomium without a median antenna	7
4a (3a).	Modified setae absent	*Aedicira*
4b (3a).	Modified setae present	5
5a (4b).	Modified setae either pseudocomposite or curved with a subterminal arista on concave side of the shaft	*Aricidea*

5b (4b). Modified setae otherwise 6
6a (5b). Modified setae not greatly different from the capillary setae, but somewhat thicker and more abruptly tapering and with a long arista *Allia*
6b (5b). Modified setae distally strongly *curved,* or bifid, either with numbers of long aristae or bearded . *Acesta*
7a (2b). Nuchal organ on posterior part of prostomium, prostomium with several transverse bands of cilia Paraonis
7b (2b). Nuchal organ on the reduced peristomium; with a single preoral ciliary band or prostomial ciliary bands absent 8
8a (7b). Modified setae absent *Paraonella*
8b (7b). Modified setae present 9
9a (8b). Three prebranchial setigers; terminal prostomial sense organs absent Sabidius
9b (7b). More than three prebranchial setigers; terminal prostomial sense organs present *Tauberia*

Generic Definitions

Acesta Strelzov 1973, *Aricidea catherinae* Laubier 1967a; 10 species.

Median antenna present. Modified setae neuropodial; each strongly curved distally, or bifid with several aristae or with a short stiff beard.

Aedicira Hartman 1957, *Aricidea Pacifica* Hartman 1944c; only species.

Median antenna present. All setae slender capillaries; those in the neuropodial fascicles often shorter than the notopodial ones.

Allia Strelzov 1973, *Aricidea albatrossae* Pettibone 1957b; 13 species.

Median antenna present. Modified setae slightly thicker than the non-modified capillary setae; somewhat more abruptly tapering; or tapering abruptly near the middle, giving the outer part of the seta the appearance of a long, smooth arista.

Aparaonis Hartman 1965, *A. abyssalis* Hartman 1965; only species.

Setae present in the first segment; three pairs of branchiae on segments 2-4. All setae simple capillaries.

Aricidea Webster 1879b, *A. fragilis* Webster 1879b; 7 species.

Median antenna present; modified setae either pseudocomposite or recurved with a subterminal arista arising from the concave side of the shaft.

Cirrophorus Ehlers 1908, C. *branchiatus* Ehlers 1908; 10 species.

Median antenna present or absent; modified setae present in the postbranchial notopodial fascicles.

Paraonella Strelzov 1973, *Paraonides nordica* Strelzov 1968a; 4 species.

Nuchal organs on the peristomium; median antenna absent. Modified setae absent.

Paraonis Cerruti 1909, *Aonides fulgens* Levinsen 1884; 2 species.

Nuchal organs prostomial; median antenna absent. Modified setae neuropodial.

Sabidius Strelzov 1973, Paraonis cornatus Hartman 1965; only species.

Nuchal organs peristomial; median antenna absent. Modified setae neuropodial. Prostomial terminal sense organs absent. Three prebranchial setigers.

Tauberia Strelzov 1973, *Aonides gracilis* Tauber 1879; 10 species.

Nuchal organs peristomial; median antenna absent. Modified setae neuropodial. Prostomial terminal sense organs present. More than three prebranchial setigers present.

Taxonomic Notes

The generic subdivision given above, differs markedly from the more traditional pattern summarized by Fauchald (1972). Strelzov (1973) introduced several new taxonomic characters to the ones previously in common usage. The presence of prostomial ciliary bands, of prostomial terminal sense organs and the localization of the nuchal organs must now be investigated.

Similar characters have been used in other families, and it is anticipated that they will gain acceptance also in the treatment of the paraonids.

Invalid Genus

Levinsenia Mesnil 1897, see *Paraonis.*

Several other genera, such as *Paraonides, Paradoneis* and others used in the traditional sub-division of the family, may be invalid. Until the value of Strelzov's system has been tested, I hesitate to treat these genera as invalid.

FAMILY QUESTIDAE HARMAN 1966a

Body long and slender. Prostomium without appendages. One asetigerous anterior segment present. Pharynx with a muscular pad. Parapodia biramous with reduced lobes. Branchiae and anal cirri present or absent. Setae include serrated capillaries, bidentate hooks and trifurcate spines.

As remarked by Hobson (1970) the questids have the gonads limited to a few segments; this generally is considered the key feature separating the oligochaetes from the polychaetes (Fauchald 1974a). However, the questids have several different kinds of setae; a feature rarely found among the oligochaetes. It is quite possible that the family should be considered among the oligochaetes.

Key to Genera

Ia.	Setae include capillaries and bidentate hooks; posterior cirriform branchiae present	*Questa*
lb.	Setae include capillaries, bidentate hooks and trifurcate spines; branchiae absent	*Novaquesta*

Generic Definitions

Novaquesta Hobson 1970, *N. trifurcata* Hobson 1970; only species.

Questids with serrated capillary setae, bidentate hooks and trifurcate spines with the middle tine shorter and slenderer than the other; branchiae and anal cirri absent.

Questa Harman 1966a, *Q. caudicirra* Hartman 1966a; only species.

Questids with serrated capillary setae and bidentate hooks. Branchiae present on posterior segments, anal cirri present.

ORDER CTENODRILIDA

Prostomium without appendages; palps absent. At least one asetigerous anterior segment present. Proboscis a ventral muscular pad. Parapodia uni- or biramous; all setae simple. Parapodial lobes absent.

Members of this order are very small, generally grub-shaped polychaetes that tend to turn up in mass-culture in aquaria more frequently than in the field (especially true for the ctenodrilids). Specimens of *Ctenodrilus* also have turned up associated with *Flabelliderma commensalis* at Santa Catalina Island and have the same dark purple pigmentation on sea urchins as these commensals do.

FAMILY CTENODRILIDAE KENNEL 1882

Body short or long, prostomium without appendages, palps absent. Pharynx a ventral muscular pad. Some anterior segments may be fused and asetigerous; some segments with median dorsal cirri; paired lateral branchiae present in some juveniles. Setae in double fascicles; parapodial lobes absent.

This small family of tiny polychaetes recently has been reorganized and redefined by Hartmann-Schroder (1971); it now is divided into two sub-families with three genera in all; each with only a few species.

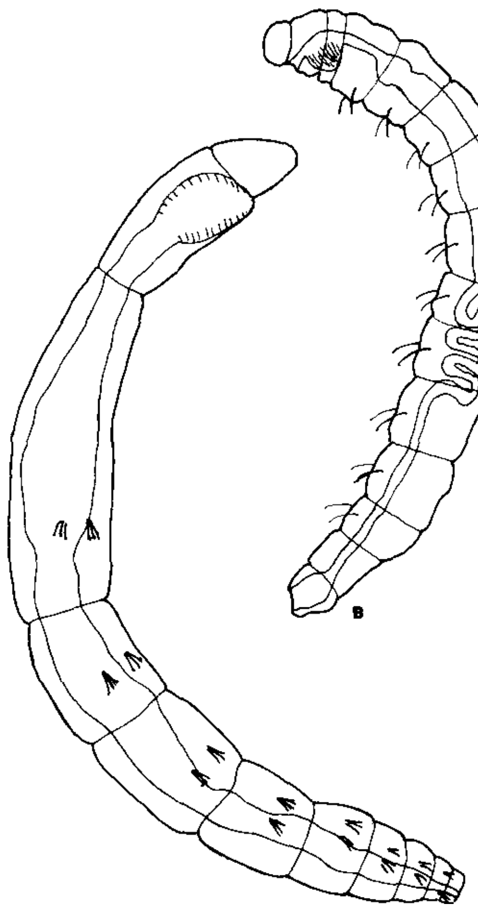


FIGURE 3. (A), Family CTENODRILIDAE, *Crenodrilus serratus,* modified after Hartman 1944, 284x; (B), Family PARERGODRILIDAE, *Stygocapitella subterranea,* after Hattmann-Schroder 1971, about 300x.

Key to Genera

Ia.	Body short and grublike, with few segments, unpaired dorsal cirri and branchiae absent . . . . CTENODRILINAE	*Ctenodrilus*
lb.	Body long and slender, with at least 15 segments; unpaired dorsal cirri on one or two anterior segments or larval branchiae present	RHAPHIDRILINAE 2

2a (lb).	Unpaired dorsal cirri present; branchiae absent	*Zeppelinia*
2b (Ib).	Unpaired dorsal cirri absent; branchiae present	*Raphidrilus*

Generic Definitions

Ctenodrilus Claparede 1863, *Parthenope cirrata* Schmidt 1857; 2 species.

CTENODRILINAE. Body with maximally 15 segments; one achaetous segment present. Setae thick, marginally coarsely dentate or smooth.

Rhaphidrilus Monticelli 1910, R. *nemasoma* Monticelli 1910; only species.

RHAPHIDRILINAE. Body long and slender, with at least 18 segments; one asetigerous segment present. Setae include capillaries and genital spines in the adult males. Paired branchiae present in the juvenile stages.

Zeppelinia Vaillant 1890, *Ctenodrilus monostylos Zeppelin* 1883; 5 species.

RHAPHIDRILINAE. Body long and slender, with at least 18 segments; asetigerous segments absent. Setae include capillaries and short, thicker dentate or smooth spines. One or two unpaved dorsal cirri present anteriorly.

Invalid Genera

Monostylos Vejdovsky 1884, see *Zeppelinia*
Parthenope Schmidt 1857, see *Ctenodrilus*

FAMILY PARERGODRILIDAE REISINGER 1960

Small, grub-shaped worms with at least one anterior asetigerous segment. Prostomium without appendages; parapodial lobes absent; setae present in single fascicles, each with one or a few setae only. Setae all simple.

The parergodrilids are very small worms, living either interstitially in shallow marine sands *(Stygocapitella)* or in rotting terrestrial plant material *(Parergodrilus)*. The family is poorly known and understood; the revision by Hartmann-Schrdder (1971) is followed here.

Key to Genera

la.	Body not translucent, with 10-11 setigers; setae limbate and furcate	*Stygocapitella*
lb.	Body translucent, 8-9 setigers present; all setae smooth rods	*Parergodrilus*

Generic Definitions

Parergodrilus Reisinger 1925, *P. heideri* Reisinger 1925; only species.

One anterior and no posterior asetigerous segments; eight or nine setigers present. Setae all smooth rods, except copulatory hooks in males.

Stygocapitella Knollner 1934, *S. subterranea* Knollner 1934; only species.

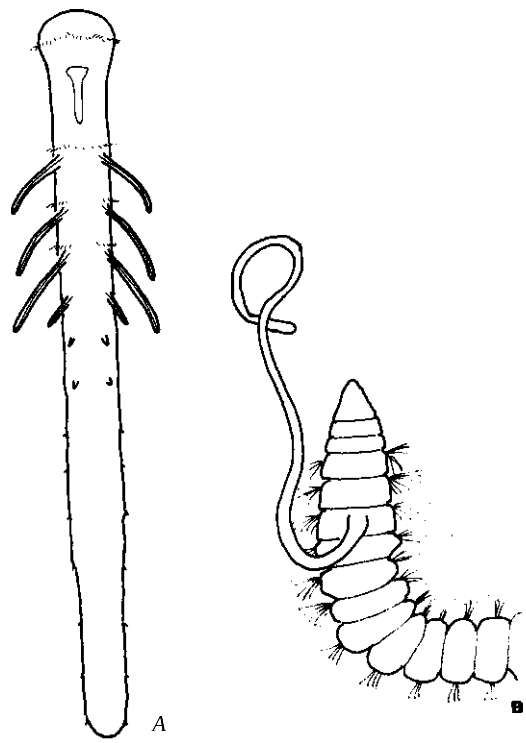
Two anterior and two posterior asetigerous segments, ten or 11 setigers present. Setae include smooth, short bilimbate setae, smooth bilimbate setae with long, whiplike tips and short furcate setae with two accessory teeth in the crotch.

ORDER PSAMMODRILIDA

Prostomium without appendages, palps absent. At least one asetigerous anterior segment present. Notopodia in a median region strongly prolonged and supported by acicula. Parapodia biramous; neuropodial tori present in one form, otherwise parapodial lobes absent (except for the cirri mentioned above); all setae simple.

FAMILY PSAMMODRILIDAE SWEDMARK 1952

Small, grub-shaped worms. Pro- and peristomium without appendages; palps absent. Parapodia, except



FIGUae 4. (A), Family PSAMMODRILIDAE, Psammodril*oides* fauveli after Swedmark 1958, about 50x; (B), Family COSSURIDAE, Cossura brunnea, after Fauchald 1972, 12.5x.

the thoracal dorsal cirri reduced; abdominal neuropodial tori present in one form.

As remarked by Swedmark (1958), these small interstitial worms are very isolated among the polychaetes. The first form described, *Psammodrilus balanoglossoides* Swedmark, is unique in that the eversible pharynx is formed from the longitudinal body muscles.

Key to Genera

Ia. Dorsal cirri decreasing evenly in length from the first to the sixth thoracic segment; abdominal uncinigers with several uncini ..... *Psammodrilus*

lb. Dorsal cirri increasing in length from first to fourth segment; those of segments five and six very short; single uncini present in abdominal neuropodia ..... *Psammodriloides*

Generic Definitions

Psammodriloides Swedmark 1958, *P. fauveli* Swedmark 1958; only species.

Body with two distinct regions: head and trunk; six thoracic setigers, each with a dorsal cirrus supported by an aciculum. Ten abdominal setigers; each with a single uncinus in each neuropodium. Eversible pharynx absent.

Psammodrilus Swedmark 1952, *P. balanoglossoides* Swedmark 1952; only species.

Body in three regions: head, pharyngeal region and trunk. Six thoracic setigers with dorsal cirri supported by acicula; up to about thirty abdominal setigers; each with several uncini in each neuropodium. Pharyngeal apparatus present.

ORDER COSSURIDA

Prostomium without appendages; a single peristomial asetigerous segment present; a single median palp present on the dorsum of an anterior setiger (usually between setigers 3 and 6). Proboscis a ventral pad. Parapodia biramous, with very low parapodial lobes; all setae simple.

FAMILY COSSURIDAE DAY 1963

Prostomium without appendages, a single median palp present dorsally on one anterior setiger; proboscis a ventral pad. Parapodia biramous, with reduced parapodial lobes. All setae simple, including bilimbate or hirsute setae in two or more fascicles; thick spines and capillary setae present in the abdomen of some forms.

Cossurids are common in sand and especially in deep slope and abyssal muds. They are burrowers, and apparently feed on detritus with the help of the pharynx. The palp in this case appears to be sensory, and perhaps may additionally be respiratory in function since it is well-equipped with blood-vessels (Fauchald in preparation).

The only currently described genus is *Cossura* Webster and Benedict, (1887) with genotype C. *longocirrata* Webster and Benedict (1887) with a total of about fifteen species. Two of these differ rather sharply from the others and may deserve separate generic standing.

ORDER SPIONIDA

Prostomium distinct, without appendages or with an occipital antenna. A pair or two groups of grooved feeding palps usually present anteriorly, either on the prostomium or on an anterior segment. Paired tentacular cirri sometimes present at the base of the palps. Pharynx either axial or as a ventral pad. Parapodia well developed or reduced. All setae simple.

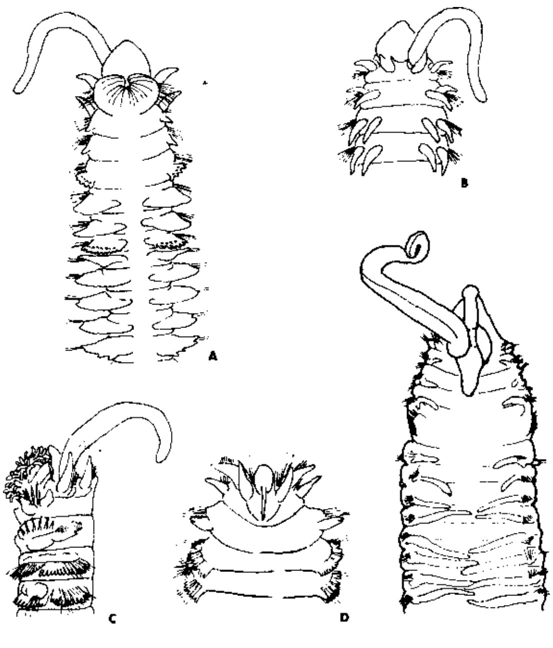


FIGURE 5. *(A),* Family APISTOBRANCHIDAE, *Apistobranchus tullbergi,* ventral view, after Pettibone 1963, lox; (B), dorsal view of the above, lox; (C), Family TROCHOCHAETIDAE, *Trochochaetus multisetosum,* lateral view, after Pettibone 1963, 1 *Ox; (D),* dorsal view of the above, *I Ox; (E),* Family SPIONIDAE, *Boccardia proboscidea,* modified after Hartman 1969, *25x.*

Key to Suborders

Ia.	Body separated into at least two distinct regions; uncini present	Chaetopteriformia
lb.	Body rarely separated into distinct regions, uncini always absent	2
2a (I b).	Palps at the junction of the pro- and peristomium; parapodial lobes well developed at least in some setigers	Spioniformia
2b (lb).	Palps post-peristomial in origin; parapodial lobes poorly developed	Cirratuliformia

Suborder Spioniformia

Palps on the peristomium or at the junction between the pro- and peristomium; eversible pharynx either a ventral pad or an axial sac.

FAMILY APISTOBRANCHIDAE MESNIL AND CAULLERY 1898

Spioniforms with the anterior end inflated and the rest of the body cylindrical. Prostomium without appendages, but with palps attached at the postectal margins. Parapodia biramous, parapodial lobes mostly cirriform, but serrated postsetal lobes present in some setigers. All setae simple, mainly capillaries.

The apistobranchids are known for one genus, *Apistobranchus* Levinsen 1883, with type species *Aricia tullbergi* Theel 1879. A total of three species currently are recognized.

Apistobranchids are in fact not as rare as the low number of species should indicate; they are, as some of their spionid relatives, not limited to a tubicolous existence, but will feed from loosely constructed burrows. Most commonly found in shelly sands, sands and muds.

Invalid Genera

Ethocles Webster and Benedict 1887, see *Apistobranchus*
Skardaria Wesenberg-Lund 1951, see *Apistobranchus*

FAMILY SPIONIDAE GRUBE 1850

Spioniforms with body elongated. Prostomium anteriorly blunt, with frontal horns, or pointed; an occipital papilla may be present, other appendages absent. Palps at the postectal comers of the prostomium. Parapodia biramous, parapodial lobes cirriform or foliose, never serrated. All setae simple, including capillaries and bi- or multidentate, hooded or non-hooded hooks.

Spionids are very common in all environments. Some forms are burrowers (*Polydora, Boccardia* et al.) in calcareous substrata or in rock; others build permanent tubes in soft substrata and some forms combine the two activities. Numerous forms are free-living in sands and muds. Species of some genera, most frequently perhaps of *Prionospio* SENSU LATU and of the *Polydora/Boccardia* complex, very likely are present in any kind of benthic marine soft-bottom sample taken anywhere on the globe. Members of the genus *Aonides* are dominant forms in sandy beaches in temperate and warm areas of the world (Foster 1971).

The spionids usually lose their palps, and frequently most of their branchiae in fixation. This is especially true in those genera where the structure of the branchiae is important for species separation. Attempts at identification of these taxa on incomplete material should be avoided; the family is speciose and serious errors are easily introduced into the literature, if care is not taken at all identificatory levels.

Key to Genera

Ia.	Each branchia with several (maximally seven) processes in median parapodia	*Polybranchia*
1b.	Branchia, if present, single process	2
2a (I b).	One setiger with strongly modified setae	3
2b (lb).	Setae change gradually along the body, no segment with remarkably different setae (except large hooks in the first setiger)	8
3a (2a).	Setiger 16 modified	*Morants*
3b (2a).	Either setiger 4 or 5 modified	4
4a (3b).	Setiger 4 modified	*Polydorella*
4b (3b).	Setiger 5 modified	5
5a (4b).	Neuropodial uncini distally trifid	*Tripolydora*
5b (4b).	Neuropodial uncini distally bifid or entire	6
6a (5b).	Branchiae first present from setiger 2	*Boccardia*
6b (5b).	Branchiae first present posterior to the modified segment	7
7a (6b).	Setae in modified segment arranged in a horseshoe-shaped series	*Pseudopolydora*
7b (6b).	Setae in the modified segment in a straight line or a small patch	*Polydora*
8a (2b).	Branchiae absent; first neuropodia with stout hooks	*Spiophanes*

8b (2b).	At least one pair of branchiae present; first neuropodia without stout hooks	9
9a (8b).	Branchiae present on nearly the whole body	10
9b (8b).	Branchiae limited to less than half the length of the body	19
10a (9a).	Branchiae present from setiger 1	11
10b (9a).	Branchiae present from setiger 2	14
11a (10a).	Accessory branchiae on some segments	*Dispio*
11b (10a).	Accessory branchiae absent	12
12a (11b).	Posterior notopodia with uncini	*Marenzelleria*
12b (11b).	Notosetae all capillaries	13
13a (12b).	Prostomium anteriorly rounded	*Spio*
13b (12b).	Prostomium with laterofrontal horns	*Malacoceros*
14a (10b).	Posterior notopodia with uncini	*Scolelepis*
14b (10b).	All notosetae capillaries	15
15a (14b).	Prostomium with laterofrontal horns	16
15b (14b).	Prostomium anteriorly blunt or pointed	17
16a (15a).	Branchiae partially fused to the notopodial postsetal lobes	*Rhynchospio*
16b (15a).	Branchiae completely separated from the notopodial postsetal lobes	*Mesospio*
17a (15b).	Occipital antenna absent	*Microspio*
17b (15b).	Occipital antenna present	18
18a (17b).	Branchiae partially fused to the notopodial postsetal lobes	*Pseudomalacoceros*
18b (17b).	Branchiae completely separated from the notopodial postsetal lobes	*Laonice*
19a (9b).	A single pair of branchiae present	*Streblospio*
19b (9b).	At least two pairs of branchiae present	20
20a (19b).	Branchiae concentrated in a medio-posterior region, except in the males, where an additional single pair is present on the second setiger	*Pygospio*
20b (19b).	Branchiae concentrated near the anterior end only	21
21a (20b).	Peristomium forms large lateral wings on either side of the prostomium	22
21b (20b).	Peristomium does not form lateral wings on the sides of the prostomium	24
22a (21a).	Three pairs of pinnate branchiae present from setiger 1	*Paraprionospio*
22b (21a).	Branchiae otherwise, first present from setiger 2	23
23a (22b).	Two to four pairs of branchiae present	*Aquilaspio*
23b (22b).	At least six pairs of branchiae present	*Minuspio*
24a (21b).	Prostomium anteriorly pointed	*Aonides*
24b (21b).	Prostomium anteriorly blunt or with frontal horns	25
25a (24b).	Prostomium with frontal horns	*Scolecolepides*
25b (24b).	Prostomium anteriorly rounded	26
26a (25b).	Branchiae two pairs on setigers 3-4	*Anaspio*
26b (25b).	Four pairs of branchiae from setiger 2	27
27a (26b).	Three first pairs of branchiae cirriform, the last pinnate	*Apoprionospio*
27b (26b).	Branchiae cirriform or pinnate in another pattern	*Prionospio*

Generic Definitions

Anaspio Chamberlin 1920, *A. boreus,* Chamberlin 1920; only species.

Prostomium anteriorly rounded. Two pairs of branchiae on setigers 3 and 4; free from the notopodial postsetal lobes. Notosetae all capillaries (in 36 setigers); neuropodia with uncini from setigers 10-11. Anterior parapodial lobes very large and foliose.

Aonides Claparede 1864, *Nerine oxycephala* Sars 1862; 7 species.

Prostomium anteriorly pointed. Branchiae from setiger 2, present on anterior end only; completely free from the notopodial postsetal lobes. Anterior setigers with capillary setae only; posterior parapodia with uncini in both rami. Neuropodial postsetal lobes smooth.

Apoprionospio Foster 1969, *A. dayi* Foster 1969; 5 species.

Prostomium anteriorly blunt; peristomium without lateral wings. Four pairs of branchiae from setiger 2; first three cirriform, fourth pinnate. All anterior setae capillaries; posteriorly uncini in both rami. Neuropodial postsetal lobes large and foliose in setiger 2.

Aquilaspio Foster 1971, *Prionospio sexoculata* Augener 1918; 2 species.

Prostomium anteriorly blunt; peristomium with large lateral wings; first setiger more or less reduced. Two to four pairs of branchiae from setiger 2. All anterior setae capillaries; posterior setigers with uncini in both rami.

Boccardia Carazzi 1895, *Polydora (Leucodore) polybranchia* Haswell 1885; 15 species.

Prostomium anteriorly blunt or bifid. Branchiae present from setiger 2. Fifth setiger modified with strong setae; in other setigers, all notopodia with capillaries only; neuropodia posteriorly with uncini.

Dispio Hartman 1951a, *D.* uncinata Hartman 1951a; 5 species.

Prostomium anteriorly blunt; peristomium enfolding sides of prostomium. Branchiae from setiger 1 to the end of the body; at least partially fused to the notopodial postsetal lobes; accessory branchiae present in some setigers. Notosetae all capillaries; neurosetae include capillaries and uncini in median and posterior setigers.

Laonice Malmgren 1867, *Nerine cirrata* Sars 1850; 15 species.

Prostomium anteriorly rounded; occipital antenna present. Branchiae present from setiger 2 to the middle of the body; completely free from the notopodial postsetal lobes. Notosetae all capillaries; neurosetae include capillaries and uncini. Genital pouches in at least some setigers.

Malacoceros Quatrefages 1843, *Spio vulgaris* Johnston 1827; 10 species.

Prostomium with lateral horns. Branchiae present from setiger 1, partially fused to the notopodial postsetal lobes. Notosetae all capillaries; neurosetae include capillaries and uncini in posterior setigers.

Marenzelleria Mesnil 1896, *M. wireni* Augener 1913b; only species.

Prostomium anteriorly rounded. Branchiae present from setiger 1, partially fused to the notopodial postsetal lobes. Anterior setigers with capillary setae in both rami; posteriorly uncini in both rami.

Mesospio Gravier 1911a, *M. moorei* Gravier 1911a; only species.

Prostomium with frontal horns. Branchiae present from the second setiger, completely free of the postsetal lobes. Notosetae all capillaries; neuropodia with uncini present from setiger 15. All anal cirri similar, short and tapering.

Microspio Mesnil 1896, *Spio* mecznikowianus Claparede 1870a; 10 species.

Prostomium anteriorly rounded. Branchiae present from setiger 2; partially fused to the notopodial postsetal lobes. Notosetae all capillaries; neuropodia posteriorly also with uncini.

Minuspio Foster 1971, *Prionospio cirrifera* Wiri;n 1883; 7 species.

Prostomium anteriorly blunt; peristomium with large lateral wings. Branchiae present from setiger 2 to about setiger 40, all cirriform. Anterior setae all capillaries in both rami; posterior end with uncini in both rami.

Morants Chamberlin 1919a, *M. duplex* Chamberlin 1919a; only species.

First four setigers with branchiae; fused to the notopodial postsetal lobes; setiger 16 with strongly modified setae. Curved hooks present in the first notopodia; all other notosetae capillary. Anterior neurosetae capillary, posterior ones uncini.

Paraprionospio Caullery 1914b, *Prionospio* pinnata Ehlers 1901; 5 species.

Prostomium anteriorly rounded; peristomium with large lateral wings. Second segment asetigerous. Three pairs of pinnate branchiae present from setiger 1; parapodia of first setiger well developed. All anterior setae capillaries; posterior parapodia with uncini in both rami.

Polybranchia Potts 1928, *P. foxi* Potts 1928; only species.

Prostomium with frontal horns. Branchia present from setiger 1; each branchia with maximally six to seven processes in median setigers. Capillary setae absent; all setae uncini in both rami.

Polydora Bosc 1802, P. *cornuta* Bose 1802; 65 species.

Prostomium anteriorly blunt or bifid. Branchiae not present before setiger 6. Setiger 5 with strongly modified, stout setae. Other setae include notopodial capillaries, sometimes also with simple posterior spines. Neuropodial uncini present from setiger 7-10 in most species.

Polydorella Augener 1914, *P. prolifera* Augener 1914; 2 species.

Prostomium anteriorly blunt. Branchiae from setiger 6. Fourth setiger modified with large, stout setae. Notosetae all capillaries, except in setiger 4; neuropodia with capillaries, but with uncini present from setiger 6.

Prionospio Malmgren 1867, *P. steenstrupi* Malmgren 1867; 36 species.

Prostomium anteriorly blunt; peristomium without lateral wings. Four pairs of branchiae, either cirriform or pinnate or both, first present from setiger 2. Branchial parapodia with large postsetal lobes. All anterior setae capillaries; in median and posterior parapodia uncini also present.

Pseudomalacoceros Czerniavsky 18816, *Nerinides cantabra* Rioja 1918; 11 species.

Prostomium anteriorly blunt or pointed; occipital antenna present. Branchiae present from setiger 2; at least partially fused to the notopodial postsetal lobes. Notosetae all capillaries; neurosetae include capillaries and uncini.

Pseudopolydora Czemiavsky 1881 b, *Polydora antennata* Claparede 1870a; I I species.

Prostomium anteriorly blunt or bifid. Branchiae first present from setiger 7. Fifth setiger modified with large, thick setae arranged in a horseshoe-shaped pattern. Notosetae all capillaries; neurosetae include capillaries and posterior uncini.

Pygospio Claparede 1863, *P. elegans* Claperede 1863; 3 species.

Prostomium anteriorly rounded. Branchiae concentrated in a short posterior region, except in the males where a single pair is present on the second setiger; all are fused to the notopodial postsetal lobes. Notosetae all capillaries; neurosetae include capillaries and uncini.

Rhynchospio Hartman 1936b, *R. arenincola* Hartman 1936b; 4 species.

Prostomium with frontal horns. Branchiae present from setiger 2, partially fused to the notopodial postsetal lobes. All notosetae capillaries; neurosetae include capillaries and uncini.

Scolecolepides Ehlers 1907, S. *benhami* Ehlers 1907; 3 species.

Prostomium with frontal horns. Branchiae present from setiger 1, limited to the anterior part of the body. Anterior setae all capillaries; posterior setae include capillaries and uncini in both rami.

Scolelepis Blainville 1828, *Lumbricus squamatus* O.F. Milller 1806; 20 species.

Prostomium usually pointed, rarely blunt. Branchiae present from setiger 2, partially fused to the notopodial postsetal lobes. Neuropodial postsetal lobes notched at least in posterior setigers. Anterior setae all capillaries; posterior parapodia with uncini and capillaries in both rami.

Spio Fabricius 1785, *Nereis filicornis O.* F. Muller 1776; 15 species.

Prostomium anteriorly rounded. Branchiae present from setiger 1, at least anteriorly fused with the notopodial postsetal lobes. Notosetae all capillaries; neurosetae include capillaries and uncini.

Spiophanes Grube 1860, S. *kroeyeri* Grube 1860, 16 species.

Prostomium blunt or with frontal horns; occipital antenna present. Branchiae absent. First neuropodia with stout hooks; all other anterior setae capillaries; posterior neuropodia with uncini.

Streblospio Webster 1879a, S. *benedicti* Webster 1879a, 2 species.

Prostomium conical. A single pair of branchiae on setiger 1. Setiger 2 with a dorsal collar between the notopodia. Notosetae all capillaries; neurosetae anteriorly all capillaries, posteriorly also uncini.

Tripolydora Woodwick 1964, *T. spinosa* Woodwick 1964, only species.

Prostomium anteriorly rounded. Branchiae present from setiger 2. Fifth setiger modified, with a few modified setae only. Notosetae all capillaries; neurosetae include capillaries and trifid uncini first present from setiger 9.

Taxonomic Note

The above survey of the genera follows in the main Foster's (1971) survey of the fauna from the Gulf of Mexico, except that I have preferred to list all the taxa at the generic level, rather than use some of them as subgenera. From the number of species listed for each genus, it will be noted that I have been rather mom conservative than Foster in retaining species. The family is one of the better studied, and best understood families. In addition to Foster's extensive review cited above, Hannerz (1956) and Soderstrom (1920) reviewed the major taxa. The biology of the more common forms also has been rather well studied, especially the reproductive biology of members of *Polydora* and *Boccardia* has been the subject of several studies by Blake (e.g. Blake 1971).

Incertae Sedis

Aberranm Hartman 1965, *A. enigmatica* Hartman 1965; only species.

Paired spioniform palps present; prostomium otherwise without appendages, eyes absent. Pharynx muscularized. One apodous segment present; all others with biramous parapodia. All setae simple capillaries. Dorsal and ventral cirri and small branchiae present.

According to Hartman (1965) this differs from the true spionids in that it has a muscular, rather than saclike pharynx; it further differs from the spionids in that it completely lacks hooks of any kind. This is not a larval form, in that one of the specimens described was ovigerous.

The structure of the proboscis may not be a very important feature in this group as noted by Orrhage (1966). The total absence of uncini may not be particularly surprising, considering how many spionid genera may lack such hooks in either of the two rami, or over long stretches of the body. However, it is considered best to leave the genus as a free-standing genus, until it can be better investigated.

Invalid Genera

Aonis Audouin and Milne Edwards 1833c, see *Scolelepis*
Aonopsis Wagner 1885, indeterminable
Aricideopsis Johnson 1901, see *Laonice*
Bilobaria Sveshnikov 1959, larval forms
Carazzia Mesnil 1896, see *Pseudopolydora*
Chaetosphaera Haecker 1896, larval forms

Cheironotus Costa 1861b, indeterminable *(?Polydora)*
Colobranchus Schmarda 1861, see *Scolelepis*
Ctenospio Sars 1867, see *Prionospio*
Diplotis Montagu 1815, see *Polydora*
Dipolydora Verrill 1881, see *Polydora*
Euspio McIntosh 1915, see Spio
Hekaterobranchus Buchanan 1890, see Streblospio
Heterospio Czemiavsky 1881 b, see Spio
Kinbergella McIntosh 1909, see *Prionospio*
Leipoceras Mobius 1874, see *Polydora*
Leucodora Johnston 1838, see *Polydora*
Mandane Kinberg 1866b, indeterminable
Neopygospio Berkeley and Berkeley 1954, see *Pseudopolydora*
Nerine Johnston 1838, see *Scolelepis*
Nerinides Mesnil 1896, see *Pseudomalacoceros*
Nerinopsis Elders 1912, larval form
Paranerine Czerniavsky 1881, *we Aonides*
Perialla Kinberg 1866, questionably *Boccardia*
Prospio Mesnil 1896, hypothetical
Protopolydora Czerniavsky 1881 b, *see Polydora*
Pseudoleucodore Czerniavsky 188lb, see *Polydora*
Pseudonerine Czemiavsky 1881b, indeterminable
Pseudonerine Augener 1926, see *Scolelepis*
Pteriptyches Grube 1872a, see *Prionospio*
Pygophyllum Schmarda 1861, indeterminable
Scolecolepis Malmgren 1867, mis-spelling of *Scolelepis*
Spione Orsted 1844, in Quatrefages 1865, indeterminable
Spionereis Sars 1853, NOMEN NUDUM
Spionides Webster and Benedict 1887, see *Laonice*
Uncinia Quatrefages 1865, see *Scolelepis*

FAMILY MAGELONIDAE CUNNINGHAM AND RAMAGE 1888

Spioniforms with long, slender bodies, separated into two regions. Prostomium flattened and anteriorly ovate or truncate, without appendages. Palps at the junction of the pro- and peristomium on the ventral side. Setae include capillaries and hooded bi- or multidentate hooks.

Magelonids currently are assigned to a single genus, *Magelona* Muller 1858, with type species *M. papillicornis* Muller 1858 and a total of about 35 described species. Dr. Meredith L. Jones of the Smithsonian Institution is revising the family. It is anticipated that more taxa may be recognized when this revision is completed.

Magelonids are common in sandy bottoms; they are rather characteristic with the flattened, shovel-shaped prostomium often much wider than the rest of the animal, which tends to be rather threadlike with very long segments. Magelonids build only very flimsy tube-structures and tend to move through the sediment.

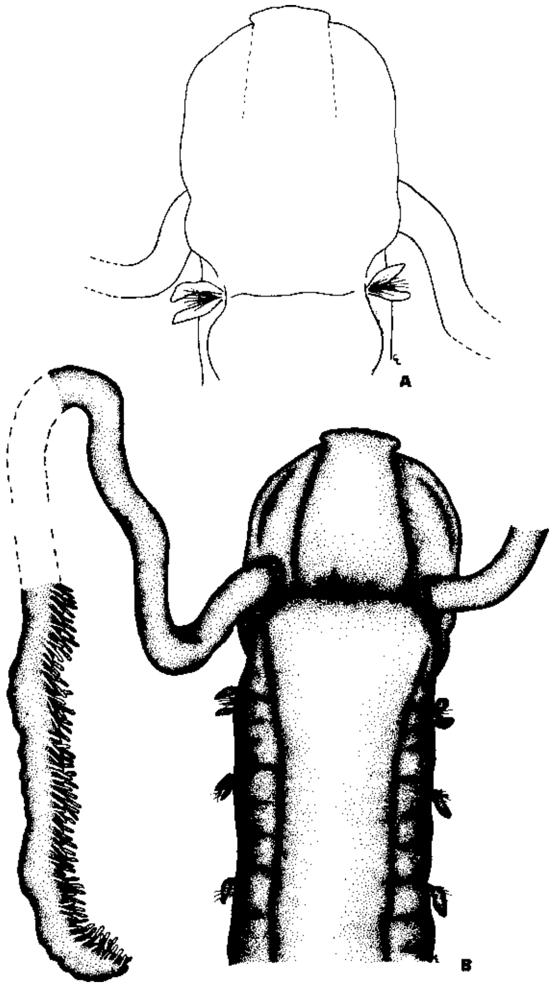


FIGURE 6. (A), Family MAGELGNIDAE, *Magelona* sp., off Santa Barbara, California, diagram of dorsal view, 25x; (B), ventral view of the above, 25x.

Invalid Genera

Maea Johnston 1865, see *Magelona*
Papillaria Sveshnikov 1959, larval form
Rhynophylla Carrington 1865, see *Magelona*

FAMILY TROCHOCHAETIDAE PETTIBONE 1963

Body flattened cylindrical. Prostomium a flattened ridge with palps present at the postectal comers. First parapodia directed forwards along the sides of the prostomium. Setae capillaries, acicular falcate spines, fringed setae and straight spines.

The family is recognized for a single genus, *Trochochaeta* Levinsen 1884 with type species *Disoma* multisetosum Orsted 1844 and a total of nine recognized species. Pettibone (1963) correctly pointed out that the name *Disoma,* originally applied to these animals by Orsted (1844), was used ten years earlier by Ehrenberg for a protozoan.

Trochochaetids are long, slender non-tubicolous spionifotms mainly reported from shallow water in soft substrates. They appear to be nowhere truly numerous, but frequently are reported from areas where quantitative benthic investigations have been undertaken.

Invalid Genera

Cherusca Muller 1858, indeterminable
Disoma Orsted 1844, see *Trochochaeta*
Disomides Chamberlin 1919c, see *Trochochaeta*
Nevaya McIntosh 1911, see *Trochochaeta*
Pilearia Sveshnikov 1963, larval forms
Thaumastoma Webster and Benedict 1884, see *Trochochaeta*

The family Kalaminochaetidae Nolte, 1941 was described for two genera, *Kalaminochaeta* and *Kalummaria* both based on pelagic larval forms, possibly of a *Trochochaeta,* but not identifiable. The family and both genera are here considered invalid.

FAMILY POECILOCHAETIDAE HANNERZ 1956

Spioniforms with long, slender bodies. Prostomium small with either a frontal or a median antenna. Palps present at the postectal comers. First segment with or without setae, with one or two pairs of tentacular cirri. Parapodia biramous, with lateral sense-organs between rami. Setae include capillaries, pectinate, plumose and acicular setae. Dorsal and ventral cirri spindle or bottle-shaped.

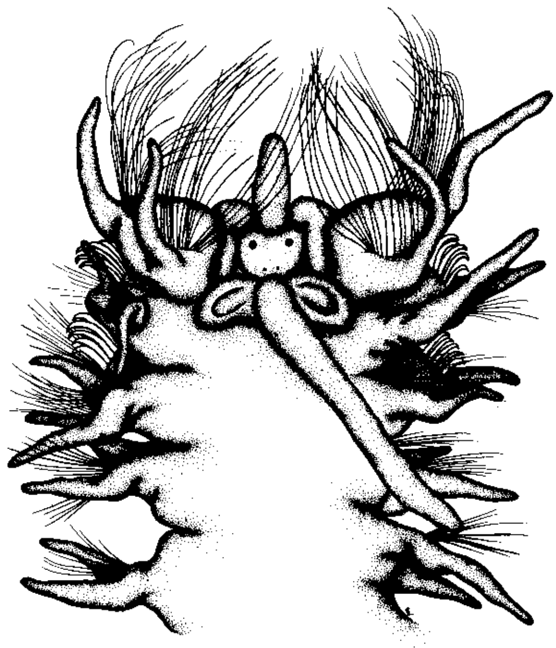


FIGuRE 7. Family POECILOCHAETIDAE, *Poecilochaetus johnsoni, off* Loon Point, Santa Barbara, California, 35 m, 25X.

Key to Genera

1.	Antenna frontal, first segment with series of long setae	*Poecilochaetus*
2.	Antenna median, first segment asetigerous	*Elicodasia*

Generic Definitions

Elicodasia Laubier and Ramos 1973, *E. mirabilis* Laubier and Ramos 1973; only species.

Poecilochaetids with a median antenna, without nuchal organ. First segment is asetigerous and first setiger lacks dorsal and ventral cirri. Neuropodial acicular spines are present in most setigers from segment 4.

Poecilochaetus Claparede 1875, *P. fulgoris* Claparede *in* Ehlers 1875; 12 species.

Poecilochaetids with a frontal antenna, nuchal organs present. First segment with long setae forming a cephalic cage and second setiger similar to all following segments. Neuropodial acicular spines present in a few anterior segments only.

Taxonomic Notes

Setae are present from the second segment in *Elicodasia* and from the first in *Poecilochaerus.*

FAMILY HETEROSPIONIDAE HARTMAN 1963a

Body with short thoracic and greatly prolonged abdominal setigers. Prostomium blunt without appendages; palps attached at the postectal corners. Long, filiform branchiae on the thoracic setigers. Setae in nearly complete cinctures around the abdomen; most simple capillaries, but some neurosetae are thickened and gently falcate.

The family is known for a single genus, *Heterospio* Ehlers 1874 with type species *H. longissima* Ehlers 1874 and for a total of four species.

Heterospionids have been reported from widely scattered areas, mainly in deep shelf and slope sediments; the family is poorly known and the several species may be considerably more common than their scattered records indicate. They are rather fragile and non-descript and thus easily overlooked if quantitative studies are not undertaken.

Invalid Genus

Longosoma Hartman 1944c, see *Heterospio*

Suborder Chaetopteriformia

Short palps on prostomium; pharynx a simple, non-eversible tube. Uncini present.

FAMILY CHAETOPTERIDAE MALMGREN 1867

Body with two or three distinct body-regions. Peristomium may have one or two pairs of tentacular cirri; palps of varying lengths always present. Anterior region with uniramous parapodia, median and posterior regions with biramous parapodia. Setae include capillary, limbate setae and modified spines in setiger 4. Pectiniform uncini present in posterior setigers.

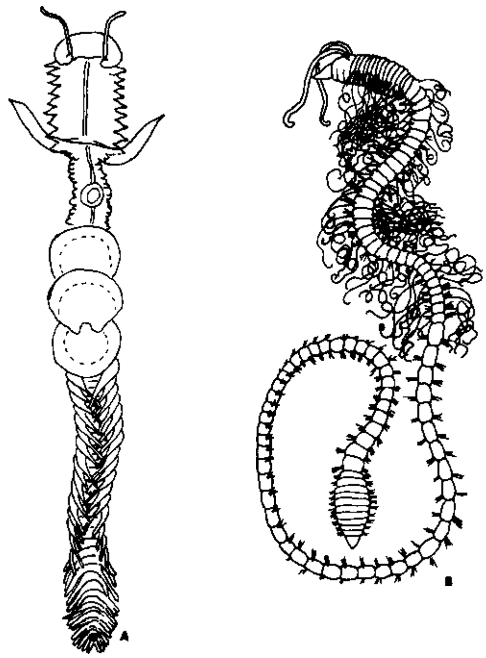


FIGURE 8. (A), Family CHAETOPTERIDAE, *Chaetopterus variopedatus*, modified from various sources, natural size; (B), Family CIRRATULIDAE, *Tharyx monilocera*s, after Hartman, 1969, 80x.

Key to Genera

Ia.	Median notopodia bilobed	2
lb.	Median notopodia never bilobed, may be fused	3
2a. (I a)	A pair of small tentacular cirri present at the base of the large palps	*Phyllochaetopterus*
2b. (I a)	Tentacular cirri absent, palps large	*Spiochaetopterus*
3a. (lb)	Some median notopodia fused to form dorsal fans, palps very short	*Chaetopterus*
3b. (Ib)	Notopodia never fused; palps large	*Mesochaetopterus*

Generic Definitions

Chaetopterus Cuvier 1827, *Tricoelia variopedatus* Renier 1804; only species.

Body divided in three distinct regions; anterior region with uniramous parapodia with lancet-shaped setae, except setiger 4, which has stout spines. Median region with biramous parapodia; some posterior notopodia fused to form dorsal fans, all notopodia of median region asetigerous; neuropodia with pectinate uncini; posterior region with long, pointed notopodia with a few contained acicula, but no setae; neuropodia with pectiniform uncini.

Mesochaetopterus Potts 1914, *M. taylori* Potts 1914; 11 species.

Body with three regions; antennae absent. Median notopodia all simple, asetigerous; median neuropodia with uncini; posterior region with pointed notopodia with internal acicula; neuropodia with uncini.

Phyllochaetopterus Grube 1863, *P. gracilis* Grube 1863; 17 species.

Body with three distinct regions; antennae present. Median notopodia foliaceous, bilobed and asetigerous, neuropodia with pectinate uncini; posterior region with pointed notopodia supported by internal acicula; neuropodia with pectinate uncini.

Spiochaetopterus Sars 1853, S. *typicus* Sars 1856; 12 species.

Body with three distinct body-regions; antennae absent. Median notopodia bilobed and foliaceous; neuropodia with pectinate uncini; posterior region with pointed notopodia, supported by internal acicula, neuropodia with pectinate uncini.

Invalid Genera

Leptochaetopterus Berkeley 1927, see *Spiochaetopterus*
Mesotrocha Leuckart and Pagenstecher 1855, see *Phyllochaetopterus*
Ranzania Claparede 1870b, see *Mesochaetopterus*
Ranzanides Chamberlin 1919c, see *Mesochaetopterus*
Telepsavus Costa 1861a, see *Spiochaetopterus*
Tricoelia Renier 1804, see *Chaetopterus*

Suborder Cirratuliformia

One pair of grooved palps, or a group of grooved palps on one or several post-peristomial segments. Prostomium without appendages, eversible pharynx a thick ventral pad.

FAMILY CIRRATULIDAE CARUS 1863

Body cylindrical. Prostomium conical or blunt; peristomium fused with at least two segments. Parapodia reduced; slender filiform orr clavate branchiae present on at least some setigers. All setae simple including capillaries and curved or excavate hooks.

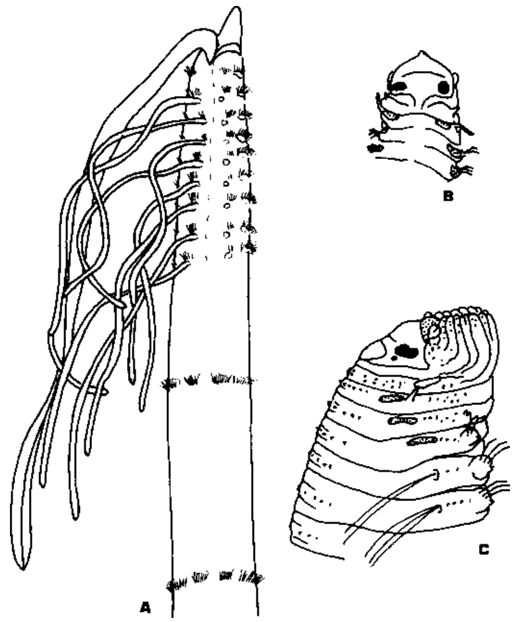


FIGURE 9. *(A),* Family *HETEROSPIONIDAE, Heterospio catalinensis,* modified from Hartman, *1944c, 12x; (B),* Family *ACROCIRRIDAE, Acrocirris fronrifilis,* after Banse, *1969,* about 5x; (c), *Acrocirris crassilis,* lateral view, after Banse, *1969,* about 12x.

Key to Genera

Ia.	A pair of long grooved palps attached on the anterior dorsum	2
lb.	Two groups of grooved tentacular cirri present	5
2a (Ia).	All setae slender, distally pointed	*Tharyx*
2b (la).	At least some setae either curved hooks or spines	3
3a (2b).	Acicular setae distally excavate; body usually dark green or brown	*Dodecaceria*
3b (2b).	Acicular setae not excavate, body usually light colored	4
4a (3b).	Acicular spines in posterior segments distally entire	*Chaetozone*
4b (3b).	Acicular spines in posterior segments distally bi- or multifid	*Caulleriella*
5a (lb).	All setae acicular, falcate spines	*Pseudocirratulus*
5b (lb).	At least some capillary setae present	6
6a (5b).	Anterior region without long tentacular structures	*Raricirrus*
6b (5b).	One or more anterior segments with groups of long tentacular cirri or branchiae	7
7a (6b).	Dorsal tentacular cirri first present posterior to the anteriormost branchiae	*Cirriformia*
7b (6b).	Dorsal tentacular cirri first present from the same segment as the anteriormost branchiae	8
8a (7b).	Tentacular cirri on one segment only	*Cirratulus*
8b (7b).	Tentacular cirri on two or more segments	*Timarete*

Generic Definitions

Caulleriella Chamberlin 1919c, *Cirratulus bioculatus* Keferstein 1862; 16 species.

Paired palps inserted dorsally anterior to, or at the first setiger. Setae include capillaries and distally bidentate or multidentate curved spines.

Chaetozone Malmgren 1867, C. *setosa* Malmgren 1867; 19 species.

Paired palps inserted dorsally anterior to, or at the fast setiger. Setae include capillaries and distally entire, curved spines.

Cirratulus Lamarck 1801, *Lumbricus cirratus O.F.* Muller 1776, 25 species.

Cirratulids without palps; tentacular cirri present on one segment only; anteriormost branchiae present from the same segment. Setae include capillaries and acicular spines that are usually entire distally.

Cirriformia Hartman 1936a, *Terebella tentaculata* Montagu 1808; 26 species.

on one segment only; anteriormost branchiae present anterior to the tentacular cirri. Setae include capillaries and curved, distally entire spines.

Dodecaceria Orsted 1843b, *D. concharum* Orsted 1843b; 16 species.

Palps present; branchiae present on a few segments; filiform or clavate. Anterior setigers with capillary setae; median and posterior ones also with excavate stout spines. Posterior part of body often flattened and expanded.

Pseudocirratulus Augener 1922, P. kingstonensis Augener 1922; only species.

Palps absent, cirri and branchiae present on most segments; two achaetous anterior segments present. Setae all gently curved, entire spines or hooks.

Raricirrus Hartman 1961, R. maculatus Hartman 1961; only species.

Body anteriorly narrow, then abruptly broad at setiger 9 and tapering from there to the posterior end. Branchiae present on some anterior segments; setiger 13 with a pair of papillae. Setae include capillaries in the notopodia and neuropodia and curved hooks with dentate cutting edges.

Tharyx Webster and Benedict 1887, *T. acutus* Webster and Benedict 1887; 22 species.

Palps anterior to or at the first b setae slender, capillary and smooth, but some- All times with serrated cutting edges.

Timarete Kinberg 1866b, *Cirratulus* anchylochaetus Schmarda 1861; 8 species.

Palps absent; tentacular cirri present on at least two anterior setigers; branchiae present from the same segment as the first tentacular cirri. Setae include notopodial capillaries and anteriorly neuropodial capillaries; posterior neuroopodia with gently curved spines.

Taxonomic Notes

appears likely that the generic division of the palpate cirratulids will change with future revisions. The Tharyx-complex is presently rather confused, and additional characters will have to be included to clarify the relations between the several species described in this genus.

Invalid Genera

Ambo Chamberlin 1918, see *Timarete*
Archidice Kinberg 1866b, see *Cirratulus*
Audouinia Quatrefages 1865, *see Cirriformia*
Cirratulispio McIntosh 1911, questionably Cirratulus or *Chaetozone*
Cirrhineris Blainville 1818, indeterminable
Heterocirrus Grube 1855, see *Dodecaceria*
Heterocirrus Saint-Joseph 1894, see *Caulleriella* and in part *Tharyx*
Labranda Kinberg 1866b, see *Cirriformia*
Mesocirrineris Czerniavsky 18816, see *Caulleriella*
Monticellina Laubier 1961a, see *Tharyx*
Naraganseta Leidy 1855, see *Dodecaceria*
Pentacirrus Wesenberg-Lund 1958, see Timarete
Promenia Kinberg 18666, see *Cirratulus*

FAMILY ACROCIRRIDAE BANSE 1969

Body either slender and elongate, or short and maggot-shaped. Prostomium blunt, paired palps usually present. Several segments usually crowded near the anterior end; these segments usually asetigerous. Parapodia biramous with small parapodia; notosetae segmented and spinose; neurosetae compound hooded falcigers.

The acrocinids recently were recognized as a separate family, and even more recently, the genus *Flabelligella* known from several deep-water locations was transferred to this family (Orensanz 1974b).

Key to Genera

Ia.	Branchiae absent	*Flabelligella*
lb.	Branchiae present	2
2a (lb).	Palpal bases well separated; epithelium densely papillated	*Macrochaeta*
2b (I b).	Palpal bases nearly abutting, epithelium nearly smooth	*Acrocirrus*

Generic Definitions

Acrocirrus Grube 1872b, *Heterocirrus frontifilis* Grube 1860; 8 species.

Acrocirrids with palps originating close together. Four pairs of gills; a papilla on third segment below the gill. Thorax of 12 segments; a row of papillae ventral to the neurosetae in all setigers.

Flabelligella Hartman 1965, F. papillata Hartman 1965; 5 species.

Acrocirrids without branchiae and palps; separation between thorax and abdomen indistinct. Body-surface densely papillated. Anterior segments uniramous in some species.

Macrochaeta Grube 1850, *Nais clavicornis Sars* 1835; 6 species.

Acrocirrids with bases of palps separated by at least the width of the palps. Usually four pairs of branchiae. Number of thoracal segments variable; epidermis usually densely papillated. All parapodia biramous.

Invalid Genus

Ledon Webster and Benedict 1887, see *Macrochaeta*

ORDER CAPITELLIDA

Prostomium without appendages; palps absent. One or two anterior asetigerous segments. Parapodia biramous; neuropodia long transverse welts in at least some setigers. All setae simple, including capillaries and rostrate uncini.

FAMILY CAPITELLIDAE GRUBE 1862

Body cylindrical, usually slender. Prostomium short and truncate, without appendages. Thorax and abdomen defined on internal structures and parapodial development; generally, thorax with capillary setae and abdomen with rostrate hooded hooks.

Capitellids are among the most commonly encountered polychaetes; some forms, such as *Capitella capitata* are considered pollution indicators, in that they are capable of invading areas where disastrous defamation of natural or man-made causes has taken place (Grassle and Grassle 1974).

The anterior thorax of most capitellids is usually strongly areolated and they are usually reddish pink or brown. In general appearance, they are perhaps the most earthwormlike of the common marine polychaetes.

The characteristic rostrate uncini are small, making the determination of the first occurrence of these setae difficult. However, genera and species cannot be identified without this information. I have found it useful to rotate the specimen while counting the segments, trying to observe the setae as the light catches them. The rostrate uncini look truncate in this sort of observation, and the capillaries will retain their tapered appearance.

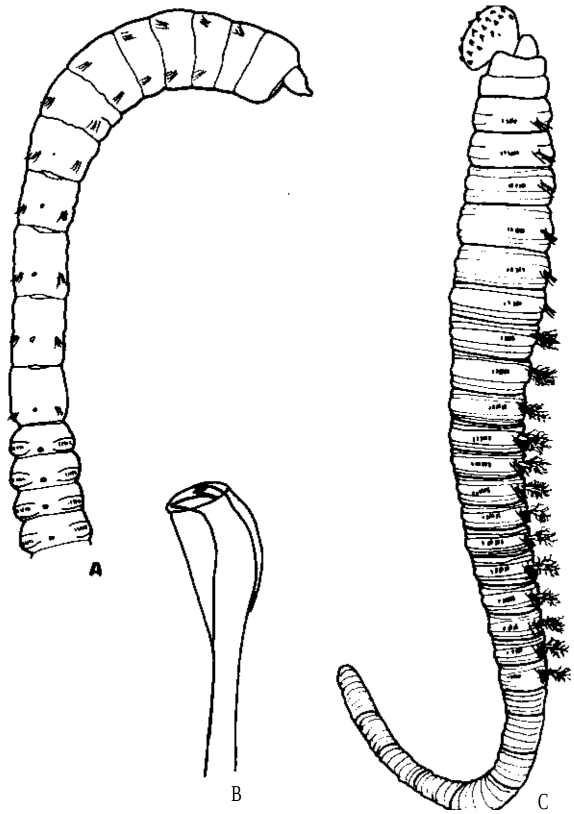


FIGURE 10. (A), Family CAPITELLIDAE, *Notomactus tenuis*, after Hartman, 1947, 7x; (b), hooded hook of the above, 850x; (C), Family ARENICOLIDAE, *Arenicola*, *near marina*. *modified from* several sources, about natural size.

Key to Genera

Ia.	Three first setigers with capillary setae only	2
l b.	At least four setigers with capillary setae only	4
2a (Ia).	Some thoracic segments with flanged hooks; twelve thoracic segments present	*Peresiella*
2b (Ia).	Flanged hooks absent; either ten or thirteen thoracic segments present	3
3a (2b).	Setigers 7-8 with genital spines; ten thoracic segments	*Capitomastus* 9
3b (2b).	Genital spines absent; 13 thoracic segments	*Heteromastides*
4a (lb).	Four first setigers with capillary setae only	5
4b (Ib).	At least five anterior setigers with capillary setae	8
5a (4a).	Genital spines present	6
5b (4a).	Genital spines absent	7

6a (5a).	Genital spines in setigers 7-8; ten thoracic segments present	*Capitomastus d*
6b (5a).	Genital spines in setigers 8-9; nine thoracic segments present	*Capitella* (part)
7a (5b).	Thorax with I I segments	*Mediomastus*
7b (5b).	Thorax with 12 segments	*Parheteromastus*
8a (4b).	Five setigers with capillary setae	9
8b (4b).	At least six anterior setigers with capillary setae only	10
9a (8a).	First setiger with both noto- and neuropodia; branchiae present	*Heteromastus*
9b (8a).	First setiger with notopodia only; branchiae absent	*Parheteromastides*
l0a (8b).	Six anterior setigers with capillary setae only	11
l0b (8b).	At least seven anterior setigers with capillary setae	13
I la (l0a).	Genital spines in setigers 8-9	*Capitellides*
1lb (l0a).	Genital spines absent	12
l 2a (I1 b).	Thorax with 11 segments	*Neomediomastus*
12b (IIb).	Thorax with 12 segments	*Barantolla*
l3a (l0b).	Seven anterior setigers with capillary setae only	l 4
13b (l0b).	At least nine anterior setigers with capillary setae only	17
l 4a (13a).	Genital spines present	15
14b (13a).	Genital spines absent	16
15a (14a).	Notopodial cirriform branchiae on some abdominal segments	*Branchiocapitella*
15b (l4a).	Branchiae absent	*Capitella*
l6a (14b).	Thorax with eight segments; all thoracic setigers with capillary setae only	*Leiocapitellides*
l6b (14b).	Thorax with 12 segments; posterior thoracic setigers with hooks	*Neoheteromastus*
17a (13b).	Nine anterior setigers with capillary setae only	18
17b (13b).	Ten or more anterior setigers with capillary setae	19
18a (I 7a).	One anterior asetigerous segment present; notopodial acicula absent; thorax with ten segments ...	*Pseudoleiocapitella*
I 8b (17a).	Anterior asetigerous segment absent; notopodia with acicula; thorax with nine segments ...	*Pulliella*
19a (l7b).	Ten first setigers with capillary setae only	20
l 9b (17b).	At least 11 anterior setigers with capillary setae	23
20a (19a).	First setiger with both noto- and neuropodia	*Decamastus*
20b (19a).	First setiger with notopodium only	21
21a (20b).	All thoracic setigers with capillary setae; all abdominal setigers with hooks only; mixed segments absent	*Capitellethus*
21b (20b).	At least one segment with mixed hooks and capillary setae	22
22a (21b).	Two first abdominal segments with mixed hooks and capillary setae; thorax with eleven segments	*Neonotomastus*
22b (21b).	Last thoracic segment with both hooks and capillary setae; twelve thoracic segments present	*Paraleiocapitella*
23a (19b).	Eleven anterior setigers with capillary setae only	24
23b (19b).	Twelve or more anterior setigers with capillary setae only	27
24a (23a).	At least some capillary setae in the first two abdominal setigers	25
24b (23a).	All abdominal segments with hooks only	26
25a (24a).	First setiger with neuropodia only; first two abdominal setigers with capillary setae in both rami	*Notodasus*
25b (24a).	First setiger with both noto- and neuropodia; first two abdominal setigers with hooks in the neuropodia and mixed hooks and capillary setae in the notopodia	*Mastobranchus*
26a (24b).	Abdominal notopodial tori *nearly* coalesce; notopodial hooks absent	*Rashgua*
26b (24b).	Abdominal notopodial tori well separated; notopodial hooks present	*Notomastus*
27a (23b).	Twelve setigers with capillary setae only	28
27b (23b).	Thirteen or more setigers with capillary setae only	30
28a (27a).	Anal plaque with imbedded spines present	*Scyphoproctus*
28b (27a).	Anal end rounded or with anal cirri	29
29a (28b).	Thirteenth setiger with both hooks and capillary setae	*Leiochrus*
29b (28b).	No setiger with both hooks and capillary setae present	*Leiochrides*
30a (27b).	Thirteen anterior setigers with capillary setae only	31
30b (27b).	At least 15 anterior setigers with capillary setae	35

31a (30a).	First setiger with notopodia only	32
31b (30a).	First setiger with both noto- and neuropodia	33
32a (31a).	Thorax with 14 or 15 segments; one segment with both capillary setae and hooks present	*Leiocapitella*
32b (31 a).	Thorax with 15 to 18 segments; three or four segments with both capillary setae and hooks present	*Pseudocapitella*
33a (31b).	Thorax with 19 segments; branchiae neuropodial	*Capitobranchus*
33b (31b).	Thorax with maximally 15 segments; branchiae, if present, notopodial	34
34a (33b).	All notopodial setae capillary	*Protomastobranchus*
34b (33b).	Abdominal notopodial setae hooks	*Dasybranchus*
35a (30b).	At least 16 setigers with capillary setae only; additional four segments have both setae and hooks in the notopodia	*Eunotomastus*
35b (30b).	Thoracic count otherwise; maximally two transitional segments present	36
36a (35b).	First setiger with both noto- and neuropodia	*Dasybranchetus*
36b (35b).	First setiger with notopodia only	37
37a (36b).	Twenty setigers with capillary setae	*Lumbricomastus*
37b (37b).	Seventeen or 18 setigers with capillary setae only	*Anotomastus*

Generic Definitions

Anotomastus Hartman 1947, *Eunotomastus gordioides* Moore 1909; only species.

Thorax with 18 or 19 segments; one anterior asetigerous segment present; first setiger with notopodia only. Up to segment 17 or 18 capillary setae only; segments 18 and 19 transitional with notopodial setae and neuropodia with mixed hooks and setae. Palmately branched branchiae in posterior segments.

Barantolla Southern 1921, *B. sculpta* Southern 1921; 2 species.

Thorax with 12 segments; one anterior asetigerous segment present; first setiger complete; up to segment 7 with capillary setae only; segment 8 with mixed setae and hooks in notopodia and hooks in neuropodia. Branchiae may be present in posterior segments.

Branchiocapitella Fauvel 1932, *B. singularis* Fauvel 1932; 2 species.

Thorax with nine segments; asetigerous segment absent; first setiger complete. Up to segment 7, capillary setae only; segments 8-9 with genital spines. Notopodial cirriform branchiae present.

Capitella Blainville 1828, *Lumbricus capitatus* Fabricius 1780; 15 species.

Thorax with nine segments; asetigerous segment absent; first setiger complete. *Either* four first segments with capillary setae only; then three segments with mixed hooks and setae in both rami, then genital spines in segments 8-9, *or* first seven segments with capillary setae only; then segments 8-9 with genital spines. Branchiae absent.

Capitellethus Chamberlin 1919c, *Capitellides dispar* Ehlers 1907; 3 species.

Thorax with 11 segments; asetigerous segment absent; first setiger with notopodia only. All thoracic setigers with capillary setae only; branchiae absent.

Capitellides Mesnil 1897b, C. *giardi* Mesnil 1897b; 3 species.

Thorax with nine segments; asetigerous segment absent; first setiger complete. First six setigers with capillary setae only; next three with hooks, except notopodia 8-9, which has genital spines. Branchiae absent.

Capitobranchus Day 1962, C. *macgregori* Day 1962; only species.

Thorax with 19 segments; one asetigerous segment present; first setiger complete. Up to segment 15 with capillary setae only; next four segments mixed with capillary setae in the notopodia and hooks in the neuropodia. Neuropodial branchiae present in posterior setigers.

Capitomastus Eisig 1887, *Capitella minima* Langerhans 1881; 3 species.

Thorax with ten segments; one asetigerous segment present; first setiger complete. *Males:* up to segment 5 with capillary setae only, the next two segments with hooks, segments 8-9 with genital spines. *Females:* up to segment 4 with capillary setae; the next three segments with hooks and segments 8-9 with genital spines.

Dasybranchetus Monro 1931, *D. fauveli* Monro 1931; only species.

Thorax with 16 segments; one asetigerous segment present; first setiger complete; all thoracic setigers with capillary setae. Branchiae not seen.

Dasybranchus Grube 1850, *Dasymallus* caducus Grube 1846; 10 species.

Thorax with 14 segments; one asetigerous segment present; first setiger complete; all thoracic setigers with capillary setae only. Simple or composite notopodial branchiae present.

Decamastus Hartman 1963a, D. *gracilis* Hartman 1963a; 2 species.

Thorax with I I segments; one asetigerous segment present; first setiger complete; all thoracic setigers with capillary setae only; branchiae absent.

Eunotomastus McIntosh 1885, E. *grubei* McIntosh 1885; only species.

Genus poorly defined: approximately 20 thoracic segments present; of which 16 have capillary setae only and the next four *have* mixed setae and hooks in the notopodial fascicles.

Heteromastides Augener 1914, *H. bifidus* Augener 1914; 2 species.

Thorax with 13 segments; one asetigerous segment present; first setiger complete. Up to segment 4, capillary setae only; segment 5 with mixed capillary setae and hooks in both rami; from segment 6, hooks only. Branchiae absent.

Heteromastus Eisig 1887, *Capitella fliformis* Claparede 1864; 7 species.

Thorax with 12 segments; one asetigerous segment present; first setiger complete. Up to segment 6, capillary setae only; from segment 7, all setae hooks. Notopodial branchiae present.

Leiocapitella Hartman 1947, *L. glabra* Hartman 1947; 2 species.

Thorax with 14 or 15 segments; one asetigerous segment present; first setiger with notopodia only. Up to segment 14 with capillary setae only; segment 15 with capillary setae in the notopodia and hooks in the neuropodia. Branchiae absent.

Leiocapitellides Hartmann-Schroder 1960a, *L.* analis Hartmann-Schroder 1960a; only species.

Thorax with eight segments; one asetigerous segment present; all thoracic segments with capillary setae only; first abdominal with notopodial capillary setae and neuropodial hooks. Branchiae absent.

Leiochrides Augener 1914, *L. australis* Augener 1914; 7 species.

Thorax with 13 segments; one asetigerous segment present; first setiger complete. All thoracic setigers with capillary setae only. Branchiae not seen.

Leiochrus Ehlers 1908, *L.* alutaceus Ehlers 1908; only species.

Thorax with 13 or 14 segments; one asetigerous segment present; first setiger complete. Up to segment 13, capillary setae only; segment 14 with mixed setae and hooks in both rami. Branchiae absent.

Lumbricomastus Thomassin 1970, *L. tulearensis* Thomassin 1970; only species.

Thorax with 21 segments; one asetigerous segment present; first setiger with notopodia only. All thoracic setigers with capillary setae only. Branchial processes on posterior notopodia.

Mastobranchus Eisig 1887, M. trinchesii Eisig 1887; 4 species.

Thorax with 12 segments; one asetigerous segment present; first setiger complete. All thoracic setigers with capillary setae only; two first abdominal segments with mixed capillary setae and hooks in the notopodia and hooks in the neuropodia. Notopodial branchiae present.

Mediomastus Hartman 1944b, *M. californiensis* Hartman 1944b, 7 species.

Thorax with I I segments; one asetigerous segment present; first setiger complete. Up to segment 5 with capillary setae only; thereafter, all hooks. Branchiae absent.

Neoheteromastus Hartman 1960, N. *linens* Hartman 1960; only species.

Thorax with 12 segments; one asetigerous segment present; first setiger with notopodia only. Up to segment 8 with capillary setae only; segment 9 with capillary setae in the notopodia and hooks in the neuropodia. Branchiae not seen.

Neomediomastus Hartman 1969, *Mediomastus glabrus* Hartman 1960; only species.

Thorax with 11 segments; one asetigerous segment present; first setiger complete. Up to segment 7 with capillary setae only, then all setigers with hooks. Small notopodial branchial processes present in far posterior setigers.

Neonotomastus Fauchald 1972, N. *glabrus* Fauchald 1972; only species.

Thorax with 11 segments; one asetigerous segment present; first setiger with notopodia only. All thoracic setigers with capillary setae only; first abdominal notopodia with capillary setae, second with mixed hooks and capillary setae. First abdominal neuropodia with mixed hooks and capillary setae; second with hooks only. Branchiae not seen.

Notodasus Fauchald 1972, N. magnus Fauchald 1972; 2 species.

Thorax with 12 segments; one asetigerous segment present; first setiger with neuropodia only. All thoracic setigers and the first two abdominal setigers with capillary setae only. Branchiae not seen.

Notomastus Sars 1850, N. *latericeus* Sars 1850; 34 species.

Thorax with 12 segments; one asetigerous segment present; first setiger complete. All thoracic setigers with capillary setae only. Branchiae may be present.

Paraleiocapitella Thomassin 1970, P. *mossambica* Thomassin 1970; only species.

Thorax with 12 segments; one asetigerous segment present; first setiger with notopodia only. Up to segment 11 with capillary setae only; segment 12 with notopodial capillary setae and neuropodial hooks. Branchiae absent.

Parheteromastides Hartmann-Schroder 1962a, P. *multioculatus* Hartmann-Schroder 1962a; only species.

Thorax with I I segments; one asetigerous segment present; first setiger with notopodia only. Up to segment 6, capillary setae only; segment 7 with both capillary setae and hooks and neuropodia with hooks only. Branchiae absent.

Parheteromastus Monro 1937a, *P. tenuis* Monto 1937a; only species.

Thorax with 12 segments; one asetigerous segment present. Up to segment 5, capillary setae only; all other segments with hooks only. Branchiae absent.

Peresiella Harmelin 1968. *P. clymenoides* Harmelin 1968; 2 species.

Thorax with 12 segments; one asetigerous segment present; first setiger with notopodia only. Up to segment 4, capillary setae only; the remainder of thorax with modified, flanged hooks in at least some segments, capillary setae and normal hooks in the others.

Protomastobranchus Gallardo 1968, *P. huloti* Gallardo 1968; only species.

Thorax with 13 or 14 segments; one asetigerous segment present; first setiger complete. All notopodia with limbate capillary setae only; up to segment 13 or 14, capillary setae in neuropodia also; from there on, hooks.

Pseudocapitella Fauvel 1913, *P. incerta* Fauvel 1913; 2 species.

Thorax with 15 to 18 segments; one asetigerous segment present; first setiger with notopodia only. Up to segment 15, capillary setae only; next three with notopodial capillary setae and neuropodial hooks. Branchiae absent.

Pseudoleiocapitella Harmelin 1964, *P. fauveli* Harmelin 1964; only species.

Thorax with ten segments; one asetigerous segment present; first setiger complete. Up to segment 10, capillary setae only; first two abdominal segments with notopodial capillary setae and neuropodial hooks. Branchiae absent.

Pulliella Fauvel 1929, *P. armata* Fauvel 1929; 2 species.

Thorax with nine segments; all with capillary setae. First setiger complete. Branchiae absent; notopodial acicula present.

Rashgua Wesenberg-Lund 1949, *P. rubrocincta* Wesenberg-Lund 1949; only species.

Thorax with 12 segments; one asetigerous segment present; first setiger complete; all thoracic setigers with capillary setae. Dorsal abdominal tori nearly coalesce, lack notopodial hooks. Simple branchiae present.

Scyphoproctus Gravier 1904, S. *djiboutensis* Gravier 1904; 7 species.

Thorax with 13 segments; one asetigerous segment present; first setiger complete. All thoracic setigers with capillary setae only. Expanded anal plaque with acicular imbedded spines present.

Taxonomic Notes

The generic sub-division of the capitellids is unsatisfactory; it is based on the number of thoracic segments, which may be difficult to see, and on the distribution of the capillary and hooked setae, which is easily enough seen, but poorly understood in terms of variability. The key to genera follows the traditional system, but has been based on the number of segments with capillary setae, rather than on the number of thoracic segments, since the former is the more easily observed character. A review only, such as the current one, cannot solve the problem of the number of valid capitellid genera, which must be based on the variability of all observable characters in a large amount of material.

The genus *Capitita* Hartman 1947, is considered here a synonym of *Mediomastus* Hartman 1944b, as first suggested by Hartmann-Schroder (1962a).

The genus *Bucherta* Rullier (1965a) is considered as the posterior end of a capitellid, probably of the genus *Dasybranchus* as first suggested by Gallardo (1968).

As stated above, the generic identification of capitellids is at best difficult. To make a review somewhat easier, a table has been constructed to indicate in a different manner the relationships between the genera.

It is of the utmost importance that the two concepts, segments and setigers, be kept apart, since both are used in key features of the capitellids.

Invalid Genera

Ancistria Quatrefages 1865, see *Heteromastus*
Arenia Quartrefages 1865, see *Notomastus*
Areniella Verrill 1874, questionably *Heteromastus*
Branchoscolex Schmarda 1861, *see Dasybranchus*
Bucherta Rullier 1965a, see *Dasybranchus*

Capitellides Ehlers 1907, see *Capitellethus*
Dasymallus Grube 1846, see *Dasybranchus*
Ditrocha Sveshnikov 1959, larval forms
Eisigella Gravier 1901, see *Notomastus*
Isomastus Gravier 191 la, see Capitella
Lumbriconais Orsted 1842, in Grube 1850, see Capitella
Sandanis Kinberg 1867b, see *Notomastus*
Valla Johnston 1865, see *Capitella*

TABLE 2

Genera of *Capitellidae.* Arranged in order of increasing number of thoracic segments present.

Column 1: No. of thoracic segments present
Column 2: Presence or absence of an anterior asetigerous segment
Column 3: No. of thoracic setigers
Column 4: Presence of genital spines
Column 5: No. of setigers with capillary setae
Column 6: No. of setigers with mixed capillaries and rostrate uncini
Column 7: First segment complete or incomplete
Column 8: Presence of branchiae and special kinds of setae.

Genus	1	2	3	4	5	6	7	8
Leiocapitellides	8	+	7	–	7	–	compl	no branchiae
Pulliella	9		9	–	9	–	comp)	no branchiae notacicula pres
Capitella (1)	9		9	8-9	4	3	comp)	no branchiae
Capitellides	9		9	8-9	6	–	compt	no branchiae
Capitella (2)	9		9	8-9	7	–	comp)	no branchiae
Branchiocapitella	9		9	8-9	7		compi	branchiae
Capitomastus 4	l0	+	9	8-9	3	–	compl	no branchiae
Capitomastus d	10	+	9	8-9	4	–	comp)	no branchiae
Pseudoleiocapitela	10	+	9		9	2	compl	no branchiae
Mediomastus	11	+	10		4		compI	no branchiae
Parheteromastides	11	+	10	–	5		notop.	no branchiae
Neomediomastus	II	+	10	–	6	–	compl	small knobs
Capitellethus	11	–	10	–	10	–	notop.	no branchiae
Decamastus	11	+	10		10	–	comp)	?no branchiae
Neonotomastus	11	+	10	–	10	2	notop.	?no branchiae
Peresiella	12	+	11		3	var.	notop.	flanged setae
Parheteromastus	12	+	11		4	–	comp)	no branchiae
Heteromastus	12	+	11		5	–	compl	branchiae
Barantolla	12	+	11		6	1	compl	? branchiae
Neoheteromastus	12	+	11		7	1	notop.	?branchiae
Paraleiocapitella	12	+	11		10		notop.	no branchiae
Notomastus	12	+	11		ll		compI notop.	+_ branchiae
Rashgua	12	+	11		11	–	compl	no notouncini branchiae
Mastobranchus	12	+	11		11	2	compl	branchiae
Notodasus	12	+	Il		13	–	neuro	?branchiae
Heteromastides	13	+	12		3	1	compl	no branchiae
Leiochrides	13	+	12		12	–	comp)	?branchiae
Scyphoproctus	13	+	12		12	–	compl	anal plaque
Leiochrus	13-14	+	12-13		12	1	comp)	no branchiae
Protomastobranchus	13-14	+	13-14	–	13-14	–	compl	no notouncini branchiae
Dasybranchus	14	+	13		13	–	comp)	
Leiocapitella	14-15	+	13		13	1	notop.	no branchiae
Pseudocapitella	15-18	+	14-17		14	3	notop.	no branchiae
Dasybranchems	16	+	15		15		comp!	?branchiae
Anotomartus	18-19	+	17-18		17-18	1	nomp.	branchiae
Capitobranchus	19	+	18		14	4	compl	neurop. branchiae
Lumbricomastus	21	+	20		20	–	notop.	branchiae

The genus Eunotomastus is too incompletely known to be included in the table.

FAMILY ARENICOLIDAE JOHNSTON 1835

Body cylindrical, separated into two or three distinct regions. Prostomium without appendages. Notopodia bluntly truncate, neuropodia elongated tori. Notosetae capillary or limbate, neurosetae rostrate hooks. Branchiae present on some setigers in a median or posterior region.

With the exception of *Branchiomaldane,* the arenicolids are not easily confused with any other polychaetes. The very thick, strongly areolated epidermis in most forms, the distinct branchial region with their strongly tufted branchiae and the habitat, makes it easy to recognize the "sand-worms" from all over the world. The family has been the object of very intensive studies by Wells and his students. Wells (1962) and other papers established the major classificatory criteria.

Key to Genera

Ia.	Body slender, branchiae first present from setiger 18, or later, as thick filaments arranged with maximally two or three in a tuft	*Branchiomaldane*
lb.	Body thick, branchiae first present from a more anterior setiger as thick tufts of very fine filaments	2
2a (I b).	Asetose caudal end absent	*Arenicolides*
2b(Ib).	Asetose caudal end present	3
3a (2b).	Neuropodia of branchial segment approach midventrally; a single pair of oesophageal sacs present	*Arenicola*
3b (2b).	Neuropodia of branchial segments well separated; more than one pair of oesophageal sacs present	*Abarenicola*

Generic Definitions

Abarenicola Wells 1959, *Arenicola claparedii* Levinsen 1884; 16 species and subspecies.

Three body-regions, including a prebranchial and branchial region as well as an asetose caudal end. Branchiae from setiger 7. Neuropodia widely separated in the branchial region. More than one pair of oesophageal sacs.

Arenicola Lamarck 1801, *Lumbricus marinas* Linnaeus 1758; 9 species and subspecies.

Three body-regions, including a prebranchial and branchial region as well as an asetose caudal end. Branchiae from setiger 7. Neuropodia approach midventrally in branchial segments. One pair of oesophageal sacs present.

Arenicolides Mesnil 1898, *Arenicola ecaudata* Johnston 1835; 2 species.

Two body-regions, including a prebranchial and a branchial region. Branchiae from setiger 12-17 to the posterior end. All neuropodia approach midventrally.

Branchiomaldane Langerhans 1881, *B. vincenti* Langerhans 1881; only species.

Two body-regions, including a prebranchial and branchial region. Branchiae first present from setiger 18 or behind; as thick, sessile filaments, usually no more than three filaments in a group. All neuropodia widely separated.

Invalid Genera

Chorizobranchus Quatrefages 1865, see *Arenicola*
Clymenides ClaparBde 1863, see *Arenicolides*
Protocapitella Berkeley and Berkeley 1932, see *Branchiomaldane*
Pteroscolex Lutken 1864, see *Arenicola*
Puparia Sveshnikov 1959, larval forms
Telethusae Savigny 1818, see *Arenicola*

FAMILY MALDANIDAE MALMGREN 1867

Capitelliform polychaetes with long cylindrical bodies, usually truncate at one or both ends; most species with long, cylindrical segments. Prostomium without appendages, with a pair of nuchal slits and a median cephalic keel. Notopodia short and rounded; neuropodia elongated ton. Notosetae smooth or spinose capillaries; neurosetae rostrate hooks, anterior modified spines present in several forms.

The bamboo-worms are recognized easily in that for once, the popular name of the members of this family makes sense; the long segments with the parapodia at one end, give the worms the jointed appearance of slender bamboo-shoots. However, even though easily recognized to family, they are not as easily identified to genus and species. It is necessary to have complete specimens to *get* them even to sub-family; or at least, one must have both anterior and posterior ends from the same specimen to get them safely identifed. It is here strongly suggested that identification of fragments not be undertaken, except of course when one can be sure about the provenance of the fragments.

Maldanids are especially common in shelf sediments. *They* are all tubicolous, with mud-walled tubes, and are usually quite large animals, often up to 20 cm in length. Most frequently the worms are darkly red or orange in life, often with lighter glandular fields and neuropodial tori.

The major taxonomic revision of the maldanids was done by Arwidsson (1907). He established the subfamilies and by and large the currently accepted genera. Another very important study, especially on members of the subfamily Euclumeninae, is that of Verrill (1900).

The subfamilies are defined on the development of the anterior and posterior ends. These can be plain and rounded, or they may form flattened discs, plaques, or funnels. The anal plaque may have series of marginal anal cirri or be unadorned. The cephalic plaque always has paired nuchal slits, but is otherwise unadorned, except that the anterior point of the prostomium may project as a short palpode.

The subfamilies may be defined as follows:

RHODININAE: Anterior and posterior ends without plaques; posterior setigers with numerous encircling collars; uncini in double rows.

LUMBRICLYMENINAE: Anterior and posterior ends without plaques; posterior segments withoutt collars; uncini in single rows.

NICOMACHINAE: Anterior end without plaque; anal plaque present; uncini in single rows.

MALDANINAE: Both anterior and posterior ends with plaques; anus dorsal.

EUCLYMENINAE: Anterior and posterior ends with plaques, anus terminal.

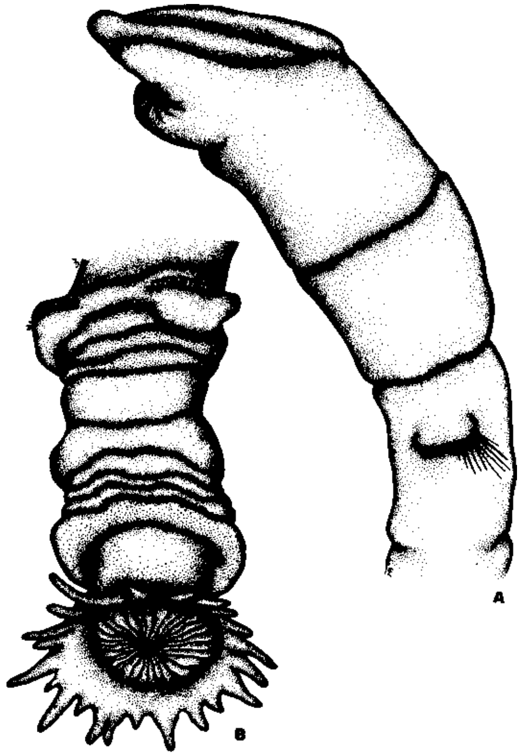


FIGURE 11. (A), Family MALDANIDAE, *Axiothella rubrocincta,* Tomales Bay, California, intertidal, 17x; (B), posterior end of the above, 17x.

Key to Genera

Ia.	Both cephalic and anal plaques absent	2
lb.	At least anal plaque present	7
2a (Ia).	Rostrate uncini in double rows, posterior segments with encircling collars	RHODININAE
		Rhodine
2b (Ia).	Rostrate uncini in single rows, posterior segments not collared	LUMBRICLYMENINAE
		3
3a (2b).	More than 20 setigers present	*Praxillura*
3b (2b).	Nineteen setigers present	4
4a (3b).	Setiger 4 with a deep encircling collar	*Clymenopsis*
4b (3b).	Setiger 4 without collar	5
5a (4b).	Pygidium with anus at the end of a simple, upturned, flattened cone	*Lumbriclymenella*
5b (4b).	Pygidium otherwise	6
6a (5b).	Pygidium flattened with anus dorsal	*Notoproctus*
6b (5b).	Pygidium conical with anus terminal	*Lumbriclymene*
7a (lb).	Cephalic plaque absent, anal plaque present	NICHOMACHINAE 8
7b (Ib).	Both cephalic and anal plaques present	10
8a (7a).	Rostrate uncini in all setigers	*Micromaldane*
8b (7a).	Acicular spines in first three setigers, thereafter rostrate uncini	9
9a (8b).	Anal funnel symmetrically developed	*Nicomache*

9b (8b).	Anal funnel asymmetrical, with the dorsal side reduced	*Petaloproctus*
l0a (7b).	Anus dorsal	MALDANINAE 11
l0b (7b).	Anus terminal	EUCLYMENINAE 15
lla (l0a).	Rostrate uncini in two or three series in most setigers	*Sonatsa*
l lb (l0a).	Rostrate uncini always in single series	12
12a (I lb).	First three setigers with acicular neuropodial spines	*Clymaldane*
12b (I lb).	First setiger either without neurosetae or with rostrate uncini	13
13a (12b).	Cephalic keel long and high, cephalic rim shallowly notched laterally	*Maldane*
13b (12b).	Cephalic keel short and low, cephalic rim deeply incised laterally	14
14a (13b).	Numerous branchial filaments on median setigers	*Branchioasychis*
146 (136).	Branchial filaments absent	*Asychis*
15a (l0b).	Series of vascular caeca cover the surface of the two last setigers	*Johnstonia*
15b (l0b)	Vascular caeca absent	16
16a (15b).	Anal plaque marginally smooth or gently crenulated	17
16b (15b).	Anal plaque bordered by distinct anal cirri	18
17a (16a).	First setiger with notosetae only; anal plaque gently crenulated	*Abyssoclymene*
I7b (16a).	First setiger with noto- and neurosetae; anal plaque smooth	*Microclymene*
18a (16b).	All anal cirri similar in length	19
18b (16b).	Midventral anal cirrus (rarely two) distinctly longer than all other anal cirri	23
19a (18a).	More than 30 setigers present	*Macroclymene*
19b (18a).	Nineteen or 20 setigers present	20
20a (19b).	Acicular spines in the first neuropodia	21
20b (19b).	First neurosetae rostrate uncini	22
21a (20a).	Setiger 4 with a deep encircling collar	*Clymenella*
21b (20a).	Setiger 4 without a collar	*Isocirrus*
22a (20b).	First setiger with notosetae only; anal plaque with numerous cirri	*Maldanella*
22b (20b).	First setiger with both noto- and neurosetae; anal plaque with a few long cirri only	*Clymenura*
23a (18b).	More than 30 setigers present	24
23b (18b).	Eighteen to 20 setigers present	25
24a (23a).	Setiger 4 with a deep encircling collar	*Macroclymenella*
24b (23a).	Setiger 4 without a collar	*Gravierella*
25a (23b).	Anterior neuropodia with rostrate uncini	*Axiothella*
25b (23b).	Anterior neuropodia with acicular spines	26
26a (25b).	Anal plaque with two large ventral and several shorter lateral and dorsal anal cirri	*Proclymene*
26b (25b).	A single large ventral cirrus and several shorter lateral and dorsal anal cirri present	27
27a (26b).	Nuchal slits short, straight and diverging anteriorly	*Pseudoclymene*
27b (26b).	Nuchal slits long, straight and parallel	28
28a (27b).	Anal cone projecting well beyond the rim of the anal plaque	*Praxillella*
28b (27b).	Anal cone low and not projecting beyond the rim of the anal plaque	29
29a (28b).	Apart from the long ventral anal cirrus, all other anal cirri similar in length	*Euclymene*
29b (28b).	Anal cirri of varying lengths	*Heteroclymene*

Generic Definitions

Abyssoclymene Hartman 1967, *A. annularis* Hartman 1967; only species.

EUCLYMENINAE. Nuchal slits straight. Nineteen setigers, first with notosetae only; anal plaque nearly smooth, gently crenulated along margin.

Asychis Kinberg 1867b, *A. atlanticus* Kinberg 1867b; 28 species.

MALDANINAE. Cephalic rim with deep lateral incisions; cephalic keel short and low. Neurosetae absent in first setiger. Branchiae absent.

Axiothella Verrill 1900, *Axiothea catenata* Malmgren 1865; 12 species.

EUCLYMENINAE. Cephalic rim incised or entire; 18-20 setigers, acicular spines absent. Anal plaque with long midventral and shorter lateral and dorsal anal cirri.

Branchioasychis Monro 1939c, *B. colmani* Monro 1939c; 3 species.

MALDANINAE. Cephalic rim deeply incised laterally; cephalic keel short and low. Neurosetae absent in first setiger. Numerous gill filaments on median setigers.

Clymaldane Mesnil and Fauvel 1939, C. *sibogae* Mesnil and Fauvel 1939; 2 species.

MALDANINAE. Cephalic rim shallowly notched. Keel short and very low. Acicular spines present in anterior neuropodia. Branchiae absent.

Clymenella Verrill 1873b, *Clymene torquatus* Leidy 1855; 7 species.

EUCLYMENINAE. Eighteen to 20 setigers; nuchal slits long and straight. Setiger 4 with deep encircling anterior collar; anterior neuropodia with acicular spines or strongly reduced uncini. Anal plaque with all cirri evenly long.

Clymenopsis Verrill 1900, *Clymene* cingulata Ehlers 1887; 2 species.

LUMBRICLYMENINAE. Nineteen setigers; setiger 4 with deep encircling collar; nuchal slits strongly angled. First three neuropodia with spines.

Clymenura Verrill 1900, *Clymene cirrara* Ehlers 1887; 11 species.

EUCLYMENINAE. About 20 setigers; with large triangular glandular field on setiger 8. Nuchal slits long and straight. Acicular spines absent. Anal plaque a flattened disc with few long anal cirri; anal cone strongly projecting.

Euclymene Verrill 1900, *Clymene oerstedii* Claparede 1863; 27 species.

EUCLYMENINAE. Eighteen to 20 setigers; nuchal slits long and straight. Acicular spines present. Anal plaque with one long median and numerous evenly long anal cirri; anal cone low.

Gravierella Fauvel 1919, G. *multiannulata* Fauvel 1919; only species.

EUCLYMENINAE. Numerous setigers, far posterior ones campanulate. Nuchal slits long and straight. Acicular spines absent. Anal plaque with the anal cirri increasing in length from the dorsal side towards the long midventral cirrus.

Heteroclymene Arwidsson 1907, *H. robusta* Arwidsson 1907; 3 species.

EUCLYMENINAE. Nineteen setigers; nuchal slits long and straight. Acicular spines in first neuropodia. Anal plaque with one long midventral and numerous shorter anal cirri of varying lengths. Anal cone low.

Isocirrus Arwidsson 1907, *Clymene planiceps* Sars 1872; 5 species.

EUCLYMENINAE. About 20 setigers; nuchal slits long and straight. Acicular spines in anterior neuropodia. Anal plaque with all cirri of the same length.

Johnstonia Quatrefages 1850b, J. *clymenoides* Quatrefages 1850b; 2 species.

EUCLYMENINAE. Twenty-two setigers; nuchal slits long and straight. Acicular spines in the first neuropodia. Anal plaque with one long midventral and several shorter anal cirri. Two last setigers covered with series of vascular caeca.

Lumbriclymene Sars 1872, *L. cylindricauda* Sars 1872; 5 species.

LUMBRICLYMENINAE. Nineteen setigers present; nuchal slits strongly curved. Rostrate uncini in single rows; acicular spines present. Anal cone symmetrical, with circular cross-section.

Lumbriclymenella Arwidsson 1911a, *L. robusta* Arwidsson 1911 a; only species.

LUMBRICLYMENINAE. Nineteen setigers present; nuchal slits strongly curved. Uncini in single rows; acicular spines present. Anal end a simple upturned, flattened cone with anus distal.

Macroclymene Verrill 1900, Clymene *producta* Lewis 1897; 2 species.

EUCLYMENINAE. More than 30 setigers; nuchal slits long and straight. Acicular spines present in anterior neuropodia. Anal plaque with numerous evenly long cirri.

Macroclymenella Augener 1926, *M. stewartensis* Augener 1926; only species.

EUCLYMENINAE. More than 30 setigers; nuchal slits long and straight. Acicular spines absent. Setiger 4 with deep encircling collar. Anal plaque with a long midventral and numerous short, slender cirri; anal cone low.

Maldane Grube 1860, M. *glebifex* Grube 1860; 18 species.

MALDANINAE. Nineteen setigers; cephalic keel long and high; cephalic rim notched. Acicular spines absent.

Maldanella McIntosh 1885, M. *antarctica* McIntosh 1885; 8 species.

EUCLYMENINAE. Nineteen setigers; nuchal slits long and straight. Neurosetae absent from first setiger; acicular spines absent. Anal cone large; anal plaque with all cirri evenly short.

Microclymene Arwidsson 1907, *M. acirrata* Arwidsson 1907; 3 species.

EUCLYMENINAE. Nineteen to 20 setigers; nuchal slits long and straight. Acicular spines absent. Anal plaque smooth-rimmed.

Micromaldane Mesnil 1897a, *M. ornithochaeta* Mesnil 1897a; 2 species.

NICOMACFIINAE. Strongly curved, avicular uncini on all setigers; collars absent. Anal plaque with crenulated margin.

Nicomache Malmgren 1865, *Sabella lumbricalis* Fabricius 1780; 16 species.

NICOMACHINAE. Rostrate uncini in single rows; acicular spines in the first three neuropodia. Anal plaque with subequal anal cirri.

Notoproctus Arwidsson 1907, N. oculatus Arwidsson 1907; 9 species.

LUMBRICLYMENINAE. Nineteen setigers, prostomium large, hoodlike. Acicular spines in anterior neuropodia. Anal plaque flat, smooth-rimmed, with anus dorsal.

Petaloproctus Quatrefages 1865, *P. terricolus* Quatrefages 1865; 11 species.

NICOMACHINAE. Nineteen setigers. Acicular spines in the first neuropodia. Anal plaque asymmetrical with the dorsal side strongly reduced.

Praxillella Verrill 1881, *Praxilla praetermissa* Malmgren 1865; 20 species.

EUCLYMENINAE. Eighteen to 19 setigers; nuchal slits long and straight. Acicular spines in anterior neuropodia. Anal plaque short, with a long midventral and several shorter anal cirri. Anal cone very large, projecting well beyond the rim of the anal plaque.

Prarillura Verrill 1880, *P.* ornata Verrill 1880; 6 species.

LUMBRICLYMENINAE. Twenty to 29 or more setigers; nuchal slits strongly curved. Acicular spines in anterior and posterior neuropodia.

Proclymene Arwidsson 1907, *Clymene muelleri Sars* 1856; only species.

EUCLYMENINAE. Nineteen setigers; nuchal slits anteriorly curved. Acicular spines present in anterior neuropodia. Anal plaque with two large midventral and several shorter anal cirri.

Pseudoclymene Arwidsson 1907, *Clymene quadrilobata* Sars 1856; 2 species.

EUCLYMENINAE. Eighteen to 20 setigers, nuchal slits short, straight and diverging anteriorly. Acicular spines present; anal cirri all of the same length except the larger midventral one.

Rhodine Malmgren 1865, *R. loveni* Malmgren 1865; 8 species.

RHODININAE. Numbers of setigers variable; first setigers with notosetae only; acicular spines absent. Numerous encircling collars on posterior setigers. Uncini in double rows.

Sonatsa Chamberlin 1919c, S. *meridionalis* Chamberlin 1919c; only species.

MALDANINAE. Numbers of setigers unknown; prostomium with high, long cephalic keel; cephalic rim notched. Rostrate uncini in two or three series in some setigers.

Taxonomic *Notes*

The genus *Chaponella* Rullier 1972 is considered here in the Sabellidae; it resembles closely members of the genus *Euchone,* except for its loss of tentacular crown.

The genus *Sonatsa* was described originally in its own subfamily; the posterior end of the only known species remains unknown. The anterior end closely resembles well-known species of *Maldane* and the genus is considered here in the subfamily Maldaninae.

Invalid Genera

Arwidssonia McIntosh 1914b, *see Euclymene*
Axiothea Malmgren 1865, see *Axiothella*
Caesicirrus Arwidsson 191lb, see *Euclymene*
Chrysothemis Kinberg 1867b, see *Asychis*
Clymene Oken 1815, indeterminable
Clymene Savigny 1818, indeterminable
Heteromaldane Ehlers 1908, see *Maldane*
Iphianissa Kinberg 1867b, questionably *Praxillella*
Leiocephalus Quatrefages 1865, see *Euclymene*
Leiochone Grube 1868b, see *Maldane* and *Asychis*
Leiochone Saint-Joseph 1894, *see Clymenura*
Maldanopsis Verrill 1900, *see Asychis*
Mandrocles Kinberg 1867, indeterminable
Neco Kinberg 1867b, see Mylitta
Nicomachella Levinsen 1884, *see Petaloproctus*
Paraxiothea Webster 1879a, *see Clymenella*
Petaloclymene Augener 1918, incompletely known
Praxilla Malmgren 1865, *see Praxillella*
Promaldane Mesnil 1897a, hypothetical
Sabaco Kinberg 1867b, see *Asychis*

ORDER OPHELIIDA

Prostomium without appendages; palps absent. Maximally one anterior asetigerous segment present. Parapodia uniramous or (usually) biramous. All setae simple, including capillary setae. Rostrate hooks absent. All neuropodia short and truncate.

Composite setae have been reported from a single species of the family Scalibregmidae; this form may be incorrectly assigned to family and in some respects resembles members of the Syllidae.

FAMILY OPHELIIDAE MALMGREN 1867

Body with a limited number of segments; often with a deep ventral furrow. Prostomium without appendages, blunt or conical. Parapodia biramous or uniramous, with small button-shaped parapodial lobes; all setae capillary, either smooth or marginally dentate.

Opheliids have a series of three very distinct body-shapes. Some are short, thick and grub-shaped; others are very slender, nearly smooth and torpedo-shaped.

Finally, some are anteriorly inflated and posteriorly cylindrical or narrow. Opheliids are common animals in sandy and muddy bottoms and have been studied extensively by ecologists interested in sandy beaches.

Key to Genera

la.	Body fusiform without ventral groove	2
lb.	Body cylindrical with at least posterior ventrum deeply grooved	4
2a (I a).	Branchiae absent	*Kesun*
2b (la).	Branchiae present	3
3a (2b).	First setiger appear in front of the mouth; all setae smooth	Travisia
3b (2b).	First setiger appear behind the mouth; some setae spinose	*Dindymenides*
4a (lb).	Ventral groove present in posterior part of body only	5
4b (1b).	Ventral groove present along the whole body	6
5a (4a).	Three body-regions, including inflated head, inflated anterior part and narrow posterior part; branchiae in posterior region only	Euzonus
5b (4a).	Body not clearly regionated, inflated anteriorly and grooved posteriorly; branchiae from setigers 8-10, if present	*Ophelia*
6a (4b).	Branchiae absent	7
6b (4b).	Branchiae present	8
7a (6a).	Lateral eyes absent	*Tachytrypane*
7b (6a).	Lateral *eyes* present	*Polyophthalmus*
8a (6b).	Lateral eyes present	*Armandia*
8b (6b).	Lateral eyes absent	9
9a (8b).	Anal tube short, all anal cirri of similar length	*Antiobactrum*
9b (8b).	Anal tube long, two internally attached ventral cirri present, dorsal anal cirri short	10
l0a (9b).	Branchiae, if present, along the whole body	*Ophelina*
l0b (9b).	Branchiae always present, limited to the posterior end of body only	*Ammotrypanella*

Generic Definitions

Ammotrypanella McIntosh 1879, *A. arctica* McIntosh 1879; only species.

Ventral groove present along the whole body; branchiae present and limited to the posterior end only. Anal tube long and narrow, with two internally attached ventral cirri. Lateral eyes absent.

Antiobactrum Chamberlin 1919c, *Ophelina brasiliensis* Hansen 1882; only species.

Ventral groove present along the whole body; branchiae present. Anal tube short and with all anal cirri of the same length. Lateral eyes absent; expanded palpode at the tip of the prostomium.

Armandia Filippi 1861, *A. cirrhosa* Filippi 1861; 18 species.

Ventral groove along the whole body; branchiae present. Lateral *eyes* present; anal tube long and slender, with paired long internally attached ventral cirri and shorter dorsal cirri.

Dindymenides Chamberlin 1919c, *Dindymene* concinna Kinberg 1866b; 3 species.

Body short and grublike without ventral furrow. Branchiae present. First setiger appears behind the mouth; some setae spinose.

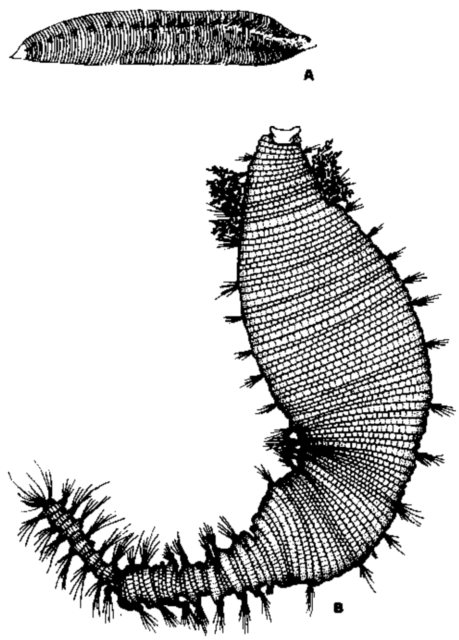


FIGURE 12. (A), Family OPHELIIDAE, *Ophelia rathkei,* modified from Hartmann-Schroder, 1971, about 5x; (B), Family SCALIBREGMIDAE, Scalibregma *injlatum,* off Anacapa Island, California, 90 m, 5x.

Euzonus Grube 1866, E. *arcticus* Grube 1866; 10 species.

Body with three regions; a head consisting of prostomium and one or two setigers, an anterior swollen region and a posterior region with ventral groove. Branchiae limited to posterior region. Last setiger of anterior region with specialized notopodia.

Kesun Chamberlin 1919c, K. fusus Chamberlin 1919c; 5 species.

Body short and grublike without ventral furrow. Branchiae absent. Last setigers without epipodial pads; anal cylinder furrowed, but without papillae.

Ophelia Savigny 1818, O. *bicornis* Savigny 1818; 32 species.

Body fusiform with inflated anterior end and ventral furrow posteriorly. Branchiae rarely absent, on most setigers from setigers 8-10. No notopodial lobes modified.

Ophelina Orsted 1843b, O. acuminata Orsted 1843b; 44 species.

Body with ventral furrow along the whole length. Branchiae presently, rarely absent, on most setigers. Anal cone long, with paired internally attached ventral cirri and shorter dorsal cirri. Lateral eyes absent.

Polyophthalmus Quatrefages 1850a, *Nais pitta* Dujardin 1839; 3 species.

Body with ventral furrow along the whole length. Branchiae absent; lateral eyes present. Anal tube short with small anal cirri.

Tachyrrypane McIntosh 1879, *T. jeffreysii* McIntosh 1879; only species.

Body with ventral furrow along the whole length. Branchiae and lateral eyes absent. Anal tube cut away ventrally forming an open hood with marginal anal cirri.

Travisia Johnston 1840, *T. forbesii* Johnston 1840, 20 species.

Body short and grublike without a ventral groove. Branchiae present; posterior setigers with epipodial pads. Anal cirri all short and thick. All setae smooth; first setiger appears before the mouth.

Taxonomic Notes

I am presently following Hartmann-Schreder (1971) and others in accepting *Ophelina* as the valid name for worms often referred to under the generic name *Ammotrypane.* Hartmann-Schroder (1971) also recognized a series of subfamilies within this family. There are two distinct groups of genera within the family, but the differences between the groups and the size of the family does not seem to warrant such treatment.

Invalid Genera

Aloysina Claparede 1864, see *Polyophthalmus*
Ammotrypane Rathke 1843, *see Ophelina*
Cassandane Kinberg 1866b, *see Ophelia*
Dindymene Kinberg 1866b, see *Dindymenides*
Ladice Kinberg 1866b, see *Ophelina*
Nais Dujardin 1839, *see Polyophthalmus*
Neomeris Costa 1844, see *Ophelia*
Nitetis Kinberg 1866b, *see Ophelia*
Omaria Grube 1869b, see *Ophelina*
Pygophelia Sars 1869, indeterminable
Terpsichore Kinberg 1866b, see *Ophelina*
Urosiphon Chamberlin 1919c, *see Ophelina*

FAMILY SCALIBREGMIDAE MALMGREN 1867

Body short and stocky or long and slender, often anteriorly inflated. Prostomium anteriorly bifid or with T-shaped frontal horns. Parapodia biramous, with small, triangular or button-shaped parapodia. Setae include capillaries and furcate setae and in some cases acicular spines. Composite setae reported in one species.

The scalibregmids contained up to a t;.w years ago a well-circumscribed group of forms; all charae.erized by having capillary and furcate setae; usually combined with a strongly wrinkled or areolated epidermis. During last ten years several new forms have been added, making a definition of the family more difficult. Some of these forms *(Proscalibregma* and *Scalispinigera)* may in fact not be as closely associated with this family as previously indicated; especially the latter resembles forms usually associated with the order Phyllodocida. No attempts have been made below to move these genera to other families, but it is anticipated that the content of this family may change rather drastically in the near future.

Key to *Genera*

Ia.	Body short, maggotlike and inflated	2
lb.	Body long, sometimes anteriorly inflated, but always with a slender posterior end	4
2a (Ia).	Two or three anterior asetigerous segments	*Neolipobranchius*
2b (la).	One anterior asetigerous segment	3
3a (2b).	Branchiae present	*Polyphysia*
3b (2b).	Branchiae absent	*Lipobranchius*

4a (1b).	Neurosetae composite heterogomph spinigers	*Scalispinigera*
4b (1b).	Neurosetae capillary, furcate or acicular	5
5a (4b).	Furcate setae absent	*Proscalibregma*
5b (4b).	Furcate setae present	6
6a (5b).	Median parapodia with long, digitate postsetal lobes	*Scalibregmides*
6b (5b).	Postsetal lobes short and triangular or absent	7
7a (6b).	Prostomium with long, cirriform frontal antenna	*Scalibregmella*
7b (6b).	Prostomium T-shaped, without appendages	8
8a (7b).	Neither dorsal nor ventral cirri present	9
8b (7b).	At least ventral cirri present	11
9a (8a).	Acicular setae present	*Asclerocheilus*
9b (8a).	Acicular setae absent	10
10a (9b).	Eyes present	*Hyboscolex*
10b (9b).	Eyes absent	*Kebuita*
11a (8b).	Branchiae present	12
11b (8b).	Branchiae absent	14
12a (11a).	Acicular spines absent	*Scalibregma*
12b (11a).	Acicular spines present	13
13a (12b).	Eyes present	*Parasclerocheilus*
13b (12b).	Eyes absent	*Sclerobregma*
14a (11b).	Dorsal cirri absent	*Sclerocheilus*
14b (11b).	Dorsal cirri present	*Pseudoscalibregma*

Generic Definitions

Asclerocheilus Ashworth 1901, *Lipobranchius intermedius* Saint-Joseph 1894; 4 species.

Body elongated, prostomium T-shaped, eyes absent. One asetigerous segment. Branchiae, dorsal and ventral cirri absent. Acicular spines in up to three anterior setigers; otherwise with furcate and capillary setae.

Hyboscolex Schmarda 1861, *H. longiseta* Schmarda 1861; 3 species.

Body elongated, prostomium T-shaped. Branchiae, dorsal and ventral cirri absent. Setae include capillaries and furcate setae. Eyes present.

Kebuita Chamberlin 1919c, *Eumenia glabra* Ehlers 1887; 2 species.

Body elongated, prostomium T-shaped. Branchiae, dorsal and ventral cirri absent. Setae include capillaries and furcate setae. Eyes absent.

Lipobranchius Cunningham and Ramage 1888, *Eumenia jeffreysii* McIntosh 1869; only species.

Body short and maggotlike, prostomium bilobed; one asetigerous segment present. Branchiae absent. Acicular setae absent; furcate and capillary setae present.

Neolipobranchius Hartman and Fauchald 1971, *N. glabrus* Hartman and Fauchald 1971; only species.

Body short and maggotlike; prostomium a conical lobe. Two or three asetigerous anterior segments present. Acicular spines, furcate setae, branchiae and dorsal and ventral cirri absent. Eyes absent.

Parasclerocheilus Fauvel 1928b, *P. branchiatus* Fauvel 1928b; 2 species.

Body elongated; prostomium T-shaped; *eyes* present. One asetigerous segment present. Branchiae present. Dorsal cirri absent, ventral cirri present in posterior setigers. Acicular spines present in up to four anterior setigers; other setae include capillaries and furcate setae.

Polyphysia Quatrefages 1865, *Eumenia crassa* Orsted 1943b; 2 species.

Body short and maggotlike; prostomium bilobed; one asetigerous segment present. Branchiae present. Acicular spines absent; setae include furcate and capillary setae.

Proscalibregma Hartman 1967, *P. linea* Hartman 1967; only species.

Body elongated; prostomium trapezoidal; eyes absent. No asetigerous segment present; all setae capillary; anus within a collar-shaped pygidium.

Pseudoscalibregma Ashworth 1901, *Scalibregma parva* Hansen 1878; 3 species.

Body elongated; prostomium T-shaped. One asetigerous segment present. Dorsal and ventral cirri present in posterior setigers. Branchiae absent. Furcate and capillary setae present; acicular spines present in some forms.

Scalibregma Rathke 1843, S. *inflatum* Rathke 1843, 4 species.

Body elongated; prostomium T-shaped. Eyes absent. One asetigerous segment present. Branchiae present. Capillary and furcate setae present; acicular spines absent.

Scalibregmella Hartman and Fauchald 1971, S. *antennata* Hartman and Fauchald 1971, only species.

Body elongated; prostomium quadrangular with cirriform long antennae and nuchal organs. Dorsal and ventral cirri absent; smooth capillary setae in both rami, furcate setae in notopodia only. A muscular eversible pharynx present.

Scalibregmides Hartmann-Schroder 1965, S. *chilensis* Hartmann-Schroder 1965; only species.

Body elongated, prostomium T-shaped. One asetigerous segment present. Branchiae absent. Parapodia with long, slender postsetal lobes in median and posterior setigers. Acicular setae absent, furcate and capillary setae present.

Scalispinigera Hartman 1967, S. *oculata* Hartman 1967, 2 species.

Body elongated; prostomium rectangular; eyes present. One asetigerous segment present. Notosetae all capillary; neurosetae all composite heterogomph spinigers. Branchiae, furcate setae, dorsal and ventral cirri absent.

Sclerobregma Hartman 1965, S. *branchiata* Hartman 1965; only species.

Body elongated; prostomium T-shaped, one asetigerous segment present. Eyes present. Branchiae present. Acicular spines in first setiger; capillary and furcate setae present.

Sclerocheilus Grube 1863, S. minutus Grube 1863; 5 species.

Body elongated, prostomium T-shaped; one asetigerous segment present. Branchiae absent; ventral cirri present on posterior setigers; dorsal cirri absent. Acicular spines, furcate and capillary setae present.

Taxonomic Note

The genus *Oncoscolex* Schmarda 1861, is considered here a synonym of *Hyboscolex* Schmarda as suggested by Day (1967).

Invalid Genera

Eumenia Orsted 1843b, see *Polyphysia*
Eumeniopsis Bidenkap 1895, see *Polyphysia*
Eusclerocheilus Hartman 1967, see *Pseudoscalibregma*
Gwasitoa Chamberlin 1919c, see *Kebuita*
Oligobranchus Sars 1846, see *Scalibregma*
Oncoscolex Schmarda 1861, *see Hyboscolex*

ORDER PHYLLODOCIDA

Prostomium usually with at least one pair of antennae; palps, if present, frontal or frontolateral. Maximally two pairs of jaws present, but jaws often absent. Eversible pharynx always muscular and cylindrical. Parapodia distinct in most forms, supported by acicula at least in one ramus.

Apart from the amphinomids and eunicids and associated families, this order contains most members of the old order ERRANTIA. It is by far the most speciose of the polychaete orders. For that reason, it was considered appropriate to erect suborders and superfamilies within the order, even if some families are left without specific intermediate designation.

Most members of this order are modified moderately from the assumed ancestral condition (Fauchald 1974a) in that they have biramous parapodia and only one, or perhaps a few segments involved in the anterior tagma. Several families show varying levels of cephalization, indicating that this process is going on independently in these taxa. Similarly, a change in function of the notopodia from locomotory to defensive appears to have taken place independently in several of the groups.

It is possible to divide this order into several orders recognizing as such, taxa characterized as suborders here. However, the Phyllodocida is characterized by the same characters as all the other orders of polychaetes whereas the suborders of Phyllodocida are characterized by a slightly different set of characters, making such a change undesirable.

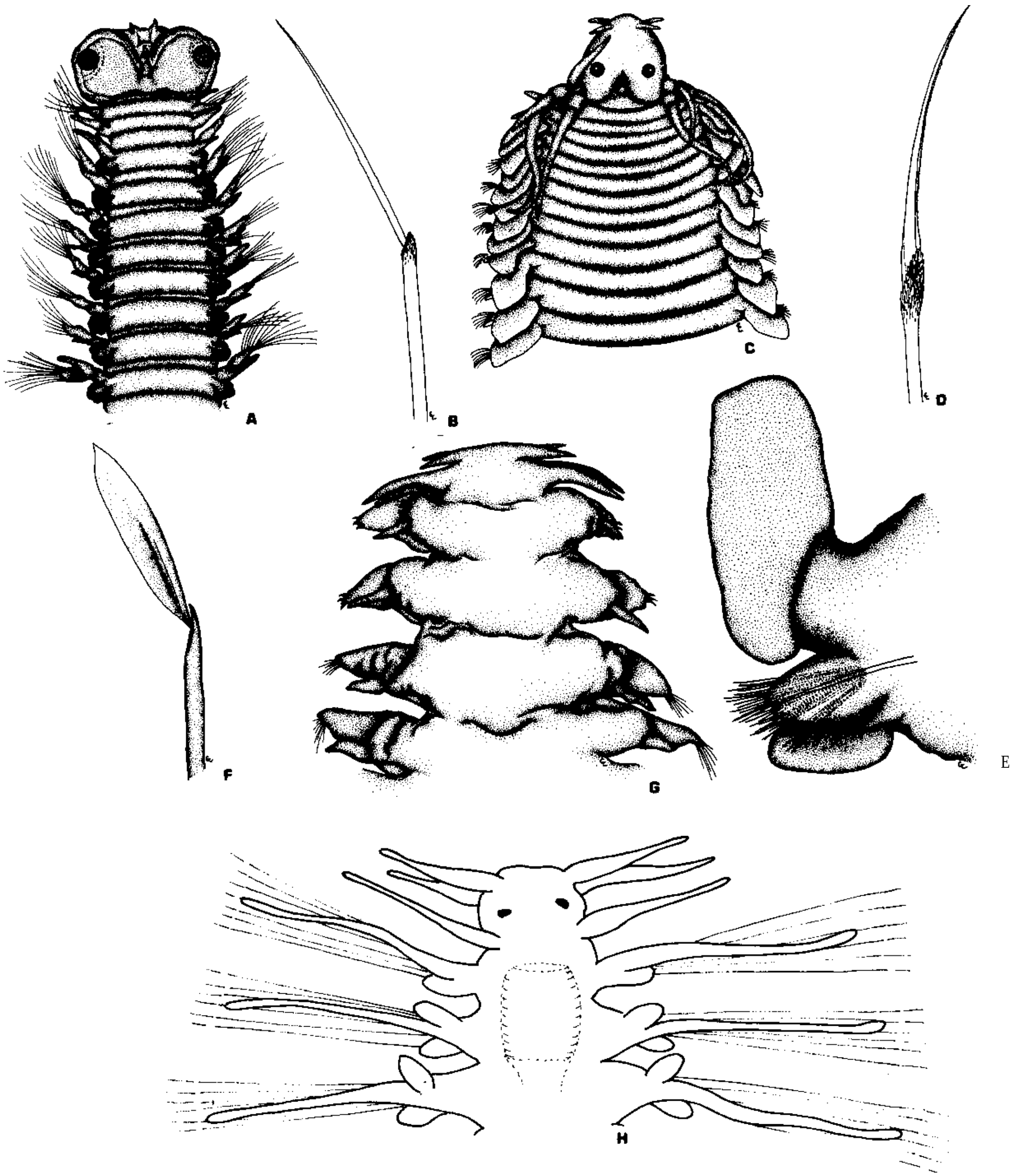
Suborder Phyllodociformia

Phyllodocida with at least two pairs of prostomial appendages and at least two pairs of tentacular cirri. Palps absent; eversible pharynx unarmed; first parapodia lateral.

FAMILY PHYLLODOCIDAE WILLIAMS 1851

Phyllodociformia with long and slender bodies; prostomium with four or five antennae, eyes, when present, small. Two to four pairs of tentacular cirri present. Parapodia uniramous (usually) or biramous with the notopodia represented by a short stalk and large, foliose dorsal cirri held erect over the dorsum, rarely with acicula or setae. All neurosetae composite; notosetae, when present, simple.

The phyllodocids are common shallow-water polychaetes, more commonly associated with hard substrates than with sands and muds. They are frequently highly colored in life, and these colors are diagnostic, but fade very rapidly upon preservation. The phyllodocida produce copious amounts of mucus when



FtcuaE 13. (A), Family ALCIOPIDAE, *Vanadis formosa, off* central California, pelagic, lOx; (B), seta *of* the above, 112x; (C), Family PHYLLODOCIDAE, *Anaitides groenlandica,* Cance Bay, Alaska, 43-70 m, 12x; (D), seta of the above, 100x; (E), median parapodium of the above, 19x; (F), Family LOPADORHYNCHIDAE, *Lopadorhynchas errans,* central Pacific Ocean, deep pelagic, seta from median setiger, 125x; (G), anterior end *of* the above, lOx; (H), Family PONTODORIDAE, *Pontodora pelagica,* modified after Uschakov, 1972, about 50x.

disturbed, and must be relaxed carefully before preservation. If possible, each specimen should be preserved separately. Important recent revisions include Hartmann-Schroder (1971); Uschakov (1972) and Banse (1973).

Important identificatory characters and methods of observations:

The most important characters in the Phyllodocidae includes the number and arrangement of antennae on the prostomium and the numbers of tentacular cirri and their arrangement on the first few segments (Bergstrom 1914). This latter character may be somewhat troublesome, in that varying fusions obscure the primitive arrangement. In principle, the first *segment* has a single, dorsal pair of tentacular cirri; the next segment usually both a dorsal and a ventral pair, and the third segment has dorsally a tentacular citrus and ventrally a normal parapodium. As stated above, discrepancies from this pattern are common, and are of great importance.

The best way to observe these structures is to hold the specimen with a pair of forceps so that one can look in at the animal in three-quarter dorsal view, and then rotate the animal slowly from dorsal to lateral positions. In this manner it is possible to follow the segmental furrows, most easily visible laterally, over towards the dorsal side, and reductions and fusions can be assessed. This whole process is best done under a stereo microscope, and I have found it helpful to use a low light-angle, so that strong shadows fall across the specimen.

In certain groups of species, the ventral tentacular cirri (on the second segment) may be foliose, often assymmetrical and flattened. Distortions in fixation of ordinary tapering ventral tentacular cirri may be misleading. The flattening of the ventral cirri is very striking and once *seen,* this character is never again confused with the distortions one can find in *preserved* material.

The papillation of the eversible pharynx is another important character and if the pharynx is not everted, dissection may be necessary. This is easily done, either ventrally or dorsally on most specimens, but may be difficult to do on smaller animals. However, in most cases it cannot be avoided.

Biramous and uniramous parapodia in the phyllodocida are exceedingly similar, and the difference essentially is defined by convention: the parapodia are considered biramous if the notopodia, i.e. the stems of the dorsal cirri, contain internal acicula, or if setae are present. It may be necessary to make parapodial preparations and observe these under the compound microsocpe to ascertain the presence or absence of the internal acicula. The blood-vessels in the notopodial rudiments may resemble the internal acicula, so the observations have to be rather careful.

Key to Genera

la,	Two antennae present	*Cirrodoce*
lb.	At least four antennae present	2
2a (Ib).	Two pairs of tentacular cirri on one segment	3
2b (1b).	At least three pairs of tentacular cirri on two or three segments	4
3a (2a).	Eversible pharynx diffusely papillated or smooth	*Eteone*
3b (2a).	Eversible pharynx with large lateral papillae in rows	*Mysta*
4a (2b).	Three pairs of tentacular cirri on two or three segments	5
4b (2b).	Four pairs of tentacular cirri on three segments	7
5a (4a).	Third segment with dorsal cirri	*Lugia*
5b (4a).	Third segment without dorsal cirri	6
6a (5b).	Second segment with setae; dorsal and ventral cirri broadly ovate	*Mystides*
6b (5b).	Second segment without setae; dorsal and ventral cirri lanceolate	*Hesionura*
7a (4b).	Parapodia biramous (with notacicula and sometimes with notosetae)	8
7b (4b).	Parapodia uniramous (without notacicula or setae)	11
8a (7a).	Ventral tentacular cirrus (on segment 2) foliaceous	*Hesperophyllum*
8b (7a).	Ventral tentacular cirri digitate or subulate	9
9a (8b).	First tentacular segment a complete ring	*Austrophyllum*
9b (8b).	First tentacular segment dorsally reduced	10
l0a (9b).	First segment with two pairs of cirri and setae	*Nipponophyllum*
IOb (9b).	First segment with a single pair of cirri; setae first present from the second segment ..	*Notophyllum*
Ila (7b).	Five antenna present	12
11b (7b).	Four antennae present	22
12a (I la).	Ventral tentacular cirri (on segment 2) foliose	13

12b (I Ia).	Ventral tentacular cirri digitate or subulate	16
13a (12a).	First segment dorsally reduced	14
13b (12a).	All tentacular segments complete rings	15
14a (13a).	Second tentacular segment with setae	Sige
I4b (13a).	Second tentacular segment without setae	*Pterocirrus*
15a (13b).	Second tentacular segment with setae; proboscis papillated	*Steggoa*
15b (13b).	Second tentacular segment without setae; proboscis smooth	*Notalia*
16a (12b).	Nuchal epaulettes present	17
16b (12b).	Nuchal epaulettes absent	18
17a (16a).	First and second tentacular segment free from each other and complete rings	Vitiazia
17b (16a).	First and second tentacular segment fused; first segment dorsally reduced	*Vitiaziphyllum*
18a (16b).	First and second tentacular segment fused; pharynx smooth	*Eumida*
I8b (16b).	All three tentacular segments free from one another; pharynx papillated	19
19a (18b).	Reniform ventral cirri broadly attached transverse to the long axis of the parapodia	20
19b (18b).	Ventral cirri narrowly attached; usually narrow and elongated	21
20a (19a).	Pharyngeal papillae distally in six rows	*Bergstroemia*
20b (19a).	Pharyngeal papillae dispersed	*Clavadoce*
21a (196).	Pharynx with few papillae; second segment with setae	*Pirakia*
21b (19b).	Pharynx with numerous papillae; second segment without setae	*Eulalia*
22a (I Ib).	All three tentacular segments form complete rings .... *Protomystides* and *Pseudeulalia* (these two cannot be separated on current information).	
22b (l lb).	First two segments fused dorsally	23
23a (22b).	Nuchal papillae absent	24
23b (22b).	Nuchal papillae present	25
24a (23a).	Tentacular cirri flattened	*Nereiphylla*
24b (23a).	Tentacular cirri digitate or subulate	*Generyllis*
25a (23b).	First and second segment fused to each other and to the prostomium	26
256 (23b).	First and second segment fused to each other at least dorsally, but free from the prostomium	27
26a (25a).	Simple enlarged setae in segments 2-4	*Chaetoparia*
26b (25a).	Segments 2-4 with composite spinigers	*Prochaetoparia*
27a (25b).	First segment with a pair of small dorsolateral papillae in addition to the tentacular cirri	*Prophyllodoce*
27b (25b).	First segment with tentacular cirri only	28
28a (27b).	First to third pair of tentacular cirri and the antenna globose, four pairs of cirri digitate	Sphaerodoce
28b (27b).	All pairs of tentacular cirri and the antennae digitate or subulate	29
29a (28b).	Nuchal papilla on a posterior prolongation from the prostomium	*Paranoids*
29b (28b).	Prostomium heart-shaped with the nuchal papilla in a posterior incision	30
30a (29b).	Pharyngeal papillae basally in rows	*Anaitides*
30b (29b).	Pharyngeal papillae basally dispersed	*Phyllodoce*

Taxonomic Notes

The system indicated above, follows in the main the principles first promulgated by Bergstrom (1914) and followed by most later authors. It incorporates the main features of the systems organized by Uschakov (1972) and Banse (1973). Certain taxa here considered genera often are considered as subgenera. This creates a problem of setting the relative taxonomic value of the same character in different parts of the family, to the subgeneric level in some cases and to the generic level in others (cf. Banse 1973). For the sake of consistency, these characters are here all considered to be of generic value.

Generic Definitions

Anaitides Czerniavsky 1882, *Phyllodoce groenlandica* Orsted 1843a; 28 species.

Phyllodocids with four antennae; heart-shaped prostomium with nuchal papilla in the crevice between the lobes. First segment dorsally reduced and partially fused to the second; all tentacular cirri cylindrical. Papillae in rows on the base of the eversible pharynx. Parapodia uniramous.

Austrophyllum Bergstrom 1914, *Eulalia charcoti* Gravier 1911b; 5 species.

Phyllodocids with five antennae; pentagonal or rounded prostomium and without a nuchal papilla. All anterior segments complete and free from one another; all tentacular cirri cylindrical. Parapodia biramous.

Bergstroemia Banse 1973, *Eulalia nigrimaculata* Moore 1909; only species.

Phyllodocids with five antennae, pentagonal prostomium and without a nuchal papilla. All anterior segments free from one another, but the first dorsally reduced; all tentacular cirri cylindrical. Eversible pharynx with papillae in six rows distally. Parapodia uniramous, ventral cirri large and reniform and attached transverse to the long axis of the parapodium.

Chaetoparia Malmgren 1867, C. *nilssoni* Malmgren 1867; only species.

Phyllodocids with four antennae and a nuchal papilla; prostomium fused to the first segment, which, in turn, is fused to the second. All tentacular cirri cylindrical. Specialized, enlarged simple setae in segments 2-4.

Cirrodoce Hartman and Fauchald 1971, C. *cristata* Hartman and Fauchald 1971; only species.

Phyllodocids with two antennae, quadrangular prostomium and without nuchal organs. Three pairs of tentacular cirri on two segments; first segment with normal setae. A pair of auricular lobes attached between prostomium and first parapodia.

Clavadoce Hartman 1936c, C. *splendida* Hartman 1936c; 2 species.

Phyllodocids with five antennae, quadrangular prostomium and no nuchal papilla. First segment dorsally reduced, but free from the other tentacular segments; all four pairs of tentacular cirri club-shaped and slightly flattened. Eversible pharynx with diffuse papillation. Parapodia uniramous, ventral cirri large and reniform and attached transverse to the long axis of the parapodium.

Eteone Savigny 1818, *Nereis flava* Fabricius 1780; 40 species.

Phyllodocids with four antennae; triangular or trapezoidal prostomium and a small nuchal papilla. All tentacular segments complete and free from one another; two pairs of cylindrical tentacular cirri present. Eversible pharynx diffusely papillated or smooth. Parapodia uniramous.

Eulalia Savigny 1818, *Nereis viridis* Linnaeus 1767; 50 species.

Phyllodocids with five antennae; pentagonal prostomium and no distinct nuchal papilla. All three tentacular segments free from one another and from the prostomium; all tentacular cirri cylindrical. Eversible pharynx diffusely papillated; parapodia uniramous.

Eumida Malmgren 1865, *Eulalia sanguinea* Orsted 1843b; 13 species.

Phyllodocids with five antennae; pentagonal prostomium and indistinct nuchal papilla. First tentacular segment dorsally reduced and fused to the second; all tentacular cirri cylindrical. Eversible pharynx smooth or with very small papillae. Parapodia uniramous.

Genetyllis Malmgren 1865, *G. lutea* Malmgren 1865; 11 species.

Phyllodocids with four antennae; short wide prostomium and no nuchal papilla. First and second tentacular segments are fused and reduced dorsally; all tentacular cirri cylindrical. Eversible pharynx diffusely papillated. Parapodia uniramous.

Hesionura Hartmann-Schroder 1858, *H. fragilis* Hartmann-Schroder 1958; 9 species.

Phyllodocids with four antennae, prolonged prostomium and no nuchal papilla. Two tentacular segments, free from each other and from the prostomium; all three pairs of tentacular cirri cylindrical. Third segment without dorsal cirrus.

Hesperophyllum Chamberlin 1919a, H. *tectum* Chamberlin 1919a; only species.

Phyllodocids with five antennae, short and wide prostomium and no nuchal papilla. All tentacular segments complete; ventral cirrus foliaceous; all others cylindrical. Parapodia biramous; ventral cirrus large and transversely attached.

Lugia Quatrefages 1865, *Eteone aurantiaca* Schmarda 1861; 3 species.

Phyllodocids with five antennae of which the median is very small; long prostomium and no nuchal papilla. Two tentacular segments with three pairs of tentacular cirri; all cylindrical. Third segment with dorsal cirrus. Parapodia uniramous.

Mysta Malmgren 1865, M. *barbata* Malmgren 1865; 6 species.

Phyllodocids with four antennae; pentagonal prostomium and no nuchal papilla. Two pairs of tentacular cirri on first segment; all cirri cylindrical. Eversible pharynx with large lateral papillae in rows.

Mystides Theel 1879, *M. borealis* Theel 1879; 8 species.

Phyllodocids with five antennae; long prostomium and no nuchal papillae. Three pairs of cylindrical tentacular cirri on two segments. Third segment without dorsal cirri.

Nereiphylla Blainville 1828, N. *paretti* Blainville 1828; 3 species.

Phyllodocids with four antennae; short wide prostomium and no nuchal papilla. First and second segment fused and dorsally reduced; all tentacular cirri flattened. Eversible pharynx diffusely papillated. Parapodia uniramous; ventral citrus reniform.

Nipponophyllum Imajima and Hartman 1964, *Notophyllum japonicum* Marenzeller 1879; 3 species.

Phyllodocids with five antennae; rounded pentagonal prostomium and no nuchal papilla. Four pairs of cylindrical tentacular cirri on two segments; first segment dorsally reduced, but with setae. Eversible pharynx closely papillated. Parapodia biramous.

Notalia Bergstrom 1914, *Eulalia picta* Kinberg 1866b, only species.

Phyllodocids with five antennae; pentagonal prostomium and no nuchal papilla. All tentacular segments free from one another and from the prostomium; ventral cirri foliose; all others cylindrical. Eversible pharynx smooth; parapodia uniramous, setae present from second segment.

Notophyllum Orsted 1843b, *Phyllodoce foliosa* Sars 1835; 6 species.

Phyllodocids with five antennae; broadly transverse prostomium and nuchal epaulettes present. All tentacular segments free, but first or first and second dorsally reduced; all tentacular cirri cylindrical. Parapodia biramous; no setae in first segment.

Paranaitis Southern 1914, *Anaitis wahlbergi* Malmgren 1865; 15 species.

Phyllodocids with four antennae; rounded prostomium and a nuchal papilla present. First and second segment fused and dorsally reduced; all tentacular cirri cylindrical. Eversible pharynx with rows of lateral papillae. Parapodia uniramous.

Phyllodoce Savigny 1818, *P. laminosa* Savigny 1818; 48 species.

Phyllodocids with four antennae; heart-shaped prostomium with nuchal papilla in the crevice between the lobes. First segment dorsally reduced and fused to the second; all tentacular cirri cylindrical. Eversible pharynx with diffuse papillation. Parapodia uniramous.

Pirakia Bergstrom 1914, *Phyllodoce (Eulalia) punctifera* Gmbe 1860; 4 species.

Phyllodocids with five antennae; pentagonal prostomium and no nuchal papilla. All three anterior segments free from each other; all tentacular cirri cylindrical. Eversible pharynx with few scattered papillae. Parapodia uniramous; setae present from second segment.

Prochaetoparia Bergstrom 1914, *Genetyllis brevis* Ehlers 1901; only species.

Phyllodocids with four antennae; broadly transverse prostomium; a nuchal papilla present. First and second segment fused to each other and to the prostomium; all tentacular cirri cylindrical. Parapodia uniramous, with normal composite setae in all setigers.

Prophyllodoce Hartman 1966b, *P. hawaila* Hartman 1966b; only species.

Phyllodocids with four antennae; heart-shaped prostomium with a nuchal papillae between the lobes. First and second segment fused; first segment dorsally reduced; all tentacular cirri cylindrical. First segment with a pair of small papillae dorsal to the tentacular cirri. Prostomium with diffuse papillae. Parapodia uniramous.

Protomystides Czemiavsky 1882, *Mystides bidentata* Langerhans 1880; only species.

Phyllodocids with four antennae and no nuchal papilla. All tentacular segments complete rings; three or four pairs of cylindrical tentacular cirri on three segments.

Pseudeulalia Eliason 1962, *P. exigua* Eliason 1962; only species.

Phyllodocids with four antennae and no nuchal papilla. All tentacular segments are separate and complete rings; all tentacular cirri are cylindrical. Parapodia uniramous.

Pterocirrus Claparede 1868, *Phyllodoce (Eulalia) macroceros* Grube 1860; 10 species.

Phyllodocids with five antennae; pentagonal prostomium and no nuchal papilla. All tentacular segments free from one another; first segment dorsally reduced; ventral tentacular cirrus foliose, all others cylindrical. Parapodia uniramous; setae first present in second segment.

Sige Malmgren, 1865, *Sige fusigera* Malmgren, 1865; about five species.

Phyllodocids with five antennae, pentagonal prostomium and no nuchal papilla. All tentacular segments free from one another; first segment dorsally reduced; ventral tentacular cirrus foliose, all others cylindrical. Parapodia uniramous, setae first present in the third segment.

Sphaerodoce Bergstrom 1914, *Phillodoce quadraticeps* Grube 1878, only species.

Phyllodocids with four antennae; heart-shaped prostomium with a nuchal papilla between the lobes. First and second segments fused and dorsally reduced; first three pairs of tentacular cirri and the antennae globose; last pair of tentacular cirri (on third segment) digitate.

Steggoa Bergstrom 1914, *Eulalia magalaensis* Kinberg 18666; 13 species.

Phyllodocids with five antennae, pentagonal prostomium and no nuchal papilla. All three tentacular segments complete rings, free from one another. Ventral tentacular cirrus foliose; all others cylindrical. Eversible pharynx diffusely papillated. Parapodia uniramous.

Vitiazia Uschakov 1953, *V. dogieli* Uschakov 1953; only species.

Phyllodocids with four large and one small median antenna; broadly truncate prostomium and paired nuchal epaulettes. All tentacular segments fully developed and separate from one another; tentacular cirri cylindrical. Parapodia uniramous.

Vitiaziphyllum Uschakov 1972, *V. nuchalum* Uschakov 1972; only species.

Phyllodocids with five antennae, broadly transverse prostomium and paired nuchal epaulettes. First and second segment fused; first segment reduced dorsally; all tentacular cirri cylindrical. Parapodia uniramous.

Invalid Genera

Carobia Quatrefages 1865, see *Nereiphylla*
Carobia (Paracarobia) Czemiavsky 1882, see *Anaitides*
Carobia (Protocarobia) Czemiavsky 1882, see *Phyllodoce*
Cirraria Sveshnikov 1959, larval forms
Eracia Quatrefages 1865, see *Eulalia* and *Sige*
Eteonella McIntosh 1874, see *Eteone*
Eteonides Hartmann-Schroder 1960a, *see Hesionura*
Eulalides Czemiavsky 1882, see *Eumida (?)*
Eumenia Quatrefages 1865, error for *Eunomia,* indeterminable
Eumidia Verrill 1873b, error for *Eumida*
Eunornia Risso 1826, indeterminable
Eunotophyllum Czemiavsky 1882, *see Notophyllum*
Globiodoce Bergstrom 1914, lapsus calami for *Sphaerodoce*
Hypereteone Bergstrom 1914, see *Eteone*
Hypocirrus Giard 1913, indeterminable
Hypoeulalia Bergstrom 1914, see *Eulalia*
Kinbergia Quatrefages 1865, indeterminable
Lepadorhynchus Schmarda 1861, *see Anaitides*
Macrophyllum Schmarda 1861, see *Notophyllum*
Mesoeulalia Czemiavsky 1882, indeterminable
Mesomystides Czemiavsky 1882, see *Mystides*
Myriana Savigny 1820, indeterminable
Myriacyclum Gmbe 1880, see *Eulalia*
Nothis Pruvot 1885, hypothetical
Paraeulalia Czemiavsky 1882, *seeNotophyllum*
Phyllodoce Ranzani 1817, see *Polyodontes* (family Polyodontidae)
Porroa Quatrefages 1865, see *Eulalia*
Protocarobia Czemiavsky 1882, see *Phyllodoce*
Pseudonotophyllum Czemiavsky 1882, see *Notophyllum*
Trachelophyllum Levinsen 1883, see *Notophyllum*

FAMILY ALCIOPIDAE EHLERS 1864

Phyllodociforms with slender, transparent long bodies found exclusively pelagically. Prostomium with five antennae and a pair of very large, spherical eyes. Three to five pairs of tentacular cirri. Parapodia uniramous, dorsal and ventral cirri foliaceous; setae simple or composite.

Alciopids are delicate, slender pelagic organisms, mainly known for their very *large,* complex camera-type eyes (Hermans and Eakin 1974). The pelagic polychaetes recently were reviewed by Dales and Peter (1972). The system indicated below, follows these two authors. The key to genera has been rewritten from Uschakov (1972).

Key to Genera

Ia.	Several anterior segments with rudimentary parapodia	2
lb.	Anterior segments with fully developed parapodia	4
2a (Ia).	All setae simple capillaries	*Naiades*
2b (la).	Setae composite spinigers	3
3a (2b).	Parapodia distally with a cirriform appendage	*Vanadis*
3b (2b).	Parapodia distally without a cirriform appendage	*Torrea*
4a (1b).	Parapodia with two distal cirriform appendages, nearly all setae composite spinigers	*Alciopa*
4b (Ib).	Parapodia without cirriform appendages, or with a single such appendage; simple or acicular setae present	5
5a (4b).	All setae simple	6
5b (4b).	At least some composite setae present	7
6a (5a).	Parapodia with a cirriform appendage	*Krohnia*
6b (5a).	Parapodia without ciriiform appendages	*Alciopina*
7a (5b).	Parapodia with citriform appendages	8
7b (5b).	Parapodia without cirriform appendages	*Plotoheimis*
8a (7b).	Acicula barely extending beyond the tip of the parapodia	*Rhynchonerella*
8b (7b).	Aciculum prolonged, extending well beyond the tip of the parapodia	*Watelio*

Generic Definitions

Alciopa Audouin and Milne Edwards 1833b, *A. reynaudi* Audouin and Milne Edwards 1833b; one, possibly three species.

Alciopids with parapodia fully developed on the anterior segments. Each parapodium with two digitiform cirri distally. Three or four pairs of tentacular cirri. Setae include numerous composite spinigers, but a few slender capillaries may be present.

Alciopina Claparede and Panceri 1867, *A.* parasitica Claparede and Panceri 1867; 2 species.

Alciopids with parapodia fully developed on anterior segments. Parapodia without digitiform cirri. Five pairs of tentacular cirri. All setae simple, including numerous slender capillaries and several shorter acicular setae.

Krohnia Quatrefages 1865, *Alciopa lepidota* Krohn 1845; 2 species.

Alciopids with parapodia fully developed on anterior segments. Parapodia with a single digitiform cirrus distally. Five pairs of tentacular cirri. All setae simple, including capillaries and thicker, acicular setae in anterior segments and ventrally in other parapodia.

Naiades delle Chiaje 1830, N. *cantrainii* delle Chiaje 1830; only species.

Alciopids with rudimentary parapodia on first three body segments. Three pairs of tentacular cirri. Parapodia without digitiform cirrus. All setae simple capillaries.

Plotohelmis Chamberlin 1919c, *Rhynchonerella capitata* Greeff 1876; 3 species.

Alciopids with parapodia fully developed on anterior segments. Four or five pairs of tentacular cirri present. Parapodia without digitiform distal cirrus. Setae of two kinds including simple acicular setae and composite setae with slender pointed appendages.

Rhynchonerella Costa 1862, R. *gracilis* Costa 1862; 5 species.

Alciopids with parapodia fully developed on anterior segments. Five pairs of tentacular cirri present. Parapodia with single digitiform distal cirri. Setae of several kinds, including slender composite setae with long appendages, and shorter acicular setae simple or composite.

Torrea Quatrefages 1865, *Alciopa* candida delle Chiaje 1828; 2 species.

Alciopids with rudimentary parapodia on the two first segments. Three pairs of tentacular cirri. Parapodia without digitiform distal cirri. All setae composite spinigers with long narrow appendages.

Vanadis Claparede 1870b, V. formosa Claparede 1870b; 13 species.

Alciopids with several segments with rudimentary parapodia, maximally ten segments. Three or four pairs of tentacular cirri. Each parapodium with a digitiform distal cirrus. All setae composite spinigers with long, slender appendages.

Watelio Stop-Bowitz 1948, *Callizona gravieri* Benham 1929; only species.

Alciopids with parapodia fully developed on all segments. Four pairs of tentacular cirri present. Each parapodium with a digitiform distal cirrus; acicula extending well beyond the tip of the parapodia. Setae include numerous composite spinigers with long, slender appendages and a few simple capillaries.

Invalid Genera

Asterope Claparede 1870b, see *Torrea*
Callizona Greeff 1876, see *Rhynchonerella*
Callizonella Apstein 1891, see *Krohnia*
Cleta Claparede 1870b, lapsus calami for *Vanadis*
Corynocephalus Levinsen 1885, see *Alciopina*
Greela McIntosh 1885, *see Alciopa*
Halodora Greeff 1876, see *Alciopa*
Liocapa Costa 1862, *see Torrea*
Mauita Chamberlin 1919c, see *Vanadis*
Nauphanta Greeff 1876, see *Alciopa*

FAMILY LOPADORHYNCHIDAE CLAPAREDE 1868

Exclusively pelagic, short-bodied phyllodociform polychaetes. Prostomium with four antennae and a pair of small eyes. Two or three pairs of tentacular cirri present. Parapodia Imitations, dorsal and ventral cirri cirriform; all setae composite except for modified anterior setae in some forms.

Members of this family often are considered as truly phyllodocids and are treated as such. It is preferable to segregate them in their own family; inclusion in the phyllodocids would make that family very difficult to define. Dales and Peter (1972) and Uschakov (1972) have given recent reviews; but the latter considered the lopadorhynchids as part of the phyllodocids.

Key to Genera

Ia.	Setae present at the base of the tentacular cirri	2
lb.	Setae absent at the base of the tentacular cirri	3
2a (la).	Two pairs of tentacular cirri on one segment; parapodial cirri long and digitate	*Pelagobia*

2b (I a).	Three pairs of tentacular cirri on two segments; parapodial cirri short	*Maupasia*
3a (Ib).	First two or three parapodia modified and with large, simple setae	*Lopadorhynchus*
3b (lb).	All parapodia similar, all setae composite spinigers	*Pedinosoma*

Generic Definitions

Lopadorhynchus Grube 1855, L. *brevis* Grube 1855, 9 species.

Lopadorhynchids with three pairs of tentacular cirri on two segments; setae absent from tentacular segments. Two or sometimes three anterior setigers enlarged with markedly modified parapodia and simple setae. Normal segments with conical setal lobes and rounded presetal lobes. Normal setae composite with broad, oar-shaped appendages with dentate cutting margin.

Maupasia Viguier 1886, M. *caeca* Viguier 1886, 4 species.

Lopadorhynchids with three pairs of tentacular cirri on two segments; setae present on tentacular segments. All parapodia similar; each conical with short dorsal and ventral cirri. Setae include composite spinigers with slender appendages and sometimes simple setae in the first setiger.

Pedinosoma Reibisch 1895, P. *curtain* Reibisch 1895, only species.

Lopadorhynchids with two pairs of tentacular cirri on the first segment; no setae on tentacular segment. All parapodia similar, with small rounded dorsal cirri and long, slender ventral cirri. All setae composite spinigers.

Pelagobia Greeff 1879, P. *longicirrata* Greeff 1879, 2 species.

Lopadorhynchids with two pairs of tentacular cirri on first segment; setae present on tentacular segment. All parapodia similar with long setal lobes and very long dorsal and ventral cirri. All setae composite with narrowly oar-shaped, marginally dentate appendage.

Invalid Genera

Haliplanella Treadwell 1943, *see Maupasia*
Haliplanes Reibisch 1895, see *Maupasia*
Halyplanes Reibisch 1893, see *Maupasia*
Hydrophanes Claparede 1870b, see *Lopadorhynchus*
Mastigethus Chamberlin 1919c, see *Lopadorhynchus*
Reibischia Bergstrom 1914, *see Lopadorhynchus*

FAMILY PONTODORIDAE BERGSTROM 1914

Phyllodociform, small, slender, pelagic polychaetes. Prostomium with four antennae, eyes small. Two pairs of tentacular cirri present. Slender, elongated uniramous parapodia with long dorsal cirri; setae composite.

The family is known for a single genus, *Pontodora* Greeff 1879 and a single species *P. pelagica* Greeff 1879. It has so far been reported from warm waters in the Atlantic Ocean and from colder waters in the Pacific Ocean (Uschakov 1972).

Invalid Genus

Epitoka Treadwell 1943, see *Pontodora*

Suborder Aphroditiformia

Phyllodocida with up to three antennae (may be absent); one pair of tentacular cirri; long ventral palps. Eversible pharynx, if armed, with two or four jaws. First parapodia directed forwards.

Superfamily Aphroditacea

Dorsal cirri alternating with elytrae in at least part of the body; notosetae cylindrical in cross-section, slender or thick. Prostomium not fused to the first setiger.

FAMILY APHRODITIDAE MALMGREN 1867

Aphroditaceans with dorsoventrally flattened bodies and one antenna present. Eversible pharynx with a pair of jaws or unarmed. Elytrae alternating with dorsal cirri; each marginally smooth or irregularly lobed. Notosetae of several kinds, including in some genera finely attenuated felt setae and in others harpoon-shaped, erect, flattened spines or cylindrical spines. All setae simple.

Key to Genera

Ia.	Dorsum covered with felted notosetae	2
lb.	Dorsum without felt, or with a very few felt setae	4
2a (Ia).	Stout supportive notosetae absent; facial tubercle absent	*Heteraphrodita*
2b (Ia).	Stout supportive notosetae present; facial tubercle present	3
3a (2b).	Neurosetae distally bifid	*Tricertia*
3b (2b).	Neurosetae distally entire, but sometimes subdistally spurred	*Aphrodita*

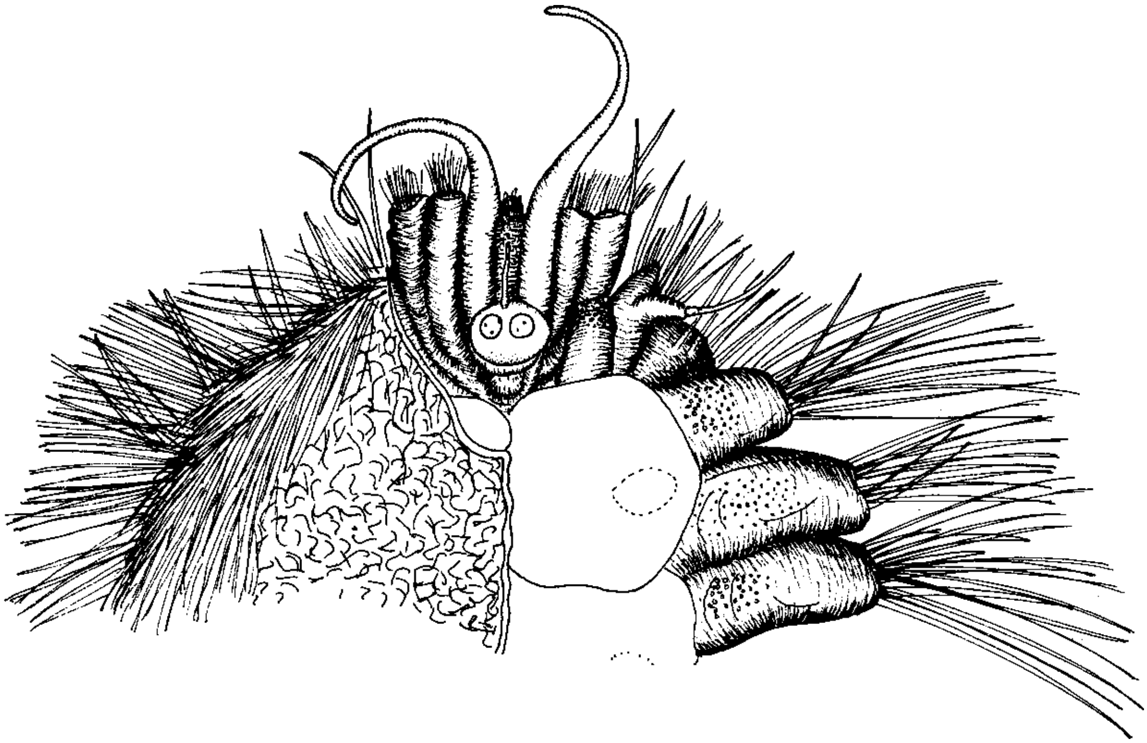


FIGURE 14. Family APHRODITIDAE, *Aphrodita refulgida,* Halfmoon Bay, California, felt removed on right side, 2.5x.

4a (I b).	Harpoon-shaped notosetae present	*Laetmonice*
4b (l b).	Harpoon-shaped notosetae absent	5
5a (4b).	Notosetae sabre-shaped and smooth	*Aphrogenia*
Sb (4b).	Notosetae, if flattened, marginally serrated	6
6a (5b).	Notosetae flattened and marginally serrated	*Pontogenia*
6b (Sb).	Notosetae cylindrical and smooth	*Hermionopsis*

Generic Definitions

Aphrodita Linnaeus 1758, *A. aculeata* Linnaeus 1761; 26 species.

Facial tubercle present; felt present. Harpoon-shaped notosetae absent; other long supportive notosetae present.

Aphrogenia Kinberg 1855, *A. alba* Kinberg 1855; 5 species.

Facial tubercle present; felt absent. Harpoon-shaped notosetae absent; notosetae long, sabrelike or smooth and capillary.

Hermionopsis Seidler 1923, *H. levisetosa* Seidler 1923; only species.

Facial tubercle present; felt absent. Harpoon-shaped notosetae absent; notosetae long, straight and cylindrical without asperities.

Heteraphrodita Pettibone 1966a, *H. altoni* Pettibone 1966a; only species.

Facial tubercle absent; felt present. Stout supportive notosetae absent.

Laetmonice Kinberg 1855, *L. filicornis* Kinberg 1855; 28 species.

Facial tubercle present; felt absent. Harpoon-shaped notosetae present.

Pontogenia Claparede 1868, *Hermione chrysocoma* Baird 1865; only species.

Facial tubercle present; felt poorly developed or absent. Protective notosetae flattened and marginally serrated.

Tricertia Haswell 1883, *T. araeoceras* Haswell 1883; only species.

Facial tubercle present; felt present. Long protective notosetae present, flattened and curved. Neurosetae distally bifid.

Taxonomic Notes

The above treatment follows Pettibone (1966a) closely in that several genera (e.g. *Hermonia* Hartman 1959), generally considered valid, have been excluded from the named genera. The validity of *Tricertia* and *Hermionopsis is* doubtful; however, both have been defined on characters usually used in the group, and therefore, have been included.

Invalid Genera

Barbularia Sveshnikov 1959, *NOMEN NUDUm*
Cyanippa Castelnau 1842, see *Aphrodita*
Halithea Savigny 1818, *see Laetmonice*
Halogenia Horst 1916b, *see Laetmonice*
Hermione Blainville 1828, see *Laetmonice*
Hermonia Hartman 1959, see *Laetmonice*
Laetmatonice ExAucToRE, see *Laetmonice*
Letmonicella Roule 1898, see *Laetmonice*
Milnesia Quatrefages 1865, see *Aphrodita*

FAMILY POLYNOIDAE MALMGREN 1867

Aphroditaceans with dorsoventrally flattened bodies; one, two or, usually, three antennae present. Eversible pharynx with four jaws. Marginally smooth or fringed

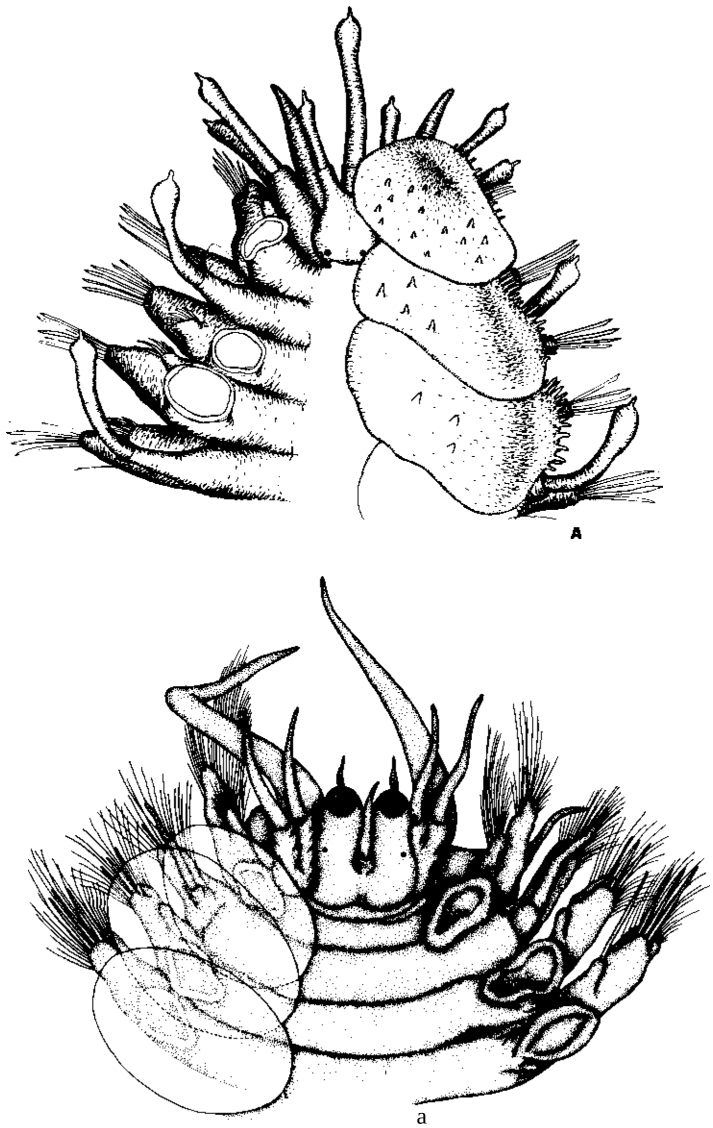


FIGURE 15. (A), Family POLYNOIDAE, *Halosydna brevisetosa,* Sunset Bay, Oregon, intertidal, elytrae removed on left side, lox; (B), Family POLYODONTIDAE, *Polyodontes sp., off* Santa Barbara, California, 84 m, elytrae removed on the right side, 15x.

elytrae alternate with dorsal cirri at least on the anterior end. All setae simple, notosetae variously developed, but never as felt- or harpoon-setae, and usually distinctly lateral in position.

The polynoids are the most commonly occurring scale-worms. They are usually medium-sized, rarely large worms. Forms with smooth elytrae are often commensals with other organisms; those with strongly ornamented elytrae tend to be free-living. Nearly 100 genera of scale-worms presently are recognized and more are being described every year; most genera are well defined and the species are recognizable, but within several of the larger genera *(Harmothoe, Lepidonotus, Halosydna)* problems occur. Several taxa that usually are considered as subgenera under *Harmothoe,* have been considered as separate genera below. They differ from *Harmothoe* SENSU *Srstcru,* in exactly the characters that usually are considered valid generic characters elsewhere in the family and cannot be related to *Harmothoe* by overlap.

If possible, when preserving scale-worms, especially members of HARMOTHOINAE, care must be taken that scales are maintained with the specimens, since these furnish one of the best diagnostic characters for species identifications. The best way of doing this, is either to bulk-relax the whole sample (MS 222, or MgCl,) or, if the specimens are larger, preserve each scale-worm separately.

There are no recent reviews of the whole family; recent authors interested in these worms, include Hartman and Hartmann-Schroder, and especially Marian H. Pettibone of the Smithsonian Institution.

Key to Genera

la.	Lateral antennae inserted posteriorly on the prostomium	*Cervilia*
lb.	Lateral antennae inserted anteriorly	2
2a (Ib).	At least two antennae well developed	3
2b (lb).	Median antenna well developed; lateral antennae reduced or absent	MACELLICEPHALINAE 5
3a (2a).	Median antenna present	4
3b (2a).	Median antenna absent	IPHIONINAE 7
4a (3a).	Lateral antennae attached sub-distally or ventrally on the prostomium (ceratophores below the anterior points of the prostomium which maybe produced into cephalic peaks)	HARMOTHOINAE 8
4b (3a).	Lateral antennae attached distally on the prostomium (ceratophores continuations of the prostomium)	LEPIDONOTINAE 51
5a (2b).	Fifteen pairs of elytrae	*Macelloides*
5b (2b).	Maximally 13 pairs of elytrae	6
6a (5b).	Prostomium consisting of two inflated lobes, 16-17 segments present	*Macellicephaloides*
6b (5b).	Prostomium a single unified lobe, with paired rounded anterior projections, 17-19 segments	Macellicephala
7a (3b).	Notosetae coarser than neurosetae	*Bylgides*
7b (3b).	Notosetae much thinner than neurosetae	*Iphione*
8a (4a).	First setigers with simple, strongly curved hooks	9
8b (4a).	Anterior hooks absent	10
9a (8a).	Two segments with anterior hooks	*Australaugeneria*
9b (8a).	Three segments with anterior hooks	*Uncopolynoe*
l0a (8b).	Fourteen or fewer pairs of elytrae	11
lob (8b).	Fifteen or more pairs of elytrae	15
Ila(l0a).	Notosetae absent	*Polynoella*
llb (l0a).	Notosetae present	12
12a (I Ib).	Eight or nine pairs of elytrae present, parapodia prolonged	*Herdmanella*
12b (I Ib).	Twelve to 14 pairs of elytrae present, parapodia short	13
13a (12b).	Some notocirri with spherical subdistal inflations	*Andresia*
13b (12b).	Notocirri maximally gently inflated	14
14a (13b).	*Eyes* very large and confluent	*Robertianella*
l4b (13b).	Eyes small	*Antinoana*
15a (lob).	Fifteen pairs of elytrae	16
15b (l0b).	Sixteen or more pairs of elytrae	42
16a (15a).	More than 50 segments present, only anterior part of body covered by elytrae	17
16b (15a).	Less than 45 segments present; elytrae cover the whole body, or at most, the last 10-15 segments uncovered	23

17a (16a).	Neurosetae with semilunar pockets	*Adyte*
17b (16a).	Neurosetae spinose or smooth, without pockets	1 8
18a (17b).	Notosetae absent	*Heteropolynoe*
18b (17b).	Notosetae present	19
19a (18b).	All notosetae thicker than or at least as thick as the neurosetae	20
l 9b (18b).	At least some capillary notosetae present	21
20a (19a).	Notosetae held erect over body	*Hermadion*
lob (19a).	Notosetae short and lateral in position	*Hemilepidia*
21a (19b).	Eyes reduced or absent, prostomium quadrangular	*Nemidia*
21b (19b).	Eyes distinct, prostomium rounded	22
22a (21b).	Notosetae mainly capillary, neurosetae unidentate	*Enipo*
22b (21b).	Notosetae mainly thick and blunt-tipped, neurosetae bidentate, except in far posterior setigers	*Polynoe*
23a (16b).	Notosetae distinctly slenderer than the neurosetae	24
23b (16b).	At least some notosetae as thick as or thicker than the neurosetae	27
24a (23a).	Ventral surface with paired foliose appendages	*Phyllohartmania*
24b (23a).	Ventral surface smooth	25
25a (24b).	Most neurosetae bidentate	*Arcteobia*
25b (24b).	All neurosetae unidentate	26
26a (25b).	Neurosetae slender, straight spines	*Hartmania*
26b (25b).	Neurosetae distally falcate	*Gattyana*
27a (23b).	Ventral cirri foliose, ventrum papillose	*Phyllosheila*
27b (23b).	Ventral cirri digitate, ventrum usually smooth	28
28a (27b).	Neurosetae in part distally trifid	*Gorekia*
28b (27b).	Neurosetae distally uni- or bidentate	29
29a (28b).	Neurosetae with semilunar pockets	*Paradyte*
29b (28b).	Neurosetae spinose or nearly smooth	30
30a (29b).	Notosetae with distal tufts of long hairs	*Barrukia*
30b (29b).	Notosetae without distal tufts of hairs	31
31a (30b).	Neurosetae distally with capillary tips	32
31b (30b).	Neurosetae distally falcate, uni- or bi-dentate	33
32a (31 a).	Some neurosetae with fine, filamentous tips	*Antinoella*
32b (31 a).	All neurosetae with slender tips, but without filaments	*Antinoe*
33a (3lb).	All neurosetae unidentate	34
33b (31b).	At least some neurosetae bidentate	37
34a (33a).	Dorsal cirri alternating between short and long; short dorsal cirri basally inflated	*Kermadecella*
34b (33a).	All dorsal cirri similar in length, none basally inflated	35
35a (34b).	Notosetae of two kinds, thick and slender	*Hesperonoe*
35b (34b).	All notosetae thick and similar in shape	36
36a (35b).	Eyes absent	*Intoshella*
36b (35b).	Eyes present	*Eunoe*
37a (33b).	Neurosetae distally pencillate	*Australaenilla*
37b (33b).	Neurosetae never pencillate	38
38a (37b).	Both noto- and neurosetae slender; notosetae with capillary tips	*Tenonia*
38b (37b).	Notosetae and most neurosetae coarse	39
39a (38b).	Neurosetae include furcate spines with subequal tips and slender, dentate capillaries	*Melaenis*
39b (38b).	Neuropodial capillary setae absent	40
40a (39b).	Some neurosetae deeply cleft with both teeth long and narrow	*Eucranta*
4ob (39b).	Neurosetae with main fangs very much larger than secondary teeth	41
41 a (4ob).	Posterior eight to ten segments not covered by elytrae	*Lagisca*
41b (40b).	Whole body covered by elytrae	*Harmothoe*
42a (I5b).	Sixteen pairs of elytrae	43
42b (15b).	Eighteen or more pairs of elytrae	45
43a (42a).	Neurosetae with semilunar pockets	*Subadyte*
43b (42a).	Neurosetae slender and serrate, semilunar pockets absent	44
44a (43b).	Notosetae distinctly serrated	*Leucia*
44b (43b).	Notosetae with a few spines	*Scalisetosus*

45a (42b).	Eighteen pairs of elytrae	*Acanthicolepis*
45b (42b).	Nineteen or more pairs of elytrae	46
46a (45b).	Notosetae distinctly slenderer than neurosetae	47
46b (45b).	Notosetae as thick as, or thicker than neurosetae	49
47a (46a).	Neurosetae with semilunar pockets	*Pottsiscalisetosus*
47b (46a).	Semilunar pockets absent	48
48a (47b).	Neuropodia with subacicular digitiform lobes	*Parahololepidella*
48b (47b).	Neuropodia with large, supra-acicular presetal lobes	*Grubeopolynoe*
49a (46b).	All neurosetae unidentate	*Polyeunoa*
49b (46b).	At least some neurosetae bidentate	50
50a (49b).	Neurosetae with long bare tips beyond the serrated regions	*Hololepidella*
50b (49b).	Neurosetae with very short bare tips beyond the serrated region	*Neohololepidella*
51a (4b).	Palps represented by two small tubercles	*Bouchiria*
51b (4b).	Palps well developed	52
52a (51b).	Ventral cirrus heavily fimbriated, ventrum with transverse rows of three papillae on each segment	*Lepidofimbria*
52b (51b).	Ventral cirrus and ventrum smooth	53
53a (52b).	Neurosetae distally bifid with several small accessory teeth in the crotch	*Lepidogyra*
53b (52b).	Neurosetae unidentate or bifid, rarely trifid; if bifid, then without accessory teeth	54
54a (53b).	Prostomium anteriorly produced into two large lobes with small lateral antennae attached distally	*Allmaniella*
54b (53b).	Prostomium anteriorly tapering into the ceratophores	55
55a (54b).	Renal papillae greatly prolonged in some median setigers	*Bathymoorea*
55b (54b).	Renal papillae of similar length in all setigers	56
56a (55b).	Notopodia completely reduced, neuropodium prolonged with the ventral cirrus attached near the middle	*Frennia*
56b (55b).	Notopodia usually present; if absent, then neuropodia short with ventral cirri basal	57
57a (56b).	Twelve or 13 pairs of elytrae	58
57b (56b).	More than 13 pairs of elytrae	66
58a (57a).	With branchial filaments on the elytrophores	59
58b (57a).	Branchial filaments absent	61
59a (58a).	With pseudelytrae on non-elytrophoral, alternating segments posteriorly	*Euphionella*
59b (58a).	Pseudelytrae absent	60
60a (59b).	Neurosetae coarsely spinose	*Chaetacanthus*
60b (59b).	Neurosetae finely plumose	*Euphione*
61a (58b).	Notopodia absent	Drieschia
61b (58b).	Notopodia present	62
62a (61 b).	With one very large bidentate hook in the middle of each neuropodial fascicle	*Sheila*
62b (61b).	All neurosetae similar in thickness, none bidentate hooks	63
63a (62b).	Neurosetae distally trifurcate	*Hermenia*
63b (62b).	Neurosetae distally entire	64
64a (63b).	Notosetae of two kinds, lancet-shaped and tapering and serrated	*Thormora*
64b (63b).	Notosetae all of one kind, usually slender and serrated	65
65a (64b).	Pseudelytrae on non-elytrophoral segments	*Dilepidonotus*
65b (64b).	Pseudelytrae absent	*Lepidonotus*
66a (57b).	Fourteen pairs of elytrae	67
66b (57b).	Fifteen or more pairs of elytrae	68
67a (66a).	Neurosetae bidentate	*Lucopia*
67b (66a).	Neurosetae entire	*Podarmus*
68a (66b).	Only anterior half of body covered by elytrae	*Pseudopolynoe*
68b (66b).	Elytrae on most parts of the body	69
69a (68b).	Fifteen pairs of elytrae	70
69b (68b).	Sixteen or more pairs of elytrae	74
70a (69a).	Notosetae thin	*Parahalosydna*
70b (69a).	Notosetae as thick as, or thicker than the neurosetae	71
71a (70b).	All neurosetae unidentate	*Eulagisca*
71b (70b).	At least some neurosetae bidentate	72

72a (7lb).	Dorsal cirri of two kinds, short and expanded or long and gently inflated	*Malmgreniella*
72b (71 b).	All dorsal cirri long and slightly inflated subdistally	73
73a (72b).	Notosetae nearly smooth	*Malmgrenia*
73b (72b).	Notosetae densely serrated	*Paralepidonotus*
74a (69b).	With 16 pairs of elytrae	*Arctonoella*
74b (69b).	At least 17 pairs of elytrae	75
75a (746).	Seventeen to 20 pairs of elytrae	76
75b (74b).	At least 21 pairs of elytrae	80
76a (75a).	Notosetae absent	77
76b (75a).	Notosetae present	79
77a (76a).	Dorsum with a median pustule on each segment	*Weberia*
77b (76a).	Dorsal pustules absent	78
78a (77b).	Neurosetae with capillary tips	*Drieschella*
78b (77b).	Neurosetae with falcate tips	*Alentiana*
79a (76b).	Notosetae numerous, lateral antennae terminal	*Halosydna*
79b (76b).	Only few notosetae present; lateral antennae subterminal	*Alentia*
80a (75b).	Notosetae present	81
80b (75b).	Notosetae absent	90
81a (80a).	Parapodia distally with series of long papillae	*Halosydnopsis*
81b (80a).	Parapodia distally without papillae	82
82a (81b).	Neurosetae with semilunar pockets	*Hololepida*
82b (81b).	Neurosetae spinose or smooth	83
83a (82b).	Notosetae thinner than most neurosetae	84
83b (82b).	Notosetae as thick as, or thicker than the neurosetae	86
84a (83a).	Superior neurosetae slender and spinose, inferior ones acicular	*Pseudohalosynda*
84b (83a).	All neurosetae stout	85
85a (84b).	At least some neurosetae bidentate	*Halosydnella*
85b (84b).	All neurosetae unidentate	*Acholoe*
86a (83b).	All neurosetae unidentate	87
86b (83b).	At least some neurosetae bidentate	88
87a (86a).	Ventrum with large segmentally arranged lamellae	*Gastrolepidia*
87b (86a).	Ventrum smooth	*Lepidastheniella*
88a (86b).	Lateral antennae subterminal, neurosetae few	*Arctonoe*
88b (866).	Lateral antennae terminal, neurosetae numerous	89
89a (88b).	Twenty-one or 22 pairs of elytrae; neurosetae with long, curved tips	*Hyperhalosydna*
89b (88b).	Numerous pairs of elytrae; neurosetae with short, straight or curved tips	*Lepidasthenia*
90a (8ob).	Ventral cirri with two-three knobs	*Perolepis*
90b (8ob).	Ventral cirri smooth	91
9la (90b).	Antennal scales present	92
91b (90b).	Antennal scales absent	93
92a (91a).	Setae flattened, marginally serrated with long, slender tips; up to 30 pairs of elytrae	*Admetella*
92b (91 a).	Setae flattened, finely dentate and very abruptly tapering; 23 pairs of elytrae	*Bathyadmetella*
93a (91b).	Neurosetae stout, falcate; pre- and postsetal neuropodial lobes of similar length ...	*Benhamipolynoe*
93b (91 b).	Neurosetae slender; presetal lobes distinctly longer than the postsetal ones in the neuropodia	*Telolepidasthenia*

Generic Definitions

Acanthicolepis McIntosh 1900, *Polynoe asperrima* Sars 1861; 3 species.

HARMOTHOINAE. Eighteen pairs of elytrae, approx. 40 segments. Notosetae thicker than neurosetae, with whorls of teeth. Neurosetae bidentate with slender secondary tooth; serrated. Dorsal cirri and antennae papillated.

Acholoe Claparede 1870b, *Nereis squamosa* delle Chiaje 1828; only species.

LEPIDONOTINAE. Numerous segments and elytrae. Cirriferous segments with T-shaped papillae. Notosetae thinner than neurosetae, with transverse rows of spines. Neurosetae few, unidentate with serrated subdistal areas.

Admetella McIntosh 1885, *A. longipedata* McIntosh 1885; 2 species.

LEPIDONOTINAE. Up to 30 pairs of elytrae; 75 segments. Antennal scales at base of lateral antennae. Notosetae absent; neurosetae long, flattened, finely marginally serrated with smooth tips. Neuropodia prolonged.

Adyte Saint-Joseph 1899, *Hermadion* assimile McIntosh 1876; only species.
HARMOTHOINAE. Fifteen pairs of elytrae; long posterior region without scales. Notosetae at least as thick as neurosetae, smooth with few spines. Neurosetae with semilunar pockets and faintly bifid tips; serrations faint. Presetal neuropodial lobes longer than postsetal ones.

Alentia Malmgren 1865, *Polynoe gelatinosa* Sars 1835; 3 species.
LEPIDONOTINAE. Eighteen pairs of elytrae; 43 segments. Lateral antennae subterminal. Notopodia reduced with a few, nearly capillary setae. Neurosetae thin, slender, usually bifid.

Alentiana Hartman 1942, *Polynoe* aurantiaca Verrill 1885; only species.
LEPIDONOTINAE. Seventeen to 20 pairs of elytrae; 36-39 segments. Notosetae absent. Neurosetae unidentate, serrated or smooth.

Allmaniella McIntosh 1885, *A. setubalensis* McIntosh 1885; 5 species.
LEPIDONOTINAE. More than 15, but less than 30 pairs of elytrae. Prostomium anteriorly produced into two large lobes with the small lateral antennae attached distally. Notosetae thick and finely serrated; neurosetae of two kinds, upper slender and smooth, lower thicker, bidentate and vaguely serrated.

Andresia Prenant 1924, *A. ampullifera* Prenant 1924; only species.
HARMOTHOINAE. Thirteen to 14 pairs of elytrae; 32-33 segments. Notosetae thicker than neurosetae, coarsely serrated. Neurosetae unidentate, serrated. Some notocirri with large, spherical ampullae subdistally.

Antinoana Hartman and Fauchald 1971, *A. fusca* Hartman and Fauchald 1971; only species.
HARMOTHOINAE. Twelve to 13 pairs of elytrae; 26-27 segments. Notosetae thicker than neurosetae, vaguely serrated. Neurosetae slender and bifid.

Antinoe Kinberg 1855, *A. microps* Kinberg 1855; 8 species.
HARMOTHOINAE. Fifteen pairs of elytrae. Notosetae thicker than neurosetae, blunt, transversely serrated. Neurosetae with slender tips, but not fdamentously prolonged.

Antinoella Augener 1928b, Antinoe *sarsi* Kinberg in Malmgren 1865; 7 species.
HARMOTHOINAE. Fifteen pairs of elytrae; approximately 40 segments. Notosetae thicker than neurosetae with rows of spines. Neurosetae distally with slender, filamentous tips, often pilose.

Arcteobia Annenkova 1937, *Eupolynoe* anticostiensis McIntosh 1874; 2 species.
HARMOTHOINAE. Fifteen pairs of elytrae; 36 segments. Notosetae slenderer than neurosetae, with blunt or capillary tips. Upper neurosetae sharp-tipped; others bidentate.

Arctonoe Chamberlin 1920, *Polynoe vittata* Grube 1855; 4 species.
LEPIDONOTINAE. Forty or more pairs of elytrae, numerous segments. Lateral antennae subterminal. Notosetae few, thick, recurved uni- or bidentate with coarse serrations. Neurosetae few, thick and falcate, uni- or bidentate.

Arctonoella Buzhinskaya 1967, *Harmothoe* sinagawaensis Izuka 1912; only species.
LEPIDONOTINAE. Sixteen pairs of elytrae, 41 segments. Lateral antennae subterminal. Notosetae thinner than neurosetae, distally capillary. Neurosetae unidentate.

Australaugeneria Pettibone 1969d, *Polynoe rutilans* Grube 1878; 2 species.
HARMOTHOINAE. Fifteen pairs of elytrae, approximately 40 segments. Notosetae thicker than neurosetae, smooth or faintly serrated. Neurosetae varied: as large golden hooks in the second and third segment; otherwise uni- or bidentate, often spurred and subdistally inflated.

Austrolaenilla Bergstrom 1916, *A. antarctica* Bergstrom 1916; 6 species.
HARMOTHOINAE. Fifteen 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 pencillate.

Barrukia Bergstrom 1916, *Gatryana cristata* Willey 1902; 2 species.
HARMOTHOINAE. Fifteen pairs of elytrae, 35-36 segments. Notosetae distally with tuft of long, fine hairs, otherwise blunt and serrated. Neurosetae unidentate, with a few coarse teeth on the cutting edge.

Bathyadmetella Pettibone 1967, *B. commando* Pettibone 1967; only species.
LEPIDONOTINAE. Twenty-three pairs of elytrae, 58 segments. Notosetae absent, notopodia reduced. Neuropodia prolonged, with slender, flattened setae, finely dentate and distally very abruptly tapering.

Bathymoorea Pettibone 1967, *Polynoe ?renotuberculata* Moore 1910; only species.
LEPIDONOTINAE. Numbers of elytrae not known, 35 segments. Notosetae short and slender, neurosetae

thicker, long, bidentate and marginally serrated. Renal papillae greatly prolonged in some median setigers.

Benhamipolynoe Pettibone 1970d, *Lepidasthenia antipathicola* Benham 1927; only species.

LEPIDONOTINAE. More than 17 pairs of elytrae; numerous segments. Notosetae absent. Neurosetae thick, falcate with weakly marked serrations.

Bouchiria Wesenberg-Lund 1949, *B. vesiculosa* Wesenberg-Lund 1949; only species.

LEPIDONOTINAE. Numbers of pairs of elytrae and segments not known. Notosetae absent; neurosetae include slender capillary setae with long slender spines and thicker more acicular, but otherwise similar setae ventrally. Palps reduced to two small tubercles. Numerous stalked papillae present on the parapodia.

Bylgides Chamberlin 1919c, *Bylgia elegans* Theel 1879; only species.

IPHIONINAE. Two antennae; facial tubercle absent. Notosetae coarser than neurosetae.

Cervilia Frickinger 1916, *C. japonica* Frickinger 1916; only species.

Sub-family unknown. Three antennae, lateral antennae attached posteriorly on the prostomium. Fifteen pairs of elytrae. Notosetae slender and capillary; neurosetae unidentate and thicker.

Chaetacanthus Seidler 1924, *Iphione magnifica* Grube 1875; 3 species.

LEPIDONOTINAE. Twelve pairs of elytrae, 26 segments. Elytrophores with branchiae. Notosetae fine and capillary; neurosetae unidentate and spinose.

Dilepidonotus Hartman 1967, *D. falklandicus* Hartman 1967; only species.

LEPIDONOTINAE. Twelve pairs of elytrae, 26 setigers. Notosetae slender and silky capillaries; neurosetae thicker, smooth and pointed. Dorsum of cirral segments crested; pseudelytrae present.

Drieschia Michaelsen 1892, *D. pelagica* Michaelsen 1892; 6 species.

LEPIDONOTINAE. Twelve to 13 pairs of elytrae; 26-27 segments. Notopodia absent; upper neurosetae capillary, lower thicker and slightly serrated.

Drieschella Augener and Pettibone *in* Pettibone 19704, *D. maculata* Augener and Pettibone *in* Pettibone 19704; only species.

LEPIDONOTINAE. Twenty pairs of small elytrae; 47 segments. Notosetae absent; neurosetae slender and tapering to capillary tips. Presetal lobes longer than postsetal ones; acicular lobes not projecting.

Enipo Malmgren 1865, *E. kinbergi* Malmgren 1865; 4 species.

HARMOTHOINAE. Fifteen pairs of elytrae; posterior half of body not covered by elytrae. Notosetae mainly capillaries, a few thicker blunt setae present. Neurosetae thicker than notosetae, mainly unidentate, but a few bidentates also present. Prostomium round, eyes conspicuous.

Eucranta Malmgren 1865, *E. villosa* Malmgren 1865; 4 species.

HARMOTHOINAE. Fifteen pairs of elytrae; 36-40 segments. Notosetae thicker than neurosetae with rows of teeth. Some neurosetae distally split with both parts about equally long and thick; other neurosetae slender and unidentate.

Eulagisca McIntosh 1885, *E. corrientis* McIntosh 1885; 3 species.

LEPIDONOTINAE. Fifteen pairs of elytrae; 37 segments. Lateral antennae subterminal; facial tubercle present. Notosetae slender, numerous, pectinate, thicker than the neurosetae. Neurosetae slender and tapering to capillary tips.

Eunoe Malmgren 1865, *E. oerstedi* Malmgren 1865; 40 species.

HARMOTHOINAE. Fifteen pairs of elytrae, approximately 40 segments. Notosetae thicker than neurosetae with rows of spines; neurosetae all unidentate, with more or less well-marked spinose region.

Euphione McIntosh 1885, *E. elisabethae* McIntosh 1885; 6 species.

LEPIDONOTINAE. Twelve pairs of elytrae, short-bodied. Elytrophores with branchiae. Notosetae capillary; neurosetae thicker, unidentate and laterally covered with fine hairs.

Euphionella Monro 1936, *Physalidonotus lobulatus* Seidler 1922; 3 species.

LEPIDONOTINAE. Twelve pairs of elytrae; 25 segments. Elytrophores with branchiae. Notosetae capillary; neurosetae thicker, unidentate and smooth. Pseudelytrae present.

Frennia Viguier 1912, *F. dubia* Viguier 1912; 2 species.

LEPIDONOTINAE. Numbers of pairs of elytrae and segments not known. Notopodia completely reduced; neuropodia strongly prolonged with ventral cirri attached near the middle. All setae slender, smooth capillaries.

Gastrolepidia Schmarda 1861, *G. clavigera* Schmarda 1861; only species.

LEPIDONOTINAE. More than 21 pairs of elytrae. Notosetae and neurosetae similar in thickness; notosetae blunt and serrated; neurosetae unidentate and serrated. Antennae and dorsal cirri strongly inflated subdistally, with slender tips. Ventrum with large lamellae.

Gattyana McIntosh 1900, *Aphrodita cirrhosa* Pallas 1766; 14 species.

HARMOTHOINAE. Fifteen pairs of elytrae; approximately 40 segments. Most notosetae capillary with fine dentition. Neurosetae thicker than notosetae, distally unidentate, serrated.

Gorekia Bergstrom 1916, *Malmgrenia crassicirris* Willey 1902; only species.

HARMOTHOINAE. Fifteen pairs of elytrae; 38-40 segments. Notosetae shorter and thicker than the neurosetae, finely serrated. Neurosetae in part distally trifid.

Grubeopolynoe Pettibone 1969b, *Polynoe tuts* Grube 1855; only species.

HARMOTHOINAE. Fifty or more pairs of elytrae; numerous segments. Notosetae slenderer than neurosetae; of two kinds, short and blunt and slender and tapering. Neurosetae all of one kind, vaguely bidentate or unidentate, serrated. Neuropodia with long supra-acicular postsetal lobe.

Halosydna Kinberg 1855, *H. patagonica* Kinberg 1855; 14 species.

LEPiDONOTINAE. Eighteen pairs of elytrae; 37 segments. Notosetae much finer than neurosetae, pointed and serrated. Neurosetae thick, uni- or bidentate, with coarse serrations.

Halosydnella Hartman 1938, *Halosydna australis* Kinberg 1855; 9 species.

LEPH)ONOTINAE. Twenty-one pairs of elytrae; 45 segments. Notosetae finer than neurosetae; serrated. Neurosetae distally uni- or bidentate, subdistally serrated.

Halosydnopsis Uschakov and Wit 1959, *Halosydna pilosa* Horst 1917; only species.

LEPLDONOTINAE. Twenty-seven pairs of elytrae, body covered. Notosetae finer than neurosetae, finely serrated; neurosetae nearly smooth and unidentate. Distal end of parapodia with series of large papillae.

Harmothoe Kinberg 1855, *H. spinosa* Kinberg 1855; 120 species.

HARMOTHOINAE. Fifteen pairs of elytrae; approximately 40 segments. Notosetae thicker than neurosetae; with rows of spines. Neurosetae at least in part bidentate, but usually also some unidentate in inferior positions.

Hartmania Pettibone 1955, *H. moorei* Pettibone 1955; only species.

HARMOTHOINAE. Fifteen pairs of elytrae; 40 segments. Notosetae finer than neurosetae, tapering to sharp tips. Neurosetae tapering to sharp, pointed tips, not falcate.

Hemilepidia Schmarda 1861, *H. tuberculata* Schmarda 1861; 4 species.

HARMOTHOINAE. Fifteen pairs of elytrae; posterior part of body not covered by elytrae. Notosetae as thick as neurosetae, vaguely serrated. Neurosetae distally bi- or unidentate.

Herdmanella Darboux 1899, *Polynoe ascidioides* McIntosh 1885; 3 species.

HARMOTHOINAE. Eight to 9 pairs of elytrae; 15-17 segments. Notosetae spinose, neurosetae less so, both conspicuously long and unidentate, parapodia prolonged.

Hermadion Kinberg 1855, *H. magalhaensi* Kinberg 1855; 5 species.

HARMOTHOINAE. Fifteen pairs of elytrae; more than 50 segments. Notosetae thicker than neurosetae and strongly serrated. Neurosetae uni- or bidentate, serrated. Notosetae held erect over body.

Hermenia Grube 1856, *H. verruculosa* Grube 1856; 2 species.

LEPIDONOTINAE. Twelve pairs of elytrae, small, not overlapping. Notosetae few, slender and serrated; neurosetae distally trifurcate.

Hesperonoe Chamberlin 1919, *Harmothoe complanata* Johnson 1901; 4 species.

HARMOTHOINAE. Fifteen pairs of elytrae; 36-38 segments. Notosetae in part at least as thick as neurosetae; of two kinds; thick serrated and blunt and slender, serrated and pointed. Neurosetae all unidentate, and serrated, usually slender superior and thick in inferior positions.

Heteropolynoe Bidenkap 1907, *H. nordgaardi* Bidenkap 1907; only species.

HARMOTHOINAE. Numbers of pairs of elytrae not known, 58 segments. Notosetae absent, all neurosetae unidentate and marginally serrated, slender in superior and coarse in inferior positions.

Hololepida Moore 1905, *H. magna* Moore 1905; 3 species.

LEPIDONOTINAE. Numerous pairs of elytrae, numerous segments. Notosetae few in numbers, capillary; neurosetae thicker, of two kinds, tanceotate and bidentate with transverse rows of pockets. Nuchal flap present.

Hololepidella Willey 1905, *H. commensalis* Willey 1905; 5 species.

HARMOTHOINAE. Twenty-six or more pairs of elytrae; 55 or more segments. Notosetae at least as thick as neurosetae, nearly smooth with blunt tips. Neurosetae distally bidentate or entire.

Hyperhalosydna Augener 1922, *Lepidonotus striatus* Kinberg 1855; 2 species.

LEPIDONOTINAE. Twenty-one to 22 pairs of elytrae; 50 segments. Notosetae few, short, curved and blunt. Neurosetae bidentate with long, curved tips. Lateral antennae terminal.

Intoshella Darboux 1899, *Polynoe (Langerhansia) euplectellae* McIntosh 1885; 3 species.
HARMOTHOINAE. Fifteen pairs of elytrae, approximately 40 segments. Noto- and neurosetae similar in thickness; notosetae smooth-tipped, weakly serrated; neurosetae unidentate, more distinctly serrated. Eyes absent.

Iphione Kinberg 1855, *Polynoe* muricata Savigny 1818, 4 species.
IPHIONINAE. Thirteen pairs of elytrae; notosetae capillary, neurosetae serrated and distally entire.

Kermadecella Darboux 1899, *Polynoe magnipalpa* McIntosh 1885; only species.
HARMOTHOINAE. Fifteen pairs of elytrae, short body. Notosetae thicker than neurosetae, serrated. Neurosetae with transverse rows of spines; distally unidentate. Dorsal cirri alternating long and short, the short ones basally inflated.

Lagisca Malmgren 1865, *Polynoe rarispina* Sars 1861; 24 species.
HARMOTHOINAE. Fifteen pairs of elytrae, approximately 50 segments. Noto- and neurosetae about equally thick. Notosetae with dense rows of teeth; neurosetae at least in part bidentate; all neurosetae serrated. Posterior 8-10 segments not covered by elytrae.

Lepidasthenia Malmgren 1867, *Polynoe elegans* Gmbe 1840; 37 species.
LEPIDONOTINAE. Numerous pairs of elytrae and segments. Notosetae few, usually blunt; neurosetae numerous, uni- or bidentate, most are thicker than notosetae except inferior ones in each fascicle. Lateral antennae terminal.

Lepidastheniella Monro 1924, *Polynoe* comma Thomson 1902; 3 species.
LEPIDONOTINAE. Up to 90 pairs of elytrae; covering the body. Notosetae thinner than neurosetae, ringed with spines. Neurosetae spinose and distally entire.

Lepidofimbria Hartman 1967, *L. oculata* Hartman 1967; only species.
LEPIDONOTINAE. Numbers of pairs of elytrae and segments not known. Ventrum with transverse row of three papillae on each segment; ventral citrus heavily funbriated. Notosetae assent; neuroseta smooth and distally entire.

Lepidogyra Hartman 1967, L. *alba* Hartman 1967; only species.
LEPIDONOTINAE. Numbers of pairs of elytrae and segments not known. Notosetae coarser than neuroseta; neuroseta spinose, distally bifid with a series of accessory teeth in the crotch between the two major teeth.

Lepidonotus Leach 1816, *Aphrodita clava* Montagu 1808; 65 species.
LEPIDONOTINAE. Twelve pairs of elytrae; 26 segments. Notosetae finer than neurosetae, all tapering with whorls of spines. Neurosetae with rows of coarse teeth; rarely bidentate, usually unidentate.

Leucia Malmgren 1867, *Polynoe nivea* Sars 1863; only species.
HARMOTHOINAE. Sixteen pairs of elytrae, short-bodied. Notosetae coarser than neurosetae and serrated. Neurosetae long, slender, unidentate and serrated.

Lucopia Pillai 1965, *L. magnicirra* Pillai 1965; only species.
LEPIDONOTINAE. Fourteen pairs of elytrae; 27 segments. Notosetae absent; neurosetae bidentate and serrated. Dorsal cirri strongly inflated.

Macellicephala McIntosh 1885, *M. mirabilis* McIntosh 1885; 18 species.
MACELLICEPHALINAE. Eight to 13 pairs of elytrae; 17-29 segments. Notosetae few or absent, if present then with marginal teeth. Neurosetae long, usually paddle-shaped.

Maceliicephaloides Uschakov 1955b, *M. grandicirra* Uschakov 1955b; only species.
MACELLICEPHALINAE. Maximally 9 pairs of elytrae; 16-17 segments. Notosetae absent. Neurosetae long, marginally dentate. Prostomium with two very strongly inflated lobes.

Macelloides Uschakov 1957, *M. antarctica* Uschakov 1957; only species.
MACELLICEPHALINAE. Fifteen pairs of elytrae; 30 segments. Notosetae absent. Neurosetae distally inflated.

Maimgrenia McIntosh 1874, *M. whiteavesi* McIntosh 1874; 9 species.
LEPIDONOTINAE. Fifteen pairs of elytrae; 36-41 segments. Noto- and neuroseta similar in thickness. Notosetae nearly smooth; neurosetae uni- or bidentate with very small secondary teeth. Lateral antennae subterminal.

Maimgreniella Hartman 1967, *M. dicirra* Hartman 1967; only species.
LEPIDONOTINAE. Fifteen pairs of elytra; 41-56 segments. Noto- and neuroseta similar in thickness; notosetae falcate, nearly smooth. Neuroseta bidentate with long, slender secondary tooth. Dorsal cirri of two kinds; long and slender and short and expanded.

Meiaenis Malmgren 1865, *M. loveni* Malmgren 1865; only species.

HARMOTHOINAE. Fifteen pairs of elytrae; 39-41 segments. Notosetae thicker than neurosetae, few in number; smooth or faintly structured. Neurosetae of two kinds: numerous slender dentate with capillary tips; few furcates with subequal blunt tips.

Nemidia Malmgren 1865, *N. torelli* Malmgren 1865; 9 species.

HARMOTHOINAE. Fifteen pairs of elytrae; posterior part of body without elytrae. Notosetae mainly capillaries, but a few thick spines present; neurosetae mainly unidentate, but a few bidentate setae present. Prostomium quadrangular, eyes missing or strongly reduced.

Neohololepidella Pettibone 1969b, *N. murrayi* Pettibone 1969b; only species.

HARMOTHOINAE. Fifty or more pairs of elytrae; numerous segments. Notosetae thicker than neurosetae, nearly smooth, with blunt tips. Neurosetae with very short bare tip beyond a dense spinose region; distally bidentate or entire.

Paradyte Pettibone 1969a, *Polynoe crinaidicola Potts* 1910; 2 species.

HARMOTHOINAE. Fifteen pairs of elytrae; 40 segments. Notosetae thicker than neurosetae, sabrelike with entire or slightly notched tips, nearly smooth. Neurosetae of two kinds: supracicular ones with semilunar pockets, slender, spinose and with bifid tips. Subacicular ones thicker, with semilunar pockets and entire tips.

Parahalosydna Horst 1915a, *P. sibogae* Horst 1915a; 4 species.

LEPIDONOTINAE. Fifteen pairs of elytrae; short-bodied. Notosetae thinner than neurosetae, serrated. Neurosetae unidentate and serrated along both *edges.*

Parahololepidella Pettibone 1969b, *Hololepidella greeffli* Augener 1918; 2 species.

HARMOTHOINAE. Numerous pairs of elytrae and segments. Notosetae slenderer than neurosetae, but still thick. Neurosetae very thick, slightly hooked, entire and very faintly spinose. Neuropodia with subacicular digitiform process.

Paralepidonotus Horst 1915a, *Polynoe ampullifera* Grube 1878; 4 species.

LEPIDONOTINAE. Fifteen pairs of elytrae; 38 segments. Notosetae thicker than the neurosetae; densely serrated. Neurosetae at least in part bidentate.

Perolepis Ehlers 1908, *P. regularis* Ehlers 1908; only species.

LEPIDONOTINAE. Numerous pairs of elytrae and segments. Notosetae absent; neurosetae distally bidentate. Ventral cirri with three knobs; cirrophores enlarged dorsally; pre- and postsetal lobes of similar length.

Phyllohartmania Pettibone 1961, *P. taylori* Pettibone 1961; only species.

HARMOTHOINAE. Fourteen pairs of elytrae, less than 40 segments. Notosetae slender and spinose with capillary tips; neurosetae similar in thickness; distally spinose and spinigerous. Ventral surface with paired foliose appendages on each segment.

Phyllosheila Pettibone 1961, *P. wigleyi* Pettibone 1961; only species.

HARMOTHOINAE. Fifteen pairs of elytrae; less than 50 segments. Notosetae thicker than neurosetae, spinose. Neurosetae smooth and distally bidentate. Ventral cirri foliose, ventral surface papillated.

Podarmus Chamberlin 1919c, *P. ploa* Chamberlin 1919c; 2 species.

LEPIDONOTINAE. Fourteen pairs of elytrae, 30 segments. Notosetae absent; neurosetae all distally entire; of two kinds, thick and straight or slender and capillary.

Polyeunoa McIntosh 1885, *P. laevis* McIntosh 1885; 3 species.

HARMOTHOINAE. Nineteen to 30 pairs of elytrae, posterior part of body not covered by elytrae. Notosetae thicker than neurosetae, faintly serrated. Neurosetae unidentate, subdistally expanded and dentate.

Polynoe Savigny 1818, *P. scolopendrina* Savigny 1818; 17 species.

HARMOTHOINAE. Fifteen pairs of elytrae; posterior part of body not covered by elytrae. Notosetae mainly thick and blunt-tipped, but a few capillary setae present. Nearly all neurosetae bidentate, except usually one or two unidentate in each of the posterior setigers; most neurosetae coarser than the notosetae.

Polynoella McIntosh 1885, *P. levisetosa* McIntosh 1885; 3 species.

HARMOTHOINAE. Twelve pairs of elytrae; 25-26 segments. Notosetae absent. Neurosetae long, slender, unidentate and falcate. Neuropodia long, pointed and distally bifid.

Pottsiscalisetosus Pettibone 1969a, *Scalisetosus praelongus* Marenzeller 1902; only species.

HARMOTHOINAE. Twenty-eight or more pairs of elytrae; numerous segments. Notosetae finer than neurosetae; tapered to blunt tips, serrated. Neurosetae with semilunar pockets, distally entire and more or less falcate.

Pseudohalosydna Fauvel 1913, *P. rosea* Fauvel 1913; only species.

LEPIDONOTINAE. At least 20 pairs of elytrae; numerous segments. Notosetae spinose and capillary;

neurosetae of two kinds; superior ones slender and spiralled spinose; inferior ones acicular and spinose.

Pseudopolynoe Day 1962, *Polynoe inhacae* Day 1951; only species.

LEPIDONOTINAE. Fifteen to 17 pairs of elytrae; posterior half of body not covered by elytrae. Notosetae finer than neurosetae, serrated; neurosetae bi- or unidentate, serrated.

Robertianella McIntosh 1885, *R. synophthalma* McIntosh 1885; only species.

HARMOTHOINAE. Thirteen pairs of elytrae; approximately 30 segments. Noto- and neurosetae of similar thickness; notosetae blunt, nearly smooth; neurosetae distally minutely notched, nearly smooth. Eyes very large and nearly confluent on the prostomium.

Scalisetosus McIntosh 1885, S. *ceramensis* McIntosh 1885; 8 species.

HARMOTHOINAE. Sixteen pairs of elytrae; 40 segments. Notosetae much coarser than neurosetae, with a few spines only. Neurosetae slender, distally entire and spinose. Both noto- and neuropodia with long lobes.

Sheila Monro 1930, S. *bathypelagica* Monro 1930; only species.

LEPIDONOTINAE. Thirteen pairs of elytrae; 29 segments. Notosetae slender, dentate capillaries; neurosetae of several kinds: numerous superior dentate capillaries; most of the others coarse, dentate and entire; one very large bidentate hook in the middle of each fascicle.

Subadyte Pettibone 1969a, *Polynoe pellucida* Ehlers 1864; 3 species.

HARMOTHOINAE. Fifteen to 16 pairs of elytrae; approximately 40 segments. Notosetae similar in thickness to the neurosetae; with spinose pockets and slightly notched tips. Neurosetae with semilunar pockets, spinose and distally bidentate.

Telolepidasthenia Augener and Pettibone *in* Pettibone 1970d, *T. lobetobiensis* Augener and Pettibone *in* Pettibone 1970d; only species.

LEPIDONOTINAE. More than 21 pairs of elytrae and more than 50 segments. Notosetae absent; neurosetae slender with spinose regions and entire tips. Presetal lobes longer than postsetal ones.

Tenonia Nichols 1969, *T. kitsapensis* Nichols 1969; only species.

HARMOTHOINAE. Fifteen pairs of elytrae; approximately 40 segments. All setae similar in thickness; all slender; notosetae capillary, neurosetae in part bidentate.

Thormora Baird 1865, *T. jukesii* Baird 1865; 5 species.

LEPBDONOTINAE. Twelve pairs of elytrae; short-bodied. Notosetae of two kinds; short and lancet-shaped, and longer, serrated and tapering. Neurosetae serrated and unidentate.

Uncopolynoe Hartmann-Schroder 1960a, *U. corallicola* Hartmann-Schrdder 1960a; only species.

HARMOTHOINAE. Numbers of elytrae not known, approximately 44 segments. Notopodia absent; first three neuropodia with strongly curved hooks; others with uni- or bidentate setae with serrated subdistal areas.

Weberia Horst 1915b, *W. pustulate* Horst 1915b; 3 species.

LEPIDONOTINAE. Eighteen pairs of elytrae; short-bodied. Notosetae absent; neurosetae unidentate and curved. Ventral cirri absent except in second segment; dorsum with a pustule on each segment.

Invalid Genera

Agnodice McIntosh 1885, see *Lagisca*
Bathynoe Ditlevsen 1917, see *Weberia*
Bylgia Theel 1879, see *Bylgides*
Chaetosphaera Haecker 1898, larvae of several genera
Dasylepis Malmgren 1867, see *Acanthicolepis*
Eumolpe Oken 1807, see *Lepidonotus*
Eupolynoe McIntosh 1874, see *Eucranta*
Evarne, Malmgren 1865, see *Harmothoe*
Evarnella Chamberlin 1919c, see *Harmothoe*
Gastroceratella Darboux 1899, see *Thormora*
Halosydnoides Seidler 1924, see *Arctonoe*
Harmopsides Chamberlin 1919c, see *Lepidasthenia*
Iphionella McIntosh 1885, see *Iphione*
Laenilla Malmgren 1865, see *Harmothoe*
Langerhansia McIntosh 1885, see *Intoshella*
Lepidametria Webster 1879b, see *Lepidasthenia*
Nectochaeta Marenzeller 1892, in part *Lepidasthenia,* also generally polynoid larvae and juveniles
Norepa Baird 1865, see *Iphione*
Nychia Malmgren 1865, see *Gattyana*
Oligolepis Levinsen 1887, see *Macellicephala*
Paranychia Czerniavsky 1882, questionably *Lagisca*
Parapolynoe Czemiavsky 1882, see *Polynoe*
Parmensis Malmgren 1867, see *Harmothoe*
Physalidonotus Ehlers 1905, see *Euphione*
Plotolepis Chamberlin 1919c, see *Drieschia*
Quetieria Viguier 1911, juvenile form
Tricosmochaeta Morgera 1918, see *Harmothoe*

FAMILY POLYODONTIDAE BUCHANAN 1894

Aphroditaceans with dorsoventrally flattened bodies. Two or three antennae present, median antenna when present, attached dorsally or posteriorly on the prostomium (antennae may be absent). Eversible pharynx with four jaws. Marginally fringed or smooth elytrae alternate with dorsal cirri in all setigers. All setae simple. Spinning glands present.

The polyodontids are large, solid-bodied scaleworms, usually covered with thick, loosely constructed tubes consisting of thin threads filled with clay or sand particles. The most important recent revision was made by Strelzov (1968b).

Key to Genera

la.	Ommatophores present	2
lb.	Ommatophores absent	5
2a (Ia).	Two antennae present	3
2b (Ia).	Three antennae present	4
3a (2a).	Ommatophores fused in the midline	*Neopanthalis*
3b (2a).	Ommatophores separated from each other	*Eupolyodontes*
4a (2b).	Superior neurosetae long and tapering, more or less hirsute	*Polyodontes*
4b (2b).	Superior neurosetae short and brush-topped	*Panthalis*
5a (lb).	Three antennae present	*Eupanthalis*
5b (lb).	Antennae absent	*Resno*

Generic Definitions

Eupanthalis McIntosh 1876, E. *kinbergi* McIntosh 1876; 8 species.

Ommatophores absent, three antennae present; median antenna attached dorso-posteriorly. Setae include slender, pilose tapering capillaries; bluntly acicular, aristate ones with pilose shafts, and side-shaped, dentate ones.

Eupolyodontes Buchanan 1894, E. cornishii Buchanan 1894; 5 species.

Ommatophores present and separated from each other. Two frontal antennae present; small nuchal papilla present. Setae include bipinnate pencillate setae; serrulate setae and smooth, acicular spines.

Neopanthalis Strelzov 1968b, N. *pelamida* Strelzov 1968b; only species.

Ommatophores present but fused in the midline. Lateral antennae short and inserted dorsally on the ommatophores.

Panthalis Kinberg 1855, *P. oerstedii* Kinberg 1855; 12 species.

Ommatophores present and separated; three antennae present. Setae include short brush-topped setae; thick, blunt acicular setae with rows of teeth subdistally and dentate side-shaped setae.

Polyodontes Renier *in* Audouin and Milne Edwards 1832, *Phyllodoce maxillosa* Ranzani 1817; 12 species.

Ommatophores present and separated; three antennae present. Setae include long, tapering hirsute ones; stout acicular setae with or without aristae, usually hirsute or dentate; and dentate sickle-shaped setae.

Restio Moore 1903, *R. aenus* Moore 1903; only species.

Ommatophores and antennae absent. Setae include long, slender ones with awnlike spines, thick, colorless and tapering, slightly curved with pilose middle part, acicular in appearance, thick, with broad lance-shaped ends and transverse rows of fine hairs.

Taxonomic Note

Pseudeupanthalis Fauvel (1957), described in this family, appears to be synonymous with *Sthenelanella* in the family Sigalionidae.

Invalid Genera

Acoetes Audouin and Milne Edwards 1832, see *Polyodontes*

Euarche Ehlers 1887, see *Eupanthalis*

Eupompe Kinberg 1855, see *Polyodontes*

Lepidia Savigny in Audouin and Milne Edwards 1832, see *Panthalis.*

Pholoididae NEw NAME

Aphroditaceans with flattened bodies. One median antenna present. Four jaws present. Fringed elytrae alternate with dorsal cirri in all setigers. Each elytron with concentric rings. Neurosetae composite, notosetae simple.

The family consists of one genus, *Pholoides* Pruvot 1895 with genotype *P. dorsipapillata* Pruvot 1895. The family-name is to replace Peisidicidae Hartman

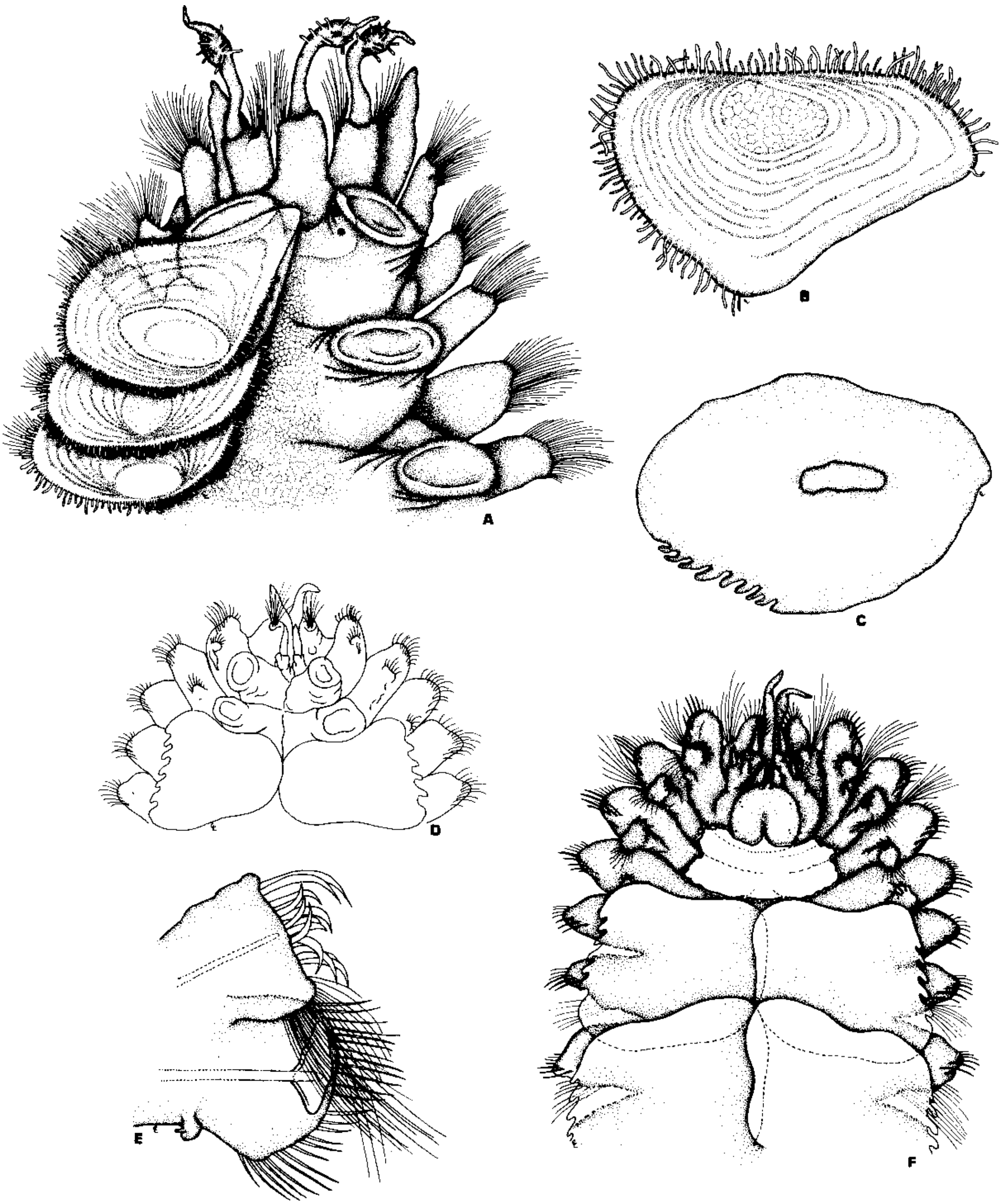


FIGURE 16. (A), Family PHOLOIDIDAE, *Pholoides aspera,* Mugu Submarine Canyon, California, about 100 m, 50x; (B), elytron of the above, 50x; (C), Family EULEPETHIDAE, *Grubeulepis fimbriata,* Consag Rock, Golfo de California, elytron, l i x; (D), diagram of the anterior end of the above, 8x; (E), median parapodium of the above, 25x; (F), anterior end of the above, first two elytrophores removed, 10x.

and Fauchald 1971, based on the genus *Peisidice* Johnson 1897. There appears to be no reason to maintain a separation between the two genera; the older name has priority, and the family name should be based on this generic name. Four species are presently considered valid.

Invalid Genera

Parapholoe Hartmann-Schroder 1965, see *Pholoides*
Peisidice Johnson 1897, see *Pholoides*

FAMILY EULEPETHIDAE CHAMBERLIN 1919c

Aphroditaceans with flattened bodies. Two antennae, four jaws present. Elytrae alternate with dorsal cirri in anterior setigers, present on all posterior setigers; elytrae marginally notched or with flattened marginal lappets. All setae simple. Neuracicula distally hammer-headed.

The eulepethids (formerly pareulepids *sensu* Hartman) were recently the subject of a monographic study by Pettibone (1969e). The present survey follows hers closely in most matters.

Key to Genera

Ia.	Elytrae 12 pairs, increasing in length progressively, followed by posterior pseudelytrae	2
lb.	Elytrae more than 12 pairs; the first 12 pairs increasing in length posteriorly; the more posterior pairs smaller	3
2a (la).	Elytrae with lateral border notched	*Pareulepis*
2b (Ia).	Elytrae with flattened lateral marginal lappets	*Grubeulepis*
3a (I b).	Elytrae with lateral borders notched	*Eulepethus*
3b (lb).	Elytrae with flattened lateral marginal lappets	*Mexieulepis*

Taxonomic Note

The pseudelytrae referred to in the key are sessile in contrast to the true elytrae, which are equipped with distinct elytrophores. They are in the same general position as the elytrae and appear to have similar functions.

Generic Definitions

Eulepethus Chamberlin 1919c, *Eulepis* hamifera Grube 1875; only species.

Body with 60-70 segments. Elytrae with marginal notches on segments 2,4,5,7 ... 21,24 and from segment 28 small elytrae with entire margins on every segment.

Grubeulepis Pettibone 1969e, *Eulepis funbriata* Treadwell 1901; 7 species.

Body with about 38 segments. Elytrae with flattened marginal lappets including in all twelve pairs, on segments 2,4,5,7 . . . 21,24; pseudelytrae begin on segments 26-29.

Mexieulepis Rioja 1961, *M. elongata* Rioja 1961; 2 species.

Body with about 50 segments. Elytrae with flattened marginal lappets, including numerous pairs, on segments 2,4,5,7 ... 21,24; smaller elytrae on every segment starting on segments 27 or 28.

Pareulepis Darboux 1899, *Eulepis wyvillei* McIntosh 1855; 2 species.

Body with about 37 segments. Twelve pairs of elytrae on segments 2,4,5,7 ... 21,24; all with lateral border notched. Pseudelytrae begin on segment 28.

Invalid Genus

Eulepis Grube 1875, see *Eulepethus*

FAMILY SIGALIONIDAE MALMGREN 1867

Aphroditaceans with quadrangular or flattened bodies. One to three antennae present; four jaws present. Marginally fringed elytrae alternate with dorsal cirri on anterior setigers and are present on all posterior setigers. Neurosetae composite, notosetae simple.

Sigalionids are common in soft bottoms; they tend to be long-bodied and the scales are usually rather closely appended to the bodies. This, combined with the well-developed notopodial fascicles of setae, tend to give them a rather quadrangular appearance. The sigalionids are presently under revision by Pettibone, who has already published a series of important monographs (Pettibone 1969c, 1970a, 1970b, 1970e, 1971b, 1971c). The key given below must be considered provisional.

Key to Genera

Ia.	One median antenna present	2
lb.	At least two antennae present	3

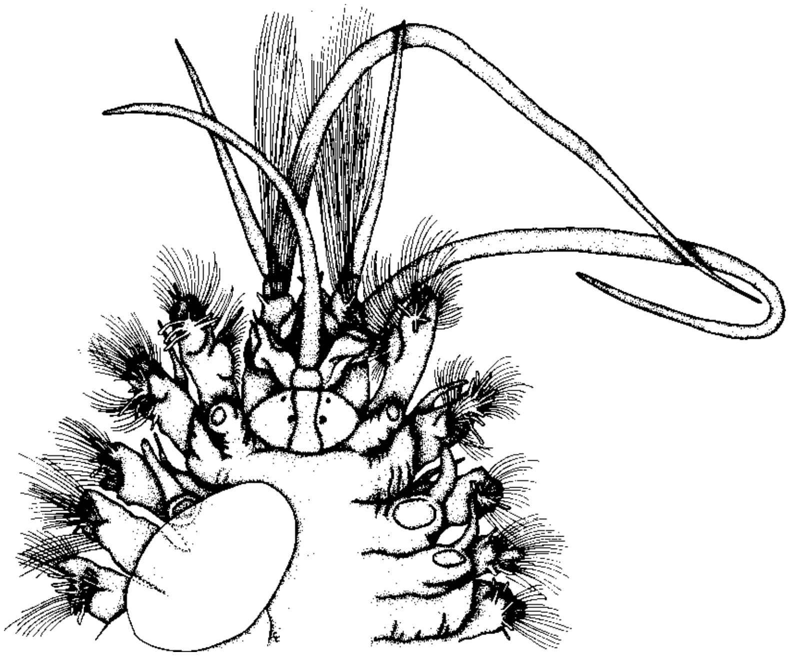


FIGURE 17. Family SIGALIONIDAE, *Sthenolepis japonica,* Bay of Nha Trang, Viet Nam, 50 m, 25x.

2a (I a).	Composite neurosetae with long, slender, articulated appendages	*Mayella*
2b (la).	Composite neurosetae short, smooth unidentate falcigers	*Pholoe*
3a (1b).	Two antennae present	*Sigalion*
3b (lb).	Three antennae present	4
4a (3b).	Lateral antennae on the prostomium proper; all antennae with short ceratophores or short and inconspicuous	5
4b (3b).	Lateral antennae fused to first setiger; median antenna with large median ceratophore	6
5a (4a).	Eyes large, antennae with ceratophores	*Euthalenessa*
5b (4a).	Eyes small, antennae without ceratophores	*Thalenessa*
6a (4b).	Median ceratophore without auricles	7
6b (4b).	Median ceratophore with auricles	10
7a (6a).	Dorsal cirri absent on setiger 3; elytrae not sand-incrusted	8
7b (6a).	Dorsal cirri present on setiger 3; elytrae sand-incrusted	9
8a (7a).	Neurosetae composite spinigers with short, canaliculated appendages	*Leanira*
8b (7a).	Neurosetae composite, unidentate falcigers with marginally serrated appendages	*Pareupholoe*
9a (7b).	Elytrae small, leaving the middle of the dorsum uncovered; neurosetae with short bidentate appendages	*Euphofoe*
9b (7b).	Elytrae covering the dorsum, neurosetae with uni- or bidentate appendages of varying lengths	*Psammolyce*
IOa (6b).	Auricles large, auricles also present on the tentacular segment	*Horstileanira*
l0b (6b).	Auricles small, absent from tentacular segment	11
1 la (lob).	All neurosetae composite unidentate falcigers with relatively short, straight appendages	*Sthenelanella*
IIb (lob).	At least some neurosetae otherwise (bidentate, or with articulated, canaliculated or spinigerous appendages)	12
12a (1 Ib).	Ventral cirri covered medially by long papillae	*Willeysthenelais*
12b (I lb).	Ventral cirri smooth	13
13a (126).	Parapodial lobes and stylodes covered with fine fimbriae	*Fimbriosthenelais*
13b (12b).	Parapodial lobes and stylodes smooth	14
14a (13b).	Long dorsal cirri on setiger 3	*Neoleanira*
14b (13b).	Dorsal cirri absent from setiger 3	15

15a (14b).	At least some neuropodial falcigers present	*Sthenelais*
15b (14b).	All neurosetae spinigerous	16
16a (15b).	Dorsal tubercle present on setiger 3	*Sthenolepis*
lob (156).	Dorsal tubercle absent from setiger 3	*Ehlersileanira*

Generic Definitions

Ehlersileanira Pettibone 1970c, Sthenelais incisa Grube 1877; 2 species.

Three antennae; auricles present. Dorsal cirrus on setiger 3 absent. All neurosetae spinigerous, with canaliculated appendages.

Eupholoe McIntosh 1885, E. *philippinensis* McIntosh 1885; only species.

Three antennae; auricles absent. Dorsal cirrus on setiger 3 present. Elytrae small, leaving middle of body uncovered. Neurosetae with short, bidentate appendages. Encrusted with sand.

Euthalenessa Darboux 1899, *Thalenessa digitata* McIntosh 1885; 8 species.

Three small antennae, all on the prostomium, ceratophores present. Two pairs of large eyes. Neuropodia with large foliose lobes anteriorly. Neurosetae slender, composite with multiarticulated distally bidentate appendages.

Fimbriosthenelais Pettibone 1971b, *Sthenelais longipinnis* Grube 1870a; 2 species.

Three antennae; auricles present. No dorsal cirrus on setiger 3. All parapodial lobes and stylodes fimbriated. Neurosetae either simple and spinose or composite with distally bidentate, short, slender and articulated appendages.

Horstileanira Pettibone 1970a, *H. vanderspoeli* Pettibone 1970a; 2 species.

Three antennae, large auricles, auricles present also on the tentacular segment. Setiger 3 with prominent dorsal tubercle. Neurosetae simple and spinose and composite spinigers with long, canaliculated appendages; a few may be bidentate.

Leanira Kinberg 1855, *L. quatrefagesi* Kinberg 1855; 11 species.

Three small antennae; auricles absent. No dorsal cirrus on setiger 3. Neurosetae composite spinigers with relatively short, canaliculated appendages.

Mayella Hartmann-Schroder 1959, M. *articulata* Hartmann-Schroder 1959; only species.

One antenna, auricles absent. Neurosetae composite spinigers with articulated appendages.

Neoleanira Pettibone 1970a, Sigalion *tetragonum* Orsted 1845; 2 species.

Three antennae; auricles present. Long dorsal cirri on setiger 3. Neurosetae composite spinigers with canaliculated, relatively short appendages.

Pareupholoe Hartmann-Schroder 1962a, *P. fimbriatus* Hartmann-Schroder 1962a; only species.

Three antennae; auricles absent. No dorsal cirri on setiger 3. Neurosetae composite, unidentate falcigers with serrated cutting edge.

Pholoe Johnston 1839, *Aphrodita* minuta Fabricius 1780; 10 species.

One antenna; auricles absent. Neurosetae composite falcigers with short, unidentate appendages. Notosetae in part geniculate and strongly dentate.

Psammolyce Kinberg 1855, *P. flava* Kinberg 1855; 26 species.

Three antennae, auricles absent. Third setiger with long dorsal cirri. Neurosetae composite falcigers with uni- or bidentate appendages of varying lengths. Elytrae cover body, sand-incrusted.

Sigalion Audouin and Milne Edwards 1832, *S. mathildae* Audouin and Milne Edwards 1832; 12 species.

Two lateral antennae; auricles absent. Neurosetae simple and spinose or composite with appendages of varying lengths, multiarticulated and bidentate.

Sthenelais Kinberg 1855, S. *helenae* Kinberg 1855; 45 species.

Three antennae, auricles present. No dorsal cirrus on setiger 3'. Neurosetae include simple spinose and two kinds of falcigers, stout with short, bidentate appendages, and slenderer falcigers with articulated appendages.

Sthenelanella Moore 1910, S. *uniformis* Moore 1910; 4 species.

Three antennae; auricles present. No dorsal cirri on setiger 3. All neurosetae with short, unidentate appendages.

Sthenolepis Willey 1905, *Leanira japonica* McIntosh 1885; 20 species.

Three antennae; auricles present. With dorsal tubercles on setiger 3. Neurosetae all composite spinigers with canaliculated appendages.

Thalenessa Baird 1868, *Sigalion edwardsi* Kinberg 1855; 8 species.

Three small antennae, all on the prostomium, ceratophores absent. Two pairs of small eyes. Neurosetae composite falcigers and a few simple spinose setae.

Willeysthenelais Pettibone 1971b, *Sthenelais diplocirrus* Grube 1875; only species.

Three antennae; auricles present. No dorsal cirri on setiger 3. Neurosetae simple spinose or composite falcigers with thick, short appendages or more slender with articulated appendages. Ventral cirri covered medially with long papillae.

Invalid Genera

Conconia Schmarda 1861, see *Sthenelais*
Euleanira Horst 1916a, see *Sthenelanella*
Eusigalion Augener 1918, see *Thalenessa*
Eusthenelais McIntosh 1876, see *Sthenelais* and *Leanira*
Haswellia Darboux 1899, see *Euthalenessa*
Lepidopleurus Claparede 1868, see *Psammolyce*
Pelogenia Schmarda 1861, see *Psammolyce*
Polylepis Grube 1878, see *Psammolyce*
Pseudeupanthalis Fauvel 1957, see *Sthenelanella*

Superfamily Chrysopetalacea

Elytrae absent; notosetae flattened and expanded paleae covering the dorsum. Prostomium not fused to the first setiger.

FAMILY CHRYSOPETALIDAE EHLERS 1864

Chrysopetalaceans with short or long bodies, usually strongly flattened. Three antennae. Notosetae in transverse rows, held erect over the dorsum or covering the back as tiles on a roof. Neurosetae composite.

Chrysopetalids and palmyrids are very similar; the two families are often considered synonymous, in which case the name Palmyridae applies (cf. Day 1967).

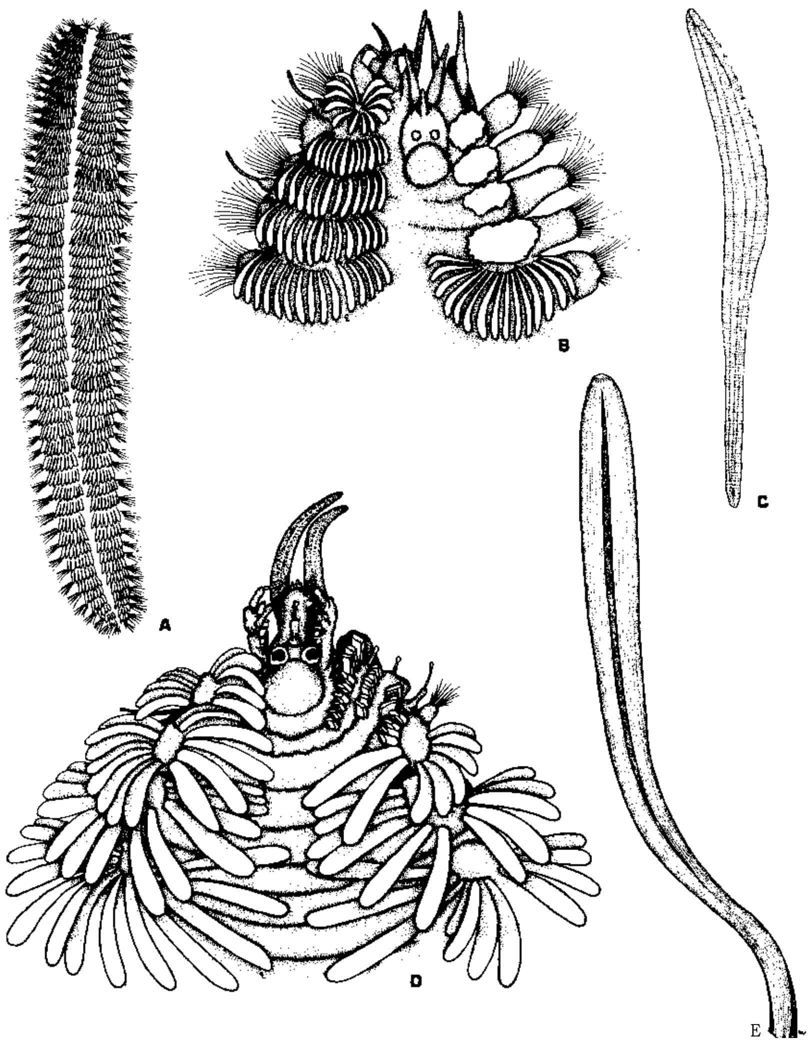


FIGURE 18. (A), Family CHRYSOPETALIDAE, *Chrysopetalum occidentale,* off Santa Catalina Island, California, 50 m, whole animal, 10x; (B), anterior end of the above, setae of four first notopodia removed on the right side, 50x; (C), notoseta (palea) of the above, 200x; (D), Family PALMYRIDAE, *Palmyra aurifera,* Eniwetok, Marshall Islands, shallow subtidal, notosetae removed on four first segments on the right side and on the first segment on the left, 75x; (E), notoseta (palea) of the above, 50x.

Key to Genera

Ia.	Notosetae cylindrical rather than flattened, not covering dorsum	*Dysponetus*
lb.	Notosetae flattened paleae	2
2a (lb).	Prostomium without a conspicuous caruncle, body long, consisting of many segments ...	Bhawania
2b (lb).	Prostomium with a conspicuous caruncle overlapping the peristomium; body short	3
3a (2b).	First segment with asymmetrical ventral cirri; dorsal palette of two abruptly different kinds	*Paleanotus*
3b (2b).	First segment with paired similar cirri; dorsal paleae of one kind only	*Chrysopetalum*

Generic Definitions

Bhawania Schmarda 1861, *B. myriolepis* Schmarda 1861; 9 species.

Body with up to 300 segments, completely covered by paleae. Caruncle absent, prostomium retractile under a fold from the first setigers. Palette of one or two kinds, broad and narrow; neurosetae composite falcigers with blades of varying lengths.

Chrysopetalum Ehlers 1864, *Palmyra debilis* Grube 1855; 5 species.

Body with about 40 segments, completely covered by paleae. Caruncle present. Paleae of one kind only; first segment with paired, similar ventral cirri.

Dysponetus Levinsen 1879, D. *pygmaeus* Levinsen 1879; 4 species.

Body with few segments, not covered by palette. Caruncle absent. Notosetae cylindrical and erect over the dorsum.

Paleanotus Schmarda 1861, *P.* chrysolepis Schmarda 1861; 6 species.

Body with about 40 segments, completely covered by paleae. Caruncle may be present. Paleae of two kinds, abruptly differing in shape. First segment with strongly asymmetrical ventral cirri.

Invalid Genera

Heteropale Johnson 1897, see Paleanotus
Psectra Grube 1868a, see *Bhawania*
Taphus Webster and Benedict 1887, see *Dysponetus*

FAMILY PALMYRIDAE KINBERG 1858

Chrysopetalaceans with short, flattened bodies. One antenna present. Notosetae in rosettes on the notopodial tubercles. Neurosetae composite.

The palmyrids are known for one genus, *Palmyra* Savigny 1818 with genotype P. aurifera Savigny 1818 and possibly for one or two more species; most described forms *are* considered synonyms of *P. aurifera* or indeterminable. The family is limited to shallow water, usually sandy or generally hard substrates in warm water and appear to be most common in the western Pacific Ocean.

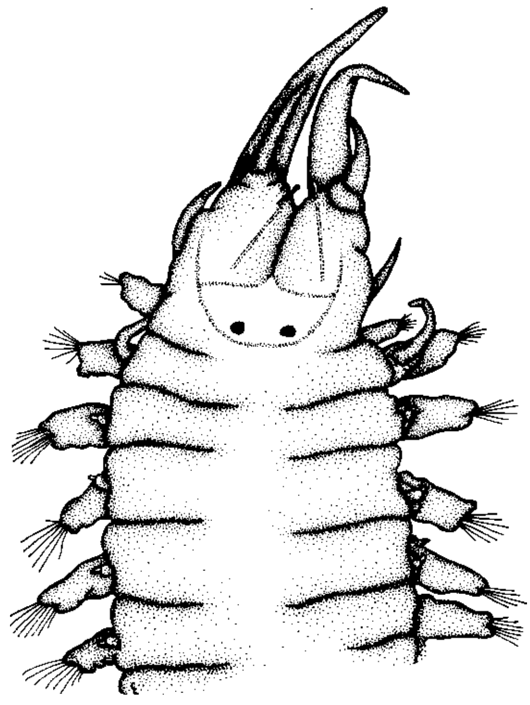
Superfamily Pisionacea

Elytrae absent; parapodia sub-biramous or uniramous; prostomium deeply imbedded in the first segment, or projecting freely between the first segments.

FAMILY PISIONIDAE SOUTHERN 1914

Pisionaceans with maximally two pairs of antennae on the prostomium. First segment with two pairs of tentacular cirri. Four jaws present. Setae composite and simple; dorsal and ventral cirri usually clavate.

Siewing (1953), Laubier (1967b) and Stecher (1968) recently have reviewed the family in terms of the generic sub-division. *Pisionura* Hartman and Fauchald (1971) does not belong to this family (Hartmann-Schriider 1975). The key below is after Laubier (1967b).



Room 19. Family PISIONIDAE, *Pisione oerstedi,* Independencia Bay, Peru, shallow water, 25x.

Key to Genera

Ia.	Median unpaired antennae present	*pisionella*
1b.	Median unpaired antennae absent	2
2a (1 b).	With two pairs of similar cephalic appendages	*Pisionidens*
2b (lb).	With three pairs of cephalic appendages of different structure	3
3a (2b).	First segment asetigerous and apodous; proboscis unarmed	*Anoplopisione*
3b (2b).	No apodous and asetigerous segment present; proboscis with four jaws	*Pisione*

Generic Definitions

Anoplopisione Laubier 1967b, *A. minuta* Laubier 1967b; only species.

Pisionids with palps and two pairs of tentacular cirri present. Proboscis unarmed; first segment without parapodia and setae.

Pisione Grube 1857, *P. oerstedii* Grube 1857; 11 species.

Pisionids with palps and two pairs of tentacular cirri present. Proboscis with four jaws; all anterior segments with parapodia and setae.

Pisionella Hartman 1939, *P. hancocki* Hartman 1939; only species.

Pisionids with palps; two pairs of tentacular cirri and a median unpaired antenna present. Proboscis with four jaws; all anterior segments with parapodia and setae.

Pisionidens Aiyar and Alikunhi 1943, *Pisionella indica* Aiyar and Alikunhi 1940; only species.

Pisionids with two pairs of similar cephalic appendages. Proboscis with four jaws; all segments with parapodia and setae.

Invalid Genera

Fauveliella Tebble 1953, see *Pisionidens*
Pisionella Aiyar and Alikunhi 1940, see *Pisionidens*
Praegeria Southern 1914, see *Pisione*

Suborder Nereidiformia

Phyllodocida with at least one pair of antennae; at least one pair of tentacular cirri; palps short and usually distally blunt, frequently biarticulated. Eversible pharynx, if armed, with one pair of lateral jaws and sometimes with accessory denticles. First parapodia lateral.

FAMILY HESIONIDAE SARS 1862

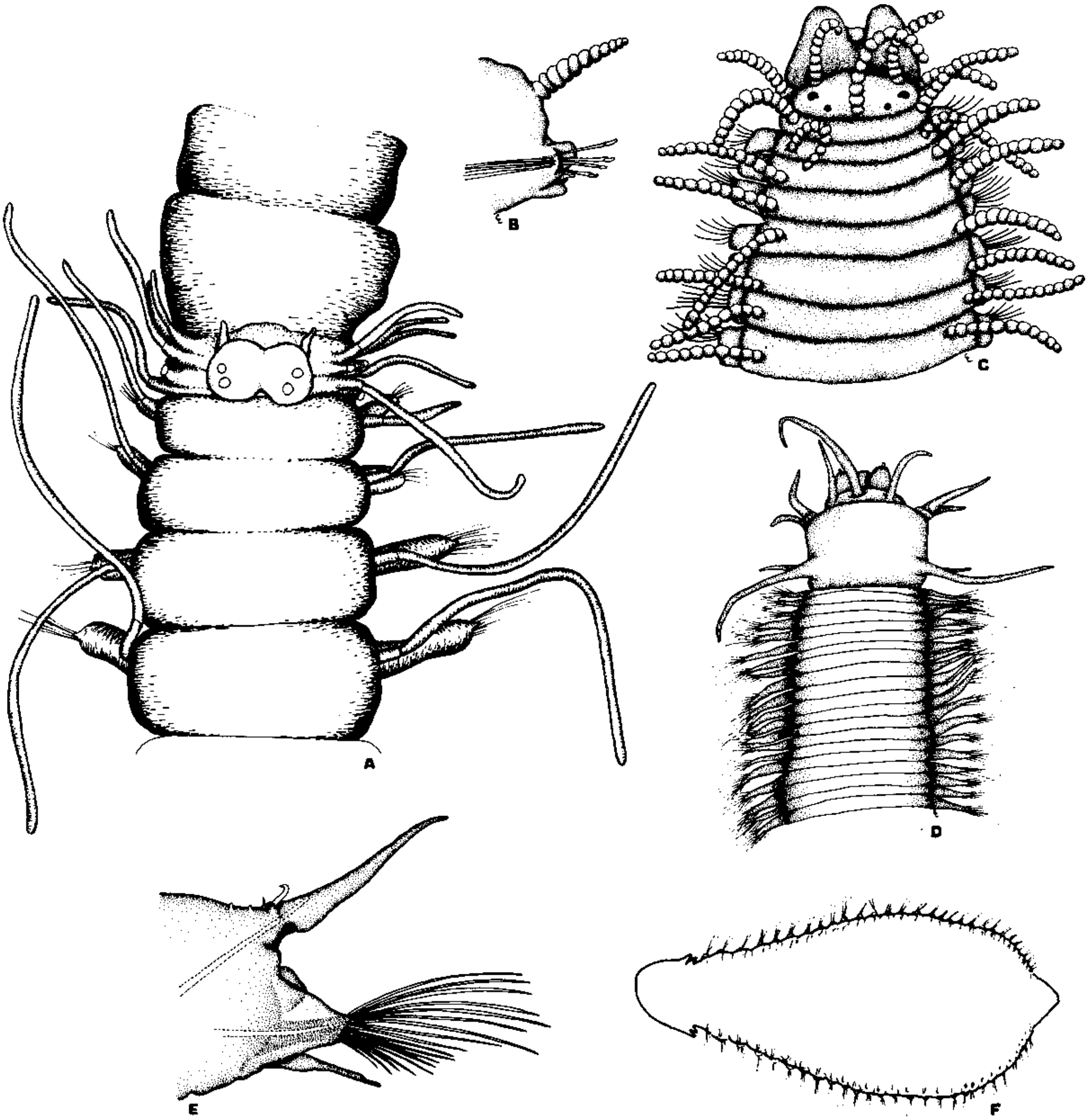
Relatively short-bodied, dorsoventrally flattened worms. Two or three antennae (antennae rarely absent); palps may be absent or have from one to three articles. Two to eight pairs of tentacular cirri present. Jaws may be present. Parapodia uniramous or biramous, but notopodia always reduced compared to the neuropodia. Dorsal cirri long and slender. Neurosetae composite; notosetae, if present, simple.

The hesionids are one of the least known families of polychaetes; the generic sub-division suggested by the *key* below is very tentative; a large number of additional genera may be expected described within a few years. Hesionids are common animals in hard substrates and in shallow water; they are more rarely found in deep water. They tend to be fragile and fragment easily upon collection; generally hesionids should be handled as scale-worms: each specimen preserved separately.

Key to Genera

la.	Two pairs of tentacular cirri; five antennae	*Hesiosyllis*
lb.	At least three pairs of tentacular cirri; maximally three antennae	2
2a (Ib).	Four or more pairs of tentacular cirri	3
2b (lb).	Three pairs of tentacular cirri	7
3a (2a).	Five or more pairs of tentacular cirri	4
3b (2a).	Four pairs of tentacular cirri	8
4a (3a).	Five pairs of tentacular cirri	*Friedericiella*
4b (3a).	Six or more pairs of tentacular cirri	5
5a (4b).	Seven or more pairs of tentacular cirri	6
5b (4b).	Six pairs of tentacular cirri	12
6a (5a).	Seven pairs of tentacular cirri	*Periboea*
6b (5a).	Eight pairs of tentacular cirri	22
7a (2b).	Parapodia uniramous	*Orseis*
7b (2b).	Parapodia biramous	*Alikunhia*

8a (3b).	Parapodia distinctly uniramous	9
8b (3b).	Parapodia sub-biramous or biramous	10
9a (8a).	First setiger with large hooks	*Struwela*
9b (8a).	First setiger without hooks	*Hesiocaeca*
Ills (8b).	Antennae absent	*Bonuania*
10b (8b).	Antennae present	11
I la (l0b).	Tentacular cirri on three segments (1-2-1); dorsal cirri articulated	*Hesionella*



Frouae 20. (A), Family HESIONIDAE, *Hesione intertexta,* Puerto Rico, intertidal, 10x; (B), Family SYLLIDAE, *Typosyllis armillaris,* El Descanso, Baja California, intertidal, median parapodium, 50x; (C). anterior end of the above, 50x; (D), Family PILARGIIDAE, *Sigambra bassi,* outer harbor, Los Angeles, California, 50 m, 15x; (E), median parapodium of the above, 50x; (F), Family CALAMYZIDAE, ? *Calamyzas* sp., diagrammatic outline from the dorsal side, 50x.

I lb (lob).	Tentacular cirri on two segments (2-2); dorsal cirri smooth	*Hesionides*
12a (5b).	All parapodia uniramous	13
12b (5b).	At least some parapodia sub-biramous or biramous	17
13a (12a).	First three segments dorsally reduced	*Syllidia*
13b (12a).	Maximally first segment dorsally reduced	14
14a (13b).	Tentacular cirri on four segments (first reduced) so that they appear as 3-2-1	*Syllidia"*
14b (13b).	Tentacular cirri on three segments (2-2-2)	15
l5a (14b).	Pharynx distally with a circlet of fine fimbriae	*Parasyllidea*
15b (14b).	Pharynx with either eleven or twenty-one distal papillae	16
16a (15b).	Pharynx with 21 distal papillae	*Neopodarke*
l6b (15b).	Pharynx with eleven distal papillae	*Micropodarke*
17a (12b).	Three antennae present	18
l7b (12b).	Two antennae present	21
18a (17a).	Median antenna attached medially or posteriorly on the prostomium	*Microphthalmus*
18b (17a).	Median antenna attached frontally	19
19a(18b).	Palpi simple	*Heteropodarke*
19b (18b).	Palpi biarticulated	20
20a (19b).	Setae present from the second segment	*Ophiodromus*
20b (19b).	Setae present from the fourth segment	*Podarke"*
21a (17b).	Dorsal cirri smooth	*Parahesione*
21b (17b).	Dorsal cirri articulated	*Nereimyra*
22a (6b).	Three antennae	23
22b (6b).	Two antennae	27
23a (22a).	Median antenna attached medially or posteriorly on the prostomium	24
23b (22a).	Median antenna attached frontally	26
24a (23b).	Eversible pharynx distally fimbriated	*Amphiduros*
24b (23b).	Eversible pharynx distally papillated	25
25a (24b).	Parapodia uniramous	*Leocratides*
25b (24b).	Parapodia biramous	*Leocrates*
26a (23b).	Setae present from the second segment	*Gyptis*
26b (23b).	Setae present from the fifth (or fourth) segment	*Podarkeopsis*
27a (22b).	Notopodia with falcate spines	*Hesiospina*
27b (22b).	Parapodia uniramous	28
28a (27b).	Palps absent	*Hesione*
28b (27b).	Palps present	29
29a (28b).	Setae present from the fourth segment	*Wesenbergia*
29b (28b).	Setae present from the third segment	30
30a (29b).	Eversible pharynx smooth	*Dalhousiella*
30b (29b).	Eversible pharynx distally fimbriated	*Kefersteinia*

Generic Definitions

Alikunhia Hartman 1959, *Anophthalmus erythraeus* Alil unhi 1949; 4 species.

Three antennae, palps and three pairs of tentacular cirri present. Parapodia biramous. Eversible pharynx distally papillated, jaws absent.

Amphiduros Hartman 1958, *Amphidromus setosus* Hessle 1925; 3 species.

Three antennae, biarticulated palps and eight pairs of tentacular cirri present (2-2-2-2). Parapodia biramous. Eversible pharynx distally fimbriated, jaws absent. Median antenna attached medially.

Bonuania Pillai 1965, *B. parva,* Pillai 1965; only species.

Antennae absent; biarticulated palps and four pairs of tentacular cirri present. Parapodia biramous.

Dalhousiella McIntosh 1901, *D. carpenteri* McIntosh 1901; 5 species.

Two antennae; biarticulated palps and eight pairs of tentacular cirri present. Parapodia uniramous, first setae in third segment. Eversible pharynx distally smooth, jaws absent.

Friedericiella Laubier 1967c, *Hesionella pacifica* Friedrich 1956; only species.

Three antennae, simple palps and five pairs of tentacular cirri present. Parapodia biramous, first setae in fourth segment.

Gyptis Marion and Bobretzky 1875, *G. propinqua* Marion and Bobretzky 1875; 16 species.

Three antennae, biarticulated palps and eight pairs of tentacular cirri present. Parapodia biramous; first setae in second segment. Eversible pharynx with 40 distal papillae, jaws absent.

Hesiocaeca Hartman 1965, *H. bermudensis* Hartman 1965; only species.

Three antennae, biarticulated palps and four pairs of tentacular cirri present. Parapodia uniramous, first setae in third segment. Eversible pharynx with a few distal papillae, jaws absent.

Hesione Savigny 1818, *H. splendida* Savigny 1818; 7 species.

Two antennae, palps absent, eight pairs of tentacular cirri present. Parapodia uniramous, setae first in third segment. Eversible pharynx distally smooth, jaws absent.

Hesionella Hartman 1939b, *H. mccullochae* Hartman 1939b; only species.

Two antennae, palps absent, four pairs of tentacular cirri present. Parapodia sub-biramous.

Hesionides Friedrich 1937, *H. arenaria* Friedrich 1937; 3 species.

Three antennae, biarticulated palps and four pairs of tentacular cirri present. Parapodia sub-biramous to biramous, first setae in third segment. Eversible pharynx with ten distal papillae and two longer cirri, jaws absent.

Hesiospina Imajima and Hartman 1964, *Kefersteinia similis* Hessle 1925; only species.

Two antennae, biarticulated palps and eight pairs of tentacular cirri present. Parapodia biramous. Eversible pharynx with 21-27 distal papillae; jaws absent. Notopodial falcate spines present.

Hesiosyllis Wesenberg-Lund 1950, *H. enigmatica* Wesenberg-Lund 1950; only species.

Five antennae (four frontal, one dorsal), smooth palps and two pairs of tentacular cirri present. Parapodia biramous. Eversible pharynx with ten distal papillae; jaws and teeth present.

Heteropodarke Hartmann-Schroder 1962a, *H. heteromorpha* Hartmann-Schroder 1962a; only species.

Three antennae, smooth palps and six pairs of tentacular cirri present. Parapodia sub-biramous.

Kefersteinia Quatrefages 1865, *Psamathe cirrata* Keferstein 1862; only species.

Two antennae, biarticulated palps and eight pairs of tentacular cirri present. Parapodia uniramous, setae from fourth segment. Eversible pharynx with distal circlet of fimbriae; jaws absent.

Leocrates Kinberg 1866b, *L. chinensis* Kinberg 1866b; 11 species.

Three antennae, biarticulated palps and eight pairs of tentacular cirri present. Parapodia biramous. Eversible pharynx with jaws. Median antenna attached posteriorly.

Leocratides Ehlers 1908, *L. filamentosa* Ehlers 1908; only species.

Three antennae, biarticulated palps and eight pairs of tentacular cirri present. Parapodia uniramous. Eversible pharynx with jaws. Median antenna attached posteriorly.

Microphthalmus Mecznikow 1865, *M. sczelkowii* Mecznikow 1865; 13 species.

Three antennae, simple palps and six pairs of tentacular cirri present. Parapodia sub-biramous. Eversible pharynx with distal circlet of papillae, jaws absent. Median antenna attached posteriorly.

Micropodarke Okuda 1938, *Kefersteinia dubia* Hessle 1925; only species.

Two antennae, biarticulated palps and six pairs of tentacular cirri present. Parapodia unramous. Eversible pharynx with 11 papillae distally, jaws absent.

Neopodarke Hartman 1965, *N. woodsholea* Hartman 1965; only species.

Two antennae, biarticulated palps and six pairs of tentacular cirri present. Parapodia uniramous; first setae in fourth segment. Eversible pharynx with 21 distal papillae, jaws absent.

Nereimyra Blainville 1828, *Nereis punctata* O.F. Muller 1776; 12 species.

Two antennae, biarticulated palps and six pairs of tentacular cirri present. Parapodia sub-biramous, first setae in fourth segment. Eversible pharynx with circlet of papillae distally, jaws present.

Ophiodromus Sars 1862, *Nereis fexuosa* delle Chiaje 1825; 11 species.

Three antennae, biarticulated palps and six pairs of tentacular cirri present. Parapodia biramous, first setae in second segment. Eversible pharynx distally with many fine frmbriae; jaws absent.

Orseis Ehlers 1864, *O. pulls* Ehlers 1864; 5 species.

Three antennae, simple palps and three pairs of tentacular cirri present. Parapodia uniramous, first setae in second segment. Median antenna attached posteriorly.

Parahesione Pettibone 1956, *Podarke luteola* Webster 1880; 2 species.

Two antennae, simple palps and six pairs of tentacular cirri present. Parapodia biramous, first setae in second segment. Eversible pharynx with distal circlet of fimbriae, jaws absent.

Parasyllidea Pettibone 1961, *P. humesi* Pettibone 1961; only species.

Two antennae, biarticulated palps and six pairs of tentacular cirri present. Parapodia uniramous; first setae in third segment. Eversible pharynx with a distal circlet of fimbriae, jaws absent. First segment reduced.

Periboea Ehlers 1864, *P. tongocirrata* Ehlers 1864; only species.

Two antennae, triarticulated long palps and seven pairs of tentacular cirri present. Parapodia sub-biramous, first setae in third segment. Eversible pharynx with 16-22 distal papillae, jaws absent.

Podarke Ex AUCTORE; confused, possibly about 12 species.

Three antennae, biarticulated palps and six pairs of tentacular cirri present. Parapodia biramous, first setae from fourth segment. Eversible pharynx with a circlet of papillae, ? jaws absent.

Podarkeopsis Laubier 1961b, P. *galangaui* Laubier 1961b; only species.

Three antennae, biarticulated palps and eight pairs of tentacular cirri present. Parapodia biramous, first setae on fourth visible segment (fifth segment). Eversible pharynx with circlet of papillae, jaws absent.

Struwela Hartmann-Schroder 1959, S. *noodti* Hamnann-Schroder 1959; only species.

Two antennae, biarticulated palps, four pairs of tentacular cirri present. Uniramous parapodia, first setae in third segment. First setiger with large hooks.

Syllidia Quatrefages 1865, S. *armata* Quatrefages 1865; 5 species.

Two antennae, biarticulated palps and six pairs of tentacular cirri present. Parapodia uniramous, first setae in second segment. Eversible pharynx with jaws. First to third segment dorsally reduced.

Syllidia ExAucroRe; confused, possibly five species.

Two pairs of antennae, biarticulated palps and six pairs of tentacular cirri present. Parapodia uniramous, first setae in fourth segment.

Wesenbergia Hartman 1955, *Hesionella problematica* Wesenberg-Lund 1950; only species.

Two antennae, biarticulated palps and eight pairs of tentacular cirri present. Parapodia uniramous, first setae in fourth segment.

Taxonomic Notes

The genus *Podarke* usually is considered a synonym of *Ophiodromus.* However, the concept as usually used, differs slightly from *Ophiodromus,* and has been included in the key and in the definitions. The same is true of the concept *Syllidia* as it has been used in the literature, compared to the version originally proposed.

The key is wholly dependent on correct identification of the numbers of pairs of tentacular cirri. This is perhaps best observed on the lateral side of the animal, and with the light coming in under a low angle, so that each tentacular citrus will cast a shadow. Most hesionids have dehiscent antennae and tentacular cirri so this may be the only means of getting the numbers of anterior appendages correctly identified.

Hesionids in general are rather fragile, and have to be handled very carefully in collections; the only exceptions are the *large,* and rather solid-bodied members of the genus *Hesione.*

Invalid Genera

Anophthalmus Alikunhi 1949, see *Alikunhia*
Anoplonereis Giard 1882, see *Ophiodromus*
Castalia Savigny 1820, see *Nereimyra*
Cirrosyllis Schmarda 1861, indeterminable
Dalhousia McIntosh 1885, *see Leocrates*
Hallmede Rathke 1843, see *Nereimyra*
Mania Quatrefages 1865, see *Ophiodromus*
Orthodromus Ehlers 1908, see *Ophiodromus*
Oxydromus Grube 1855, *see Gyptis*
Pseudosyllidia Czerniavsky 1882, unidentifiable
Schmardiella Czemiavsky 1882, unidentifiable
Stephania Claparede 1870b, see *Ophiodromus*
Telamone Claparede 1868, see *Hesione*
Tyrrhena Claparede 1868, *see Leocrates*

FAMILY PILARGIIDAE SAINT-JOSEPH 1899

Nereidiforms with ribbon-shaped or cylindrical bodies. Two or three antennae present (rarely absent). Palps simple or biarticulated; two pairs of tentacular cirri (rarely absent). Proboscis unarmed. Parapodia biramous, but notopodia always reduced. Setae simple; notosetae sometimes as a thick spine or hook. Notosetae may be absent.

Pilargiids have been the subject of two recent revisions on the generic level, Pearson (1970), and Emerson and Fauchald (1971). Pettibone (1966b) added to the generic descriptions and revised several species. Pilargiids are never really numerous, but are present in most areas in moderate numbers; they tend to be associated with shelf depths and moderately coarse to mixed sediments.

Key to Genera

la.	Notopodia with stout emergent hooks or spines	2
lb.	Notopodia without emergent hooks or spines	8
2a (la).	Notopodia with recurved emergent hooks	3
2b (Ia).	Notopodia with stout, straight spines	6
3a (2a).	Peristomium dorsally entire	*Ancistargis*
3b (2a).	Peristomium dorsally incised	4
4a (3b).	Dorsal and ventral cirri reduced or absent; parapodia reduced, body subcylindrical	*Cabira*
4b (3b).	Dorsal and ventral cirri well developed, parapodia well developed, body dorso-ventrally flattened .	5
5a (4b).	Antennae shorter than palps; integument papillated	*Ancistrosyllis*
5b (4b).	Antennae longer than palps, integument smooth	*Sigambra*
6a (2b).	Prostomial antennae present; parapodia sharply set off from body	*Synelmis*
6b (2b).	Prostomial antennae absent; parapodia distinct, but not set off from body	7
7a (6b).	Tentacular cirri present; palps absent	*Litocorsa*
7b (6b).	Tentacular cirri absent, palps present	*Parandalia*
8a (Ib).	Prostomial antennae and tentacular cirri absent	*Loandalia*
8b (lb).	Prostomial antennae and tentacular cirri present	9
9a (8b).	Prostomium with two antennae, biarticulate palps present	*Pilargis*
9b (8b).	Prostomium with three antennae; palps without palpostyles	*Otopsis*

Generic Definitions

Ancistargis Jones 1961, *A. papillosus* Jones 1961; 4 species.

Body flattened, with two antennae, biarticulate palps, two pairs of tentacular cirri. Peristomium dorsally entire. Antennae shorter than palps. Emergent notopodial hooks present.

Ancistrosyllis McIntosh 1879, *A. groenlandica* McIntosh 1879; 7 species.

Body flattened, with three antennae, biarticulate palps, two pairs of tentacular cirri. Peristomium dorsally incised. Antennae shorter than palps. Emergent notopodial hooks present.

Cabira Webster 1879b, *C. incerta* Webster 1879b; 2 species.

Body cylindrical, with three antennae, biarticulate palps and two pairs of tentacular cirri. Peristomium dorsally incised. Dorsal and ventral cirri reduced, parapodia poorly developed. Emergent notopodial hooks present.

Litocorsa Pearson, 1970, *L. stremma* Pearson 1970; only species.

Body cylindrical without antennae and palps; two pairs of tentacular cirri present. Emergent notopodial spines present.

Loandalia Monro 1936, *L. aberrans* Monro 1936; only species.

Body cylindrical with biarticulate palps; antennae and tentacular cirri absent. Emergent spines absent.

Otopsis Ditlevsen 1917, O. *longipes* Ditlevsen 1917; 3 species.

Body flattened; three antennae and two pairs of tentacular cirri present; palps present, but not articulated. Emergent spines absent.

Parandalia Emerson and Fauchald 1971, *P. ocularis* Emerson and Fauchald 1971; 6 species.

Body cylindrical; biarticulate palps present; antennae and tentacular cirri absent. Emergent notopodial spines present.

Pilargis Saint-Joseph 1899, *P. verrucosa* Saint-Joseph 1899; 7 species.

Body flattened; two antennae, biarticulate palps and two pairs of tentacular cirri present. Emergent spines absent.

Sigambra Muller 1858, S. *grubii* Muller 1858; 11 species.

Body flattened, three antennae, biarticulate palps and two pairs of tentacular cirri present. Antennae longer than palps. Emergent notopodial hooks present.

Synelmis Chamberlin 1919c, *S. simplex* Chamberlin 1919c; 6 species.

Body cylindrical, with three antennae, biarticulate palps and two pairs of tentacular cirri present. Emergent notopodial spines present.

Taxonomic Note

Talehsapia Fauvel 1932, with genotype *T. annandalei* Fauvel 1932, has been considered a member of the family. As noted by Emerson and Fauchald (1971), it cannot be considered a pilargiid, and has been considered an INCERTAE *Sents. T. annandalei* as reported by

Fauvel (1935) and Mesnil and Fauvel (1939) differ from the species as originally described; they are considered here as unidentifiable *Parandalia spp.* (Olga Hartman, personal communication).

Invalid Genera

Glyphohesione Friedrich 1951, see *Synelmis*
Harpochaeta Korschelt 1893, see *Ancistrosyllis*
Hermundura Muller 1858, indeterminable
Kynephorus Ehlers 1920, see *Synelmis*
Phronia Webster 1879b, See *Pilargis*

FAMILY SYLLIDAE GRUBE 1850

Small to medium-sized nereidiform polychaetes with usually, slender bodies (sometimes dorsoventrally flattened). Three antennae and simple palps present, the latter sometimes fused to each other. Two pairs of tentacular cirri. Eversible pharynx armed with a single tooth or a circlet of smaller teeth or unarmed. Proventricle present in nearly all forms. Parapodia uniramous, dorsal cirri usually conspicuous, setae simple or composite.

The syllids are very common shallow-water forms, and tend to be most numerous on hard substrates; however, one sub-family, *Exogoninae,* also is well represented in abyssal depths. In certain genera *(Trypanosyllis, Autolytus* and others), the structure of the trepan, the denticles along the cutting edge of the eversible pharynx, is of great importance. The pharynx is only rarely eversed in preserved material. The examination of the trepan can be done through the body-wall, if the specimen is very small and unpigmented. Larger specimens, more than .5 mm across, or pigmented specimens will have to be dissected. Examination of the eversible pharynx cannot be dispensed with in this family, even at the generic level, as is amply demonstrated in the key below. Similarly, close examination of the structure of the setae is also necessary, making the identification of syllids a time-consuming occupation. Parapodia from anterior, median and posterior region should be mounted on a slide for setal examination under a compound microscope, and the whole specimens should be scanned for modified setae of any kind.

Recent monographs include Imajima (1966a-d 1967) who, in a series of papers revised the Japanese syllids. Gidholm has published a series of papers on the subfamily *Autolytinae (e.g.* Gidholm 1962) and more are expected. Hartmann-Schroder has also concentrated considerable attention on the syllids. Revision of the California fauna is under way and may be expected within a few years (Piltz, in preparation).

Key to Genera

Ia.	Ventral cirri absent	AUTOLYTINAE	2
lb.	Ventral cirri present		9
2a (Ia).	Dorsal cirri on first setiger only		*Procerastea*
2b (Ia).	Dorsal cirri on most setigers		3
3a (2b).	All setae simple, occipital flap present		*Alluaudella*
3b (2b).	At least some setae composite, occipital flap absent		4
4a (3b).	Dorsal cirri cylindrical		5
4b (3b).	Dorsal cirri clavate or foliose		6
5a (4a).	Bayonet-setae thick-shafted; segmental ciliary bands absent		*Proceraea*
5b (4a).	Bayonet-setae thin-shafted; ciliary bands present on every segment		*Autolytus*
6a (4b).	Eversible pharynx unarmed		*Phyllosyllis*
6b (4b).	Eversible pharynx with teeth		7
7a (6b).	With projecting nuchal lobes, rather than flattened nuchal epaulettes		*Autosyllis*
7b (6b).	Nuchal organs flattened epaulettes		8
8a (7b).	Antennae and dorsal cirri clavate		*Umbellisyllis*
8b (7b).	Antennae cylindrical, dorsal cirri flattened		*Myrianida*
9a (Ib).	Small forms (usually less than 8 mm)- palps fused for at least half their lengths ...	EXOGONINAE	II
9b (1b).	Larger forms, palps, if fused at all, only fused basally		10
l0a (9b).	Palps fused at base; dorsal cirri smooth or irregularly wrinkled	EUSYLLINAE	23
lob (9b).	Palpi free to base or absent; dorsal cirri articulated	SYLLINAE	43
1 Ia (9a).	Antennae, tentacular and dorsal cirri absent		*Exogonella*
I Ib (9a).	At least tentacular cirri present, usually also antennae and dorsal cirri		12
12a (I lb).	Two pairs of tentacular cirri present		13
12b (11b).	One pair of tentacular cirri present		17

13a (12a).	Antennae absent	*Exogonita*
13b (12a).	Three antennae present	14
14a (13b).	Eversible pharynx non-muscular and sinuous	*Campesyllis*
l4b (13b).	Eversible pharynx at least partially muscular, straight	15
15a (14b).	Dorsal cirri long and filiform	*Brania*
15b (14b).	Dorsal cirri globular	16
16a (15b).	Body with dorsal globular papillae in addition to the dorsal cirri	*Eurysyllis*
I6b (15b).	Body without dorsal globular papillae	*Plakosyllis*
17a (12b).	One antenna present; dorsal cirri rudimentary	*Spermosyllis*
l7b (12b).	Three antennae present; dorsal cirri well developed if sometimes short	18
18a (17b).	Dorsal cirri long and slender	19
l8b (17b).	Dorsal cirri short, ovoid or pyriform	20
19a (18a).	Parapodia with erect, contractile dorsal lobes	*Anguillosyllis*
l9b (18a).	Parapodia without dorsal lobes	*Braniella*
20a(I8b).	Eversible pharynx unarmed	21
206 (18b).	Eversible pharynx with a single anterior tooth	22
21 a (20a).	Ventral cirri fused to lower edge of parapodia	*Exogonoides*
21b (20a).	Ventrial cirri free from parapodia	*Pseudexogone*
22a (20b).	Dorsal cirri pyriform (flask-shaped)	*Sphaerosyllis*
22b (20b).	Dorsal cirri papilliform or ovoid	*Exogone*
23a (l0a).	Eversible pharynx unarmed	25
23b (l0a).	Eversible pharynx either with a single tooth or with a circlet of smaller teeth	24
24a (23b).	Eversible pharynx with a single large tooth	30
24b (23b).	Eversible pharynx with a series of teeth	41
25a (23a).	Dorsum covered with small papillae	*Rhopalosyllis*
25b (23a).	Dorsum without papillae	26
26a (25b).	Pharynx with an internal valve	*Pharyngeovalvata*
26b (25b).	Pharynx without an internal valve	27
27a (26b).	Tentacular cirri absent; dorsal cirri rudimentary	Fauvelia
27b (26b).	Tentacular cirri present; dorsal cirri well developed	28
28a (27b).	Antennae and tentacular cirri very short	*Atelesyllis*
28b (27b).	Antennae and tentacular cirri not noticeably short	29
29a (28b).	Enlarged knobbed acicula present in anterior parapodia	*Streptosyllis*
29b (28b).	Enlarged knobbed acicula absent	*Syllides*
30a (24a).	Notacicula present	*Eudontosyllis*
30b (24a).	Notacicula absent	31
3Ia (30b).	Antennae and dorsal cirri absent	*Nudisyllis*
31b (30b).	Antennae and dorsal cirri present	32
32a (31b).	Three first segments fused with six pairs of tentacular cirri	*Irmula*
32b (31b).	Maximally two pairs of tentacular cirri on one segment	33
33a (32b).	One pair of tentacular cirri present	34
33b (32b).	Two pairs of tentacular cirri present	36
34a (33a).	Dorsal cirri flattened	*Lamellisyllis*
34b (33a).	Dorsal cirri cylindrical	35
35a (34b).	Composite setae spinigerous	*Parapionosyllis*
35b (34b).	Composite setae falcigerous	Petitia
36a (33b).	Tentacular and dorsal cirri very large, ovoid and inflated	*Clavisyllis*
36b (33b).	Tentacular and dorsal cirri more or less cylindrical	37
37a (36b).	Middorsal tooth situated posterior in the eversible pharynx	*Opisthodonta*
37b (36b).	Middorsal tooth situated anterior in the eversible pharynx	38
38a (37b).	Anterior margin of eversible pharynx denticulated	39
38b (37b).	Anterior margin of eversible pharynx smooth	40
39a (38a).	Median body-region with furcate, thick simple setae	*Synsyllis*
39b (38a).	Median body-region with composite falcigers	*Eusyllis*
40a (38b).	Parapodia long, palps twice as long as prostomium	*Dioplosyllis*
40b (38b).	Parapodia short and conical; palps maximally as long as prostomium	*Pionosyllis*
41 a (24b).	Eversible pharynx with a series of very small teeth	*Parautolytus*

41 b (24b). Eversible pharynx with a limited number of large teeth 42
42a (41b). Body short, with few segments; large nuchal epaulettes present *Amblyosyllis*
42b (41b). Body longer, with numerous segments; nuchal epaulettes absent *Odontosyllis*
43a (lob). Palps absent; first segment with parapodia and setae *Haplosyllides*
43b (l0b). Palps present, first segment without parapodia and setae; usually with tentacular cirri 44
44a (43b). Eversible pharynx with a single tooth, a trepan or both 45
44b (43b). Eversible pharynx unarmed 46
45a (44a). Eversible pharynx with a trepan of several teeth; sometimes with an additional larger single tooth as well 49
45b (44a). Eversible pharynx with a single tooth 50
46a (44b). Dorsum covered with small papillae *Xenosyllis*
46b (44b). Dorsum smooth 47
47a (46b). Parapodia with long, digitate distal lobes *Branchiosyllis*
47b (46b). Parapodia without distal lobes 48
48a (47b). Paired, posteriorly directed nuchal lappets present *Parapterosyllis*
48b (47b). Nuchal lappets absent *Pseudosyllides*
49a (45b). Palpi as long as prostomium; body cylindrical *Geminosyllis*
49b (45b). Palpi small and conical; body flattened *Trypanosyllis*
50a (45a). Middorsal tooth attached posteriorly *Opisthosyllis*
50b (45a). Middorsal tooth attached anteriorly 51
51a (50b). Setae simple, distally furcate or subdistally bossed *Haplosyllis*
51b (50b). At least some setae composite 52
52a (51 b). Dorsal cirri in posterior region alternately long and slender or large, bulbously fusiform . . . . *Parasphaerosyllis*
52b (51 b). Dorsal cirri may alternate between long and short, but all are of similar thickness 53
53a (52b). Tentacular and dorsal cirri with very few articles; dorsal cirri absent from second segment . . . . *Paratyposyllis*
53b (52b). Tentacular and dorsal cirri with at least five articles; dorsal cirri present on second segment 54
54a (53b). Parapodia with pseudocomposite and simple setae in addition to the composite ones *Syllis*
54b (53b). Parapodia maximally with two simple setae in addition to the composite ones 55
55a (54b). Both composite spinigers and falcigers present *Ehlersia*
55b (54b). Only composite falcigers present *Typosyllis*

Generic Definitions

Alluaudella Gravier 1905c, *A. madagascariensis* Gravier 1905c; 2 species.

AUTOLYTINAE. Three short antennae and occipital flap present. Palps completely fused; two pairs of tentacular cirri; setae all simple. Eversible pharynx unarmed.

Amblyosyllis Grube 1857, *A. rhombeata* Grube 1857; 8 species.

EUSYLLINAE. Three long antennae, long palps separated to the base. Dorsal cirri wrinkled. Paired long nuchal epaulettes present. Eversible pharynx with six or seven bi- tri- or pentacuspid teeth.

Anguillosyllis Day 1963, *A. capensis* Day 1963; only species.

EXOGONINAE. Long slender forms with three minute antennae; one pair of tentacular cirri; eversible pharynx unarmed. Parapodia with long contractile dorsal lobes.

Atelesyllis Pruvot 1930, *A. rubrofasciata* Pruvot 1930; only species.

EUSYLLINAE. Three antennae, palps separated to the base. Antennae and tentacular cirri very short; large occipital flap present. Eversible pharynx unarmed. Dorsal cirri emerge well above base of parapodia.

Autolytus Grube 1850, *Nereis prolifera* O.F. Muller 1788; 110 species.

AUTOLYTINAE. Three antennae, two pairs of tentacular cirri; first dorsal cirri longer than the rest. Nuchal epaulettes present. Eversible pharynx with trepan with varying number of teeth. Each segment with ciliated band. Bayonet-setae thin-shafted.

Autosyllis Imajima and Hartman 1964, A. japonica Imajima and Hartman 1964; only species.

AUTOLYTINAE. Three antennae, two pairs of tentacular cirri; first dorsal cirri short. Dorsal cirri clavate or foliose; nuchal projecting lobes present.

Branchiosyllis Ehlers 1887, B. *oculata* Ehlers 1887; 5 species.

SYLLINAE. Palps free to base; two pairs of tentacular cirri. Parapodia with long digitate distal lobes attached pre- and postsetally. Eversible pharynx unarmed.

Brania Quatrefages 1866, *Exogone pusilla* Dujardin 1851; 21 species.

EXOGONINAE. Two pairs of tentacular cirri; dorsal cirri long and filiform. Dorsal cirri longer than, ventral cirri as long as the setal lobes. Palpi as long as prostomium. Eversible pharynx with anterior dorsal tooth.

Braniella Hartman 1965, *B. pupa* Hartman 1965; 2 species.

EXOGONINAE. Three short, ovate antennae; one pair of tentacular cirri; dorsal cirri long, slender and smooth, eversible pharynx unarmed. Composite spinigers.

Campesyllis Chamberlin 1919a, C. minor Chamberlin 1919a; only species.

EXOGONINAE. Three short antennae; two pairs of tentacular cirri. Eversible pharynx sinuous and non-muscular.

Clavisyllis Knox 1957, C. anernata Knox 1957; only species.

EUSYLLINAE. Three antennae; two pairs of tentacular cirri; prominent nuchal epaulettes present. Eversible pharynx smooth-rimmed with single dorsal tooth. Tentacular and dorsal cirri large, ovoid and inflated.

Dioplosyllis Gidholm 1962, *D. cirrosa* Gidholm 1962; 3 species.

EUSYLLINAE. Three antennae, two pairs of tentacular cirri; nuchal ridges present or absent. Palps very large and lingulate; parapodia long. Eversible pharynx with middorsal tooth, smooth-rimmed or with a few teeth.

Ehlersia Quatrefages 1865, Syllis *sexoculata* Ehlers 1864; 15 species.

SYLLINAE. Three antennae and two pairs of tentacular cirri; all anterior appendages articulated (except palps). Eversible pharynx with middorsal tooth. Setae include composite spinigers and falcigers and in posterior setigers one or two simple setae per fascicle.

Eudontosyllis Knox 1960, E. *aciculata* Knox 1960; only species.

EUSYLLINAE. Tentacular and dorsal cirri articulated, ventral cirri foliose. Eversible pharynx with middorsal tooth and denticulated margin; occipital flap present. Notacicula present.

Eurysyllis Ehlers 1864, E. *tuberculata* Ehlers 1864; 3 species.

EXOGONINAE. Body short and flattened. Three globular antennae; tentacular cirri and dorsal cirri also globular. Eversible pharynx with a trepan with 10 teeth and a middorsal tooth present. Dorsum covered with rows of globular papillae.

Eusyllis Malmgren 1867, E. *blomstrandi* Malmgren 1867; 27 species.

EUSYLLINAE. Three antennae and two pairs of tentacular cirri. Eversible pharynx with middorsal tooth, margin denticulated. Occipital flap may be present. Setae composite falcigers.

Exogone Orsted 1845, E. naidina Orsted 1845; 40 species.

EXOGONINAE. Three antennae; one pair of tentacular cirri. Dorsal and ventral cirri shorter than setal lobes; dorsal cirri ovoid or papilliform. Eversible pharynx with a single tooth.

Exogonella Hartman 1961, E. *brunnea* Hartman 1961; 2 species.

EXOGONINAE. Antennae, tentacular and dorsal cirri absent. Eversible pharynx with a single tooth.

Exogonita Hartman and Fauchald 1971, E. *oculata* Hartman and Fauchald 1971; only species.

EXOGONINAE. Antennae absent; two pairs of tentacular cirri present. Eversible pharynx with a single tooth.

Exogonoides Day 1963, E. antennata Day 1963; only species.

EXOGONINAE. Three ovoid antennae; one pair of ovoid tentacular cirri. Dorsal cirri ovoid; ventral cirri fused to parapodia. Eversible pharynx unarmed.

Fauvelia Gravier 1900, F. *martinensis* Gravier 1900; only species.

EUSYLLINAE. Antennae absent; tentacular cirri absent; dorsal cirri rudimentary. Eversible pharynx unarmed.

Geminosyllis Imajima 1966c, *Trypanosyllis (Trypanedenta)* ohma Imajima and Hartman 1964; only species.

SYLLINAE. Body subcylindrical; three antennae, two pairs of tentacular cirri. Eversible pharynx with trepan of ten teeth and in addition a single large tooth. All antennae and cirri slender and articulated.

Haplosyllides Augener 1922, *H. floridana* Augener 1922; only species.

SYLLINAE. Three antennae; palps absent. First segment with parapodia and setae. Dorsal cirri long, ventral cirri short, all cirri smooth.

Haplosyllis Langerhans 1879, Syllis *spongicola* Grube 1855; 10 species.

SYLLINAE. Three antennae, two pairs of tentacular cirri; all cirri articulated and slender. Eversible pharynx with single tooth. Setae simple, distally furcate or with a subdistal boss or knob.

Irmula Ehlers 1913, 1. *spissipes* Ehlers 1913; only species.

EUSYLLINAE. Three antennae; six pairs of tentacular cirri on three fused segments. All cirri smooth. Eversible pharynx with anterior single tooth.

Lamellisyllis Day 1960, *L.* comans Day 1960; only species.

EUSYLLINAE. Flattened, small form. Three foliaceous antennae; one pair of tentacular cirri. Eversible pharynx with single tooth. Dorsal cirri flattened; ventral cirri cylindrical.

Myrianida Milne Edwards 1845, *Nereis pinnigera* Montagu 1808; 8 species.

AUTOLYTINAE. Three antennae; two pairs of tentacular cirri. All dorsal cirri flattened; antennae cylindrical. Eversible pharynx with trepan with varying numbers of teeth.

Nudisyllis Knox and Cameron 1970, N. tinihekia Knox and Cameron 1970; only species.

EUSYILLINAE. Antennae and dorsal cirri absent. Eversible pharynx with a single tooth; margin smooth-rimmed.

Odontosyllis Claparede 1863, Syllis fuigurans Audouin and Milne Edwards 1833a; 35 species.

EUSYLLINAE. Three antennae; two pairs of tentacular cirri. Occipital flap usually present. Eversible pharynx with a series (less than 20) curved teeth.

Opisthodonta Langerhans 1879, O. *morena* Langerhans 1879; 2 species.

EUSYLLINAE. Three antennae; two pairs of tentacular cirri; all antennae and cirri smooth. Eversible pharynx with a single large, posteriorly located tooth. Some anterior parapodia with very thick acicula.

Opisthosyllis Langerhans 1879, O. brunnea Langerhans 1879; 10 species.

SYLLINAE. Three antennae; two pairs of tentacular cirri; occipital flap may be present. All antennae and cirri articulated. Eversible pharynx with posteriorly attached mid-dorsal tooth; anterior margin smooth.

Parapionosyllis Fauvel 1923, *Pionosyllis gestans* Pierantoni 1903; 9 species.

EUSYLLINAE. Three antennae; one pair of tentacular cirri. Eversible *pharynx* with a single tooth. Composite setae spinigerous.

Parapterosyllis Hartmann-Schroder 1960a, *P. sexoculata* Hartmann-Schroder 1960a; 2 species.

SYLLINAE. Three antennae and two pairs of tentacular cirri. Prostomium with paired posteriorly directed nuchal lappets. All appendages articulated. Eversible pharynx unarmed.

Parasphaerosyllis Monro 1937b, *P.* indica Monro 1937b; 4 species.

SYLLINAE. Three antennae; two pairs of tentacular cirri. Dorsal cirri anteriorly all slender and moniliform; posteriorly alternating between slender and large, bulbously fusiform cirri. Eversible pharynx with mid-dorsal tooth.

Pararyposyllis Hartmann-Schroder 1962b, *P. paurocirrata* Hartmann-Schroder 1962; 2 species.

SYLLINAE. Three antennae; two pairs of tentacular cirri; eversible pharynx with single tooth. All composite setae falcigers; one or two simple setae present in each of the posterior setigers. All antennae and cirri with less than five articles; second segment without dorsal cirri.

Parautolytus Ehlers 1900, *P. fasciatus* Ehlers 1900; 2 species.

EUSYLLINAE. Three antennae; two pairs of tentacular cirri. Antennae and cirri smooth. Eversible pharynx finely denticulated, large tooth absent.

Petitia Siewing 1955, *P.* amphophthalma Siewing 1955; only species.

EUSYLLINAE. Three antennae; one pair of tentacular cirri. Palpi biarticulate in adults. Eversible pharynx with a single tooth. Composite setae falcigerous.

Pharyngeovalvata Day 1951, *P.* natalensis Day 1951; only species.

EUSYLLINAE. Three antennae; two pairs of tentacular cirri. Occipital flap present. Pharynx with valve; teeth absent.

Phyllosyllis Ehlers 1897, *P. albida* Ehlers 1897, only species.

AUTOLYTINAE. Three antennae; first segment setose, with two *large,* foliose cirri. Eversible pharynx without teeth. Dorsal cirri foliose.

Pionosyllis Malmgren 1867, *P. compacta* Malmgren 1867; 31 species.

EUSYLLINAE. Three antennae; two pairs of tentacular cirri. Tentacular and dorsal cirri smooth and cylindrical. Eversible pharynx with single tooth; anterior margin smooth.

Plakosyllis Hartmann-Schroder 1956, *P- brevipes* Hartmann-Schroder 1956; 2 species.

EXOOONINAE. Body short, three globular antennae; tentacular cirri and dorsal cirri also globular. Eversible pharynx with a trepan with ten teeth; a single tooth also present. Dorsal globular papillae absent.

Proceraea Ehlers 1864, *P. picta* Ehlers 1864; 7 species.

AUTOLYTINAE. Three antennae; two pairs of tentacular cirri. Palps small and ventrally located. Eversible pharynx with trepan with numerous teeth. Epaulettes present. Bayonet-setae thick-shafted. Ciliary bands absent from the setigers.

Procerastea Langerhans 1884, *P. nematodes* Langerhans 1884; 3 species.

AUTOLYTINAE. Three antennae, two pairs of tentacular cirri. Dorsal cirri on first setiger only. Eversible pharynx with trepan with numerous teeth.

Pseudexogone Augener 1922, P. *backstromi* Augener 1922; only species.

EXOGONINAE. Three antennae;; one pair of tentacular cirri. Eversible pharynx unarmed. Dorsal cirri present on second segment.

Pseudosyllides Augener 1927b, *P. curacaoensis* Augener 1927b; only species.

SYLLINAE. Three antennae; two pairs of tentacular cirri; antennae and cirri strongly articulated. Eversible pharynx unarmed with a smooth margin.

Rhopalosyllis Augener 1913a, R. *hamul(fera* Augener 1913a; only species.

EUSYLLINAE. Three antennae and two pairs of tentacular cirri. Antennae and cirri smooth. Dorsum covered with long papillae. Eversible pharynx unarmed.

Spermosyllis Claparede 1864, S. *torulosa* Claparede 1864; 3 species.

EXOGONINAE. One antenna and one pair of tentacular cirri. Eversible pharynx with a single tooth. Dorsal cirri rudimentary, ventral cirri absent.

Sphaerosyllis Claparede 1863, S. hystrix Claparede 1863; 28 species.

EXOGONINAE. Three antennae; one pair of tentacular cirri. Dorsal cirri pyriform (flask-shaped), absent on second segment. Body with adhesive papillae.

Streptosyllis Webster and Benedict 1884, S. *arenae* Webster and Benedict 1884; 7 species.

EUSYLLINAE. Three antennae and two pairs of tentacular cirri. Eversible pharynx unarmed. Large knobbed acicula present in anterior setigers.

Syllides Orsted 1845, S. *longocirrata* Orsted 1845; 13 species.

EUSYLLINAE. Three antennae and two pairs of tentacular cirri. Eversible pharynx unarmed; distal margin of pharynx smooth. No enlarged setae or acicula.

Syllis Savigny 1818, S. monilaris Savigny 1818; 45 species.

SYLLINAE. Three antennae; two pairs of tentacular cirri, all articulated. Eversible pharynx with a single tooth. Pseudocomposite and simple setae present in addition to the composite setae in all parts of the body.

Synsyllis Verrill 1900, S. *longigularis* Verrill 1900; 2 species.

EUSYLLINAE. Three antennae and two pairs of tentacular cirri. Eversible pharynx with mid-dorsal tooth; margin denticulated. Middle part of body with large, distally furcate simple setae.

Trypanosyllis Claparede 1864, *Syllis zebra* Grube 1860; 26 species.

SYLLINAE. Body flattened with numerous short segments. Three antennae and two pairs of tentacular cirri; all articulated. Trepan with several teeth; a single tooth may be present.

Typosyllis Langerhans 1879, Syllis *krohnii* Ehlers 1864; 89 species.

SYLLINAE. Three antennae and two pairs of tentacular cirri; all articulated. Eversible pharynx with a single tooth. Setae include uni- or bidentate falcigers in addition to one or two simple setae in each of the posterior setigers.

Umbellisyllis Sars 1869, U. fasciata Sars 1869; 2 species.

AUTOLYTINAE. Three clavate antennae; two pairs of tentacular cirri. Nuchal organs foliaceous. Dorsal cirri clavate.

Xenosyllis Marion and Bobretzky 1875, *Syllis scabra* Ehlers 1864; 2 species.

SYLLINAE. Three short, thick antennae; two pairs of tentacular cirri. Tentacular cirri and dorsal cirri with few moniliform or collared articles. Dorsum covered with small papillae. Eversible pharynx unarmed..

Taxonomic Notes

The subfamilies have been accepted strictly as defined above; as a consequence several of the genera have been moved from one subfamily to another. This is not considered to be of any great importance: the differences between the subfamilies, especially between the EUSYLLINAE and SYLLINAE appear to be of more practical than scientific value.

The genus *Irmula* was originally described in the Hesionidae. It was moved to Syllidae by Day (1967). It has a very isolated position in the family due to the presence of three modified anterior segments with six pairs of tentacular cirri. However, the structure of pharynx, parapodia and setae is typically syllid, so it appears best to retain it in the Syllidae.

Hesiosyllis Wesenberg-Lund 1950, described as intermediary between the syllids and the hesionids, is treated here among the latter, in that the structure of the pharynx, setae, parapodia and tentacular cirri appear to resemble members of that family much more than it resembles any member of the Syllidae.

Invalid Genera

Amytis Savigny 1818, *see Proceraea*
Anoplosyllis Claparede 1868, *see Syllides*
Aporosyllis Quatrefages 1865, *see Syllis*
Autolytides Malaquin 1893, *see Autolytus*
Brachysyllis Imajima and Hartman 1964, *see Dioplosyllis*
Chaetosyllis Malmgren 1867, *see Ehlersia*
Cirrosyllis Schmarda 1861, *see Amblyosyllis and Autolytus*
Claparedia Quatrefages 1865, *see Eusyllis (?)*
Crithida Gosse 1855, *see Autolytus*
Cystonereis K61liker in Koch 1846, *see Exogone*
Desmosyllis Verrill 1900, *see Eusyllis*
Diploceraea Grube 1850, *see Autolytus*
Doyeria Quatrefages in Milne Edwards 1848, NoMen NUDUM
Eucerastes Ehlers 1864, see *Myrianida*
Eurymedusa Kinberg 1866b, see *Trypanosyllis*
Exotokas Ehlers 1864, *see Exogone*
Gattiola Johnston 1863, *see Amblyosyllis*
Gnathosyllis Schmarda 1861, *see Syllis*
Gossia Quatrefages 1865, *see Exogone (?)*
Grubea Quatrefages 1865, *see Brania*
Grubeosyllis Verrill 1900, *see Brania*
Hemisyllis Verrill 1900, *see Haplosyllis*
Hesperalia Chamberlin 1919a, *?Odontosyllis*
Heterosyllis Claparede 1863, indeterminable
loda Johnston 1840, see *Syllis*
Isosyllis Ehlers 1864, *see Typosyllis*
Lalage Miiller 1858, NoMEN NuDUM (see *Syllis)*
Lengerhansia Czemiavsky 1882, *see Ehlersia*
Laomedora Kinberg 1866b, indeterminable
Lapithas Kinberg 1866b, indeterminable
Lophosyllis Sans 1867, indeterminable
Lycastis Savigny 1818, see *Typosyllis*
Microsyllis Claparede 1863, questionably *Exogone*
Monocerina Costa 1861a, indeterminable
Nereisyllis Blainville 1828, *see Syllis*
Nicotia Costa 1864, see *Amblyosyllis*
Oophylax Ehlers 1864, *see Exogone*
Paedophylax Claparede 1868, *see Exogone*
Pagenstecheria Quatrefages 1865, *see Typosyllis*
Parasitosyllis Potts 1912, NoMEvNUDUM
Parexogone Mesnil *and Caullery* 1916, *see Exogone*
Periboea Kinberg 1866b, indeterminable
Photocharis Ehrenberg 1835, indeterminable
Platysyllis Grube 1878, indeterminable
Podonereis Blainville 1818, *see Autolytus*
Polybostrichus Orsted 1843a, see *Proceraea*
Polymastus Claparede 1864, *see Eurysyllis*
Polynice Savigny in Grube 1850, questionably *Autolytus*
Procorne Ehlers 1864, see *Odontosyllis*
Protogrubea Czemiavsky 1881 *a, see Brania*
Pseudosyllides Czemiavsky 1882, *see Amblyosyllis*
Pterautolytus Ehlers 1907, see *Autolytus*
Pterosyllis Claparede 1863, *see Amblyosyllis*
Saccонereis Muller 1853, *see Autolytus*
Salvatoria McIntosh 1885, *see Brania*
Schmardia Quatrefages 1865, *see Exogone*
Stephanosyllis Claparede 1864, *see Proceraea*
Syllia Quatrefages 1865, see *Exogone*
Sylline Grube 1860, *see Autolytus*
Sylline Claparede 1864, *see Exogone*
Tetraglene Grube 1863, *see Trypanosyllis*
Thee Kinberg 1866b, see Typosyllis
Thylaciphorus Quatrefages 1865, *see Amblyosyllis*
Trichosyllis Schmarda 1861, *see Syllis*
Virchowia Langerhans 1879, see *Umbellisyllis*
Xenosyllides Perejaslavzeva in Jakubova 1930, *questionably Umbellisyllis*

FAMILY CALAMYZIDAE HARTMANN-SCHRODER 1971

Body short, anteriorly and posteriorly rounded. *Prostomium small and without* appendages *with a sucking mouth on the ventral side. All cirri (tentacular cirri, dorsal and ventral cirri) short and digitate. Anal cirri* absent. Setae *composite. Eversible pharynx with stylet-*shaped *sucking tube, otherwise without specializations.*

The only known genus and species, Calamyzas amphictenicola Arwidsson 1932 is *parasitic on the* ampharetid polychaete, *Amphicteis gunneri* (Sars 1835) from Sweden. *A review can be found in* Hartmann-Schroder 1971.

FAMILY NEREIDAE JOHNSTON 1845

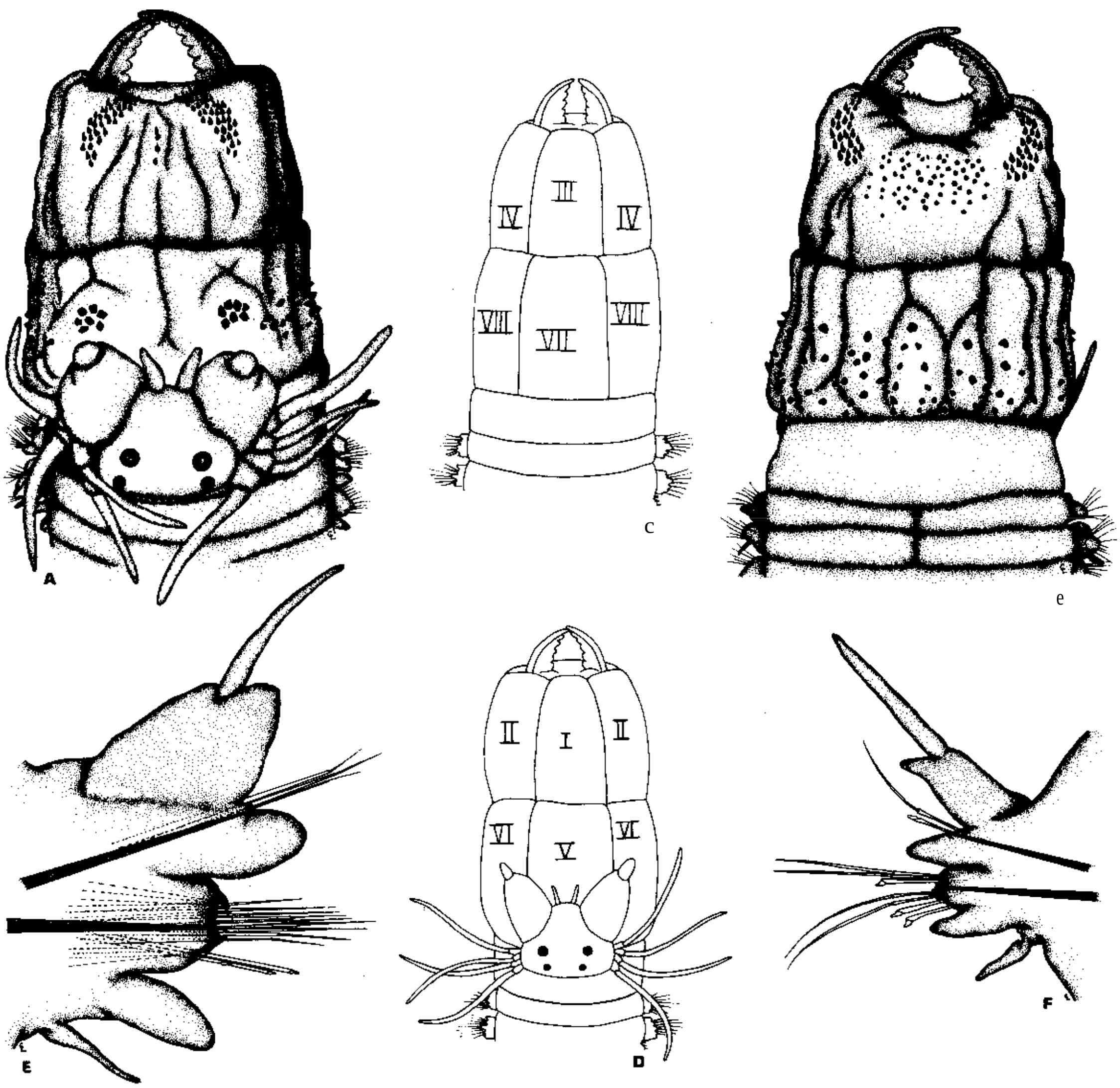
Elongated, multi-segmented nereidiform polychaetes. Two, rarely one, antennae; palps *biarticulated. Two* or four *pairs of tentacular cirri.* Eversible *pharynx with a pair of jaws and often accessory* denticles *or* papillae. *Parapodia nearly always biramous, usually with complex flattened lobes and cirri. Setae composite or simple, spinigerous or falcigerous.*

The nereids *are common forms in all depths, and* penetrate freshwater *and to a very limited extent, even terrestrial* environments *(Pflugfelder* 1933). *Some* nereids *are easy to maintain under laboratory conditions and have* been *used extensively for experimental research. The most popular of the* nereids *thus used, is Hediste diversicolor, referred to in the experimental* literature incorrectly as *Nereis diversicolor* in most cases; in *other cases,* more *correctly as Neanthes diversicolor.*

Some critical problems are associated with the recognition of species within the family, in that all species cannot be recognized on strictly morphological characters (Smith 1958). It is suspected that in fact a series of widespread species *(Nereis pelagica, Neanthes virens, Platynereis dumerilii* and others) may turn out to be species-complexes, defined on non-morphological features. It is thus of importance that the provenance of experimental organisms be stated clearly in all publications.

Key to Genera

Ia.	Peristomium forms a large ventral collar	*Cheilonereis*
lb.	Peristomium not ventrally enlarged	2
2a (lb).	Some notopodia with pectinate branchiae	3
2b (I b).	Branchiae absent	4
3a (2a).	Branchiae arise from the dorsal cirrus; all setae composite spinigers	*Dendronereis*



Frcuau 21. (A), Family NEREIDAE, *Nereis vexillosa,* Boiler Bay, *Oregon,* intertidal, dorsal view, 10x; (B), ventral view *of* the above, 10x; (C) and (D), diagrams *of* the pharyngeal areas *of nereids, in* ventral and dorsal views; (E), median parapodium *of* the above, 25x; (F), median parapodium *of N. vexillosa* from Dillon Beach, California, 50x.

3b (2a).	Branchiae arise from the notopodial lobes; some composite falcigers present	*Dendronereides*
4a (2b).	Anterior ventrum with transverse fleshy ridges	*Australonereis*
4b (2b).	Anterior ventrum smooth	5
Sa (4b).	Antennae absent	6
5b (4b).	At least one antenna present	7
6a (5a).	Two pairs of tentacular cirri present; anterior apodous segment absent	*Micronereis*
6b (5a).	Three pairs of tentacular cirri present; anterior apodous segment present	*Cryptonereis*
7a (5b).	A single median antenna present	8
7b (5b).	Two antennae present	9
8a (7a).	Paragnaths present on the maxillary ring; parapodia biramous (except the first two)	*Unanereis*
8b (7a).	Paragnaths absent; parapodia uniramous	*Dawbinia*
9a (7b).	Notocirri of parapodia 5-7 broadly elytraeform	*Kainonereis*
9b (7b).	Notocirri of parapodia 5-7 cylindrical and cirriform	10
10a (9b).	Notopodia strongly reduced or absent	11
l0b (9b).	Median and posterior notopodia well developed, with lobes and setae	14
I la (l0a).	Notosetae present	*Namanereis*
llb (l0a).	Notosetae absent	12
12a(1lb).	Tentacular cirri articulated	*Lycastoides*
12b (lib).	Tentacular cirri smooth	13
13a (12b).	Notacicula present; antennae and cirri well developed	*Namalycastis*
13b (12b).	Notacicula absent; antennae and cirri reduced	*Lycastopsis*
14a (l0b).	Eversible pharynx with either papillae or paragnaths or both, in addition to the jaws	15
14b (l0b).	Eversible pharynx with jaws, but otherwise smooth	16
15a (14a).	Eversible pharynx with soft papillae only	20
15b (14a).	Eversible pharynx with at least some paragnaths	25
16a (14b).	Two pairs of tentacular cirri; apodous segment absent	*Micronereides*
l6b (14b).	Four pairs of tentacular cirri; apodous segment present	17
17a (16b).	Dorsal cirri attached basally on the notopodial superior lobes	18
17b (16b).	Dorsal cirri attached distally on the notopodial superior lobes	19
18a (17a).	Notopodial homogomph falcigers present in posterior setigers	*Rullierinereis*
18b (17a).	Notopodial homogomph falcigers absent	*Nicon*
I9a (17b).	Superior notopodial lobes long and straplike; inferior neuropodial lobe absent	*Steninonereis*
19b (17b).	Superior notopodial lobes large and foliose; inferior neuropodial lobes present	*Leptonereis*
20a (15a).	Pharyngeal papillae at least in part in tufts	21
20b (15a).	Pharyngeal papillae solitary	22
21a (20a).	All setae homogomph spinigers	*Tylonereis*
21b (20a).	Setae include also neuropodial homogomph falcigers in posterior setigers	*Laeonereis*
22a (20b).	Ventral cirri double at least in some setigers	*Ceratocephale*
22b (20b).	All ventral cirri simple	23
23a (22b).	Accessory dorsal cirri on some anterior setigers; posterior dorsal cirri long and whiplike -	*Gymnonereis*
23b (22b).	Accessory dorsal cirri absent; posterior dorsal cirri not whiplike	24
24a (23b).	Pharyngeal papillae on both rings; inferior neuropodial lobes absent; dorsal cirri distally attached ...	*Tylorrhynchus*
24b (23b).	Pharyngeal papillae on oral ring only; inferior neuropodial lobes present; dorsal cirri basally attached	*Kinberginereis*
25a (15b).	Eversible pharynx with both papillae and paragnaths	*Leonnates*
25b (15b).	Papillae absent, paragnaths present	26
26a (25b).	Paragnaths present on one pharyngeal ring only	27
26b (25b).	Paragnaths present on both pharyngeal rings	30
27a (26a).	Paragnaths present on the maxillary ring only	28
27b (26a).	Paragnaths present on the oral ring only	29
28a (27a).	Paragnaths in eight groups, all rod-shaped	*Solomononereis*
28b (27a).	Paragnaths in patches and bands, all conical	*Ceratonereis*
29a (27b).	Notopodial homogomph falcigers present in posterior setigers	*Eunereis*
29b (27b).	Notopodial homogomph falcigers absent	*Websterinereis*

30a (26b).	All paragnaths conical	31
30b (26b).	Cones and in addition either transverse or pectinate paragnaths or both present on the pharynx ..	35
31a (30a).	All setae homogomph spinigers	*Nectoneanthes*
31b (30a).	At least some falcigers present	32
32a (31b).	Middle and posterior neuropodia with single homogomph falcigers	*Hediste*
32b (31 b).	Homogomph falcigers, if present, in notopodial positions	33
33a (32b).	With blunt simple falcigers in notopodia	*Cironereis*
33b (32b).	Simple falcigers absent, composite falcigers present or absent	34
34a (33b).	Notopodial homogomph falcigers present in posterior setigers	*Nereis*
34b (33b).	Notopodial homogomph falcigers absent	*Neanthes*
35a (30b).	Paragnaths include pectinate bars and usually small patches of cones; transverse smooth bars absent	*Platynereis*
35b (30b).	Paragnaths include transverse smooth bars, patches of cones and sometimes pectinate bars	36
36a (35b).	Superior notopodial lobes greatly expanded in posterior setigers; pectinate bars usually present	*Pseudonereis*
36b (35b).	Superior notopodial lobes not expanded in any setigers; pectinate bars absent	*Perinereis*

Generic Definitions

Australonereis Hartman 1954, *Nereis (Leonnates) ehlersi* Augener 1913a; only species.

Eversible pharynx with soft papillae on the maxillary ring, oral ring bare. Four pairs of tentacular cirri; biramous parapodia. Notosetae homogomph spinigers; neurosetae homo- and heterogomph falcigers. With fleshy transverse ridges across anterior ventrum.

Ceratocephale Malmgren 1867, C. *loveni* Malmgren 1867; 11 species.

Eversible pharynx with soft papillae on both rings. Four pairs of tentacular cirri; biramous parapodia. Setae include homogomph and heterogomph spinigers and heterogomph falcigers. Ventral cirri double on at lest some setigers, usually on most.

Ceratonereis Kinberg 1866a, C. *mirabilis* Kinberg 1866a; 53 species.

Eversible pharynx with paragnaths on the maxillary ring only. Four pairs of tentacular cirri; biramous parapodia. Notosetae include homogomph spinigers and falcigers; neurosetae homo- and heterogomph spinigers and heterogomph falcigers. Dorsal cirri attached basally to the superior notopodial lobe; inferior neuropodial lobe may be present.

Cheilonereis Benham 1916, *Nereis cyclurus* Harrington 1897; 2 species.

Eversible pharynx with conical paragnaths on both rings. Four pairs of tentacular cirri; biramous parapodia. Notosetae homogomph spinigers; neurosetae homogomph spinigers and heterogomph falcigers. Superior notopodial lobes large and foliose with dorsal cirrus attached medially. Peristomium greatly expanded ventrally.

Cirronereis Kinberg 1866a, C. *gracilis* Kinberg 1866a; only species.

Eversible pharynx with conical paragnaths on both rings. Four pairs of tentacular cirri; biramous parapodia. Notosetae include homogomph spinigers and blunt simple falcigers; neurosetae heterogomph spinigers and falcigers.

Cryptonereis Gibbs 1971, C. *malaitae* Gibbs 1971; only species.

Eversible pharynx without paragnaths or papillae. Three pairs of tentacular cirri; uniramous parapodia. Neurosetae heterogomph spinigers and falcigers. Frontal antennae absent; at maturity, parapodia biramous with capillary setae.

Dawbinia Benham 1950, *D. aucklandica* Benham 1950; only species.

Eversible pharynx without paragnaths or papillae. Two pairs of tentacular cirri; parapodia uniramous. Neurosetae homogomph spinigers and heterogomph falcigers. A single median antenna present.

Dendronereides Southern 1921, *D. heteropoda* Southern 1921; 2 species.

Eversible pharynx with soft papillae on both rings. Four pairs of tentacular cirri; parapodia biramous. Branchiae present as a subdivision of the notopodial superior lobes. Neuropodial inferior lobes absent. Notosetae homogomph spinigers; neurosetae home- and heterogomph spinigers and heterogomph falcigers.

Dendronereis Peters 1854, *D. arborifera* Peters 1854; 3 species.

Eversible pharynx smooth or with soft papillae. Four pairs of tentacular cirri; parapodia biramous. Branchiae present as subdivisions of the dorsal cirri. Neuropodia in anterior setigers multifid. All setae homogomph spinigers.

Eunereis Mahngren 1867, *Nereis longissima* Johnston 1840; 7 species.

Eversible pharynx with paragnaths on oral ring only. Four pairs of tentacular cirri; parapodia biramous. Notosetae homogomph spinigers and falcigers; neurosetae homo- and heterogomph spinigers and heterogomph falcigers.

Gymnonereis Horst 1919a, *Gymnorhynchus sibogae* Horst 1918; 2 species.

Eversible pharynx with papillae on the oral ring only. Four pairs of tentacular cirri; parapodia biramous. Accessory dorsal cirri present on some anterior segments; posterior dorsal cirri long and whiplike. All setae homogomph or slightly hemigomph spinigers.

Hediste Malmgren 1867, *Nereis diversicolor* O.F. Maller 1776; only species.

Eversible pharynx with conical paragnaths on both rings. Four pairs of tentacular cirri; parapodia biramous. Notosetae homogomph spinigers. Neurosetae homo- and heterogomph spinigers; heterogomph falcigers. A single homogomph falciger present in median and posterior neuropodia.

Kainonereis Chamberlin 1919c, *K. alata* Chamberlin 1919c; only species.

Eversible pharynx without paragnaths or papillae. Four pairs of tentacular cirri present; parapodia biramous. Antennae bifid at the tips; broad elytraeform dorsal cirri on parapodia 5-7.

Kinberginereis Pettibone 1971a, *Nereis (Leptonereis) inermis* Hoagland 1920; only species.

Eversible pharynx with soft papillae on the oral ring only. Four pairs of tentacular cirri; parapodia biramous. Notosetae homogomph spinigers; neurosetae homogomph and heterogomph spinigers. Inferior neuropodial lobe present; dorsal cirri basal.

Laeonereis Hartman 1945, *Nereis culveri* Webster 1879a; 6 species.

Eversible pharynx with tufts of papillae on both rings and large solitary papillae on area VI. Four pairs of tentacular cirri; parapodia biramous. Notosetae homogomph spinigers; neurosetae homogomph spinigers and falcigers, the latter in posterior setigers. Inferior neuropodial lobes present.

Leonnates Kinberg 1866a, *L. indicus* Kinberg 1866a; 10 species.

Eversible pharynx with papillae on the oral ring and paragnaths on the maxillary ring. Four pairs of tentacular cirri; parapodia biramous. Notosetae homogomph spinigers; neurosetae heterogomph falcigers with coarsely serrated blades.

Leptonereis Kinberg 1866a, *L. laevis* Kinberg 1866a; 2 species.

Eversible pharynx without papillae and paragnaths. Four pairs of tentacular cirri, parapodia biramous. Superior notopodial lobes large and foliose in posterior setigers. Notosetae homogomph spinigers; neurosetae heterogomph spinigers and falcigers, the latter with long appendages. Inferior neuropodial lobe present.

Lycastoides Johnson 1903, *L. alticola* Johnson 1903; only species.

Eversible pharynx without papillae or paragnaths. Four pairs of tentacular cirri present; parapodia uniramous. Neurosetae heterogomph falcigers and spinigers. Tentacular cirri jointed; eyes absent.

Lycastopsis Augener 1922, *L. beameri* Augener 1922; 6 species.

Eversible pharynx without papillae or paragnaths. Three pairs of tentacular cirri present; parapodia uniramous. Neurosetae heterogomph spinigers and falcigers. Antennae and cirri reduced.

Micronereides Day 1963, *M. capensis* Day 1963; only species.

Eversible pharynx without papillae or paragnaths. Two pairs of tentacular cirri present; parapodia biramous. Apodous segment absent. All setae homogomph spinigers.

Micronereis Claparede 1863, *M. variegata* Claparede 1863; 5 species.

Eversible pharynx without papillae or paragnaths. Two pairs of tentacular cirri present; parapodia biramous. Apodous segment absent. Antennae absent. All setae homogomph spinigers.

Namalycastis Hartman 1959, *Paranereis abiuma* Maller in Gmbe 1871; 18 species.

Eversible pharynx without papillae or paragnaths. Four pairs of tentacular cirri; parapodia sub-biramous or uniramous. Notosetae usually absent; neurosetae heterogomph spinigers and falcigers. Neuropodia with a single setal lobe only. Notopodial superior lobes prolonged in posterior setigers.

Namanereis Chamberlin 1919c, *Lycastis quadraticeps* Blanchard 1849; 2 species.

Eversible pharynx smooth or with soft papillae. Three or four pairs of tentacular cirri present; parapodia biramous with notopodia strongly reduced. Neurosetae include heterogomph spinigers and falcigers,

Neanthes Kinberg 1866a, *N. vaalii* Kinberg 1866a; 50 species.

Eversible pharynx with conical paragnaths on both rings. Four pairs of tentacular cirri, parapodia biramous. Notosetae homogomph spinigers; neurosetae homo- and heterogomph spinigers and heterogomph falcigers.

Nectoneanthes Imajima 1972, *Nereis (Alitta) oxypoda* Marenzeller 1879; 2 species.

Eversible pharynx with conical paragnaths on both rings. Four pairs of tentacular cirri present; parapodia biramous. All setae homogomph spinigers. Expanded superior notopodial lobes in median and posterior setiger, with dorsal cirrus inserted between the superior and the median lobes.

Nereis Linnaeus 1758, *N. pelagica* Linnaeus 1758; 134 species.

Eversible pharynx with conical paragnaths on both rings. Four pairs of tentacular cirri present; parapodia biramous. Notosetae include homogomph spinigers and falcigers, the latter in median and posterior setigers; neurosetae include homo- and heterogomph spinigers and heterogomph falcigers.

Nicon Kinberg 1866a, N. *pictus* Kinberg 1866a; 15 species.

Eversible pharynx without papillae or paragnaths. Four pairs of tentacular cirri; parapodia biramous. Notosetae homogomph spinigers; neurosetae homogomph spinigers and falcigers. Inferior neuropodial lobes present.

Perinereis Kinberg 1866a, *P. novaehollandiae* Kinberg 1866a; 60 species.

Eversible pharynx with conical and transverse paragnaths on both rings; four pairs of tentacular cirri; parapodia biramous. Notosetae homogomph spinigers; neurosetae homo- and heterogomph spinigers and heterogomph falcigers.

Plasynereis Kinberg 1866a, P. *magalhaensis* Kinberg 1866a; 20 species.

Eversible pharynx with paragnaths on both rings, including cones, and pectinate bars. Four pairs of tentacular cirri; parapodia biramous. Notosetae homogomph spinigers and falcigers, the latter sometimes fused to form simple falcigers; neurosetae include homo- and heterogomph spinigers and heterogomph falcigers.

Pseudonereis Kinberg 1866a, *P. gallapagensis* Kinberg 1866a; 7 species.

Eversible pharynx with paragnaths on both rings, including cones, transverse smooth bars and pectinate bars. Four pairs of tentacular cirri; parapodia biramous. Notosetae include homogomph spinigers and falcigers; neurosetae homo- and heterogomph spinigers and heterogomph falcigers.

Rullierinereis Pettibone 1971a, *Leptonereis zebra* Rullier 1963; 5 species.

Eversible pharynx without papillae or paragnaths. Four pairs of tentacular cirri; parapodia biramous. Notosetae include homogomph spinigers and falcigers, the latter in posterior setigers; neurosetae homo- and heterogomph spinigers and heterogomph falcigers. Inferior neuropodial lobes present.

Solomononereis Gibbs 1971, S. *maranensis* Gibbs 1971; only species.

Eversible pharynx with eight groups of rod-shaped paragnaths on the maxillary ring; oral ring bare. Four pairs of tentacular cirri; parapodia biramous. Notosetae include homogomph spinigers and falcigers; neurosetae hemi-, heterogomph spinigers and heterogomph falcigers.

Steninonereis Wesenberg-Lund 1958, S. martini Wesenberg-Lund 1958; only species.

Eversible pharynx without papillae and paragnaths. Four pairs of tentacular cirri; parapodia biramous. Notosetae homogomph spinigers; neurosetae home- and heterogomph spinigers, and heterogomph falcigers. Superior notopodial lobes, long and straplike in posterior setigers.

Tylonereis Fauvel 1911, *T. bogoyawlenskyi* Fauvel 1911; 2 species.

Eversible pharynx with soft papillae on the maxillary ring only. Four pairs of tentacular cirri present; parapodia biramous. All setae homogomph spinigers.

Tylorrhynchus Grube 1869a, *Nereis heterochaeta* Quatrefages 1865; 2 species.

Eversible pharynx with soft papillae on both rings. Four pairs of tentacular cirri; parapodia biramous. Notosetae hemigomph spinigers; neurosetae hemi- and heterogomph spinigers and heterogomph falcigers. Inferior neuropodial lobes absent.

Unanereis Day 1962, *U. macgregori* Day 1962; only species.

Eversible pharynx with conical paragnaths on the maxillary ring. Four pairs of tentacular cirri; parapodia biramous. Notosetae homogomph spinigers and falcigers; neurosetae homo- and heterogomph spinigers and heterogomph falcigers. A single median antenna present.

Websterinereis Pettibone 1971a, *Nereis tridentata* Webster 1880; only species.

Eversible pharynx with paragnaths on the oral ring only. Four pairs of tentacular cirri; parapodia biramous. Notosetae homogomph spinigers; neurosetae homo- and heterogomph spinigers and heterogomph falcigers.

Taxonomic *Notes*

The generic subdivision of the nereids has been based mainly on the pharyngeal structures and the presence of specific kinds of setae in the parapodial rami. Both characters are subject to some variation within each genus, and especially the pharyngeal structures require accurate dissection of the anterior end. Pettibone (1971a) introduced characters of the parapodial lobes (called ligules by Pettibone) as major features in the generic identification; this may be valid, but the character has the distinct drawback that it is dependent on interpretation of shapes, which is notoriously dependent on the experience of the observer, and very difficult to quantify. Pettibone in the same paper lumped series of species based on overlapping ranges in different characters; this is unfortunate, since the variability within any single population of these animals has never been examined and quantified in detail. The generic key given above, reflects the added insights of Pettibone at the generic level, but the numbers of species indicated for each genus is higher than as given by Pettibone, reflecting the more conservative approach taken to lumping at the specific level in this study.

Invalid Genera

Aceronereis Blainville 1818, NOMEN NUDUM
Alitta Kinberg *in* Malmgren 1865, see *Neanther*
Arete Kinberg 1866a, see *Perinereis*
Branchionereis Blainville 1818, NOMENNDDUM
Chaunorhynchus Chamberlin 1919c, we *Ceratocephale*
Chinonereis Chamberlin 1924, see *Tylorrhynchus*
Cirroceros Claparede 1863, indeterminable
Cirronereis Blainville 1818, indeterminable
Gnatholycastis Ehlers 1920, see *Perinereis*
Gymnorhynchus Horst 1918, *see Gymnonereis*
Hedyle Malmgren 1867, see *Perinereis*
Heminereis Quatrefages 1865, indeterminable
Heteronereis Orsted 1843a, *see Nereis*
Iphinereis Malmgren 1865, see *Platynereis*
Leontis Malmgren 1867, see *Platynereis*
Lepidonereis Blainville 1818, indeterminable
Lipephila Malmgren 1867, *see Perinereis*
Lycastella Feuerbom 1932, see *Namanereis*
Lycastis Audouin and Milne Edwards 1833b, see *Namalycastis*
Lycastoides Jakubova 1930, see *Namanereis*
Lycoris Savigny 1818, see *Nereis*
Mastigonereis Schmarda 1861, *see Pseudonereis*
Meganereis Blainville 1818, indeterminable
Naumachius Kinberg 1866a, *see Pseudonereis*
Nectonereis Verrill 1873b, see *Platynereis*
Nereilepas Blainville 1828, see *Neanthes*
Nicomedes Kinberg 1866a, indeterminable
Nossis Kinberg 1866a, indeterminable
Paralycastis Ehlers 1920, see *Perinereis*
Paranereis Kinberg 1866a, see *Pseudonereis*
Phaetusa Castelnau 1842, see *Hediste*
Phyllonereis Hansen 1882, *see Pseudonereis*
Pisenoe Kinberg 1866a, *see Platynereis*
Podonereis Blainville 1826, indeterminable
Praxithea Malmgren 1867, see *Nereis*
Protolycoris Hatschek 1893, NomEANuouM
Stratonice Malmgren 1867, see *Perinereis*
Tetratrocha Sveshnikov 1959, larvae, no species named
Thoosa Kinberg 1866a, see *Nereis*
Typhlonereis Hansen 1878, indeterminable
Uncinereis Chamberlin 1919c, see *Platynereis*

FAMILY *Antonbruunidae* NEW NAME

Nereidiform polychaetes with cylindrical bodies, three antennae and simple palps. Eversible pharynx unarmed. Two pairs of tentacular cirri present. Parapodia biramous, but notopodia reduced to dorsal cirri supported by internal acicula. All setae simple. Sexual dimorphism present, with small males; inquilines in bivalves.

This family is known for a single genus, *Antonbruunia* Hartman and Boss 1965 with genotype *A. viridis* living in the mantle cavity of the bivalve *Lucina fosteri* Hartman and Boss.

Suborder Glyceriformia

Phyllodocida with two pairs of antennae; palps and tentacular cirri absent. Proboscis either unarmed, with four jaws or with a circlet of jaws. First parapodia lateral.

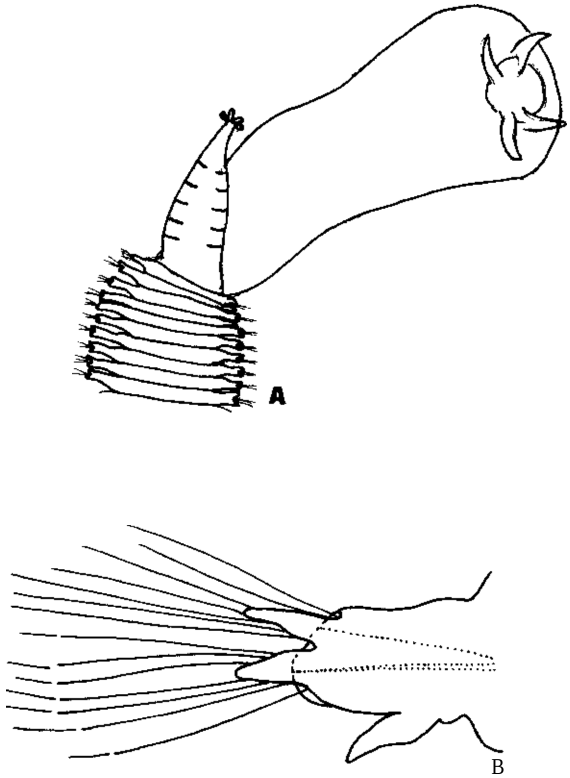
FAMILY GLYCERIDAE GRUBE 1850

Glyceriform polychaetes with long, slender bodies and conical prostomia. Eversible pharynx with four jaws in a cross. Parapodia either all biramous or all uniramous. Neurosetae composite; notosetae, when present, simple.

The glycerids are long, slender polychaetes with numerous segments. Perhaps their most noticeable feature is the very long, cylindrical eversible pharynx, which they will evert when disturbed. At the tip of the pharynx are four short, usually black jaws. Glycerids are present, mainly in soft sandy or muddy substrates, in all depths; they are rarely present in large numbers. They appear to be mainly carnivores.

Key to Genera

Ia.	Parapodia uniramous throughout	*Hemipodus*
lb.	Parapodia biramous throughout	2
2a (lb).	Prostomium long, with more than three rings; aileron of jaws with lateral wing	*Glycera*
2b (lb.	Prostomium short, with about three rings; aileron of jaws a simple rod	*Glycerella*



FICOan 22. (A) Family GLYCERIDAE, *Glycera* americana, off Santa Barbara, intertidal, 10x; (B), *Glycera* capitata, median parapodium, posterior view, after Hartman, 1950, 64x.

Generic Definitions

Glycera Savigny 1818, *G. unicornis* Savigny 1818; 55 species.

Prostomium long, with at least three, usually five to seven annuli. Aileron of jaw with lateral wing. Pharyngeal organs of many kinds. Notosetae simple, capillary or acicular; neurosetae composite spinigers.

Glycerella Arwidsson 1899, *Hemipodus magellanicus* McIntosh 1885; 2 species.

Prostomium short, with maximally four annuli. Aileron of jaws rodlike. Pharyngeal organs long and slender. Notosetae capillaries; neurosetae composite spinigers.

Hemipodus Quatrefages 1865, *Glycera rosea* Blainville in Quatrefages 1865, 15 species.

Prostomium long, with seven to ten vague annuli; aileron of jaws rod-shaped. Pharyngeal organs elongate oval or filamentous. Parapodia uniramous; all setae composite spinigers.

Taxonomic Notes

The generic subdivision, essentially in two major genera, has been stable for the last 50 years and not much change is anticipated. Identification of species, especially in certain groups of *Glycera* is quite difficult, and the number of species may be subject to considerable adjustment. Specific identification depends on study of the pharyngeal organs, in addition to parapodial lobes and branchiae. Pharyngeal organs can be characterized only by very close work under compound microscopes. It is of great importance that the light be very accurately adjusted, since the characteristic ridges may be very difficult to see and depend on the full resolution of the microscope, not because of their small sizes, but because of their structure. Branchiae may be retractable, and frequently are retracted in parts of the body; the whole body must be scanned for the presence or absence of these structures.

Invalid Genera

Euglycera Verrill 1881, see *Glycera*
Hamiglycera Ehlers 1908, see *Glycera*
Hemipodua Kinberg 1866b, *see Hemipodus*
Proboscidea Blainville 1825, see *Glycera*
Rhynchobolus Claparede 1868, see *Glycera*
Telake Chamberlin 1919c, *see Glycera*

FAMILY GONIADIDAE KINBERG 1866b

Glyceriforms with long and slender bodies. Prostomium is conical; eversible pharynx with a circlet of smaller and larger jaw-pieces. Parapodia anteriorly uniramous, posteriorly biramous, rarely all uniramous. Neurosetae composite, notosetae simple.

The goniadids often are considered as part of the glycerids, but the two groups differ sufficiently that a recognition at the family level is warranted. They resemble the glycerids in that their most remarkable structure is the eversible pharynx, covered with pharyngeal organs, very long, usually slender and crowned with a series of teeth. The pharyngeal organs are considerably *larger* than in the glycerids, and are partly sclerotinized in some genera *(Glycinde, Bathyglycinde).*

Key to Genera

Ia.	All parapodia uniramous	*Progoniada*
l b.	Anterior parapodia uniramous, posterior ones biramous	2
2a (lb).	Eversible pharynx with organs of many kinds	3

2b (lb).	Eversible pharynx with organs of one or a few kinds	4
3a (2a).	Notosetae slender capillaries	*Bathyglycinde*
3b (2a).	Notosetae knobbed or falcate hooded hooks	*Glycinde*
4a (2b).	Eversible pharynx with chevrons	5
4b (2b).	Eversible pharynx without chevrons	6
5a (4a).	Neuropodia with spinigers only	*Goniada*
5b (4a).	Neuropodia with both spinigers and falcigers	*Goniadella*
6a (4b).	Neuropodia with spinigers only	*Ophioglycera*
6b (4b).	At least some falcigers present	7
7a (6b).	Notopodia reduced to a rounded knob with a few thick acicular setae and a citrus	*Goniadides*
7b (6b).	Notopodia well developed	8
8a (7b).	Anterior setae all falcigers; posterior ones both spinigers and falcigers	*Bookhoutia*
8b (7b).	Anterior setae all falcigers, posterior ones all spinigers	*Goniadopsis*

Generic Definitions

Bathyglycinde Fauchald 1972, *B. mexicana* Fauchald 1972; 3 species.

Posterior segments biramous. Chevrons absent, pharyngeal organs large and of several kinds. Notosetae capillaries; neurosetae composite spinigers.

Bookhoutia Mohammad 1973, *B. oligognatha* Mohammad 1973; only species.

Posterior segments biramous. Chevrons absent; pharyngeal organs small and of one kind. Notosetae acicular; anterior neurosetae all falcigers, posterior neurosetae both falcigers and spinigers.

Glycinde Mu ller 1858, *G. multidens* Muller 1858; 20 species.

Posterior segments biramous. Chevrons absent; pharyngeal organs large and of several kinds. Notosetae knobbed or falcate hooded hooks; neurosetae composite spinigers.

Goniada Audouin and Milne Edwards 1833b, *G. emerita* Audouin and Milne Edwards 1833b; 34 species.

Posterior segments biramous. Chevrons present; pharyngeal organs small, mainly of one kind. Notosetae acicular or capillary; neurosetae composite spiningers.

Goniadella Hartman 1950, *Eone gracilis* Verrill 1873b; 2 species.

Posterior segments biramous. Chevrons present; pharyngeal organs of one kind. Composite spinigers and falcigers present on all neuropodia.

Goniadides Hartmann-Schroder 1960a, *G. aciculata* Hartmann-Schroder 1960a; 2 species.

Posterior segments biramous. Chevrons absent. Notopodia reduced to short rounded lobes with a cirrus and one or two coarse acicular setae. All neurosetae composite falcigers.

Goniadopsis Fauvel 1928a, *G. agnesiae* Fauvel 1928a; 3 species.

Posterior segments biramous. Chevrons absent. Neuropodia in unimmous part of body with composite falcigers; those in biramous part, spinigers. Notosetae acicular spines.

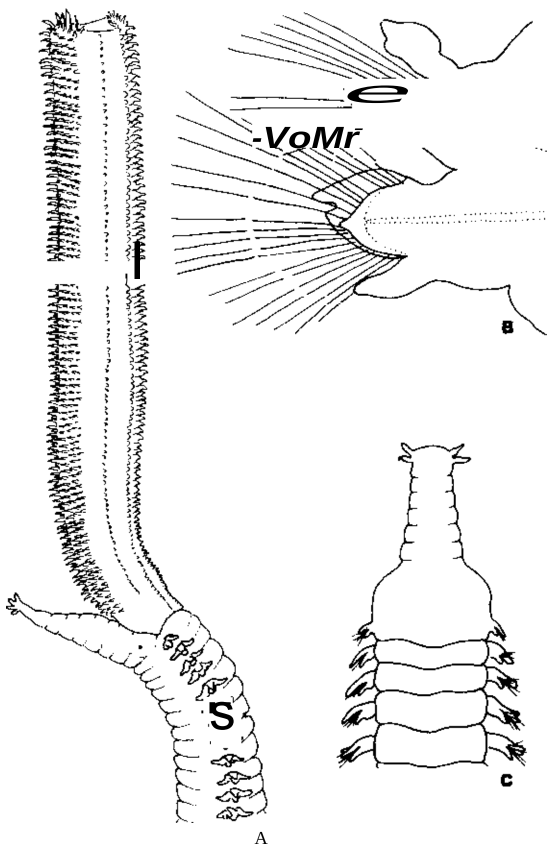


FIGURE 23. (A), Family GONIADIDAE, *Glycinde armigera*, anterior end with pharynx half everted, after Hartman, 1950, 12.5x; (B), *Goniada brunnea*, median parapodiurn, posterior view, after Hartman, 1950, 31x; (C), anterior end of the above, 25x.

Ophioglycera Verrill 1885, *O. gigantea* Verrill 1885; 6 species.

Posterior segments biramous. Chevrons absent, pharyngeal organs of one kind and short. Notosetae slender and acicular; all neurosetae composite spinigers.

Progoniada Hartman 1965, *P. regularis* Hartman 1965; 2 species.

All segments uniramous. Chevrons present. Neurosetae include composite falcigers and spinigers in all parapodia.

Taxonomic Notes

The genera appear well established in the Goniadidae. The only difficult point in the key above appears in dichotomy 2 on the question of a few or many kinds of pharyngeal organs. In *Glycinde* and *Bathyglycinde* at least three distinct kinds of organs are present; in most species at least two kinds are distinctly chitinized projections. In the other genera, most species have only one kind of pharyngeal organ, but in some cases two kinds may be identifiable.

Invalid Genera

Eone Malmgren 1866, *see Glycinde*
Epicaste Kinberg 1866b, see *Glycinde*
Lacharis Kinberg 1866b, indeterminable
Leonnatus Kinberg 1866b, see *Goniada*

FAMILY LACYDONIIDAE BERGSTROM 1914

Glyceriform polychaetes with short and slender bodies; prostomium trapezoidal in outline; eversible pharynx unarmed. First parapodia uni- or biramous, all others biramous. Neurosetae composite, notosetae simple.

The lacydoniids somewhat resembles the nephtyids, in that both noto- and neuropodia are developed equally, but the parapodia and setal structures, as well as the structure of the prostomium, ally them more closely with the glycerids than with any other group of polychaetes. *They* traditionally have been considered as an appendix to the phyllodociform polychaetes, mainly because of the lack of proboscideal armament. The lacydoniids recently were reviewed by Uschakov (1972); the present treatment follows his closely.

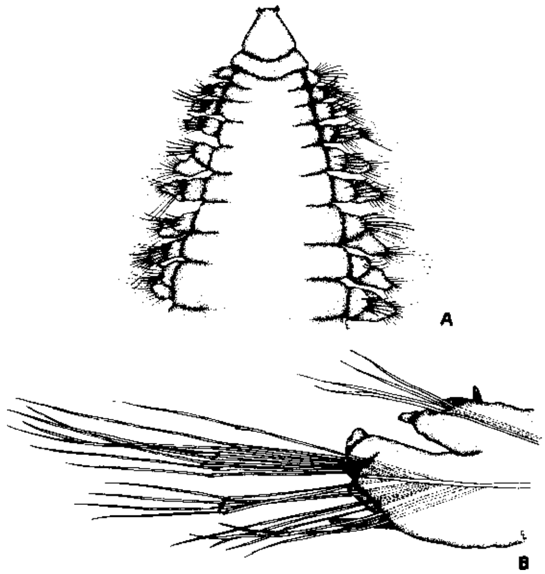


FIGURE 24. (A), Family LACYDONIIDAE, *Paralacydonia* sp., San Clemente Basin, California, 1500 m, 25x; (B), median parapodium of the above, 50x.

Key to Genera

la.	Tentacular cirri present	*Lacydonia*
lb.	Tentacular cirri absent	2
2a (lb).	Antennae short and biarticulated; first setiger uniramous	*Paralacydonia*
2b (I b).	Antennae long and smooth; first setiger biramous	*Pseudolacydonia*

Generic Definitions

Lacydonia Marion and Bobretzky 1875, *L. miranda* Marion and Bobretzky 1875; 4 species.

Antennae short and smooth; tentacular cirri present; first two-three parapodia uniramous.

Paralacydonia Fauvel 1913, *P. paradoxa* Fauvel 1913; 3 species.

Antennae short and biarticulated; tentacular cirri absent; only first parapodia uniramous.

Pseudolacydonia Rullier 1965b, *P. caeca* Rullier 1965b; only species.

Antennae long and slender, not articulated; tentacular cirri absent; all parapodia biramous.

The following five families do not appear to be closely related to any other Phyllodocida nor are they obviously related to each other. *They* are listed in alphabetical order.

The three families with pelagic members, Iospilidae, Tomopteridae and Typhloscolecidae, usually are considered with the bulk of the other pelagic polychaetes, most of which are related to the Phyllodocidae. This connection seems based on adaptive convergencies to the pelagic environment, such as a frequently foliose condition of the parapodial lobes; a reduction in the number and importance of the setae and the lightly built, often translucent bodies in these forms.

The nephtyids and sphaerodorids either are considered related to the glyceriforms or placed in the vicinity of the nereids. The nephtyids are extremely poorly cephalized compared to most other polychaetes, in that even the first setiger carries small, but recognizable parapodia and setae. The lack of cephalization places the nephtyids close to the phyllodocids, from which they differ sharply in the development of the parapodia, in that they have one pair of antennae and one pair of palps, according to the innervation pattern whereas the phyllodocids have at least two pairs of antennae and true palps are absent. For these reasons, it appears for the time being best to leave the nephtyids as a free-standing family within the order Phyllodocida. The sphaerodorids, however, appear to have an extensive and varied degree of cephalization (Fauchald 1974b) and appear isolated in the Phyllodocida. They are not related to the nephtyids. The iospilids differ from the phyllodociform families in the presence of palps and the lack of antennae. The same can be said for the tomopterids and the typhloscolecids (Uschakov 1972).

In all five cases, the presence and structure of the anterior appendages (sometimes the lack of such appendages), makes it difficult to ally these forms with any other polychaetes. Rather than forcing the issue, and insist that all families must be allied with a suborder, it here is considered best to leave all five as separate entities, without any commitment as to further affiliation.

FAMILY IOSPILIDAE BERGSTROM 1914

Pelagic, small, slender Phyllodocida. Prostomium without antennae; two short palps present. Parapodia uniramous, all setae composite. Eversible pharynx present, armed in some cases.

The iospilids often are considered allied with the phyllodocids, but appear to differ rather sharply from members of this family in most of the characters usually considered at the familial level. It is here considered a member of the order Phyllodocida, but has not been assigned to any suborder or super-familial group. The family was revised by Dales and Peter (1972) and Uschakov (1972).

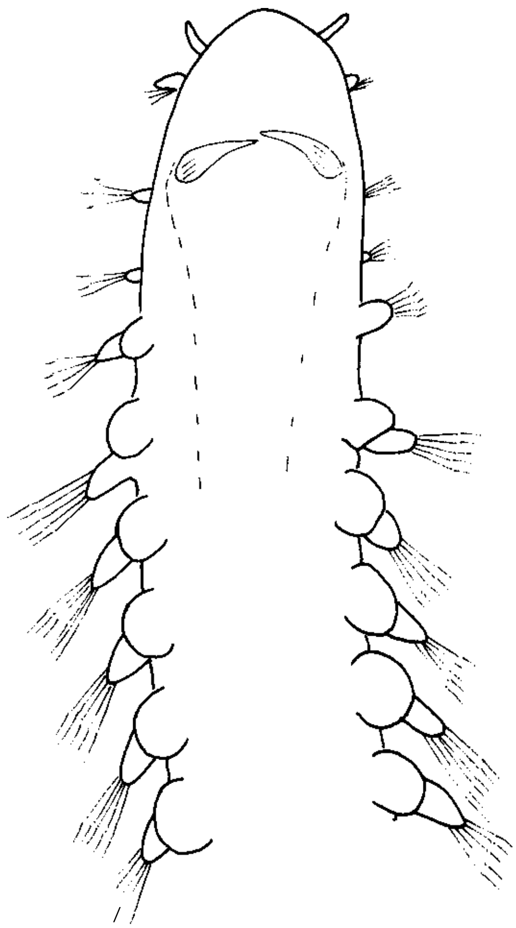


FIGURE 25. Family ISOPILIDAE, *Phalacrophorus pictus borealis*, modified after Uschakov, 1972, 50x.

Key to Genera

Ia.	Eversible pharynx with a pair of curved jaws	*Phalacrophorus*
lb.	Eversible pharynx unarmed	2
2a (lb).	Up to 11 anterior segments with reduced parapodia	*lospilopsis*
2b (lb).	Parapodia fully developed from segment 5	3
3a (2b).	Dorsal and ventral cirri present, but small on segments 2-3	*Paraiospilus*
3b (2b).	Dorsal and ventral cirri absent on segments 2-3	*lospilus*

Generic Definitions

lospilopsis Augener 1922, *1. antillensis* Augener 1922; only species.

Upp to 11 anterior segments with rudimentary parapodia; jaws absent.

lospilus Viguier 1886, *1. phalacroides* Viguier 1886; 2 species.

Maximally four anterior segments with reduced parapodia; dorsal and ventral cirri absent on segments 2 and 3; jaws absent.

Paraiospilus Viguier 1911, *P. affinis* Viguier 1911; only species.

Maximally four anterior segments with reduced parapodia; dorsal and ventral cirri present, but rudimentary on segments 2 and 3; jaws absent.

Phalacrophorus Greeff 1879, *P. pictus* Greeff 1879; 3 species.

Maximally ten anterior segments with reduced parapodia. Eversible pharynx with paired jaws.

FAMILY NEPHTYIDAE GRUBE 1850

Phyllodocida with long, slender bodies with quadrangular cross-sections. One pair of antennae and one pair of *very* short palps present. A pair of lateral jaws present. Parapodia biramous with both rami well developed with complex pre- and postsetal lobes. All setae simple. Interramal, respiratory cirri present in nearly all forms.

The nepthyids may superficially be confused with the sigalionids in that both groups have long, straight-sided bodies abruptly tapering anteriorly, and rather more gently posteriorly. However, the nephtyids lack obvious, long appendages anteriorly, and of course the scales present in the sigalionids. Nephtyids are present at all depths, and are most common in sandy and muddy substrates.

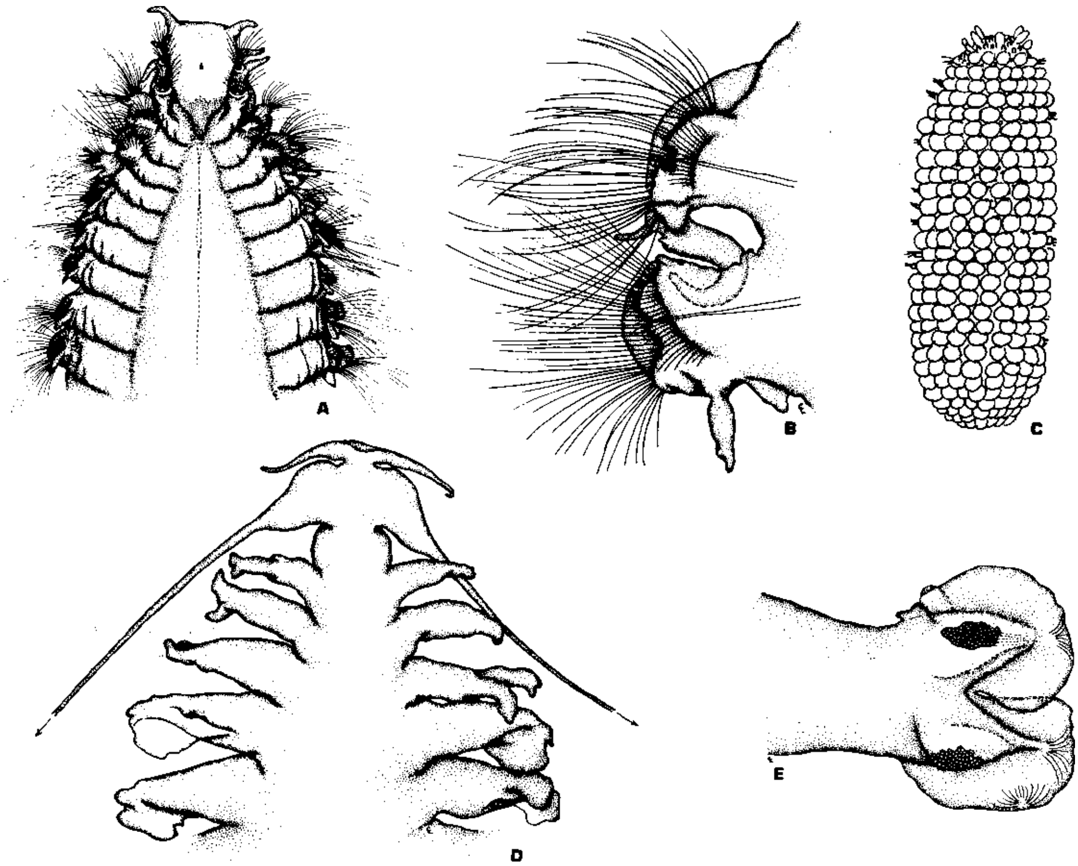


FIGURE 26. (A), Family NEPHTYIDAE, *Nephtys californiensis, off* Santa Catalina Island, California, 50 m, 15x; (B), median parapodium of the above, 15x; (C), Family SPHAERODORIDAE, *Sphaerodoropsis sphaerulifer, off* Santa Catalina Island, 70 m, 75x; (D), Family *TOMOPTERIDAE, Tonwpteris sp., off* central California, pelagic, 5x; (E), parapodium of the above, 10x.

Key to Genera

la.	Interramal cirri rudimentary or absent	*Micronephthys*
1b.	Interramal cirri well developed, recurved or involute	2
2a (lb).	Interramal cirri recurved	*Nephtys*
2b (Ib).	Interramal cirri involute	3
3a (2b).	Eversible pharynx with subterminal and terminal papillae	*Aglaophamus*
3b (2b).	Eversible pharynx without subterminal and terminal papillae	*Inermonephtys*

Generic Definitions

Aglaophamus Kinberg 1866b, *A. lyratus* Kinberg I866b; 45 species.

Eversible pharynx with 14 (rarely 16) rows of papillae. Interramal cirri involute; acicula distally hooked in most species.

Inermonephrys Fauchald 1968a, *Nephtys (Aglaophamus) inermis* Ehlers 1887; 3 species.

Eversible pharynx without papillae. Interramal cirri involute, acicula distally hooked.

Micronephthys Friedrich 1937, Nephihys minuta Theel 1879; 5 species.

Eversible pharynx with 14 rows of papillae. Interramal cirri reduced or absent; acicula blunt-tipped, but not capped.

Nephtys Cuvier in Audouin and Milne Edwards 1833b, *N. hombergii* Savigny 1818; 50 species.

Eversible pharynx with 22 rows of papillae. Interramal cirri recurved; acicula in most forms with a distal cap.

Taxonomic Notes

Identification of nephtyids to genus can be tricky on small specimens; these tend to have small, nearly straight interramal cirri and one could identify these as *Micronephthys,* and the corresponding adults as *Nephtys.* Identification to species is not difficult, but care must be taken that appropriate segments are compared with each other (or with illustrations), since the shape of the parapodia changes along the length of the body. To overcome the problem of varying body-length, comparisons should be made on distinct fractions of the bodies (i.e. first third, second third and last third). The first start of the interrama cirri is seen best from the lateral side, and a probe must be used to lift the notopodial cirrus so that the small, barely emerging interramal cirrus can be seen on its ventral side. Recent revisions include Hartman (1950) and Fauchald (1968a).

Invalid Genera

Aglaopheme Kinberg 1866b, see Aglaophamus
Aonis Savigny 1822, see *Nephtys*
Diplobranchus Quatrefages 1865, see *Nephtys*
Pellucidaria Sveshnikov 1959, larval forms, no species named.
Portelia Quatrefages 1865, *see Nephrys*

FAMILY SPHAERODORIDAE MALMGREN 1867

Small Phyllodocida with short and thick or long, relatively slender bodies. Two to six antennae and one pair of tentacular cirri present. Eversible pharynx unarmed. Uniramous parapodia with simple or composite setae. Dorsum with two to many rows of *large* spherical tubercles.

The sphaerodorids have been overlooked in most collections. They turn out to be quite frequent in deep-water samples, which tend to be better treated than shallow-water ones. It is probably only a question of time before they are found in relatively large numbers also in shallow water samples. Characteristically, they are short and grub-shaped or more slender, vermiform, and cannot be confused with any other group of polychaetes, except perhaps *Sphaerosyllis* (Syllidae), which has similar rows of tubercles, in the latter case, the dorsal cirri, along the dorsum. The setal structures, however, are quite different. Fauchald (1974b) reviewed the group.

Key to Genera

Ia.	Both dorsal and ventral surfaces smooth	*Levidorum*
lb.	At least two rows of dorsal macrotubercles	2
2a (I b).	Macrotubercles with terminal papillae	3
2b (lb).	Macrotubercles distally rounded	6
3a (2a).	Macrotubercles in four rows; terminal papillae very short	*Sphaerephesia*
3b (2a).	Macrotubercles in two rows; terminal papillae long	4

4a (3b).	All setae simple	*Sphaerodorum*
4b (3b).	At least some setae composite	5
5a (4b).	All setae composite apart from the recurved hooks in the first setiger	*Ephesiella*
5b (4b).	Both composite and simple setae in all setigers; apart from the first, which has simple recurved hooks	*Ephesiopsis*
6a (2b).	Macrombercles stalked	7
6b (2b).	Macrotubercles sessile	8
7a (6a).	Median antenna as long as, or longer than, the lateral antennae	*Clavodorum*
7b (6a).	Median antenna shorter than the lateral antennae	*Sphaerodoridium*
8a (6b).	All setae composite	*Sphaerodoropsis*
8b (6b).	All setae simple	*Commensodorum*

Generic Definitions

Clavodorum Hartman and Fauchald 1971, C. *atlanticum* Hartman and Fauchald 1971; 5 species.

Stalked macrotubercles in six or eight rows; macrotubercles without terminal papillae. Anterior end with long median antenna and two pairs of lateral antennae. Setae composite.

Commensodorum Fauchald 1974b, *Sphaerodoridium commensalis* Lutzen 1961; only species.

Sessile macrotubercles in four rows; macrotubercles without terminal papillae. Anterior end with a median and two pairs of lateral antennae; all anterior appendages short. Setae simple.

Ephesiella Chamberlin 1919c, *Sphaerodorum abyssarum* Hansen 1878; 9 species.

Two rows of macro- and two rows of microtubercles on the dorsum; the sessile macrotubercles with terminal papillae. Anterior end with a median and one or two pairs of lateral antennae. A large recurved hook present in the first setiger in most species; all other setae composite.

Ephesiopsis Hartman and Fauchald 1971, E. *guayanae* Hartman and Fauchald 1971; only species.

Two rows of macro- and two rows of microtubercles on the dorsum; the sessile macrotubercles with terminal papillae. Anterior end with a median and two pairs of lateral antennae. A large recurved hook in the first setiger; setae in other setigers both simple and composite.

Levidorum Hartman 1967, *L. scotiarum* Hartman 1967; only species.

All tubercles and papillae absent. Anterior end blunt; anterior appendages absent. Parapodia with two or three acicula; setae semicomposite or simple.

Sphaerephesia Fauchald 1972, S. *longiseta* Fauchald 1972; 3 species.

Four rows of sessile macrotubercles with short terminal papillae. Anterior end with a median and two or three pairs of lateral antennae. Setae composite.

Sphaerodoridium Lbtzen 1961, *Sphaerodorum claparedii* Greeff 1866; only species.

Stalked macrotubercles without terminal papillae. Anterior end with a short median and two pairs of longer lateral antennae. Setae composite.

Sphaerodoropsis Hartman and Fauchald 1971, *Sphaerodorum sphaerulifer* Moore 1911; 20 species.

Four or more rows of macrotubercles without terminal papillae. Anterior end with a median and two or three pairs of lateral antennae. Setae composite.

Sphaerodorum Orsted 1843b, *Ephesia* gracilis Rathke 1843; 5 species.

Four rows of sessile macrotubercles with terminal papillae. Anterior end with a median and two pairs of lateral antennae. Setae simple, including in most species large recurved hooks in the first setiger.

Invalid Genera

Bebryce Johnston 1844, see *Sphaerodorum*
Ephesia Rathke 1843, see *Sphaerodorum*
Hypephesia Perrier 1897, see *Ephesiella*
Pollicita Johnston 1845, see *Sphaerodorum*
Thysanoplea Schmidt 1857, questionably *Sphaerodorum*

FAMILY TOMOPTERIDAB GRUBE 1848

Pelagic, transparent, flattened Phyllodocida. Prostomium fused with the first two segments; two antennae. Eversible pharynx unarmed. First segment well developed in juveniles and reduced in adults. Second segment in adults with a pair of long tentacular cirri supported by long acicula; setae absent. Parapodia biramous with elongated bases and short, foliose rami. Glands of different kinds in the parapodia.

The tomopterids have been referred to the phyllodociform group of polychaetes, but differs rather sharply from these in the structure of the anterior end (Uschakov 1972) and appears best considered as a free-standing family in the order Phyllodocia. A number of genera have been described, but it appears best to consider the family as consisting of only two genera. Recent revisions include Dales and Peter (1972) and Uschakov (1972).

Key to Genera

Ia.	Tentacular cirri of second segment much longer than the body; parapodial fins restricted to the far distal part of each ramus	*Enapteris*
lb.	Tentacular cirri as long as, or barely longer than the body; parapodial fins surround the distal part of the rami	*Tomopteris*

Generic Definitions

Enapteris Rosa 1908, *Tomopteris euchaeta* Chun 1887; only species.

Parapodial rami with foliose lobes along the distal margin only. Tentacular cirri much longer than body.

Tomopteris Eschscholtz 1825, *T.onisciformis* Esch-Schultz 1825; 40 species.

Parapodia rami with foliose lobes surrounding most of the rami. Tentacular cirri shorter than, or about as long as the body.

Invalid Genera

Briaraea Quoy and Gaimard 1827, questionably *Tomopteris*

Escholtzia Quatrefages 1865, *see Tomopteris*

Johnstonella Gosse 1853, see *Tomopteris*

FAMILY TYPHLOSCOLECIDAE ULIANIN 1878

Pelagic, transparent, fusiform or torpedo-shaped Phyllodocida. Prostomium without appendages; large foliose nuchal lobes present. Two pairs of tentacular cirri. Eversible pharynx unarmed, but with retort-organ. Parapodia uniramous, with large foliose dorsal and ventral cirri; setae simple.

The typhloscolecids are poorly studied in terms of their biology and even basic biological information is missing. Recent reviews are given by Uschakov (1972) and Dales and Peter (1972).

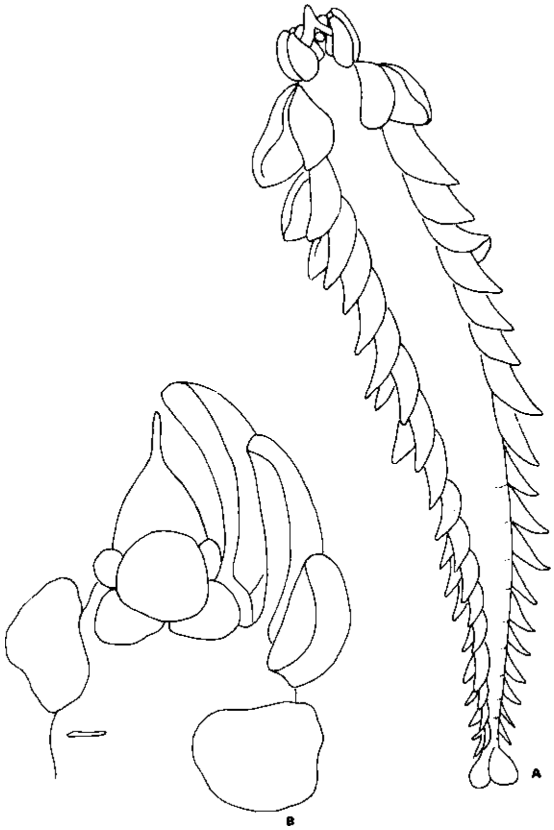


FIGURE 27. (A), Family TYPHLOSCOLECIDAE, *Travisiopsis lobifera,* after Uschakov, 1972, about 12.5x; (B), *Travisiopsis levinseni,* anterior end, cirri on left side removed, after Uschakov, 1972, 25x.

Key to Genera

la.	Prostomium with ciliated ridges dorsally and ventrally	*Typhloscolex*
lb.	Prostomium without ciliated ridges	2
2a (lb).	Median prostomial papilla on the dorsal side present	*Travisiopsis*
2b (Ib).	Prostomium without median dorsal papilla	*Sagitella*

Generic Definitions

Sagitella Wagner 1872, S. *kowalewskii* Wagner 1872; only species.

Prostomium without ciliated ridges; median antenna absent.

Travisiopsis Levinsen 1885, *T. lobifera* Levinsen 1885; 6 species.

Prostomium without ciliated ridges; median antenna present (may be indistinct).

Typhloscolex Busch 1851, *T. muelleri* Busch 1851; 6 species.

Prostomium with dorsal and ventral ciliated ridges; median antenna present.

Taxonomic Notes

The above definitions are after Uschakov (1972: 220-225); there appears to be differences in the structure of the nuchal organs in this family, and this may be of value as a generic character in a future revision.

Invalid Genera

Acicularia Langerhans 1878, *see Sagitella*
Nuchubranchiata Treadwell 1928, see *Travisiopsis*
Plotobia Chamberlin 1919c, see *Travisiopsis*

ORDER AMPHINOMIDA

Prostomium distinct, a caruncle present and at least one antenna. Pharynx with a muscular, rasplike eversible ventral pad; jaws absent. Parapodia distinct with branching branchiae on at least some setigers.

The family Spintheridae usually is associated with the Amphinomidae (Fauvel 1923a; Hartmann-Schroder 1971). The external resemblance of the ectoparasitic spintherids to the euphrosinids first were remarked upon by Sars (1850:210) and next by Johnston (1865: 127-128). Augener (1913a:87), while recognizing the overall external similarity to the short-bodied amphinomids, found the differences sufficient to erect a new family for the single genus. Manton (1967:10 and 21) remarked upon the unique construction of the eversible pharynx in *Spinther* compared to all other polychaetes. The genus also differs sharply from the order Amphinomida in general and the erection of a separate order to contain this family seems warranted. The new order, Spintherida, is listed below (p. 103).

FAMILY AMPHINOMIDAE SAVIGNY 1818

Amphinomida with either elongate or ovate and flattened bodies. One to five antennae present; palps present. Noto- and neurosetae in tufts, notosetae protective spinous setae, at least in part. Branchiae in branching tufts.

The amphinomids are common in shallow water. They generally are referred to as fire-worms, since the spines can lead to general discomfort and infections, if they break off within the inflicted cuts, The amphinomids generally are highly colored shallow-water animals, with very distinct color patterns (cf. Fauvel 1953), but are also present, in less showy editions, in deeper water.

Key to Genera

Ia.	Caruncle completely absent; neurosetae simple hooks	*Hipponoa*
lb.	Caruncle present, usually well developed (may be difficult to discern in some species); neurosetae otherwise	2
2a (lb).	Body ovate or fusiform	3
2b (I b).	Body elongated with parallel sides and usually abruptly tapering anteriorly and posteriorly	10
3a (2a).	Branchiae present on all setigers	*Branchamphinome*
3b (2a).	Some setigers (anterior or posterior) without branchiae	4
4a (3b).	One dorsal citrus per notopodium	5
4b (3b).	Two dorsal cirri per notopodium	7
5a (4a).	Caruncle with three parallel longitudinal ridges	*Benthoscolex*
5b (4a).	Caruncle long and folded with indistinct lateral folds	6
6a (5b).	Eyes absent, first pair of branchiae larger than the following ones	*Bathychloeia*
6b (5b).	Eyes present, first branchiae not larger than the following ones	*Chloeia*
7a (4b).	Caruncle with high central ridge and two wide flattened lateral folds	*Notopygos*
7b (4b).	Lateral lobes of caruncle small and hidden under the central ridge, or absent	8
8a (7b).	Caruncle wedge-shaped, without crest and folds	Sangiria
8b (7b).	Caruncle with crest and folds	9
9a (8b).	Caruncle high, loosely plaited and rugose	*Chloenopsis*
9b (8b).	Caruncle low, narrowly plaited with a crenulated plate	*Parachloeia*
l0a (2b).	Caruncle small and inconspicuous, stretching through maximally three segments	11
l0b (2b).	Caruncle large and conspicuous, stretching through at least three segments	14
1 Ia (l0a).	Branchiae present on all segments from the second or third	12
l lb (l0a).	Branchiae limited to the anterior part of the body	13
12a (11a).	Caruncle broadly triangular or cordate	*Amphinome*
12b (11a).	Caruncle narrow and elongated	*Pareurythoe*
l 3a (I lb.	First segment with large, anteriorly directed hooks	*Paramphinome*
13b (lib).	First segment without hooks	*Linopherus*

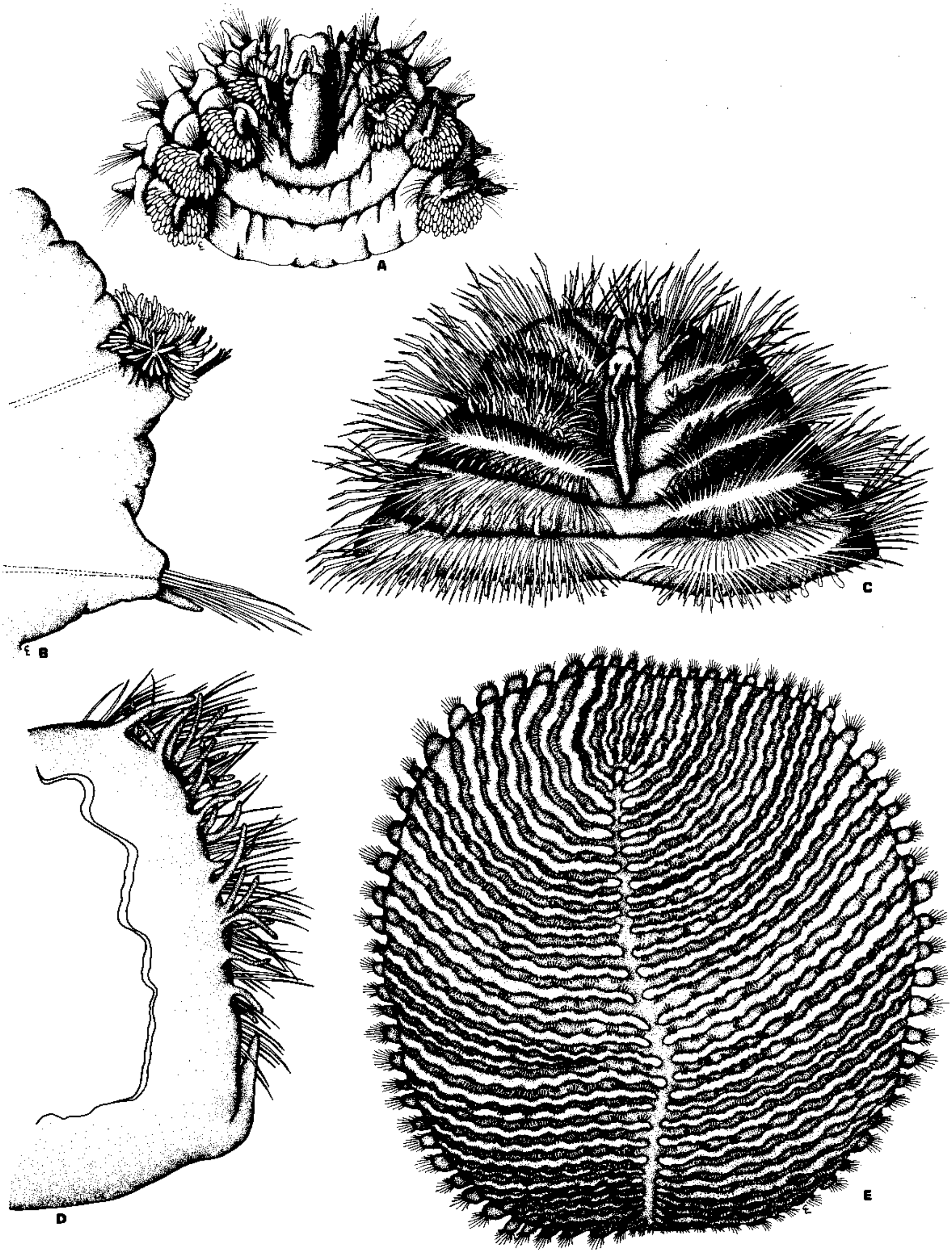


FIGuRE 28. (A), Family AMPHINOMIDAE, *Eurythoe complanata*, San Felipe, Golfo de California, intertidal, lOx; (B), median parapodium of the above, lOx; (C), Family EUPHROSINIDAE, *Euphrosine borealis*, Murchinson Sound, Greenland, 100 m, lOx; (D), *Euphrosine* sp., off Point Loma, California, median parapodium, 19x; (E), Family SPINTHERIAE, *Spinther sp.*, Point Barrow, Alaska, dredged, Sx.

14a (10b).	Caruncle longer than wide with a large smooth, sinuous median ridge nearly covering the narrow lateral parts	*Eurythoe*
14b (10b).	Caruncle about as long as wide or wider, median ridge, if present, narrow	15
15a (14b).	Caruncle without distinct median ridge, with a few deep transverse folds	*Hermodice*
15b (14b).	Caruncle with a distinct, smooth narrow ridge	16
16a (15b).	Furcate setae absent	*Pherecardia*
16b (15b).	Furcate setae present	*Pherecardites*

Generic Definitions

Amphinome Bruguière 1789, *Aphrodita rostrata* Pallas 1776; 12 species.

Body long; caruncle limited to the two-three first segments, broadly triangular or cordate. Dendritically branched branchiae on all segments from the second or third.

Bathychloeia Horst 1910, *B. sibogae* Horst 1910; only species.

Body short and ovate; caruncle large, folded with lateral folds. Bipinnate branchiae from segment 5, first pair larger than the others. Dorsal cirri single. Eyes absent.

Benthoscolex Horst 1912, *B. coeca* Horst 1912; 2 species.

Body short and ovate; caruncle with three longitudinal parallel ridges. Dendritically branched branchiae from setiger 6, especially strongly developed on posterior setigers. Dorsal cirri single, eyes absent.

Branchamphinome Hartman 1967, *B. antarctica* Hartman 1967; only species.

Body ovate; caruncle with three digitate posteriorly directed lobes. Dendritically branched branchiae present on all setigers. Dorsal cirri single, eyes present.

Chloeia Savigny 1818, *Aphrodita flava* Pallas 1766; 19 species.

Body ovate, caruncle large, with indistinct lateral folds, much longer than wide. Branchiae pennate. Dorsal cirri single, *eyes* present.

Chloenopsis new name, *Chloenea atlantica* McIntosh 1885; only species.

Body ovate, caruncle high, loosely plaited and rugose. Branchiae pennate. Dorsal cirri double; eyes present.

Chloenea Kinberg, 1867c is considered a synonym of *Chloeia. Chloenea* McIntosh, 1885 differs generically from Kinberg's genus and needs a new name. *Chloenopsis* is here proposed as the generic name for the species originally named *Chloenea atlantica* McIntosh, 1885.

Eurythoe Kinberg 1857, E. capensis Kinberg 1857; 10 species.

Body long; caruncle long with a thick, sinuous, smooth median ridge covering the narrow folded lateral folds. Dendritically branched branchiae. Dorsal cirri single, eyes present.

Hermodice Kinberg 1857, *Aphrodita carunculata* Pallas 1766; 4 species.

Body long; caruncle about as wide as long, without a distinct median ridge, with several transverse folds. Branchiae dendritically branched, bushy in appearance. Dorsal cirri single, eyes present.

Hipponoa Audouin and Milne Edwards 1830, H. gaudichaudi Audouin and Milne Edwards 1830; 3 species.

Body short and ovate; caruncle absent. Branchiae dendritically branched, bushy. Dorsal cirri single, eyes present. Notosetae large, retractile curved hooks.

Linopherus Quatrefages 1865, *Amphinome* incaruncu*lata* Peters 1854; 14 species.

Small species, but elongated bodies in most forms; caruncle small and inconspicuous, reported absent in some forms. Branchiae tufted, present on some anterior setigers only. Dorsal cirri single, eyes present or absent.

Notopygos Grube 1855, N. crinita Grube 1855; 20 species.

Body ovate; caruncle with high central ridge and large flattened lateral lobes. Branchiae dendritically branched. Dorsal cirri double; eyes present.

Parachloeia Horst 1912, *P. marmorata* Horst 1912; only species.

Body ovate; caruncle low, narrowly plaited with crenulated plates. Branchiae poorly developed, with a few filaments only. Dorsal cirri double, eyes present.

Paramphinome Sars 1869, *Hipponoe jeffreysii* McIntosh 1868; 6 species.

Small forms, but long-bodied; caruncle short, Y-shaped or elongated. Branchiae tufted, limited to anterior setigers. Dorsal cirri single; eyes present or absent. First setiger with anteriorly directed hooks.

Pareurythoe Gustafson 1930, *P. japonica* Gustafson 1930; 9 species.

Body long; caruncle small, elongated, sinuous. Branchiae dendritically branched, present on most of the body. Dorsal cirri single, eyes present.

Pherecardia Horst 1886, *Hermodice striata* Kinberg 1857; 4 species.

Body long; caruncle with a narrow smooth ridge bordered by wide lateral lobes with deep parallel folds on both sides. Branchiae bushy. Dorsal cirri single; eyes present.

Pherecardites Horst 1912, *P. parva* Horst 1912; 2 species.

Body long; caruncle with median axis and lateral lamellae directed posteriorly. Bushy branchiae present from the first setiger. Dorsal cirri single, eyes present. Furcate neurosetae present.

Sangiria Horst 1911, *S. hystrix* Horst 1911; only species.

Body ovate; caruncle wedge-shaped without crest and folds. Branchiae with few filaments. Dorsal cirri double; eyes absent.

Invalid Genera

Amphibranchus Kinberg 1867c, see *Hermodice*
Asloegia Kinberg 1867c, *see Amphinome*
Blenda Kinberg 1867c, see *Eurythoe*
Chloenea Kinberg 1867c, *see Chloeia*
Chloochaeta Kinberg 1867c, see *Chloeia*
Colonianella Kinberg 1867c, *see Amphinome*
Didymobranchus Schmarda 1861, indeterminable
Eucarunculatus Malaquin and Dehorne 1907, see *Pherecardia*
Lenora Grube 1878, see *Amphinome*
Lirione Kinberg 1867c, see *Notopygos*
Lycaretus Kinberg 1867c, *see Eurythoe*
Metamphinome Treadwell 1940, *see Hipponoa*
Pleione Savigny 1818, possibly *Amphinome*
Pseudeurythoe Fauvel 1932, *see Linopherus*
Rostraria Haecker 1898, larval forms
Strategis Kinberg 1867c, see *Chloeia*
Thesmia Kinberg 1867c, see *Chloeia*
Thetisella Baird 1870, larval forms
Veleda Castelnau 1842, indeterminable
Zothea Risso 1826, indeterminable

FAMILY EUPHROSINIDAE WILLIAMS 1851

Amphinomida with short and thick bodies.One pair of antennae; palps absent. Neurosetae in tufts, notosetae in transverse rows on the dorsum; branching branchiae in rows between the notosetae.

Euphrosinids often are considered in the amphinomids *SENSU* LATU. The two families are closely related, but the euphrosinids make up a distinct, compact group of forms, and it appears best to treat them separately.

Key to Genera

Notosetae bifurcate, with cylindrical shafts	*Euphrosine*
Notosetae flattened, smooth paleae	*Palmyreuphrosyne*

Generic Definitions

Euphrosine Savigny 1818, *E. myrtosa* Savigny 1818; 40 species.

Short-bodied forms with short prostomium, caruncle with three longitudinal lobes. Branchiae in transverse rows in the dorsum of each segment. Setae include capillaries, and furcate setae.

Palmyreuphrosyne Fauvel 1913, *P. paradoxa* Fauvel 1913; 2 species.

Short-bodied forms with an elongated caruncle. Pectinate branchiae in three dorsal groups per segment. Parapodia transverse ridges. Notosetae flattened smooth paleae.

Taxonomic Note

Palmyreuphrosyne appears, as noted by Fauvel (1913) to combine characters of the euphrosinids with those of the palmyrids. Fauvel indicates that the eversible pharynx of *Palmyreuphrosyne* should be ventral, smooth and cylindrical, which would ally the genus closely to *Palmyra* rather than to the amphinomidlike forms with their ventral plate-muscle pharynx. As indicated by Orrhage on several occasions, structure of the pharynx may not be an overwhelmingly strong character, and it appears best to await further study of these forms to decide the question. In the meantime, *Palmyreuphrosyne* is maintained where it was placed by its original describer, Fauvel (1913).

Invalid Genus

Lophonota Costa 1841, see *Euphrosine*

ORDER SPINTHERIDA

Body ovate. Prostomium with a median antenna. Pharynx retractable and cylindrical (resembles a turbellarian pharynx). Notopodia represented by membranous ridges supported by simple or furcate setae. Neuropodia with composite, strongly curved hooks. Ectoparasitic on sponges.

Family Spintheridae

As the order; the family is known for a single genus, *Spinther* Johnston 1845, with the genotype, *S. oniscoides* Johnston 1845. About 12 species presently are recognized.

Invalid Genera

Cryptonota Stimpson 1854, *see Spinther*
Oniscosoma Sars 1850, see *Spinther*

ORDER EUNICIDA

Prostomium distinct, with or without appendages. Eversible pharynx ventrolateral, strongly muscular and with at least one pair of jaws. Parapodia distinct, with strongly developed neuropodia and reduced notopodia.

Superfamily Eunicea

Two to five pairs of lateral jaws (maxillae) and usually one pair of lower jaws (mandibles).

FAMILY ONUPHIDAE KINBERG 1865

Eunicea with two frontal and five occipital antennae. Maxillary carriers short; third carrier absent. Maxilla I smooth and curved. Notopodia represented by the base of the branchiae and the dorsal cirri, often supported by internal acicula. Setae include composite and pseudocomposite hooks and spinigers, pectinate setae, limbate setae and subacicular hooks.

Most onuphids are tubicolous, some of them carry the tube around (Hyalinoecia); others are sessile, but may be able to leave their tubes in emergencies (Schafer 1972). All species appear to be scavenging and feed on both plant and animal debris floating past their tube openings; others may actively hunt for debris. Onuphids tend to be common at all depths, and are, next to the lumbrinerids, the family of Eunicea best represented in deep water. Recent revisions were made by Fauchald (1968b, 1972).

FIGURE 29. (A), Family ONUPHIDAE, *Nothria elegans, off* Santa Barbara, California, 20 m, 15x; (B), maxillae of the above, 25x; (C), third parapodium of the above, 35x; (D), median parapodium of the above, 25x.

Key to Genera

Ia.	Two or more anterior setigers with prolonged parapodia and modified setae	2
lb.	Anterior parapodia not prolonged, or only first parapodium longer than the following ones	4
2a (la).	Two modified anterior setigers; these with uni- or bidentate hooks and capillary setae . .	*Paranorthia*
2b (Ia).	More than two modified anterior setigers	3
3a (2b).	Modified parapodia with strongly curved, grapple-hook shaped setae	*Rhamphobrachium*
3b (2b).	Modified parapodia with composite falcigers	Americonuphis
4a (III).	Branchiae in part spiralled	5
4b (lb).	Branchiae pectinate, simple or absent	7
5a (4a).	Tentacular cirri absent	*Epidiopatra*
5b (4a).	Tentacular cirri present	6
6a (5b).	Frontal antennae short and conical, all dorsal cirri digitate	*Diopatra*

6b (5b).	Frontal antennae long and slender, at least some dorsal cirri foliose	*Heptaceras*
7a (4b).	Tentacular cirri absent	8
7b (4b).	Tentacular cirri present	9
8a (7a).	Branchiae present	*Hyalinoecia*
8b (7a).	Branchiae absent	*Paronuphis*
9a (7b).	Branchiae in part pectinate	*Onuphis*
9b (7b).	Branchiae simple or absent	10
l0a (9b).	Branchiae absent, dorsal cirri foliose in some anterior setigers	*Paradiopatra*
l0b (9b).	Branchiae present or absent, all dorsal cirri digitate	*Nothria*

Generic Definitions

Americonuphis Fauchald 1973, *Diopatra magna* Andrews 1891; 2 species.

Frontal antennae short and conical; tentacular cirri present. Five or more anterior setigers modified with composite falcigers. Branchiae pectinate; dorsal cirri digitate.

Diopatra Audouin and Milne Edwards 1833b, *D. amboinensis* Audouin and Milne Edwards 1833b; 40 species.

Frontal antennae short and conical; tentacular cirri present. Anterior setigers and setae not modified. Branchiae spiralled, dorsal cirri digitate.

Epidiopatra Augener 1918, *E. hupferiana* Augener 1918; 5 species.

Frontal antennae short and conical; tentacular cirri absent. Anterior setigers and setae not modified, branchiae spiralled, dorsal cirri digitate.

Heptaceras Ehlers 1868, *Diopatra phyllocirrus* Schmarda 1861; only species.

Frontal antennae long and slender; tentacular cirri present. Anterior setigers and setae not modified. Branchiae spiralled, dorsal cirri foliose in some setigers.

Hyalinoecia Malmgren 1867, *Nereis tubicola* O.F. Muller 1788; 20 species.

Frontal antennae short and conical; tentacular cirri absent. Anterior setigers and setae not modified. Branchiae present, simple and straplike in most species; dorsal cirri digitate.

Nothria Malmgren 1867, *Onuphis conchylega* Sars 1835; 40 species.

Frontal antennae short and conical; tentacular cirri present. Anterior setigers and setae not modified. Branchiae simple and straplike or absent, dorsal cirri digitate.

Onuphis Audouin and Milne Edwards 1833b, *O. eremita* Audouin and Milne Edwards 1833b; 60 species.

Frontal antennae short and concial, tentacular cirri present. Anterior setigers and setae not modified. Branchiae pectinate, dorsal cirri digitate.

Paradiopatra Ehlers 1887, *P. fragosa* Ehlers 1887; 2 species.

Frontal antennae short and conical, tentacular cirri present. Anterior setigers and setae not modified. Branchiae absent, dorsal cirri foliose in some setigers.

Paranorthia Moore 1903, *P. brevicornuta* Moore 1903; 5 species.

Frontal antennae short and conical; tentacular cirri present. Two modified anterior setigers present with uni- and bidentate hooks and capillary setae. Branchiae simple and straplike or bifid, dorsal cirri digitate.

Paronuphis Ehlers 1887, *P. gracilis* Ehlers 1887; 5 species.

Frontal antennae short and conical, tentacular cirri absent. Anterior setigers and setae not modified. Branchiae absent, dorsal cirri digitate.

Rhamphobrachium Ehlers 1887, *R. agassizi* Ehlers 1887; 10 species.

Frontal antennae short and conical, tentacular cirri present. Two or more anterior setigers modified with strongly curved, grapple-hooklike setae. Branchiae pectinate, dorsal cirri digitate.

Taxonomic Notes

Nothria often is considered a synonym of *Onuphis.* This is probably correct; species of both genera resemble each other closely. The separation is retained here for practical reasons, a final decision of this question will have to await the study of larger materials than is presently available.

Invalid Genera

Leptoecia Chamberlin 1919c, see *Paronuphis*
Nereitube Blainville 1828, *see Hyalinoecia*
Northia Johnston 1865, see *Nothria*
Trapodia Baird 1870, see *Onuphis*

FAMILY EUNICIDAE SAVIGNY 1818

Eunicea with from one to five occipital antennae. Maxillary carriers short; third carrier absent. Maxilla I smooth and curved. Notopodia represented by branchiae and dorsal cirri, sometimes supported by internal acicula. Setae include composite falcigers and spinigers, limbate setae, pectinate setae and subacicular hooks.

The eunicids are among the largest of polychaetes, some *Eunice aphroditois* have been reported as long as two meters. Most species are associated with hard substrates and thus with shallow water (Fauchald 1969, 1970). Generally, the eunicids are considered carnivores, but some may be scavengers or live on large detrital particles. Tube-building is known for some species; others are burrowing into limestone or other calcium carbonate substrates. Major revisions include Hartman (1944a) and Fauchald (1970).

Key to *Genera*

Ia.	Five occipital antennae present	2
lb.	One to three occipital antennae present	6
2a (Ia).	Tentacular cirri present	3
2b (la).	Tentacular cirri absent	5
3a (2a).	Subacicular hooks absent	*Palola*
3b (2a).	Subacicular hooks present	4
4a (3b).	Composite setae falcigers	Eunice
4b (3b).	Composite setae spinigers	*Euniphysa*
5a (2b).	Branchiae present	*Marphysa*
5b (2b).	Branchiae absent	Paramarphysa
6a (1 b).	One occipital antenna present	*Nematonereis*
6b (1 b).	Three occipital antennae present	*Lysidice*

Generic Definitions

Eunice Cuvier 1817 (NOMEN CONSERVANDUM) *NereiS aphroditois* Pallas 1788; 170 species.

Five occipital antennae; tentacular cirri present; branchiae present. Setae include limbate setae, pectinate setae, composite falcigers and subacicular hooks.

Euniphysa Wesenberg-Lund 1949, E. *aculeata* Wesenberg-Lund 1949; only species.

Five occipital antennae; tentacular cirri present; branchiae present. Setae include limbate setae, pectinate setae, composite spinigers and subacicular hooks.

Lysidice Savigny 1818, *L. ninetta* Audouin and Milne Edwards 1833a; 10 species.

Three occipital antennae; tentacular cirri and branchiae absent. Setae include limbate setae, pectinate setae, composite falcigers and subacicular hooks.

Marphysa Quatrefages 1865, *Nereis* sanguinea Montagu 1815; 50 species.

Five occipital antennae; tentacular cirri absent, branchiae present. Setae include limbate setae, pectinate setae, composite spinigers and falcigers and subacicular hooks.

Nematonereis Schmarda 1861, *N.* unicorns Schmarda 1861; 2 species.

One occipital antenna; tentacular cirri and branchiae absent. Setae include limbate and pectinate setae, composite spinigers and subacicular hooks.

Palola Gray 1847, *Eunice siciliensis* Grube 1840; 4 species.

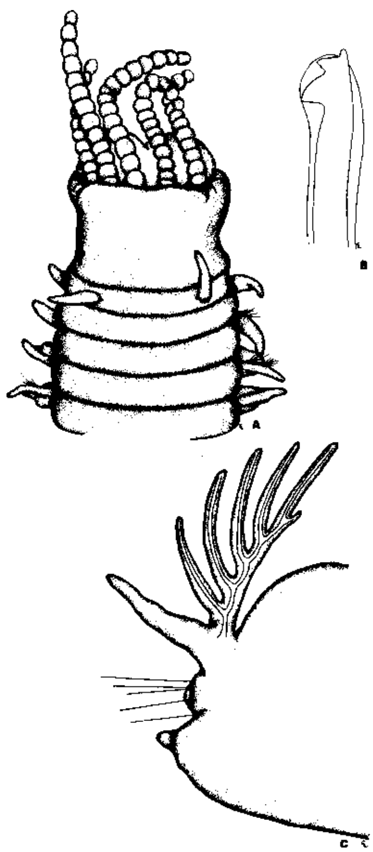


FIGURE 30. (A), Family EUNICIDAE, *Eunice* antennata, Point Loma, California, intertidal, tOx; (B), subacicular hook of the above, 100x; (C), median parapodium of the above, 25x.

Five occipital antennae; tentacular cirri and branchiae present. Setae include limbate and pectinate setae and composite falcigers.

Paramarphysa Ehlers 1887, P. longula Ehlers 1887; 4 species.

Five occipital antennae; tentacular cirri and branchiae absent. Setae include limbate and pectinate setae, composite falcigers and subacicular hooks.

Taxonomic Notes

Palola frequently is considered a subgenus of, or synonymous with Eunice. The latter is a large genus, and anything that can be done to subdivide it, appears to be of value. Members of Palola differ consistently and uniquely from the rest of the family not only in the characters listed above, but also in the deep scoop-shape of the mandibles. It thus appears valuable to retain the distinction, not least since it appears related to the ecology of the contained species.

Paramarphysa and Marphysa are very similar and can be separated only as indicated in the key; the separation is maintained here provisionally.

Invalid Genera

Amphelothrix Chamberlin 1919c, error for Aphelothrix, see Marphysa
Amphiro Kinberg 1865, see Marphysa
Amphiron Chamberlin 1919c, error for Amphiro, see Marphysa
Aphelothrix Chamberlin 1919c, see Marphysa
Blainvillea Quatrefages 1865, see Nematonereis
Eriphyle Kinberg 1865, see Eunice
Eunice Rafinesque 1815, NoMEN NuDuM (Eunice Cuvier 1817 is the valid name for the main genus in this family, fide Fauvel 1918:338).
Heteromarphysa Verrill 1900, indeterminable
Leodice Savigny 1818, see Eunice
Lithognatha Stewart 1811, see Palola
Lycidice Williams 1851, error for Lysidice
Macdufa McIntosh 1885, see Marphysa
Mayeria Verrill 1900, see Eunice
Nauphanta Kinberg 1865, see Marphysa
Nausicaa Kinberg 1865, see Marphysa
Nereidice Blainville 1828, see Lysidice
Nereidonta Blainville 1828, see Eunice, Marphysa and Palola
Palpiglossus Wagner 1885, indeterminable
Pseudopalolo Friedlander in Woodworth 1907, see Lysidice
Tibiana Lamarck 1816, see Eunice

FAMILY LUMBRINERIDAE MALMGREN 1867

Eunicea without prostomial appendages, but sometimes with one to three nuchal papillae emerging from a pocket between the pro- and peristomium. Maxillary carriers short, third carrier absent. Maxilla I smooth and curved. Notopodia absent or represented by small, button-shaped projections, sometimes with internal acicula (but see Kuwaita below). Setae include limbate setae, simple and composite hooks. Subacicular hooks and pectinate setae are absent.

Most lumbrinerids are free-living, burrowing forms in sand or mud or between algal hold-fasts and plant-roots. They are among the most common polychaetes in sandy and muddy bottoms in shelf-depths, but also occur in numbers in deep-water areas. Identification of lumbrinerids is dependent on very accurate work and is not altogether easy. Most dependable appears to be the structure of the anterior setigers, the structure of the jaw-apparatus and the detailed structure of the hooks. Length and shape of the parapodial lobes also are valuable characters, but care must be taken in noting the exact location of the parapodium examined in relation to the total length of the animal. This often is difficult since the lumbrinerids fragment readily. An important character in most keys to species concerns the length of the posterior parapodial lobes in relation to the length of the anterior ones; usually stated as "prolonged posterior lobes." The key feature in this character, is that the posterior lobes have to be distinctly longer than the anterior ones. With a fragmented specimen this may be impossible to observe; in such cases, it is of the utmost importance that both paths in a key be explored; in other words, that no assumption is made about the structure of the posterior lobes.

Key to Genera

la.	Parapodia with distinct dorsal cirri	Kuwaita
lb.	Dorsal cirri absent	2
2a (lb).	Pharyngeal apparatus absent	Ophiuricola
2b (lb).	Pharyngeal apparatus present	3
3a (2b).	Branchiae absent	Lumbrineris
3b (2b).	Branchiae present	Ninoe

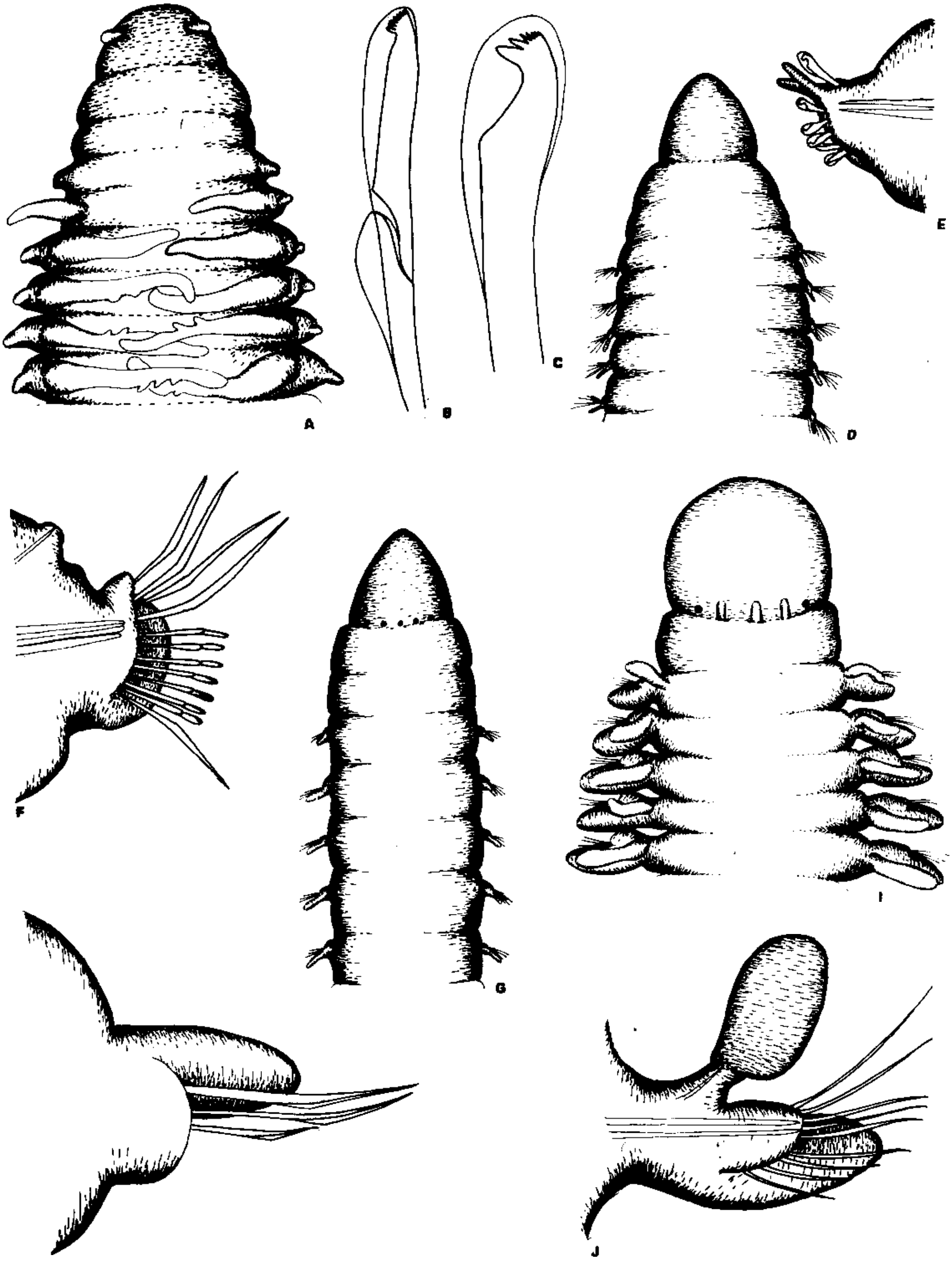


FIGURE 31. (A), Family IPHITIMIDAE, *Iphitime loxorhynchi*, from *Loxorhynchus grandis*, Santa Catalina Island, California, 26x; (B), Family LUMBRINERIDAE, *Lumbrineris* californiensis, off Point Firmin, California, 30 m, anterior composite hooded hook, 385x; (C), posterior simple hooks of the above, 385x; (D), anterior end of the above, 16x; (E), 100th parapodium of the above, 53x; (F), third parapodium of the above, 53x; (G), Family ARABELLIDAE, *Arabella iricolor*, Dillon Beach, California, intertidal, 16x; (H), fifth parapodium of the above, 95x; (1), Family LYSARETIDAE, Oenone *fulgida*, Bahia Magdalena, Baja California, 30 m, 26x; (1), fifteenth parapodium of the above, 52x.

Key to Genera Fide *Orensanz* (1974a)

Ia.	Hooded hooks distally bidentate	2
lb.	Hooded hooks, if present, distally multidentate (anterior parapodia may have incompletely formed hooks)	3
2a (Ia).	Maxilla IV with a series of articulated spines; mandibles posteriorly bifid; maxillary carriers large and posteriorly expanded	*Lumbrineriopsis*
2b (Ia).	Maxilla IV without denticles or articulated spines; mandibles posteriorly entire; maxillary carriers robust, subtriangular and not expanded posteriorly	*Lumbrinerides*
3a (I b).	Digitiform branchiae emerging from the postsetal lobes on a number of anterior setigers; maxillae IV, or III and IV usually with denticulated cutting edge	*Ninoe*
3b (Ib).	If branchial structures present, they are in a different position; maxillae III and IV either smooth or with a few large teeth	4
4a (3b).	Anterior parapodia with composite hooded hooks; maxilla II with three large teeth; maxilla IV greatly expanded with a central thin area	*Augeneria*
4b (3b).	Parapodia with or without composite setae. Maxillae different	*Lumbrineris*

Generic Definitions

Kuwaita Mohammad 1973, *K. magna* Mohammad 1973; only species.

Lumbrinerids with three nuchal papillae; dorsal cirri present and elongate in posterior segments; branchiae absent. Jaw apparatus present.

Lumbrineris Blainville 1828, *L. latreilli* Audouin and Milne Edwards 1834; 158 species.

Lumbrinerids without or with one to three nuchal papillae; dorsal cirri and branchiae absent. Jaw apparatus present.

Ninoe Kinberg 1865, *N. chilensis* Kinberg 1865; 28 species.

Lumbrinerids without nuchal papillae, dorsal cirri absent; branchiae present. law apparatus present.

Ophiuricola Ludwig 1905, *O. cynips* Ludwig 1905; only species.

Lumbrinerids without nuchal papillae, dorsal cirri or jaw apparatus.

Taxonomic Notes

Orensanz (1974a) described the two genera *Lumbrineriopsis* and *Lumbrinerides* with *L. mucronata* (Ehlers 1908) and *L. gesae* Orensanz 1974a as type species respectively. Both genera may be valid. The change in concept of the previously described *Augeneria* and *Ninoe* indicated in the alternative key above appears unfortunate and is not recommended for future adoption. Admittedly the genus *Lumbrineris* as presently accepted, contains a large number of rather different forms, but experience has taught me that surveys based on descriptions from the literature are considerably less valuable than ones based on actual specimens. It is now time to study the variability of the characters we are using to define the many species, so that we may use knowledge of this variability when we attempt to describe more genera in this family.

The genus *Kuwaita is* isolated in the family and may belong to a different, perhaps undescribed family.

Invalid Genera

Aotearia Benham 1927, see *Lumbrineris*
Augeneria Monro 1930, see *Lumbrineris* (but see above)
Cenogenus Chamberlin 1919c, see *Lumbrineris*
Eranno Kinberg 1865, see *Lumbrineris*
Lumbriconereis Grube 1840, see *Lumbrineris*
Scoletoma Blainville 1828, see *Lumbrineris*
Unciniseta Bidenkap 1907, see *Lumbrineris*
Zygolobus Grube 1863, see *Lumbrineris*
Zygophyllus Grube 1863, error for *Zygolobus,* see *Lumbrineris*

FAMILY IPHITIMIDAE FAUCHALD 1970

Eunicea with a single pair of frontal antennae. One pair of maxillary carriers fused to maxilla I, which is smooth and curved; third carrier is absent. Notopodia represented by simple or branched branchiae. Setae include simple and composite falcigers.

A single genus: *Iphitime* Marenzeller 1902, with genotype *I. doederleini* Marenzeller 1902, and five species are known.

All Iphitimidae are inquilines in branchial chambers of crustaceans; their feeding modes are unknown; it is possible that they parasitize the crustacean host; but little damage seems to be present on the branchial tissue of the host. Pilger (1972) and Fauchald (1970) reviewed the family.

Invalid Genera

Coelobranchus Izuka 1912, see *Iphitime*
Enonella Stimpson 1854, indeterminable

FAMILY ARABELLIDAE HARTMAN 1944a

Eunicea without prostomial appendages. Maxillary carriers long and narrow, a third carrier present. Maxilla I smooth or basally dentate; notopodia absent. Setae include limbate setae and in a number of cases, thick, emergent spines.

Arabellids resemble lumbrinerids closely in overall body-construction, but differ sharply from the latter in that they have long narrow maxillary carriers and have three, rather than two carriers. Arabellids are never tubicolous; *they* may be parasitic in other animals, usually in other polychaetes, but also in echiurans. They may be parasitic as juveniles and become free-living as adults (Pettibone 1957c), or may stay parasitic throughout life (Wiren 1886). Major revisions: Hartman 1944a; Pettibone 1957c; Fauchald 1970.

Key to Genera

Ia.	Acicular spines present	2
lb.	Acicular spines absent	4
2a (la).	Maxillary apparatus represented by a single rod	Drilognathus
2b (la).	Four or five pairs of jaws present	3
3a (2b).	Maxilla I distally falcate	*Drilonereis*
3b (2b).	Maxilla I distally dentate	*Notocirrus*
4a (lb).	Maxillary apparatus absent	*Biborin*
4b (lb).	Maxillary apparatus present, but often reduced	5
5a (4b).	Five pairs of maxillae present	*Arabella*
5b (4b).	Two or three pairs of maxillae present	6
6a (5b).	Mandibles fused and horseshoe-shaped	*Oligognathus*
6b (5b).	*Mandibles* two triangular plates	7
7a (6b).	Maxillary carriers anteriorly bilobed and fused along most of their lengths	*Labrorostratus*
7b (6b).	Maxillary carriers anteriorly rounded and fused along their whole length	*Haematocleptes*

Generic Definitions

Arabella Grube 1850, *Nereis* iricolor Montagu 1804; 20 species.

Arabellids with five pairs of maxillae and mandibles present. Parapodia without acicular spines.

Biborin Chamberlin 1919a, *B. ecbola* Chamberlin 1919a; only species.

Arabellids without maxillary apparatus, mandibles present. Parapodia without acicular spines.

Drilognathus Day 1960, D. capensis Day 1960; only species.

Arabellids with the maxillary apparatus reduced to a single rod. Parapodia with acicular spines.

Drilonereis Claparede 1870b, *Lumbriconereis filum* Claparede 1868; 40 species.

Arabellids with four or five pairs of maxillae; mandibles usually present. Parapodia with acicular spines; maxilla I distally falcate.

Haematocleptes Wiren 1886, H. *terebellides* Wiren 1886; 2 species.

Arabellids with the maxillary apparatus consisting of two pairs of small plates, mandibles present and separate; unpaired carrier present. Acicular spines absent.

Labrorostratus Saint-Joseph 1888, *L.* parasiticus Saint-Joseph 1888, only species.

Arabellids with two pairs of minute maxillae and the carriers fused for part of their length. Acicular spines absent.

Notocirrus Schmarda 1861, *N.* chilensis Schmarda 1861; 10 species.

Arabellids with four or five pairs of maxillae, mandibles present. Maxillae I dentate to the tip. Acicular spines present.

Notopsilus Ehlers 1868, *Lais acutus* Kinberg 1865; only species.

Arabellids with five pairs of maxillae and mandibles present. Acicular spines absent. Maxillae I proximally dentate.

Oligognathus Spengel 1882, O. *bonelliae* Spengel 1882; 2 species.

Arabellids with two or three pairs of maxillae present; mandibles fused into horseshoe-shaped piece. Acicular spines absent.

Taxonomic Notes

The generic sub-division is presently inconsistent in that in the group of arabellids with emergent acicular spines, forms with maxilla I distally falcate are considered generically distinct from forms with maxilla I distally dentate. The corresponding separation should split the genus *Arabella so* that the forms with maxilla I dentate should go to the genus *Notopsilus,* which has been defined in the generic definitions, but not considered in the key. This genus has been largely disregarded; it is not clear whether the best procedure would be to revise *Arabella* to separate the two sets of forms, or to fuse the well-known genera *Notocirrus* and *Drilonereis* to ensure generic conformity within the family.

Invalid Genera

Arabes Ehlers 1920, *see Drilonereis*
Aracoda Schmarda 1861, see *Arabella, Notocirrus* and *Lumbrineris*
Cenothrix Chamberlin 1919c, see *Arabella*
Labidognathus Caullery 1914a, see *Drilonereis*
Lais Kinberg 1867, *see Notopsilus*
Laranda Kinberg 1865, indeterminable
Maclovia Grube 1871 b, *see Arabella*
Pterothrix Chamberlin 1919c, see *Notocirrus*

FAMILY LYSARETIDAE KINBERG 1865

Eunicea with one or three occipital antennae. Maxillary carriers long and narrow, a third carrier is present; maxilla I proximally smooth or dentate. Notopodia represented by large dorsal cirri supported by acicula. Setae include limbate setae and in some genera, bidentate hooded setae.

Lysaretidae is a small family of rather large, mainly tropical shallow-water polychaetes. The general appearance of the worms is that of a lumbrinerid, but the large dorsal cirri are distinct, as is the jaw-apparatus. Important revisions include Fauchald (1970) and Knox and Green (1972).

Key to Genera

Ia.	One distinct peristomial segment present	*Oenone*
lb.	*Two* distinct peristomial segments present	2
2a (lb).	One short antenna present	*Tainokia*
2b (Ib).	Three antennae present	3
3a (2b).	Proximal end of maxilla I dentate; distal end falcate	*Halla*
3b (2b).	Proximal end of maxilla I smooth or nearly smooth; each distal end with two large fangs . .	*Lysarete*

Generic Definitions

Halla Costa 1844, *Nereis parthenopeia* delle Chiaje 1828; 3 species.

Lysaretids with two distinct peristomial rings, three antennae and the distal end of maxilla I falcate. The proximal end of maxilla I is dentate.

Lysarete Kinberg 1865, *L. brasiliensis* Kinberg 1865; 2 species.

Lysaretids with two distinct peristomial rings, three antennae and the distal end of maxilla I divided into two large fangs. Proximal end of maxilla I smooth.

Oenone Savigny 1818, *Aglaura fulgida* Savigny 1818; 4 species.

Lysaretids with one distinct peristomial ring, three antennae and usually, distally falcate maxilla I. Proximal end of maxilla I dentate.

Tainokia Knox and Green 1972, *T. iridescens* Knox and Green 1972; only species.

Lysaretids with two distinct peristomial rings, one antenna and distally falcate maxilla I. Proximal end of maxilla I is dentate.

Taxonomic Notes

The number of species involved in the circumtropical complex referred to as *Oenone fulgida* has not been determined. Crossland (1924) investigated some of the variability of the jaw-apparatus, but did not have large enough materials to confirm or reject the presence of distinct sub-groups. *Halla parthenopeia* also has been reported from cosmotropical areas and may be another species-complex.

Invalid Genera

Aenone Risso in Quatrefages 1865, indeterminable
Aglaura Savigny 1818, see *Oenone*
Aglaurides Ehlers 1868, see *Oenone*
Andromache Kinberg 1865, see *Oenone*
Cirrobranchia Ehlers 1868, see *Halla*
Danymene Kinberg 1865, indeterminable
Larymna Kinberg 1865, indeterminable
Plioceras Quatrefages 1865, see *Halla*

FAMILY DORVILLEIDAE CHAMBERLIN 1919C

Eunicea with two pairs of antennae. Maxillae consist of one or two series of small jaw-pieces and paired carriers; mandibles present. Notopodia reduced, but with setae and acicula in most forms. Setae include simple and composite hooks, furcate and limbate setae.

Dorvilleids are mainly small polychaetes, considered most common in shallow water, but recently recovered in increasing numbers from deeper water (Jumars 1974).

One pair of the antennae is referred to as palps; they differ in structure from the other pair, in that they often are articulated. Either one or both pairs may be reduced. The jaw-apparatus may also be reduced in some forms. Jumars (1974) has revised the generic classification of the family.

Key to Genera

Ia.	Notacicula present	2
lb.	Notacicula absent	3
2a (Ia).	Furcate setae present	*Schistomeringos*
2b (Ia).	Furcate setaee absent	*Dorvillea*
3a (lb).	Furcate or geniculate setae present	4
3b (Ib).	Furcate or geniculate setae absent	5
4a (3a).	Palps well developed	*Protodorvillea*
4b (3a).	Second pair of antennae reduced or absent	*Meiodorvillea*
5a (3b).	Only simple acicular setae present	*Parophryotrocha*
5b (3b).	Both capillary and compound setae present	6
6a (5b).	Setae of first setiger markedly different from the others	*Exallopus*
6b (5b).	Setae of first setiger similar to others	7
7a (6b).	First antennae long and cirriform	*Apophryotrocha*
7b (6b).	First antennae reduced and papilliform	*Ophryotrocha*

Generic Definitions

Apophryotrocha Jumars 1974, *A. mutabiliseta* Jumars 1974; only species.

Dorvilleids with very long, cirriform antennae and well-developed palps. Dorsal cirri without acicula. Setae of two kinds, capillaries and composite heterogomph falcigers. Both pairs of carriers and the four basal plates of the jaws fused into a single structure.

Dorvillea Parfrtt 1866, *Staurocephalus rubrovittatus* Grube 1855; 15 species.

Dorvilleids with both antennae and palps well developed and of the same length. Dorsal cirri with acicula. Setae include capillaries and heterogomph falcigers. Carriers and four rows of denticles always present; carriers may be variously fused to the basal plates.

Exallopus Jumars 1974, *E. cropion* Jumars 1974; only species.

Dorvilleids with both antennae and palps well developed and of the same length. Dorsal cirri absent. Setae include capillaries and composite heterogomph falcigers and in the first setiger, large, curved composite hooks. One pair of carriers and two rows of denticles present; carriers fused to the basal plates.

Meiodorvillea Jumars 1974, *Protodorvillea minuta* Hartman 1965; 3 species.

Dorvilleids with small clavate antennae, and small palps, which may be absent. Dorsal cirri small or absent, never with acicula. Setae include capillaries, furcate setae and composite heterogomph falcigers. Carriers and two rows of denticles present.

Ophryotrocha Claparede and Mecznikow 1869, *O. puerilis* Claparede and Mecznikow 1869; 11 species.

Dorvilleids with antennae and palps reduced to papilliform projections. Dorsal cirri without acicula, may be absent. Setae include capillaries and heterogomph falcigers. Carriers and basal plates fused into a characteristic ice-tong shape. Four rows of denticles present.

Parophryotrocha Hartmann-Schroder 1971, *Ophryotrocha isochaeta* Eliason 1962; only species.

Dorvilleids with antennae and palps absent. Dorsal cirri absent. Only simple, acicular setae present. Four rows of denticles present, carriers and basal plates fused into one piece.

Protodorvillea Pettibone 1961, *Staurocephalus kefersteini* McIntosh 1869; 5 species.

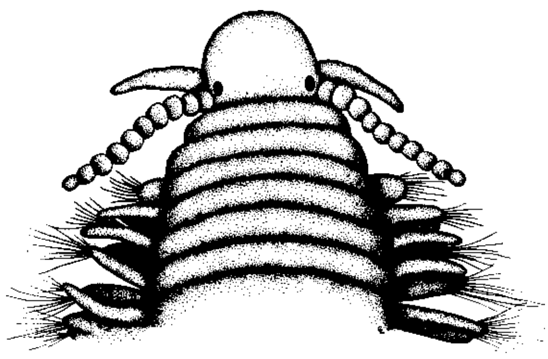


FIGURE 32. Family DORVILLEIDAE, *Dorvillea articulara*, Newport, California, shallow subtidal, 50x.

Dorvilleids with well-developed palps; antennae small or absent. Dorsal cirri without acicula. Setae include capillaries, furcate setae and composite heterogomph setae. Carriers and four rows of denticles present; carriers sometimes fused with basal plates.

Schistomeringos Jumars 1974, *Nereis rudolphii* delle Chiaje 1828; 10 species.

Dorvilleids with well-developed antennae and palps of approximately the same length. Dorsal cirri with acicula. Setae include capillaries, furcate setae and composite heterogomph falcigers. Four rows of denticles present; carriers may be fused with basal plates.

Taxonomic Notes

The genera of this family have been confused to a considerable extent, as noted by Pettibone (1961) and Jumars (1974). Thanks to these two surveys, the matter seems to have been adequately clarified.

Invalid Genera

Anisoceras Grube 1856, see *Dorvillea* and indeterminable

Eteonopsis Esmark 1878, see *Ophryotrocha*

Prionognathus Keferstein 1862, see *Schistomeringos*

Staurocephalus Grube 1855, see *Dorvillea*

Stauroceps Verrill 1900, *see Dorvillea*

Stauronereis Verrill 1900, *see Dorvillea* and *Schistomeringos*

Telonereis Verrill 1900, see *Dorvillea*

The following two families are considered here free-standing, unrelated families of the order Eunicida. They are both very small, in terms of numbers of species, and parasitic on decapod crustaceans and fishes, respectively. Probably in response to this habit, they have been modified so that the only characters they have in common with other members of the order, is the structure of the jaw-apparatus, which makes them resemble members of the Eunicida more closely than they resemble members of any other jawed family.

FAMILY HISTRIOBDELLIDAE VAILLANT 1890

Eunicida with five antennae; one pair of lower jaws and a single lateral jaw. One pair of anterior and one pair of posterior appendages always present; a varying

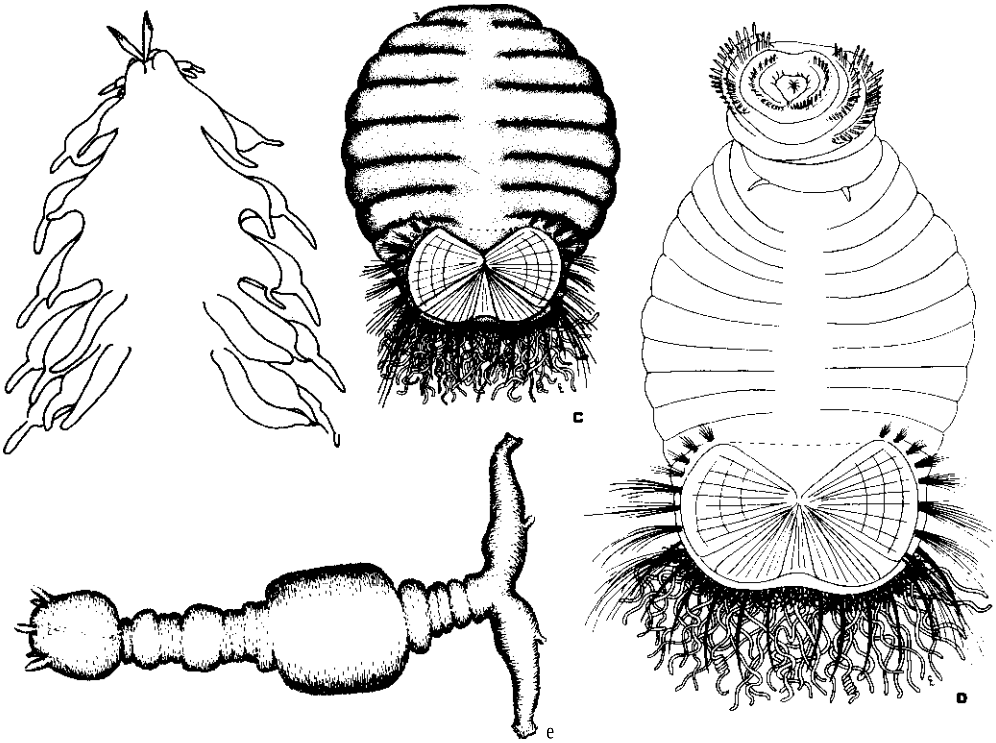


FIGuRE 33. (A), Family ICHTHYOTOMIDAE, *(chthyotomus sanguinarius,* combined from several sources, ventral view, about 30x; (B), Family HISTRIOBDELLIDAE, *Histriobdella homari,* from *Homarus americanus,* Woods Hole, Massachusetts, 95x; (C), Family STERNASPIDAE, *Sternaspis scutata, off* Santa Catalina Island, 23 m, anterior end inverted, 5x; (D), the above with the anterior end everted, lox.

number of lateral appendages also present. Setae absent. Parasitic on reptant decapod crustaceans.

Histriobdellids are known as parasites in the branchial chambers of crustaceans, both from fresh-water and marine environments. They are very small, and that, combined with their habitat makes it likely that they are considerably more common than the few scattered records indicate.

Key to Genera

Ia.	With a single pair of lateral appendages	*Histriobdella*
l b.	With at least two pairs of lateral appendages	*Stratiodrilus*

The genera are defined as indicated in the key. Each genus is known in just a few species.

Histriobdella van Beneden 1858, *H. homari* van Beneden 1858, only species.

Stratiodrilus Haswell 1900, *S. tasmanicus* Haswell 1900, 4 species.

Invalid Genus

Histriodrilus Foettinger 1884, see *Histriobdella*

FAMILY ICHTHYOTOMIDAE EISIG 1906

Eunicida with one antenna, one pair of lateral jaws. Notopodia with acicula, but otherwise asetigerous, neurosetae composite. Parasitic on fishes.

(chthyotomus is known for a single species, I. *sanguinarius* Eisig 1906 from the Gulf of Naples. It is parasitic on the fins of eels. Fauvel (1958) gives a good description and illustration of the form; the illustration given here has been redrawn from that illustration.

ORDER STERNASPIDA

Posterior ventrum covered by a stiff, chitinized, mineral-impregnated shield. Eversible pharynx axial, can be inverted with the first three setigers.

FAMILY STERNASPIDAE CARUS 1863

Short-bodied polychaetes with indistinct segmentation; prostomium without appendages. All setae simple, those in the first three setigers thick, falcate spines; those associated with the shield, slender capillaries.

The family is known for one genus, *Sternaspis Otto* 1821, with type species, *Echinorhynchus scutatus* Renier 1807. The total number of currently recognized species is about ten.

The sternaspids are among the most easily recognized polychaetes with the usually dark yellow or reddish chitinized shield. They are common in sandy and muddy substrates in all depths, but are perhaps most usually found in about 100-200 m depth. Sternaspids are only rarely found in large numbers. They are burrowers in the sand and mud.

Invalid Genera

Echinorhynchus SENsu Renier 1804, see *Sternaspis*
Schreiberius Otto 1821, see *Sternaspis*
Thalassenut Ranzani 1817, *see Sternaspis*

ORDER OWENIIDA

Prostomium fused to the anterior segments; prostomium sometimes produced in lobes or as a folded membrane; proboscis a muscular pad. Neuropodial hooks in dense fields.

FAMILY OWENIIDAE RIOJA 1917

Body cylindrical with long anterior segments and short posterior ones; tubicolous. Notosetae capillary, neurosetae very small bi- or tridentate hooks in dense fields.

The oweniids are characteristically rather small, tubicolous animals, the tubes are usually short, and they are often capable of moving around with the tube. They have turned out to be quite frequently reported from moderate depths on the continental slopes, but do not appear to be common in abyssal depths. The shape of the rather characteristic small hooks has been well demonstrated by Thomassin and Picard (1972) with help of scanning electron microscope.

Key to Genera

la.	Prostomium anteriorly produced into a low collar or tentacular crown	2
lb.	Prostomium rounded or bilobed	3
2a (Ia).	Prostomium forming a low collar, ventrally deeply incised	*Galathowenia*
2b (Ia).	Prostomium forming a tentacular crown, ventrally entire	*Owenia*
3a (I b).	Prostomium deeply bilobed with paired palps	*Myriowenia*

3b (lb).	Prostomium rounded, palps absent	4
4a (3b).	First two or three setigers with notosetae only	*Myriochele*
4b (3b).	Only first setiger with notosetae only	*Myrioglobula*

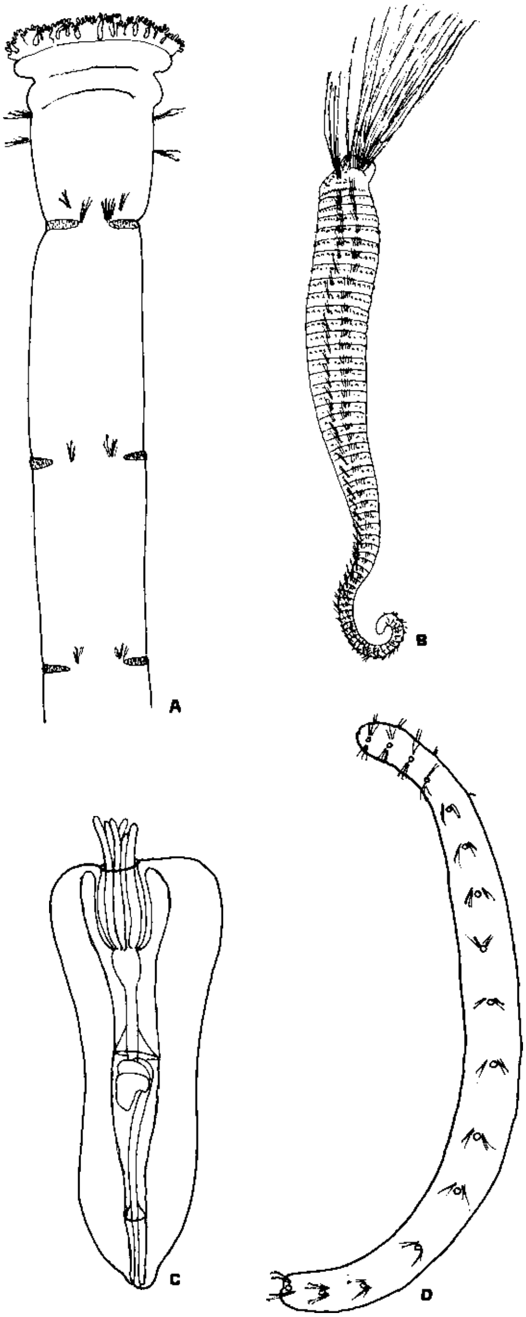


FIGURE 34. (A), Family OWENIIDAE, *Owenia collaris*, combined from several sources. 12.5x; (B), Family FLABELLIGERIDAE, *Pherusa inflata*, after Hartman, 1969, 5x; (C), Family POEOBIIDAE, *Poeobius meseres*, redrawn and simplified after Robbins, 1965, about 5x; (D), Family FAUVELIOPSIDAE, *Fauveliopsis brevis*, after Hartman and Fauchald, 1971, 12x.

Generic Definitions

Galathowenia Kirkegaard 1959, *G. africana* Kirkegaard 1959; only species.

Prostomium anteriorly produced into a low collar that ventrally is deeply incised with one lobe overlapping the other. Eyes present. First three setigers without neurosetae.

Myriochele Malmgren 1867, *M. heeri* Malmgren 1867; 12 species.

Prostomium anteriorly rounded. First two or three setigers with notosetae only.

Myrioglobula Hartman 1967, *M. antarctica* Hartman 1967; only species.

Prostomium anteriorly rounded. Only one anterior setiger with notosetae only.

Myriowenia Hartman 1960, *M. californiensis* Hartman 1960; 2 species.

Prostomium deeply bilobed with a pair of grooved palps attached anteriorly. First three setigers without neurosetae.

Owenia delle Chiaje 1841, *O. fusiformis* delle Chiaje 1841; 11 species.

Prostomium produced anteriorly into a low tentacular crown with flattened lobate projections. Three first setigers without neurosetae.

Invalid Genera

Ammochares Grube 1847, see *Owenia*
Mitraria Muller 1851, larval forms
Ops Carrington 1865, see *Owenia*
Psammocollus Grube 1868, see *Myriochele*

ORDER FLABELLIGERIDA

Anterior pharynx with ventrolateral muscular pad or unreinforced. Anterior end retractable within a sheath formed by the first setigers.

FAMILY FLABELLIGERIDAE SAINT-JOSEPH 1894

Body cylindrical or fusiform, most forms with epidermis covered by papillae. Pro- and peristomia retractable between the first three setigers. Prostomium a slender ridge with palps at the posterolateral sides. Peristomium with an expanded dorsal membrane carrying branchiae. Notosetae cross-barred or smooth, and slender; neurosetae either similar or more thickened spines or composite with falcate, unidentate or bidentate appendages.

The flabelligerids characteristically are heavily impregnated with sand or mud in a matrix of mucus; in some forms this mucus forms a complete smoothen-casing for the animal *(Flabelligera),* but in most each individual papilla, which secretes the mucus, has its separate cover of particles. Dissection of the retractable anterior end is necessary for safe identification of the several similar genera. The number and structure of the branchiae and the structure of the branchial membrane are important identificatory characters.

Key to Genera

Ia.	Body with a distinct incision just posterior to the setigers carrying the cage-forming setae	*Therochaeta*
1b.	Body without distinct incisions	2
2a (lb).	Neurosetae composite or pseudocomposite	3
2b (lb).	Neurosetae entirely simple, but usually distinctly cross-barred	4
3a (2a).	Body encased in a smooth continuous mucus sheath	*Flabelligera*
3b (2a).	Body with individual papillae covered with mucus and impregnated with debris	*Flabelliderma*
4a (2b),	Branchiae absent	*Bradabyssa*
4b (2b).	Branchiae present	5
5a (4b).	Branchial membrane long, tonguelike, sometimes doubled	6
5b (4b).	Branchial membrane short, rounded or triangular	7
6a (5a).	Branchial membrane club-shaped, with branchial filaments attached distally on all sides ..	*Coppingeria*
6b (5a).	Branchial membrane flattened, with branchial filaments attached on one side only	*Piromis*
7a (5b).	All setae capillary	8
7b (5b).	At least some neurosetae acicular or falcigerous	9
8a (7a).	Body anteriorly inflated with tapering posterior end	*Diplocirrus*
8b (7a).	Body, short, flattened and nearly disc-shaped	*Ilyphagus*
9a (7b).	Cephalic cage poorly developed or absent	10
9b (7b).	Cephalic cage well developed	11
l0a (9a).	Neurosetae distinctly thicker than notosetae, four pairs of branchiae	*Trophoniella*
l0b (9a).	Neurosetae only slightly thicker than notosetae; numerous pairs of branchiae	*Brada*
I la (9b).	Body covered by a thick mucus sheath	*Buskiella*
lib (9b).	Body not covered by a mucus sheath, often sand-incrusted	12
12a (11 b).	A long oral tube present	*Therochaetella*
l2b (Ilb).	Oral tube absent	13
13a (12b).	Notosetae serrated and plumose	*Pantoithrix*
13b (12b).	Notosetae cross-barred capillaries	*Pherusa*

Generic Definitions

Brada Stimpson 1854, B. *granola* Stimpson 1854; 21 species.

Body short and fusiform; cephalic cage absent. Numerous branchial filaments on a short branchial membrane. Neurosetae slightly thicker than notosetae, distally acicular.

Bradabyssa Hartman 1967, *B. papillata* Hartman 1967; only species.

Body short and fusiform; cephalic cage absent. Branchiae absent; branchial membrane short and folded. Neurosetae simple hooks.

Buskiella McIntosh 1885, *B. abyssorum* McIntosh 1885; 2 species.

Body anteriorly inflated; mucus sheath covering the whole body. Cephalic cage present; parapodia very prominent. Oral tube present. Branchial membrane triangular with numerous branchial filaments. Neurosetae acicular.

Coppingeria Haswell 1892, C. *longisetosa* Haswell 1892; only species.

Body anteriorly inflated; cephalic cage present. Branchial membrane long, cylindrical and slender, with the branchial filaments attached on all sides distally. Neurosetae simple hooks.

Diplocirrus Haase 1915, *Trophonia glauca* Malmgren 1867; 7 species.

Body anteriorly inflated; cephalic cage present in some forms. Four pairs of branchiae of two kinds on a short branchial membrane. All setae capillaries.

Flabelliderma Hartman 1969, *Flabelligera commensalis* Moore 1909; only species.

Body cylindrical; body papillae covered with thick mucus and encrusted with debris. Cephalic cage present. Pseudocomposite hooks present in most neuropodia.

Flabelligera Sars 1829, *F. affinis* Sars 1829; 18 species.

Body cylindrical; covered completely by smooth mucus sheath. Cephalic cage present; pseudocomposite or composite hooks in the neuropodia.

Ilyphagus Chamberlin 1919c, I. *bythincola* Chamberlin 1919c; 11 species.

Body stout, flattened and nearly disc-shaped, covered with large papillae and mud- or sand-incrusted in most forms. Cephalic cage present in some forms. Four pairs of branchiae on a short branchial membrane. All setae capillaries.

Pantoithrix Chamberlin 1919c, *Pherusa chilensis* Schmarda 1861; only species.

Body anteriorly inflated; cephalic cage present. Notosetae serrated and plumose capillaries; neurosetae bidentate hooks. Six pairs of branchiae.

Pherusa Oken 1807, *Amphitrite plumosa* O.F. MUller 1776; 43 species.

Body anteriorly inflated; cephalic cage present. Either four or many pairs of branchiae on a short branchial membrane. Most neurosetae uni- or bidentate hooks.

Piromis Kinberg 1867b, *P. arenosus* Kinberg 1867b; 10 species.

Body anteriorly inflated; cephalic cage present. Branchial membrane prolonged, flattened and tongue-shaped, either single or double, with numerous branchial filaments. Neurosetae mostly uni- or bidentate hooks.

Therochaeta Chamberlin 1919c, *Srylarioides collarifer* Ehlers 1887; 6 species.

Anterior end inflated; cephalic cage present. A distinct incision present behind the last setiger that carries the cage setae. First post-incisional setiger with series of enlarged, usually anteriorly directed papillae. Composite hooks present on some anterior setigers in most species; otherwise simple neuropodial hooks.

Therochaetella Hartman 1967, *T. chilensis* Hartman 1967; only species.

Anterior end inflated; cephalic cage present. Long narrow oral tube present. Numerous pairs of branchiae on a short branchial membrane. Neurosetae distally bifid and falcate.

Trophoniella Caullery 1944, *T. avicularia* Caullery 1944; 3 species.

Anterior end inflated; cephalic cage very poorly developed or absent. Four pairs of branchiae on a short branchial membrane. Neurosetae bi- or unidentate hooks.

Invalid Genera

Aristenia Savigny *in* Quatrefages 1865, indeterminable
Balanochaeta Chamberlin 1919c, see *Pherusa*
Chloraema Dujardin 1839a, see *Flabelligera*
Flemingia Johnston 1846, see *Pherusa*
Lophocephalus Costa 1841, see *Pherusa*
Pycnoderma Grube 1877, see *Piromis*
Saphobranchia Chamberlin 1919c, see *Diplocirrus*
Semiodera Chamberlin 1919c, see *Piromis*
Siphonostoma Rathke 1843, see *Flabelligera*
Siphostoma Otto 1821, see *Flabelligera*
Stylarioides delle Chiaje 1841, see *Pherusa*
Tecturella Stimpson 1854, see *Flabelligera*
Trophonia Cuvier 1830, see *Pherusa*
Zorus Webster and Benedict 1887, indeterminable

FAMILY POEOBIIDAE HEATH 1930

Body saclike without external segmentation or setae. Anterior end fused to the rest of the body; containing a circlet of eversible tentacles. Two distinct septa only polychaete characters. Pelagic.

The poeobiids are considered related to the flabelligerids because the anterior end is retractable, and because they have chlorocruorin as one of their pigments (Robbins 1965). The family contains a single genus and species, *Poeobius meseres* Heath 1930.

Incertae Sedis

Enigma Betrem 1924, *E. terwillei* Betrem 1924; only species.

Parapodia and setae absent, retractile branchiae and palps present; one septum observed, pelagic.

This form resembles the poeobiids in several respects, it has been reported only once, but unfortunately the original material has been lost (Hartman 1967).

ORDER FAUVELIOPSIDA

Pro- and peristomium without appendages. Pharynx with a ventral muscular pad. All setigers biramous with simple limbate setae and a small rounded papilla between the rami.

These small, deep-water polychaetes are incompletely known. They were grouped formerly with the flabelligerids from which they differ in that they lack the papillar investments, the retractable anterior end and the characteristic setae. The shape of the prostomium also is markedly different. Further information may demonstrate that they are related to other groups of polychaetes; a separate order appears justified for the time being.

FAMILY FAUVELIOPSIDAE HARTMAN 1971

Small, smooth-bodied polychaetes without anterior appendages. Proboscis a ventral muscular pad. All setigers biramous with simple limbate setae and a small rounded papilla between the rami. Parapodial lobes reduced.

The family was erected by Hartman (1971) for *Fauveliopsis* McIntosh, with type *F. challengeriae* McIntosh 1922, as well as for *Flabelligella* Hartman 1965, *Flota* Hartman 1967 and *Bruunilla* Hartman 1971. *Flabelligella* was shown to belong to the Acrocirridae by Orensanz (1974b) and are cited under that family above. *Flora* and *Bruunilla* differ sharply from *Fauveliopsis* and are characterized here as free-standing genera without obvious familial affiliations.

The whole family is then reduced to the type-genus, *Fauveliopsis,* with eight described species.

Incertae Sedis

Bruunilla Hartman 1971, *B. natalensis* Hartman 1971; only species.

Prostomium small and triangular attached ventral to the large peristomium. Peristomium with five tentacular cirri. Paired short palps lateral to the mouth as flat pads. Prominent lateral parapodia present; all biramous, both rami distally strongly pointed, with embedded acicula, setae absent. Dorsal and ventral cirri present on most segments.

Flota Hartman 1967, *F. flabelligera* Hartman 1967; only species.

Body with less than ten segments; short and flattened. Prostomium a simple conical lobe with a pair of trilobed processes. Pharynx muscular and eversible, scoop-shaped and open dorsally. Parapodia biramous with setae of two kinds; slender smooth acicular rods and thicker and cross-barred acicular setae. Body with papillae, especially on the parapodia. Encased in a thick mucus sheath, pelagic.

ORDER TEREBELLIDA

Prostomium without appendages; peristomium with a series of feeding appendages; pharynx with a ventral muscular pad. At least one pair of branchiae present (rarely absent).

FAMILY SABELLARIIDAE JOHNSTON 1865

Tubicolous polychaetes with the body in three regions; posterior region an asetigerous anal tube. Prostomium a narrow ridge fused laterally to the first setiger. Setae of first setiger forming an operculum with setae in one to three rows. Thorax with two rudimentary segments and three or four parathoracic setigers. Median region with notopodial pectinate uncini and ventral capillary setae.

The sabellariids are important as reef-builders in certain areas (Schafer 1972). All of them are tubebuilders and tend to build on firm substrates; consequently, most of them are present in shallow water only, but members of two genera *(Phalacrostemma* and *Monorchos)* appear to be most common in slope depths.

Key to Genera

Ia.	With a single row of paleae in the operculum	2
l b.	With at least two rows of paleae in the operculum	3
2a (1 a).	The prolonged opercular peduncles free from one another	*Phalacrostemma*
2b (la).	Opercular peduncles short and fused	*Monorchos*
3a (lb).	Two rows of paleae	4
3b (I b).	Three rows of paleae	6
4a (3a).	Hooks absent	*Gunnarea*
4b (3a).	A pair of large hooks dorsal and proximal to the opercular paleae	5
5a (4b).	Three parathoracic setigers	*Idanthyrsus*
5b (4b).	Four parathoracic setigers	*Lygdamis*
6a (3b).	Middle opercular paleae cover the inner ones; operculum flattened cone	*Phragmatopoma*
6b (3b).	Middle opercular paleae not concealing the inner ones; operculum open and bristly	*Sabellaria*

Generic Definitions

Gunnarea Johansson 1927, *Hermella capensis* Schmarda 1861; only species.

Two rows of paleae; opercular peduncles fused; hooks and accessory setae absent on operculum. Three parathoracic setigers.

Idanthyrsus Kinberg 1867b, *I. armatus* Kinberg 1867b; 5 species.

Two rows of paleae; opercular peduncles fused; hooks present dorsal and proximal to the paleae; accessory setae absent. Three parathoracic setigers.

Lygdamis Kinberg 1867b, *L. indicus* Kinberg 1867b; 12 species.

Two rows of paleae; opercular peduncles long and separated; hooks present dorsal and proximal to the paleae; accessory setae absent. Four parathoracic setigers.

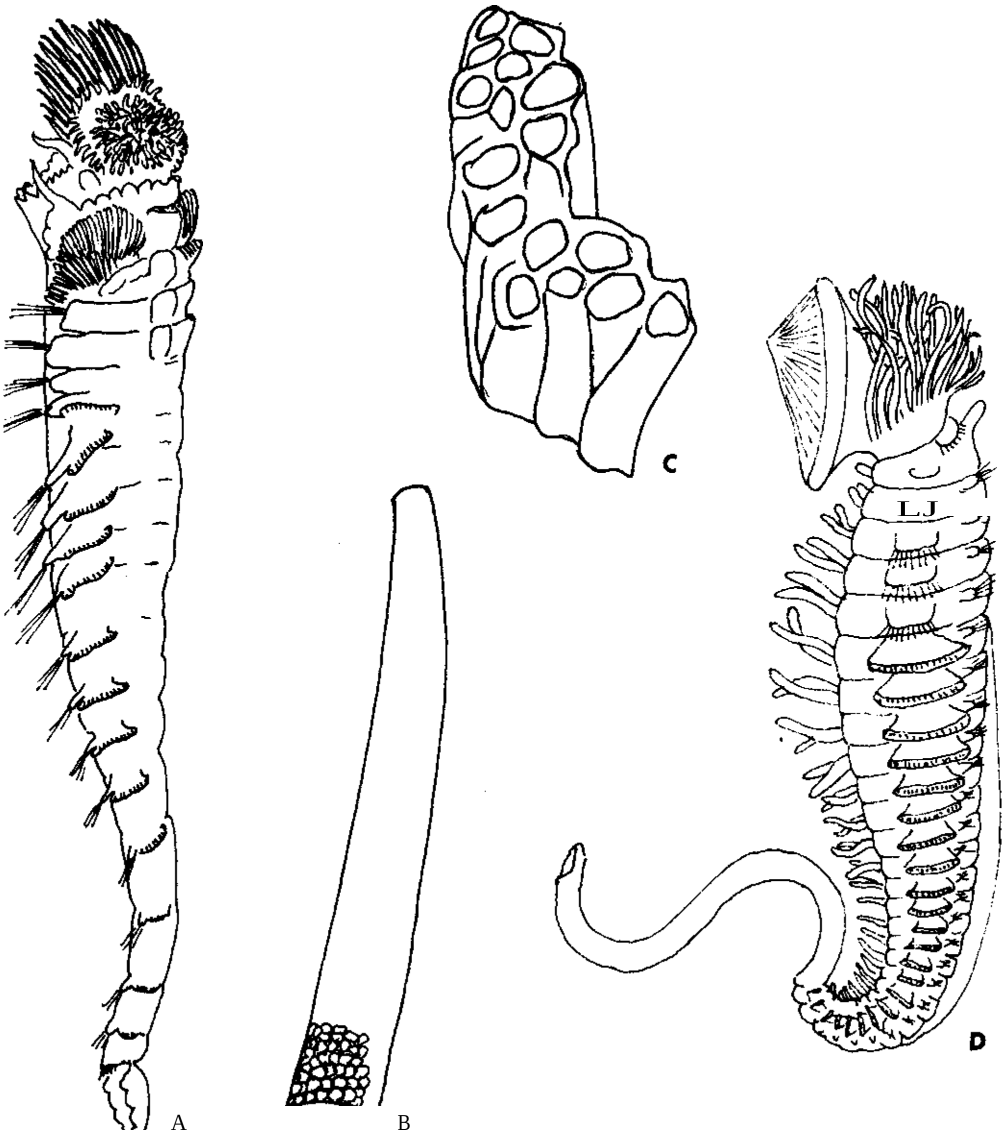


FIGuRE 35. (A), Family PECTINARIIDAE, *Amphictene* capensis, after Day, 1967, 3x; (B), pectinariid-tube, 2x; (C), Family SABELLARIIDAE, tube pattern of *Phragmatopoma* sp. natural size; (D), *Phragmatopoma californica,* after Hartman, 1969, 5x.

Monorchos Treadwell 1926, *M. philippinensis* Treadwell 1926; 2 species.

A single row of paleae; opercular peduncles fused; hooks present dorsal and proximal to the paleae and two rows of accessory setae between the paleal rows. Three parathoracic setigers.

Phalacrostemma Marenzeller 1895, *P. cidariophilam* Marenzeller 1895; 5 species.

A single row of paleae; opercular peduncles long and separated; hooks present dorsal and proximal to the paleae; accessory setae absent. Four parathoracic setigers.

Phragmatopoma Morch 1863, *P.* caudata Morch 1863; 8 species.

Three rows of paleae; opercular peduncles short and fused; hooks and accessory setae absent. Three parathoracic setigers. Middle opercular paleae covers the inner ones; operculum conical.

Sabellaria Savigny 1818, *Sabella alveolata* Linnaeus 1767; 28 species.

Three rows of paleae; opercular peduncles short and fused; hooks absent, accessory setae sometimes present. Three parathoracic setigers. Middle opercular paleae pointed distad, operculum open and generally rather bristly in appearance.

Taxonomic Notes

The "accessory setae" referred to in the above definitions, include setae associated with the operculum; they usually are acicular in appearance and may be present between the rows of paleae *(Monorchos)* or proximal to the paleae proper *(Sabellaria).* The family is under current revision by Dr. David Kirtley and the numbers of species assigned to each genus may be changed drastically. The generic sub-division appears reasonably stable.

Invalid Genera

Centrocorone Grube 1850, see Sabellaria
Chrysodon Oken in Quatrefages 1865, see *Sabellaria*
Cryptopomatus Gravier 1908, *see Idanthyrsus*
Eupallasia Augener 1927a, see Lygdamis
Hermella Savigny 1818, see *Sabellaria*
Pallasia Quatrefages 1848, see *Idanthyrsus*
Pallasina Annenkova 1925, see *Idanthyrsus*
Tetreres Caullery 1913, see *Lygdamis*

FAMILY PECTINARIIDAE QUATREFAGES 1865

Body separated into three regions, including thorax, abdomen and a posterior scaphe. Prostomium reduced. First setiger with expanded, strong setae (paleae) forming a comb used in digging. Other setae include short capillaries, pectiniform uncini and scaphal spines. Tubes short, more or less tusk-shaped, built of relatively large particles.

The pectinariids are among the most characteristic polychaetes with their strongly golden, coppery or brassy paleal setae and the gently curved, tapering, tusk-shaped, but usually very fragile tubes. The family often is recognized for only two genera, *Petta* and *Pectinaria*, in which case the other listed genera are considered subgenera of *Pectinaria.*

Key to Genera

la.	Cephalic veil marginally smooth, scaphe not distinctly separated from abdomen	*Petta*
lb.	Cephalic veil marginally cirrate; scaphe distinctly set off from abdomen	2
2a (I b).	Twelve uncinigers, cephalic veil at least partly fused to the operculum	Lagis
2b (lb).	Thirteen uncinigers, cephalic veil completely free from the operculum	3
3a (2b).	Opercular rim cirrate	*Amphictene*
3b (2b).	Opercular rim smooth	4
4a (3b).	Uncini with major teeth in a single row	*Cistenides*
4b (3b).	Uncini with major teeth in two rows	*Pectinaria*

Generic Definitions

Amphictene Savigny 1818, *Amphitrite* auricoma O.F. Miiller 1776; 8 species.

Cephalic veil free from operculum, marginally citrate; opercular rim marginally citrate. Scaphe distinctly set off from abdomen. Uncini with major teeth in double rows; 13 uncinigers.

Cistenides Malmgren 1866, *Sabella granulata* Linnaeus 1767; 8 species.

Cephalic veil free from operculum, marginally cirrate; opercular rim marginally smooth. Scaphe distinctly set off from abdomen. Uncini with major teeth in a single row, 13 uncinigers present.

Lagis Malmgren 1866, *L. koreni* Malmgren 1866; 8 species.

Cephalic veil at least partly fused to operculum, marginally curate; opercular rim marginally smooth. Scaphe distinctly set off from abdomen. Uncini with major teeth in two or more rows; 12 uncinigers present.

Pectinaria Savigny 1818, *Nereis cylindraria* belgica Pallas 1766; 18 species.

Cephalic veil free from operculum, marginally cirrate. Opercular rim marginally smooth. Scaphe distinctly set off from the abdomen. Uncini with major teeth in double rows; 13 uncinigers present.

Petta Malmgren 1866, *P. pusilla* Malmgren 1866; 4 species.

Cephalic veil free from operculum; marginally smooth. Opercular rim marginally cirrate. Scaphe not distinctly set off from abdomen. Uncini with major teeth in a single row; 14 uncinigers.

Invalid Genera

Ariapithes Kinberg 1867b, indeterminable
Cistena Leach 1816, see *Pectinaria*

Labiaria Sveshnikov 1959, larval forms
Scalis Grube 1846, indeterminable

FAMILY AMPHARETIDAE MALMGREN 1867

Body with two regions; anterior region with biramous parapodia; posterior region with well-developed neuropodia, notopodia reduced or absent. Prostomium simple or complex with lateral folds and glandular ridges. Two to four pairs of smooth or pinnate branchiae present. Notopodial capillary setae present in thorax, neuropodial uncini present both in thorax and abdomen. Thoracic uncini with major teeth in one or a few rows, rarely crested; abdominal uncini similar, but more frequently crested. Nuchal hooks and anterior acicular setae present in some forms.

The ampharetids resemble the terebellids; the main feature used to separate the two families is behavioral in that the former will withdraw the buccal tentacles completely within their mouth; the latter do not. Additionally, the ampharetids usually have a few pairs of simple branchiae, never the masses of arborescent branchiae or the numerous sessile filaments present in the terebellids. The uncini often are flattened plates in the ampharetids and nearly always distinctly crested in the terebellids.

The ampharetids have turned out to be very common in deep water and a whole mass of previously unrecognized genera have been reported from deep water over the last ten years. The major classification was reviewed by Day (1964) who reduced greatly the number of monotypic genera. The present review retains most of the genera Day fused; it is not clear that the characters Day used to identify his genera are any more precise than those he disregarded. Since a large number of additional taxa are now being described, it appears best to await further fusions of genera, until the current deep-water material has been worked up in detail. The genus *Oeorpata is* not clearly separable from *Isolda* according to Day (1964) and is incompletely known. It has been included in the definitions, but not in the key.

Key to Genera

Ia.	First several neuropodia with fine acicular setae; other neuropodia with uncini	MELINNINAE 2
l b.	First several neuropodia without acicular setae; all neurosetae uncini	AMPHARETINAE 10
2a (la).	Nuchal hooks present	3
2b (Ia).	Nuchal hooks absent	6
3a (2a).	Branchiae smooth	4
3b (2a).	Branchiae in part papillose or pennate	5
4a (3a).	Two pairs of nuchal hooks; 12 thoracic uncinigers	*Moyanus*
4b (3a).	A single pair of nuchal hooks, 14 thoracic uncinigers	*Melinna*
5a (3b).	Four pairs of branchiae, two smooth and two papillose; capillary notosetae on setigers 3-4	*Isolda*
5b (3b).	Three pairs of branchiae, one smooth, two papillose; notosetae absent on setigers 3-4	*Iran*
6a (2b).	Ten thoracic uncinigers present	7
6b (2b).	At least 12 thoracic uncinigers present	8
7a (6a).	Three pairs of branchiae	*Melinnopsides*
7b (6a).	Four pairs of branchiae	*Melinnopsis*
8a (6b).	Sixteen thoracic uncinigers present; all buccal tentacles similar	*Melinantipoda*
8b (6b).	Maximally 14 thoracic uncinigers present; one or two buccal tentacles very large	9
9a (8b).	Segment 6 with a distinct dorsal crest between the notopodia	*Melinnexis*
9b (8b).	A dorsal crest absent	*Amelinna*
l0a (Ib).	At least three pairs of branchiae	11
l0b (lb).	Two pairs of branchiae	12
I la (l0a).	Three pairs of branchiae present	15
1lb (l0a).	Four pairs of branchiae	35
12a (l0b).	Fourteen thoracic uncinigers; paleae present	*Ecamphicteis*
12b (l0b).	Maximally 12 thoracic uncinigers; paleae absent	13
13a (12b).	Nine uncinigers, first uncini in a short row similar to all others	*Egamella*
13b (12b).	Twelve uncinigers, first uncini in a long row	14
14a (13b).	Prostomium anteriorly pointed	*Auchenoplax*

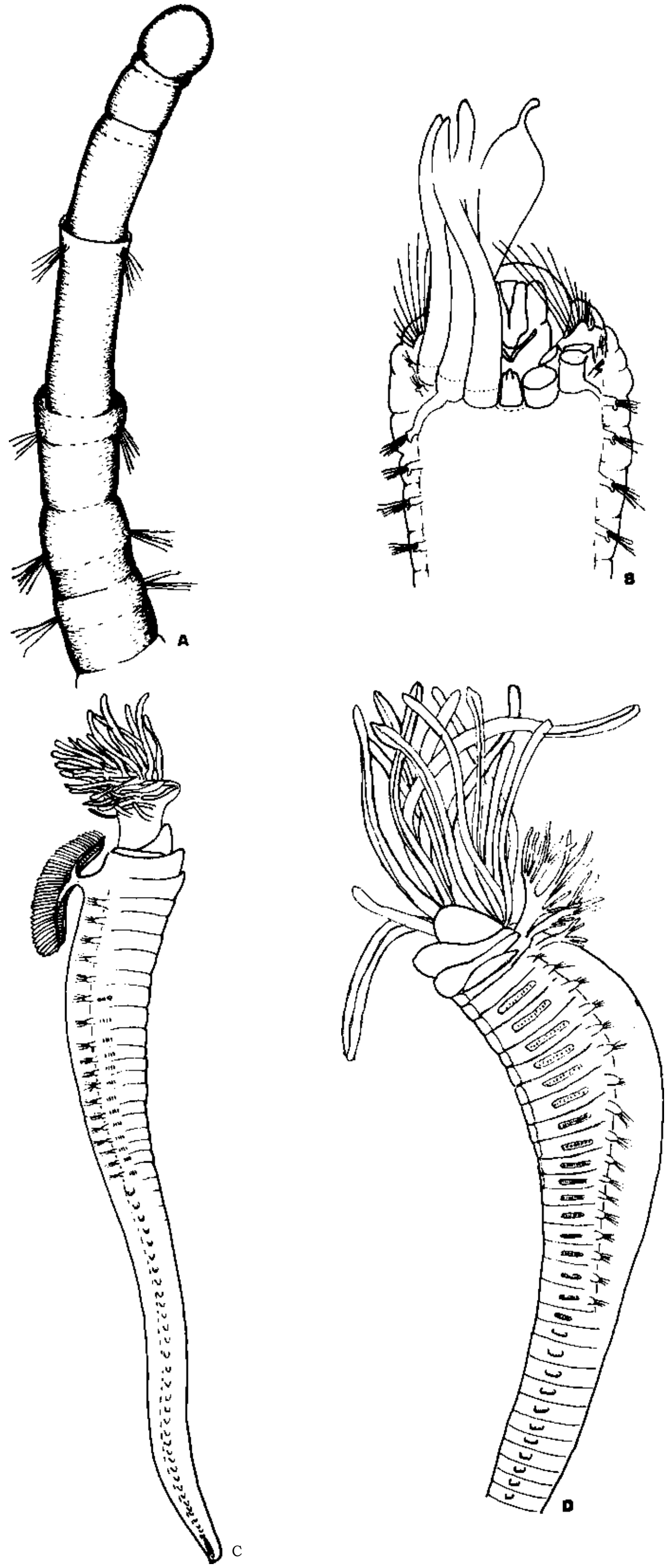


FIGuRE 36. (A), Family BOGUEIDAE, *Boguella ornata,* redrawn after Hartman and Fauchald, 1971, about 23x; (B), Family AMPHARETIDAE, *Amphicteis scaphobranchiata,* modified after Fauchald, 1972, 12.5x; (C), Family TRICHOBRANCHIDAE, *Terebellides stroemi,* combined from several sources, about 5x; (D), Family *TEREBELLIDAE, Neoamphitrite,* near *johnstoni,* modified from live sketch, 3x.

14b (13b).	Prostomium anteriorly truncate	*Melinnoides*
l5a (11 a).	All branchial pairs arranged in a distinctly segmental fashion	16
15b (I la).	Only last pair of branchiae clearly associated with a specific segment	18
16a (15a).	Eleven thoracic uncinigers; tentacular membrane large	*Amphora*=
16b (15a).	At least 14 thoracic uncinigers; tentacular membrane small	17
17a (16b).	First setae on segment 2; 14 thoracic uncinigers	*Neopaiwa*
17b (16b).	First setae in segment 3; 15 thoracic uncinigers	*Weddellia*
18a (15b).	Paleae present	19
18b (15b).	Paleae absent	25
19a (18a).	Nine thoracic uncinigers; last thoracic notopodia elevated	*Mugga*
l9b (18a).	Ten or more thoracic uncinigers	20
20a (19b).	Flange present between last thoracal notopodia; ten thoracic uncinigers	*Melinnata*
20b (19b).	Flange or crest, if present, anterior in position; at least I I thoracic uncinigers	21
2Ia (20b).	Few stout buccal tentacles present; I1 thoracic uncinigers	*Amythasides*
21b (20b).	Buccal tentacles, if present, numerous, 12 thoracic uncinigers	22
22a (21b).	Dorsal crest present on one anterior setiger	23
22b (21b).	Dorsal crest absent	*Eclysippe*
23a (22a).	Oral membrane broadly folded, 15 thoracic setigers	*Eusamythella*
23b (22a).	Oral membrane short; 14 thoracic setigers	24
24a (23b).	Dorsal crest on segment 4	*Neosamytha*
24b (23b).	Dorsal crest on either segment 6 or 7	*Melinnampharete*
25a (18b).	Ten thoracic uncinigers	*Muggoides*
25b (18b).	At least 11 thoracic uncinigers	26
26a (25b).	Eleven thoracic uncinigers	*Glyphanostomum*
26b (25b).	At least 12 thoracic uncinigers	27
27a (26b).	Twelve thoracic uncinigers	28
27b (26b).	At least 13 thoracic uncinigers	31
28a (27a).	At least one pair of branchiae basally flanged	*Samythella*
28b (27a).	All branchiae cylindrical	29
29a (28b).	Buccal tentacles papillose	*Neosabellides*
29b (28b).	Buccal tentacles smooth	30
30a (29b).	Oral membrane greatly prolonged	*Pabits*
30b (29b).	Oral membrane short	*Eusamytha*
31a (27b).	Thirteen thoracic uncinigers	32
31b (27b).	Fourteen thoracic uncinigers	33
32a (31a).	Notopodia of setiger 13 elevated with hirsute notosetae	*Sosanella*
32b (31a).	Notopodia of setiger 13 at the same level as all others; hirsute setae absent	*Alkmaria*
33a (31b).	Oral membrane smooth and folded	*Amythas*
33b (31b).	Oral membrane tentaculate	34
34a (33b).	Glandular ridges on prostomium	*Samythopsis*
34b (33b).	Glandular ridges absent	*Samytha*
35a (I lb).	Paleae present (i.e. setae present on segment 3, as the first notosetae in the body)	36
35b (11b).	Paleae absent (i.e. setae absent on segment 3 or setae already present from segment 2)	52
36a (35a).	Flanged branchiae present on four successive segments	*Phyllampharate*
36b (35a).	Branchiae flanged, lamellate, pennate or cylindrical; only one pair clearly associated with a segment	37
37a (36b).	Eleven thoracic uncinigers	38
37b (36b).	At least 12 thoracic uncinigers	39
38a (37a).	Branchiae pennate, buccal tentacles papillose	*Pterampharete*
38b (37a).	Both branchiae and buccal tentacles smooth	*Sabellides*
39a (37b).	Twelve thoracic uncinigers present	40
39b (37b).	At least 13 thoracic uncinigers present	44
40a (39a).	Buccal tentacles papillose	41
40b (39a).	Buccal tentacles smooth	42
41a (40a).	Setiger 11 with notopodia elevated and notosetae distally hirsute	*Anobothrella*
41b (40a).	Setiger I I with notopodia at the same level as all other setigers; notosetae limbate or capillary	Ampharete

42a (40b).	Setiger 14 with elevated notopodia and hirsute notosetae	Sosane
42b (40b).	Setiger 10 or 11 with elevated notopodia and tapering or hirsute notosetae	43
43a (42b).	Notopodial rudiments present in abdomen	Anobothrus
43b (42b).	Notopodial rudiments absent from abdomen	*Sosanides*
44a (39b).	Thirteen thoracic uncinigers	45
44b (39b).	Fourteen thoracic uncinigers	47
45a (44a).	One pair of branchiae pennate, others smooth	*Pterolysippe*
45b (44a).	All branchiae smooth	46
46a (45b).	Glandular ridge on prostomium	*Hypania*
46b (45b).	Glandular ridge absent	*Lysippe*
47a (44b).	Two of the four pairs of branchiae lamellate	48
47b (44b).	All four pairs of branchiae cylindrical	49
48a (47a).	Paleae large, abdominal notopodial rudiments absent	*Phyllamphicteis*
48b (47a).	Paleae small, abdominal notopodial rudiments present	*Lysippides*
49a (47b).	Glandular ridges on prostomium	50
49b (47b).	Glandular ridges absent	51
50a (49a).	Abdominal notopodial rudiments present	*Amphicteis*
50b (49a).	Abdominal notopodial rudiments absent	*Parhypania*
51a (49b).	Abdominal notopodial rudiments present	*Paiwa*
51b (49b).	Abdominal notopodial rudiments absent	*Hypaniola*
52a (35b).	Branchiae arranged in oblique series directly associated with distinct segments	*Mexamage*
52b (35b).	Only the last pair of branchiae clearly associated with a segment	53
53a (52b).	At least three pairs of branchiae lamellate	54
53b (52b).	All branchiae cylindrical	55
54a (53a).	All four pairs of branchiae lamellate; anus surrounded by a circle of papillae	*Phyllocomus*
54b (53a).	Three pairs of lamellate and one pair of cylindrical branchiae; anus with two pairs of anal cirri	Schistocomus
55a (53b).	Eleven thoracic uncinigers	56
55b (53b).	At least 12 thoracic uncinigers	58
56a (55a).	First two notopodia (segments 4 and 5) asetigerous	*Paramage*
56b (55a).	All anterior notopodia with setae	57
57a (56b).	One pair of anal cirri	*Grubianella*
57b (56b).	Two pairs of anal cirri	*Amage*
58a (55b).	Twelve thoracic uncinigers	59
58b (55b).	Fourteen thoracic uncinigers	60
59a (58a).	Buccal tentacles papillose; all notosetae capillary	*Asabellides*
59b (58a).	Buccal tentacles smooth; last thoracic notosetae modified	*Sosanopsis*
60a (58b).	Buccal tentacles papillose; notopodial cirri present	*Paramphicteis*
60b (58b).	Buccal tentacles smooth; notopodial cirri absent	Amphisamytha

Generic Definitions

Alkmaria Horst 1919b, *A. rominji* Horst 1919b; only species.

AMPHARETINAE. Three pairs of smooth branchiae; no paleae. Glandular ridges absent; 13 thoracic uncinigers; no notopodial rudiments in abdomen.

Amage Malmgren 1866, *A. auricula* Malmgren 1866; 14 species.

AMPHARETINAE. Four pairs of smooth branchiae; no paleae. Glandular ridges present; 11 thoracic uncinigers; abdominal notopodial rudiments present. Two pairs of anal cirri.

Amelinna Hartman 1969, *A. abyssalis* Hartman 1969; 2 species.

MELINNINAE. Four pairs of smooth branchiae; notosetae absent in segments 3 and 4. Nuchal hooks absent; one or two large oral tentacles present in addition to numerous smaller ones. Twelve or 13 thoracic uncinigers.

Ampharana Hartman 1967, *A. antarctica* Hartman 1967; only species.

AMPHARETINAE. Three pairs of smooth branchiae on three successive segments. Oral membrane large and folded with buccal tentacles in two lateral groups. Eleven thoracic uncinigers. Paleae absent, but small capillary setae present in segment 3.

Ampharete Malmgren 1866, *Amphicteis ac ifrons* Grube 1860; 27 species.

AMPHARETINAE. Four pairs of smooth branchiae; paleae present. Buccal tentacles papillose. Glandular ridges absent. Twelve thoracic uncinigers; abdominal notopodial rudiments absent. Notosetae absent in segment 4.

Amphicteis Grube 1850, *Amphitrite gunneri* Sars 1835; 30 species.

AMPHARETINAE. Four pairs of branchiae, usually cylindrical, rarely foliose; paleae present. Glandular ridges present. Fourteen thoracic uncinigers; abdominal notopodial rudiments present.

Amphisamytha Hessle 1917, *A, japonica* Hessle 1917; 2 species.

AMPHARETINAE. Four pairs of smooth branchiae; paleae absent. Glandular ridges absent. Fourteen thoracic uncinigers. Abdominal notopodial rudiments present.

Amythas Benham 1912, *A. membranifera* Benham 1921; only species.

AMPHARETINAE. Three pairs of smooth or grooved branchiae; oral membrane folded and smooth. Palette absent; 14 thoracic uncinigers. Abdominal notopodial rudiments absent.

Amythasides Eliason 1955, *A. macroglossus* Eliason 1955; only species.

AMPHARETINAE. Three pairs of branchiae; paleae present. Buccal tentacles few and large. Eleven thoracic uncinigers. Glandular ridges absent. Abdominal notopodial rudiments absent.

Anobothrella Hartman 1967, *Anobothrus antarctica* Monro 1939a; only species.

AMPHARETINAE. Four pairs of papillose branchiae. Buccal tentacles papillose; paleae present. Twelve thoracic uncinigers. Setiger 11 with notopodia elevated and hirsute notosetae.

Anobothrus Levinsen 1884, *Ampharete gracilis* Malmgren 1866; 8 species.

AMPHARETINAE. Four pairs of smooth branchiae, paleae present. Twelve uncinigers. Glandular ridges absent; abdominal notopodial rudiments present. Setiger 10 or 11 with notopodia elevated and modified notosetae.

Asabellides Annenkova 1929, *Sabellides sibirica Wien* 1883; 3 species.

AMPHARETINAE. Four pairs of smooth branchiae; paleae absent. Twelve thoracic uncinigers; notosetae absent in segment 4. Buccal tentacles papillose; glandular ridges absent. Abdominal notopodial rudiments present.

Auchenoplax Ehlers 1887, *A. crinita* Ehlers 1887; only species.

AMPHARETINAE. Two pairs of smooth branchiae. Prostomium anteriorly sharply pointed. Notosetae absent in segments 3 and 4. Twelve thoracic uncinigers; first row of uncini very long and ventrally located.

Ecamphicteis Fauchald 1972, *E. elongata* Fauchald 1972; only species.

AMPHARETINAE. Two pairs of smooth branchiae on first two segments. Paleae present; 14 uncinigers. Glandular ridges and abdominal notopodial rudiments absent.

Eclysippe Eliason 1955, *Lysippe vanelli* Fauvel 1936; only species.

AMPHARETINAE. Three pairs of smooth branchiae (Day 1964: four pairs of branchiae in type species); paleae present; 12 thoracic uncinigers. Glandular ridges absent; abdominal notopodial rudiments absent.

Egamella Fauchald 1972, *E. quadribranchiata* Fauchald 1972; only species.

AMPHARETINAE. Two pairs of branchiae on two successive segments; branchial membrane high and laterally free from branchial bases. Segment 3 with small capillary setae; nine uncinigers present. Clavate notopodial abdominal rudiments present; glandular ridges absent.

Eusamytha McIntosh 1885, *E. pacifica* McIntosh 1885; only species.

AMPHARETINAE. Three pairs of smooth branchiae; paleae absent. Glandular ridges and abdominal notopodial rudiments absent. Twelve thoracic uncinigers.

Eusamythella Hartman 1971, *Eusamytha sexdentata* Hartman 1967; only species.

AMPHARETINAE. Three pairs of smooth branchiae; paleae present. Oral membrane broad and folded; dorsal crest across segment 5. *Twelve* thoracic uncinigers. Glandular ridges absent.

Glyphanostomum Levihsen 1884, *Samytha pallescens* Theel 1879; 2 species.

AMPHARETINAE. Three pairs of smooth branchiae; paleae absent. Glandular ridges absent. Eleven thoracic uncinigers.

Grubianella McIntosh 1885, G. *antarctica* McIntosh 1885; only species.

AMPHARETINAE. Four pairs of smooth branchiae; paleae absent. Glandular ridges present; abdominal notopodial rudiments present; one pair of anal cirri. Eleven thoracic uncinigers.

Hypania Ostroumouw 1897, *Amphicteis i alida* Grube 1860; 2 species.

AMPHARETINAE. Four pairs of smooth branchiae, paleae present. Glandular ridges and abdominal notopodial rudiments present. Thirteen thoracic uncinigers.

Hypaniola Annenkova 1927, *Amphicteis (?Aryandes) kowalewskii* Grimm 1877; only species.

AMPHARETINAE. Four pairs of smooth branchiae; small paleae present. Glandular ridges absent; 14 uncinigers.

Irana Wesenberg-Lund 1949, 1. *heterobranchiata* Wesenberg-Lund 1949; only species.

MELINNINAE. Three pairs of branchiae, one smooth, other two pennate. Nuchal hooks on segment 4; dorsal crest on segment 6. Capillary notosetae first present in segment 7; 12 thoracic uncinigers.

Isolda Muller 1858,1. *pulchella* Muller 1858; 4 species.

MELINNINAE. Four pairs of branchiae; two smooth and two pennate. Nuchal hooks present; dorsal crest on segment 6. Capillary notosetae present in segments 5 and 6. Twelve or 13 thoracic uncinigers.

Lysippe Malmgren 1866, *L. labiata* Malmgren 1866; 5 species.

AMPHARETINAE. Four pairs of smooth branchiae; small paleae present. Glandular ridges absent. Abdominal notopodial rudiments present. Thirteen thoracic uncinigers.

Lysippides Hessle 1917, *Amphicteis fragilis* Wollebaek 1912; only species.

AMPHARETINAE. Four pairs of branchiae; two cylindrical, two flanged; small paleae present. Glandular ridges absent. Abdominal notopodial rudiments present. Fourteen thoracic uncinigers.

Melinantipoda Hartman 1967, *M.* antarctica Hartman 1967; only species.

MELINNINAE. Four pairs of smooth branchiae; nuchal hooks absent. First notosetae in segment 5. Dorsal crest on segment 6; 16 thoracic uncinigers. All buccal tentacles similar.

Melinna Malmgren 1866, *Sabellides cristata* Sars 1851; 26 species.

MELINNINAE. Four pairs of branchiae, nearly always smooth. Nuchal hooks present; dorsal crest on segment 6 present. Fourteen thoracic uncinigers. All buccal tentacles similar.

Melinnampharete Annenkova 1937, *M. eon* Annenkova 1937; 2 species.

AMPHARETINAE. Three pairs of smooth branchiae; paleae present. Dorsal ridge either on segment 6 or 7. Glandular ridges absent; abdominal notopodial rudiments absent. Twelve thoracic uncinigers.

Melinnata Hartman 1965, *M.* americana Hartman 1965; only species.

AMPHARETINAF. Three pairs of branchiae; palette present. Glandular ridges absent; ridge across dorsum on segment 4. Ten thoracic uncinigers; flange across dorsum between last thoracic notopodia.

Melinnexis Annenkova 1931, *M. arctica* Annenkova 1931; 8 species.

MELINNINAE. Four pairs of smooth branchiae. Nuchal hooks absent; first notosetae in segment 5. Dorsal crest on segment 6. Thirteen or 14 thoracic uncinigers. One very large and numerous small buccal tentacles present.

Melinnoides Benham 1927, M. *nelsoni* Benham 1927; only species.

AMPHARETINAE. Two pairs of smooth branchiae; paleae absent; first notosetae in segment 5. Prostomium a small quadrangular lobe. Twelve thoracic uncinigers; first row of uncini long and ventrally displaced.

Melinnopsides Day 1964, *Melinnopsis capensis* Day 1955; only species.

MELINNINAE. Three pairs of smooth branchiae; nuchal hooks and dorsal crest absent. Ten thoracic uncinigers. First notosetae in segment 5; segment 6 without neurosetae.

Melinnopsis McIntosh 1885, *M. atlantica* McIntosh 1885; only species.

MELINNINAE. Four pairs of smooth branchiae; nuchal hooks absent; first notosetae on segment 5. Dorsal crest absent. Ten thoracal uncinigers. Buccal tentacles all similar.

Mexamage Fauchald 1972, M. *corrugata* Fauchald 1972; only species.

AMPHARETINAE. Four pairs of branchiae on four successive segments. Paleae absent; notopodia on segments 2 and 3, but not setae. Ten thoracic uncinigers; no fused anterior segments.

Moyanus Chamberlin 1919c, *M. explorans* Chamberlin 1919c; only species.

MELINNINAE. Four pairs of smooth branchiae. Nuchal hooks on both segments 4 and 5. Dorsal crest on segment 6. Twelve thoracic uncinigers. Prostomium prolonged with oral lobe suspended below it.

Mugga Eliason 1955, *M. wahrbergi* Eliason 1955; only species.

AMPHARETINAE. Three pairs of smooth branchiae; paleae present. Glandular ridges absent; abdominal notopodial rudiments absent. Nine thoracic uncinigers. Last thoracic notopodia elevated with modified notosetae.

Muggoides Hartman 1965, *M. cinctus* Hartman 1965; only species.

AMPHARETINAE. Three pairs of smooth branchiae; palette absent. Glandular ridges and abdominal notopodial rudiments absent. Ten thoracic uncinigers; last thoracic notopodia elevated with modified notosetae.

Neopaiwa Hartman and Fauchald 1971, N. *cirrata* Hartman and Fauchald 1971; only species.

AMPHARETINAE. Three pairs of branchiae on three successive segments starting on segment 2. Capillary notosetae present from segment 2; paleal development absent. Fourteen thoracic uncinigers present. Glandular ridges absent; abdominal notopodial rudiments well developed.

Neosabellides Hessle 1917, *N. elongata* Hessle 1917; 2 species.

AMPHARETINAE. Three pairs of smooth branchiae; paleae absent; first notosetae present on segment 5. Glandular ridges absent; abdominal notopodial rudiments present. Twelve thoracic uncinigers. Buccal tentacles papillose.

Neosamytha Hartman 1967, *N. gracilis* Hartman 1967; only species.

AMPHARETINAE. Three pairs of smooth branchiae; paleae present. Glandular ridges and abdominal notopodial rudiments absent. Twelve thoracic uni inigers. Dorsal ridge across segment 4.

Oeorpata Kinberg 1867b, O. *armata* Kinberg 1867; only species.

MELINNINAE. Incompletely known, not clearly separable from *Isolda* (cf. Day 1964).

Pabits Chamberlin 1919c, *P. deroderus* Chamberlin 1919c; only species.

AMPHARETINAE. Three pairs of smooth branchiae; paleae absent. Glandular ridges absent; notopodial rudiments present in abdomen. Twelve thoracic uncinigers. Oral lobe prolonged.

Paiwa Chamberlin 1919c, *P. abyssi* Chamberlin 1919c; only species.

AMPHARETINAE. Four pairs of smooth branchiae; small paleae present. Glandular ridges absent; small abdominal notopodial rudiments present. Fourteen thoracic uncinigers.

Paramage Caullery 1944, *P. madurensis* Caullery 1944; only species.

AMPHARETINAE. Four pairs of smooth branchiae. Paleae absent, first notosetae on segment 6; notopodial lobes present on segments 4 and 5. Glandular ridges and abdominal notopodial rudiments absent. Eleven thoracic uncinigers.

Paramphicteis Caullery 1944, *Sabellides angustifolia* Grube 1878; only species.

AMPHARETINAE. Four pairs of smooth branchiae; paleae absent. Glandular ridges present; small abdominal notopodial rudiments present. Fourteen thoracic uncinigers.

Parhypania Annenkova 1928, *Amphicteis brevispinus* Grube 1860; only species.

AMPHARETINAE. Four pairs of smooth branchiae; paleae present. Glandular ridges present; abdominal notopodial rudiments very small. Fourteen thoracic uncinigers.

Phyllampharete Hartman and Fauchald 1971, *P. longicirrata* Hartman and Fauchald 1971; only species.

AMPHARETINAE. Four pairs of flanged branchiae on four successive segments starting on segment 2. Paleae absent; notosetae present from segment 2. Glandular ridges absent; abdominal notopodial rudiments present. Eleven thoracic uncinigers. Prostomium anteriorly incised.

Phyllamphicteis Augener 1918, *P. collaribranchis* Augener 1918; 2 species.

AMPHARETINAE. Four pairs of branchiae, two smooth and two lamellate. Paleae present. Glandular ridges and abdominal notopodial rudiments absent. Fourteen thoracic uncinigers.

Phyllocomus Grube 1877, *P. crocea* Grube 1877; only species.

AMPHARETINAE. Four pairs of flanged branchiae; paleae absent. Glandular ridges absent; abdominal notopodial rudiments present. Twelve thoracic uncinigers. Anus surrounded by a circle of papillae.

Pterampharete Augener 1918, P. *luderitzi* Augener 1918; only species.

AMPHARETINAE. Four pairs of pennate branchiae; paleae present. Segment 4 without notosetae. Glandular ridges and abdominal notopodial rudiments absent. Eleven thoracic uncinigers. Buccal tentacles papillose.

Pterolysippe Augener 1918, *P. bipennata* Augener 1918; only species.

AMPHARETINAE. Four pairs of branchiae; three smooth and one pennate; small paleae present. Glandular ridges absent. Thirteen thoracic uncinigers.

Sabellides Milne Edwards *in* Malmgren 1966, *Sabella octocirrata* Sars 1835; 8 species.

AMPHARETINAE. Four pairs of smooth branchiae; small paleae reported in some species. Glandular ridges and abdominal notopodial rudiments absent. Eleven thoracic uncinigers. Notosetae absent in segment 4. Buccal tentacles papillose.

Samytha Malmgren 1866, *Sabellides sexcirrata* Sars 1856; 7 species.

AMPHARETINAE. Three pairs of smooth branchiae; paleae absent. Glandular ridges absent; abdominal notopodial rudiments present. Fourteen thoracic uncinigers.

Samythella Verrill 1873a, S. *elongata* Verrill 1873a; 6 species.

AMPHARETINAE. Three pairs of smooth or flanged branchiae. Paleae absent. Glandular ridges absent; abdominal notopodial rudiments absent. Twelve thoracic uncinigers. Circle of anal papillae.

Samythopsis McIntosh 1885, S. *grubei* McIntosh 1885; only species.

AMPHARETINAE. Three pairs of smooth branchiae; paleae absent. Glandular ridges and abdominal notopodial rudiments present. Fourteen thoracic uncinigers.

Schistocomus Chamberlin 1919a, S. *hiltoni* Chamberlin 1919a; 3 species.

AMPHARETINAE. Four pairs of branchiae, one smooth and three lamellate; paleae absent. Glandular ridges absent; abdominal notopodial rudiments present. Twelve thoracic uncinigers. Two pairs of anal cirri.

Sosane Malmgren 1866, S. *sulcata* Malmgren 1866; 5 species.

AMPHARETINAE. Four pairs of smooth branchiae; paleae present. Glandular ridges absent; abdominal notopodial rudiments present. Twelve thoracic uncinigers. Third from last thoracic notopodia elevated and with modified setae.

Sosanella Hartman 1965, *S. apalea* Hartman 1965; only species.

AMPHARETINAE. Three pairs of smooth branchiae; paleae absent. Glandular ridges and abdominal notopodial rudiments absent. Thirteen thoracic uncinigers. Notopodia in setiger 13 (third from last thoracic notopodium) elevated with hirsute setae.

Sosanides Hartmann-Schroder 1965, S. *glandularis* Hartmann-Schroder 1965; only species.

AMPHARETINAE. Four pairs of smooth branchiae; paleae present. Abdominal notopodial rudiments absent. Twelve thoracic uncinigers. Setiger 11 with modified notosetae.

Sosanopsis Hessle 1917, *S. wireni* Hessle 1917; 2 species.

AMPHARETINAE. Four pairs of smooth branchiae; paleae absent. Glandular ridges absent; abdominal notopodial rudiments present; 12 thoracic uncinigers. Notosetae of last thoracic setiger modified.

Weddellia Hartman 1967, *W. profunda* Hartman 1967; only species.

AMPHARETINAE. Three pairs of smooth branchiae on three successive segments. Segment 3 with capillary setae, but without paleal modifications. Glandular ridges absent; abdominal parapodia with long dorsal cirri. Fifteen thoracic uncinigers.

Invalid Genera

Aryandes Kinberg 1867b, indeterminable
Branchiosabella Claparede 1863, see *Ampharete*
Crossostoma Gosse 1855, see *Amphicteis*
Eusamytha Hartman 1967, see *Eusamythella*
Heterobranchus Wagner 1885, see *Sabellides*
Melinnides Wesenberg-Lund 1950, see *Melinnexis* Annenkova, 1931
Melinnopsis Day 1955, see *Melinnopsides*
Microsamytha Augener 1928a, see *Alkmaria*
Pseudosabellides Berkeley and Berkeley 1943, see *Asabellides*
Rytocephalus Quatrefages 1866, indeterminable

FAMILY TEREBELLIDAE MALMGREN 1867

Body in two regions; anterior region with biramous parapodia and posterior region with neuropodia only. Prostomium a simple fold. Branchiae, when present, include one to three pairs on the first segments, associated distinctly with separate segments. Uncini usually with a large main fang and a crest of smaller teeth.

Terebellids are among the most common shallow-water polychaetes and are found in all environments. The usually numerous buccal tentacles cannot be fully retracted into the mouth. They usually are grooved and used in selective deposit-feeding on the surface. Other forms may stretch the buccal tentacles into the water and capture particles from the water.

Key to Genera

Ia.	A large scoop-shaped or conical proboscis present	ARTACAMINAE	4
lb.	Proboscis absent		2
2a (lb).	Thoracic uncini in double or alternating rows in at least some setigers	AMPHITRITINAE ...	14
2b (Ib).	Thoracic uncini in single rows in all setigers		3
3a (2b).	Branchiae present	THELEPINAE	5
3b (2b).	Branchiae absent	POLYCIRRINAE	10
4a (la).	Proboscis papillated, 17 thoracic setigers		*Artacama*
4b (Iii).	Proboscis grooved; 15 thoracic setigers		*Artacamella*
5a (3a).	First notosetae on first postbranchial segment		*Pseudampharete*

5b (3a).	First notosetae on one of the branchial segments	6
6a (5b).	First notosetae on the first branchial segment	*Streblosoma*
6b (5b).	First notosetae on the second branchial segment	7
7a (6b).	Lateral lappets present on one or a few anterior segments	8
7b (6b).	Lateral lappets absent	9
8a (7a).	Uncini from the fifth segment	*Euthelepus*
8b (7a).	Uncini from the first abdominal segment	*Telothelepus*
9a (7b).	Uncini from setiger 9	*Parathelepus*
9b (7b).	Uncini from setiger 2	*Thelepus*
10a (3b).	Setae completely absent	*Hauchiella*
10b (3b).	At least some setae present	11
11a (10b).	Neurosetae absent	12
11b (10b).	Neurosetae present	13
12a (11a).	Thoracic notopodia vascularized and in part furcate or branched	*Enoplobranchus*
12b (11a).	Thoracic notopodia may be vascularized, but never furcate or branched	*Lysilla*
13a (11b).	Neurosetae short-handled uncini	*Polycirrus*
13b (11b).	Neurosetae long-handled spines	*Amaeana*
14a (2a).	Branchiae absent	15
14b (2a).	Branchiae present	22
15a (14a).	Seventeen or fewer thoracic setigers	16
15b (14a).	More than 20 thoracic setigers	21
16a (15a).	All notosetae smooth-tipped	17
16b (15a).	At least some notosetae with denticulated tips	19
17a (16a).	Lateral lappets absent; 17 thoracic setigers	*Laphania*
17b (16a).	Lateral lappets present on one or a few anterior segments; 16 thoracic setigers	18
18a (17b).	Third segment with transverse ridge across dorsum	*Leaena*
18b (17b).	Third segment without transverse ridge	*Stschapovella*
19a (16b).	Neurosetae from setiger 3; some notosetae smooth	*Proclea*
19b (16b).	Neurosetae from setiger 2; all notosetae denticulated	20
20a (19b).	Fifteen thoracic setigers; notosetae finely denticulated	*Lanassa*
20b (19b).	Fourteen thoracic setigers; some notosetae distinctly pectinate	*Phisidia*
21a (15b).	All notosetae tapering, distally smooth-tipped	*Baffinia*
21b (15b).	Some notosetae subdistally inflated, distally denticulated	*Spinosphaera*
22a (14b).	Notosetae with marginally serrated tips	23
22b (14b).	Notosetae with smooth tips	31
23a (22a).	Three anterior segments with large lateral lappets to which the branchiae are attached .	*Colymmatops*
23b (22a).	Lateral lappets present or absent, but never directly associated with the branchiae	24
24a (23b).	Uncini from third thoracic setiger	*Neoleprea*
24b (23b).	Uncini from second thoracic setiger	25
25a (24b).	Sixteen or 17 thoracic setigers	26
25b (24b).	Eighteen or more thoracic setigers	28
26a (25a).	A single pair of branchiae; 16 thoracic setigers	*Spiroverma*
26b (25a).	Two or three pairs of branchiae; 17 thoracic setigers	27
27a (26b).	Lateral lappets present; branchiae stalked and branched	*Neoamphitrite*
27b (26b).	Lateral lappet absent; branchiae sessile filaments	*Amphitrite*
28a (24b).	Branchiae attached on segments 2-4	29
28b (24b).	Branchiae attached on another combination of segments	30
29a (28a).	Branchiae arborescent from the base	*Terebella*
29b (28a).	Branchiae distinctly stalked	*Amphitritides*
30a (28b).	Branchiae on segments 1, 2 and 5	*Polymniella*
30b (28b).	Branchiae on segments 3, 7 and 13	*Terebellobranchia*
31a (22b).	Anterior uncini long-handled	32
31b (22b).	All uncini short-handled	35
32a (31a).	Notosetae from segment 5, uncini from segment 6	*Opisthopista*
32b (31a).	Notosetae from segment 4, uncini from segment 5	33
33a (32b).	Branchiae smooth, ampharetinlike	*Eupistella*

33b (32b).	Branchiae branched	34
34a (33b).	Lateral lappets at least on segments 2 and 4	*Pista*
34b (33b).	Lateral lappets limited to segment 3	Lanicides
35a (31b).	Ventrum with large anteriorly opening glandular folds on segments 3-5	*Pararionice*
35b (31b).	Ventrum with glandular scutes or smooth	36
36a (35b).	Lateral lappets present on one or a few anterior segments	37
36b (35b).	Lateral lappets inconspicuous or absent	44
37a (36a).	Sixteen thoracic setigers; branchiae very long-shafted	*Axionice*
37b (36a).	Seventeen or 18 thoracic setigers; branchiae short-shafted or sessile	38
38a (37b).	Eighteen thoracic setigers	*Melinella*
38b (37b).	Seventeen thoracic setigers	39
39a (38b).	First four segments flattened with large lateral lappets forming an anterior plaque; one pair of branchiae	*Scionella*
39b (38b).	First four segments not modified into a flattened plaque; lateral lappets varying in size; two or three pairs of branchiae	40
40a (39b).	Branchiae tufts of sessile filaments	*Thelepides*
40b (39b).	Branchiae branching off one or a few stems	41
41a (40b).	Buccal lateral lappets form a crest across the dorsum	*Paralanice*
4lb (40b).	No dorsal crest across the buccal segment	42
42a (41b).	Uncini with teeth in a single row	Loimia
42b (41 b).	Uncini with teeth in two or more rows	43
43a (42b).	Small lateral lappets on segments 2 and 3; tube opening unadorned	*Eupolymnia*
43b (42b).	Large lateral lappets on segments 2 and 4; tube opening with fan-shaped frills	*Lanice*
44a (36b).	Thirteen thoracic setigers	Ramex
44b (36b).	At least 15 thoracic setigers	45
45a (44b).	First notosetae on first branchial segment	*Naneva*
45b (44b).	First notosetae on last branchial segment or from one of the first postbranchial segments	46
46a (45b).	Uncini present from first setiger	*Reteterebella*
46b (45b).	Uncini present from second setiger	47
47a (46b).	Uncini in an open circle in posterior thoracal setigers	*Terebellanice*
47b (46b).	Uncini arranged back to back in posterior thoracal setigers	48
48a (47b).	Two pairs of branchiae; thorax with 15 to 40 setigers	*Nicolea*
48b (47b).	Three pairs of branchiae; thorax with 17 setigers	Scionides

Generic Definitions

Amaeana Hartman 1959, *Polycirrus trilobatus* Sars 1863; 5 species.

POLYCIRRINAE. Tentacular lobe trifoil-shaped. Ten to 13 thoracic segments; notosetae from segment 3. Uncini absent; abdominal neurosetae long-shafted spines.

Amphitrite O.F. Muller 1771, *A. cirrata* O.F. Muller 1771; 17 species.

AMPHITRITINAE. Eyes rarely present. Three pairs of sessile branchiae from segment 2; nephridial papillae on segment 3 and from segment 6. Lateral lappets absent. Notosetae from fourth segment; distally serrated; 13 to 25 thoracic setigers.

Amphitritides Augener 1922, *Terebella gracilis* Grube 1860; 3 species.

AMPHITRITINAE. Two pairs of branching, stalked branchiae from segment 2. Lateral lappets absent. Serrated notosetae present from segment 4; uncini face to face in posterior thoracic setigers.

Artacama Malmgren 1866, *A. proboscidea* Malmgren 1866; 8 species.

ARTACAMINAE. Three pairs of filamentous branchiae on segments 2-4. Lateral lappets absent. Seventeen thoracic setigers; notosetae distally smooth. Papillose proboscis attached ventrally on the peristomium.

Artacamella Hartman 1955, *A.* hancocki Hartman 1955; 2 species.

ARTACAMINAE. Three pairs of smooth, ampharetinlike branchiae on segments 2-4. Fifteen thoracic setigers; uncini in all thoracic setigers; each uncinus long-shafted. Grooved, boat-shaped proboscis attached ventrally on the peristomium.

Axionice Malmgren 1866, *Terebella fexuosa* Grube 1860; 8 species.

AMPHITRITINAE. Two or three pairs of long-shafted, branched branchiae. Sixteen thoracic setigers; lateral lappets present. Notosetae distally smooth; all uncini short-handled.

Baffinia Wesenberg-Lund 1950, *B. multisetosa* Wesenberg-Lund 1950; only species.

AMPHITRITINAE. Branchiae absent. Notosetae present from third segment to the end of the body (more than 70 segments); uncini present from second setiger; uniserial in first eight uncinigers, then biserial and finally uniserial in last 30-35 setigers. Capillary setae distally smooth.

Bathya Saint-Joseph 1894, *Leaena abyssorum* McIntosh 1885; 3 species.

AMPHITRITINAE. Branchiae absent. Uncini with short handles; crested; capillary distally smooth, resembles *Proclea* in setal structures. Incompletely described.

Colymmatops Peters 1854, C. *granulatus* Peters 1854; only species.

AMPHITRITINAE. Three first segments with large lateral lappets to which are attached branchiae. Thirteen or 14 thoracic setigers. Notosetae distally serrated. Incompletely described.

Enoplobranchus Webster 1879, *Chaetobranchus* sanguinea Verrill 1873b; only species.

POLYCIRRINAE. Notopodial lobes prolonged, vascularized and in part furcate or branched. Uncini absent; notosetae spinose capillaries, with usually one seta much longer than the others.

Eupistella Chamberlin 1919c, *Eupista darwini* McIntosh 1885; 4 species.

AMPHITRITINAE. Two pairs of smooth, ampharetinlike branchiae. Seventeen thoracic setigers; some anterior uncini with prolonged shafts, notosetae distally smooth.

Eupolymnia Verrill 1900, *Amphitrite nesidensis* delle Chiaje 1828; 12 species.

AMPHITRITINAE. Three pairs of branching branchiae; lateral lappets on segments 2-3. Smooth-tipped notosetae from segment 4; 17 thoracic setigers.

Euthelepus McIntosh 1885, E. *setubalensis* McIntosh 1885; 6 species.

THELEPINAE. Branchiae on segments 2-4, sometimes as single filaments only. Lateral lappets present. Notosetae from second branchial segment; present on 20 segments. Uncini first present from first postbranchial segment.

Hauchiella Levinsen 1893, *Polycirrus tribullata* McIntosh 1869; only species.

POLYCIRRINAE. Thorax of ten segments; usually about 70 segments in all. All setae absent.

Lanassa Malmgren 1866, L. *nordenskioldi* Malmgren 1866; 7 species.

AMPHITRITINAE. Branchiae absent. Lateral lappets sometimes present. Fifteen thoracic setigers. Notosetae present from segment 4, denticulated tips.

Lanice Malmgren 1866, *Nereis conchilega* Pallas 1766; 8 species.

AMPHITRITINAE. Three pairs of branched branchiae. Lateral lappets present. Seventeen thoracic setigers. Smooth-tipped notosetae from segment 4; uncini back to back in posterior thoracic setigers. Tube with branched fine-meshed fan attached to opening.

Lanicides Hessle 1917, *Terebella (Phyzelia)* bilobata Grube 1877; 3 species.

AMPHITRITINAE. Two pairs of branched branchiae; lateral lappets present. Smooth-tipped notosetae present from segment 4; long-shafted uncini present from segment 5.

Laphania Malmgren 1866, *L. boecki* Malmgren 1866; only species.

AMPHITRITINAE. Branchiae absent. Lateral lappets absent. Seventeen thoracic setigers; notosetae distally smooth. Uncini present from setiger 7.

Leaena Malmgren 1866, *Terebella* abranchiata Sars 1865; 10 species.

AMPHITRITINAE. Branchiae absent. Lateral lappets present; third segment with transverse ridge across dorsum. Smooth-tipped notosetae present from segment 4. Sixteen thoracic setigers.

Loimia Malmgren 1866, *Terebella medusa* Savigny 1818; 16 species.

AMPHITRITINAE. Three pairs of branched branchiae. Lateral lappets present. Seventeen thoracic setigers; notosetae smooth-tipped. Uncini with all teeth in a single row (pectinate).

Lysilla Malmgren 1866, *L. loveni* Malmgren 1866; 10 species.

POLYCIRRINAE. Six to 12 thoracic segments; notosetae from segment 3. Neurosetae completely absent.

Melinella McIntosh 1914, M. *macduffi* McIntosh 1914; only species.

AMPHITRITINAE. One pair of branched branchiae; 18 thoracic setigers, all with uncini. Lateral lappets present.

Naneva Chamberlin 1919a, N. *hespera* Chamberlin 1919a; only species.

AMPHITRITINAE. Two pairs of dendritically branched branchiae from segment 2; smooth-tipped notosetae present from first branchial segment. Twenty-seven thoracic setigers. Lateral lappets absent. Uncini present in double-rows in most thoracic segments.

Neoamphitrite Hessle 1917, *Amphitrite affinis* Malmgren 1866; 11 species.

AMPHITRITINAE. Three pairs of branched branchiae; lateral lappets present. Seventeen thoracic setigers with distally serrated notosetae. Nephridial papillae present from segment 3.

Neoleprea Hessle 1917, *Leprea streptochaeta* Ehlers 1897; 5 species.

AMPHITRTTINAE. Two or three pairs of branched branchiae; lateral lappets absent. Notosetae first present from segment 3; some smooth, some distally denticulated. Seventeen-40 thoracic setigers. Nephridial papillae present on segments 3-9.

Nicolea Malmgren 1866, *Terebella zostericola* Orsted 1844; 22 species.

AMPHITRITINAE. Two pairs of branched branchiae. Lateral lappets absent. Smooth-tipped notosetae present from segment 4; 15-40 thoracic setigers. Uncini arranged back to back in posterior thoracic segments.

Opisthopista Caullery 1944, O. *sibogae* Caullery 1944; only species.

AMPHITRTTINAE. Two pairs of branched branchiae; lateral lappets present on at least segments 2 and 4. First notosetae in segment 5 and first uncini in segment 6. Anterior uncini long-shafted.

Paralanice Caullery 1944, *P. timorensis* Caullery 1944; only species.

AMPHITRTTINAE. Three pairs of branched branchiae; large lateral buccal lappets connected across dorsum with a crest; lateral lappets also on segments 2 and 3. Seventeen thoracic setigers; smooth-tipped capillaries from segment 4.

Parathelepus Caullery 1915, *Thelepides collaris* Southern 1914; only species.

THELEPINAE. Three pairs of branchiae; lateral lappets absent. Notosetae from second branchial segment; uncini from setiger 9.

Pararionice Fauchald 1972, *P. artifex* Fauchald 1972; only species.

AMPHITRITINAE. One pair of branched branchiae with double bases on segments 3 and 4. Sixteen thoracic setigers; notosetae distally smooth. Ventral part of segments 3-5 covered by a large glandular apparatus that opens anteriorly on segment 3 in two trumpet-shaped openings.

Phisidia Saint-Joseph 1894, *Leaena oculata* Langerhans 1880; 3 species.

AMPHTTRTTINAE. Branchiae absent; lateral lappets absent. Notosetae distally denticulate; longer finely so, the shorter coarse, with pectinate appearance. Uncini from setiger 2; 14 thoracic setigers.

Pista Malmgren 1866, *Amphitrite cristata* O.F. Muller 1776; 40 species.

AMPHITRTTINAE. Two pairs of stalked branched branchiae; lateral lappets large, on segments 2 and 4 at least. Smooth-tipped notosetae from segment 4; long-handled uncini present in anterior setigers. Fifteen to 24 thoracic setigers.

Polycirrus Grube 1850, *P. medusa* Grube 1850; 39 species.

POLYCIRRINAE. Thorax with a variable number of setigers; notosetae present from segment 3. Uncini first present from segments 7-18. Notosetae distally smooth or serrated.

Polymniella Verrill 1900, P. *aurantiaca* Verrill 1900; only species.

AMPHITRITINAE. Three pairs of branched branchiae on segments 1, 2 and 5. Notosetae from segment 1, marginally dentate; uncini from segment 2. Twenty-two or more thoracic segments.

Proclea Saint-Joseph 1894, *Leaena graffli* Langerhans 1880; 3 species.

AMPHITRITINAE. Branchiae absent. Lateral lappets present. Sixteen thoracic setigers; notosetae distally either dentate or smooth. Uncini from setiger 3.

Pseudampharete Hartmann-Schrdder 1960b, *P. tentaculata* Hartmann-Schroder 1960b; only species.

THELEPINAE. Two pairs of sessile branchial filaments on large bosses on first and second segment. Notosetae first present from first postbranchial segment; uncini from setiger 7.

Ramex Hartman 1944b, *R. californiensis* Hartman 1944b; only species.

AMPHITRTTINAE. One pair of branched branchiae on second segment. Notosetae from segment 4; thorax with 13 setigers; notosetae distally smooth.

Reteterebella Hartman 1963b, R. *queenslandia* Hartman 1963b; only species.

AMPHITRITINAE. Three pairs of branched branchiae; lateral lappets inconspicuous. Sixteen thoracic setigers; notosetae from segment 4; distally smooth. Uncini present from first setiger.

Scionella Moore 1903, *S. japonica* Moore 1903; 4 species.

AMPHITRITINAE. One pair of branchiae on segment 4. Seventeen thoracic setigers; notosetae first present on segment 4; notosetae distally smooth. Four first segments flattened dorsoventrally with very large longitudinally oriented lateral lappets, forming a large oblique plaque at the anterior end.

Scionides Chamberlin 1919b, *Terebella reticulata* Ehlers 1887; 2 species.

AMPHITRITINAE. Three pairs of branched branchiae; seventeen thoracic setigers; notosetae from segment 4; notosetae distally smooth. Uncini arranged back to back in posterior thoracic segments.

Spinosphaera Hessle 1917, S. *pacifica* Hessle 1917; 2 species.

AMPHTTRTTINAE. Branchiae absent. Twenty-three or more thoracic setigers; uncini present from setiger 2.

Notosetae denticulate; the longer ones with hispid swellings subdistally. Lateral lappets absent.

Spiroverma Uchida 1968, S. *ononokomachii* Uchida 1968; only species.

AMPHITRTTINAE. One pair of sessile branchiae, each with maximally eight filaments on segment 2. Sixteen thoracic setigers; notosetae marginally serrate. Body strongly spiralled.

Streblosoma Sars 1872, *Grymaea bairdi* Malmgren 1866; 20 species.

THELEPINAE. Three pairs of sessile branchiae on segments 2-4 (may be absent). Notosetae from first branchial segment (segment 2). Uncini from segment 5.

Stschapovella Levenstein 1957, S. *tatjanae* Levenstein 1957; only species.

AMPHITRITINAE. Branchiae absent; lateral lappets present. Smooth-tipped notosetae from segment 4; uncini from segment 5. Sixteen thoracic setigers. Notosetae finely capillary rather than limbate. All nephridia free from one another.

Telothelepus Day 1955, *T. capensis* Day 1955; only species.

THELEPINAE. Two or three pairs of branchiae from segment 2. Notosetae from second branchial segment (segment 3). Lateral lappets present. Fifteen thoracic setigers. Tentacular lobe very large and frilly. Neurosetae absent on thorax, uncini present on abdomen.

Terebella Linnaeus 1767, *T. lapidaria* Linnaeus 1767; 28 species.

AMPHITRTTINAE. Two or three pairs of branched branchiae; lateral lappets absent. Thorax with variable, usually large, number of setigers; notosetae from segment 4; distally serrated. Uncini face to face in posterior thoracic segments.

Terebellanice Hartmann-Schri der 1962b, *T. laeviseta* Hartmann-Schri der 1962b; only species.

AMPHITRITINAE. Two pairs of branchiae from third segment; lateral lappets absent. Notosetae smooth-tipped. Uncini in an open circle on posterior thoracic segments.

Terebellobranchia Day 1951, *T. natalensis* Day 1951; 2 species.

AMPHITRTTINAE. Three pairs of branched branchiae on segments 3, 7 and 13. Distally serrated notosetae present from segment 4; more than 19 thoracic setigers present.

Thelepides Gravier 191 la, *T. koehleri* Gravier 1911 a; 3 species.

AMPHITRTTINAE. Three pairs of filiform branchiae; lateral lappets present. Smooth-tipped notosetae from segment 3; 17 thoracic setigers present.

Thelepus Leuckart 1849, *Amphitritee cincinnata* Fabricius 1780; 32 species.

THELEPINAE. Sessile, filiform branchiae on seg ments 2-4; smooth-tipped notosetae present from second branchial segment (segment 3). Uncini from segment 5.

Taxonomic Notes

Day (1967) altered the definition of the sub-families to include the abranchiate members of AMPHITRITINAE among the POLYCIRRINAE. This change appears unfortunate, in that these genera resemble branchiate members of the AMPHITRTTINAE very closely in setal structures as well as in the structure of the anterior end. The treatment here reflects this view.

The genus *Pseudampharete* has been included among the THELEPINAE since it is branchiate and has the uncini in single rows in all thoracic segments. It further resembles members of this subfamily in that the branchiae are sessile filaments. However, this latter feature may also be present among members of the AMPHITRITINAE. The placement must be considered temporary.

The genus *Bathya* Saint-Joseph 1894, listed above in the definitions has not been included in the key. It belongs in the abranchiate gorup of AMPHITRITINAE, and is very poorly known.

The genus *Pseudothelepus* Augener 1918 is considered here a synonym of *Streblosoma,* as suggested by Day (1967).

Some of the genera are difficult to separate from related forms; no revision was attempted on this occasion.

Invalid Genera

Amaea Malmgren 1866, see *Amaeana*
Amphiro Montagu 1808, see *Amphitrite*
Amphitritoides Costa 1862, see *Eupolymnia*
Amphytrite Renier 1804, indeterminable
Anisocirrus Gravier 1905a, see *Polycinrus*
Aphlebina Claparede 1864, see *Polycirrus*
Apneuma Quatrefages 1866, see *Polycirrus*
Athelepus Chamberlin 1919c, *NoMsnNUDUM*
Chaetobranchus Verrill 1873b, see *Enoplobranchus*
Cyaxares Kinberg 1867b, see *Polycirrw*
Dejoces Kinberg 1867b, see *Polycirrus*
Dendrobranchus Wagner 1885, indeterminable
Dendrophora Grube 1870a, see *Pista*
Ehlersiella McIntosh 1885, indeterminable
Ereutho Malmgren 1866, see *Polycirrus*
Eugrymaea Verrill 1900, see *Streblosoma*
Eupista McIntosh 1885, *see Eupistella*
Euscione Chamberlin 1919c, see *Axionice*
Grymaea Malmgren 1866, see *Streblosoma*
Heterophenacia Quatrefages 1866, *see Thelepus*

Heterophyselia Quatrefages 1866, see *Terebella*
Heteroterebella Quatrefages 1866, see *Terebella*
Idalia Quatrefages 1866, see *Pista*
Laphaniella Maim 1874, see *Lanassa*
Leprea Malmgren 1866, see *Terebella*
Leucariste Malmgren 1866, see *Polycirrus*
Lumara Stimpson 1854, see *Thelepus*
Neottis Malmgren 1866, see *Thelepus*
Odysseus Kinberg 1867b, indeterminable
Otanes Kinberg 1867b, see *Pista*
Pallonia Costa 1862, see *Eupolymnia*
Phenacia Quatrefages 1866, see *Thelepus*
Pherea Saint-Joseph 1894, see *Lanassa*
Phyzelia Schmarda 1861, see *Nicolea*
Polymnia Malmgren 1867, see *Eupolymnia*
Protothelepus Verrill 1900, see *Euthelepus*
Schmardanella McIntosh 1885, see *Terebella*
Scione Malmgren 1866, see *Axionice*
Scionopsis Verrill 1873b, see *Pista*
Solowetia Ssolowiew 1899, see *Proclea*
Thelepella Chamberlin 1919c, see *Nicolea*
Thelephusa Verrill 1871, see *Thelepus*
Thelepides Southern 1914, see *Parathelepus*
Thelepodopsis Sars 1872, see *Thelepus*
Torquea Leidy 1855, see *Polycirrus*
Uncinochaeta Quatrefages 1866, indeterminable
Venusia Johnston 1865, see *Thelepus*
Wartelia Giard 1878, see *Lanice*

FAMILY TRICHOBRANCHIDAE MALMGREN 1866

Body separated into two regions; anterior region with biramous parapodia, posterior region with neuropodia only. Prostomium a large hood over the mouth. Maximally four pairs of branchiae present on anterior setigers. Anterior neuropodia with long-shafted hooks; abdomen with densely crested uncini. Notosetae capillary.

The trichobranchids are related closely to the terebellids and frequently are included among them as a subfamily (Day 1967). They differ rather strikingly in body-proportions, in that they tend to be slenderer and more muscular than the terebellids. The large folded prostomium also gives them a characteristic appearance. One species, *Terebellides stroemi*, has been reported from worldwide, areas, and is apparently nearly everywhere, an important member of soft-bottom environments. Members of the family appear to be most common in cold-water soft bottoms and may be represented best in deep water.

Key to Genera

la.	A single middorsally attached branchia present	2
lb.	At least a pair of branchiae present	3
2a (la).	Branchia a single tapering, digitate projection	*Unobranchus*
2b (Ia).	Branchia stalkedd with four lobes; each lobe with numerous flat branchial lamellae	*Terebellides*
3a (lb).	Two or three pairs of branchiae present	4
3b (lb).	Four pairs of branchiae present	5
4a (3a).	Two pairs of branchiae, 17 thoracic setigers	*Filibranchus*
4b (3a).	Three pairs of branchiae; 15 thoracic setigers	*Trichobranchus*
5a (3b).	Each branchia with pectinate branchial lamellae	*Ampharetides*
5b (3b).	Each branchia simple and digitate or rosette-shaped	6
6a (5b).	All branchiae simple and tapering	*Octobranchus*
6b (5b).	Fourth pair of branchiae sessile rosettes	*Novobranchus*

Generic Definitions

Ampharetides Ehlers 1913, *A. vanhoeffeni* Ehlers 1913; only species.

Seventeen thoracic setigers; uncini'present on nine last thoracic setigers and on abdomen. Four pairs of branchiae on first setiger; each with pectinate branchial lamellae.

Filibranchus Mahn 1874, *F. roseus* Malm 1874; only species.

Fifteen thoracic setigers; all with uncini. Two pairs of smooth branchiae on the second and third segment (presetal branchiae).

Novobranchus Berkeleyy and Berkeley 1954, *N. pacificus* Berkeley and Berkeley 1954; only species.

Sixteen thoracic setigers; uncini present from setiger 4. Four pairs of branchiae on segments 2-5; first three pairs lanceolate; last pair a frilled rosette.

Octobranchus Marion and Bobretzky 1875, *Terebella lingulata* Grube 1863; 4 species.

Sixteen thoracic setigers; first setiger is segment 3; first uncini on setiger 4. Four pairs of similar lanceolate branchiae.

Terebellides Sars_ 1835, *T. stroemi* Sars 1835; 14 species.

Eighteen thoracic setigers; first setiger is segment 3; uncini present from setiger 6. Single dorsal branchia with four lamellate branchial lobes.

Trichobranchus Malmgren 1866, T. *glacialis* Malmgren 1866; 5 species.

Fifteen thoracic setigers; first setae on segment 6; all thoracic setigers with uncini. Three pairs of simple, lanceolate branchiae.

Unobranchus Hartman 1965, *U. abyssalis* Hartman 1965; only species.

Twelve thoracic setigers; first setae on segment 3; uncini first present on setiger 4. A single, large lanceolate branchia present mid-dorsally on segment 2.

Invalid Genera

Aponobranchus Gravier 1905a, see *Terebellides*
Corephorus Grube 1846, see *Terebellides*

FAMILY BOGUEIDAE HARTMAN AND FAUCHALD 1971

Body slender and cylindrical with few segments; prostomium rounded without appendages. Parapodia biramous with long slender, in part spinose notosetae and short-handled, avicular crested uncini in the neuropodia, in part in double rows.

The bogueids, known for two genera, have setae resembling the terebellid uncini, but lack completely anterior appendages. They are known from a few locations in the western Atlantic Ocean only.

Key to Genera

First three setigers without neurosetae	*Boguea*
First four setigers without neurosetae	*Boguella*

Generic Definitions

Boguea Hartman 1945, *B. enigmatica* Hartman 1948; only species.

Two anterior asetigerous segments; three first setigers without neurosetae.

Boguella Hartman and Fauchald 1971, *B. ornata* Hartman and Fauchald 1971; only species.

One anterior asetigerous segment; four first setigers without neurosetae.

ORDER SABELLIDA

Prostomium reduced, fused with the peristomium which usually forms a large tentacular crown; setae include thoracic notopodial limbate and geniculate kinds and neuropodial uncini; setal positions reversed in the abdomen.

FAMILY SABELLIDAE MALMGREN 1867

Body cylindrical with a thorax of few setigers and abdomen with few to many. Uncini crested or with teeth in several rows; long- or short-handled. Tube present in most species, made of varying material, but never calcareous.

Sabellids characteristically have nearly smooth appearing bodies, cylindrical and tapering posteriorly, with large, often maroon or red-colored tentacular crowns. Most of the forms, especially the larger ones, are strictly sessile and never leave their tubes; the smaller forms, such as species of *Fabricia* and allied genera, are capable of moving around. Most of the larger forms are associated with shallow water; smaller species are common in deep sea collections.

The major characteristics used to identify the sabellids, include the presence or absence of companion setae to the neuropodial uncini in the thorax; these also have been called pennoned setae or pick-ax *setae.* The neutral term *companion seta is* preferred here. They occur in an anterior row, in front of the uncini they accompany and usually are small and deeply imbedded in the epidermal tissues. They are more easily seen by the reflection they give off under a stereo microscope, than in microscopic preparation under the compound microscope. The structure of the tentacular crown such as the number of radioli, and the presence of small, external appendages called stylodes, are important.

One of the key features in the group lies in the structure of the thoracic uncini. These may be acicular, by which is meant that the crested head, with one large tooth and several smaller ones, is supported by a gently curved, often nearly straight shaft. By avicular uncini are meant uncini that are essentially Z-shaped (sometimes called swan-shaped) with the small crested head at the top of the Z, and the shaft sharply bent. The shafts of these Z-shaped uncini may be short or long. In the key below, attempts have been made to avoid the more confusing part of the terminology, but a complete avoidance of this terminology has not been possible.

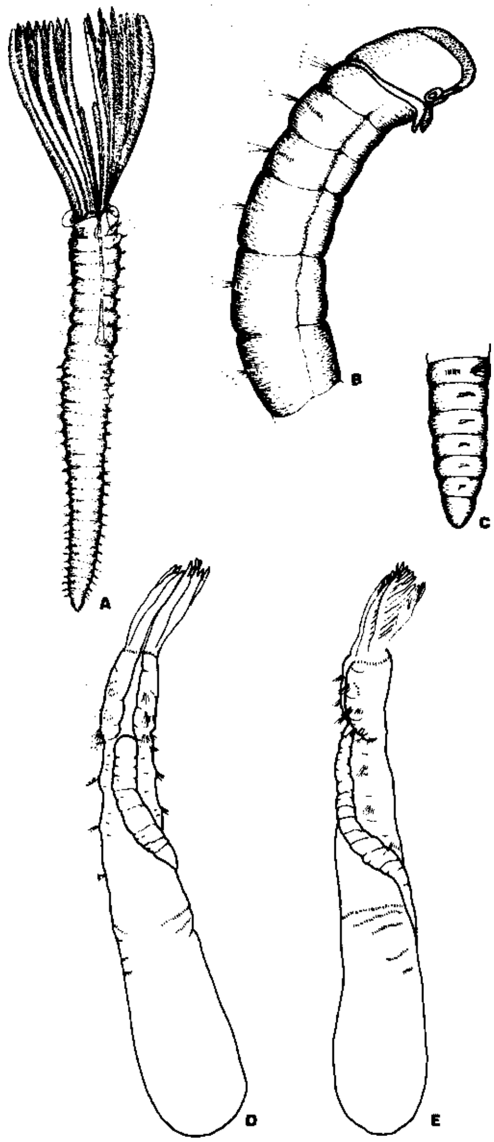


FIGuRE 37. (A), Family SABELLIDAE, *Chone sp., off* Santa Catalina Island, 50 m, 18x; (B), Family SABELLONGIDAE, *Sabellonga disjuncta,* anterior end in right ventrolateral view, modified after Hartman, 1969, 33x; (C), posterior end of the above, 33x; (D), Family CAOBANGIIDAE, *Caobangia abbotti,* after Jones, 1974, about 17x; (E), right lateral view of the above, about 17x.

Key to Genera

Ia. Abdominal uncini form nearly complete cinctures around the body ..... MYXICOLINAE *Myxicola*

lb. Abdominal uncini in short, discrete tori 2

2a (Ib). Thoracic uncini with long, gently curved shafts (acicular) companion setae always absent ..... FABRICINAE 3

2b (lb). Thoracic uncini with short or long, but always strongly bent shafts. (avicular); companion setae present in some forms ..... SABELLINAE 15

3a (2a). Abdomen with two or three setigers 4

3b (2a). Abdomen with four or more setigers 9

4a (3a).	Radioles partially united by a membrane	*Monroika*
4b (3a).	Radioles free to the base	5
5a (4b).	With an extensive lower lip, curved up under the weakly bilobed prostomium	*Pseudofabricia*
5b (4b).	Without a distinct lower lip; prostomium anteriorly rounded	6
6a (5b).	Abdominal uncini short-handled	*Fabriciola*
6b (5b).	Abdominal uncini long-handled	7
7a (6b).	Without ventral vascularized filaments	*Fabricia*
7b (6b).	With ventral vascularized filaments in the tentacular crown	8
8a (7b).	Ventral vascularized filaments branched; three pairs of radioli	*Augeneriella*
8b (7b).	Ventral vascularized filaments smooth; two pairs of radioli	*Manayunkia*
9a (3b).	Posterior end distinctly modified, with fused segments or greatly expanded pygidium	10
9b (3b).	Posterior end not modified	11
10a (9a).	Seven last setigers covered dorsally by the large, ring-shaped pygidium	*Euchonella*
10b (9a).	Last several setigers flanged laterally to form a spoon-shaped dorsal cavity	*Euchone*
11a (9b).	Radioles united by a membrane	*Chone*
11b (9b).	Radioles free to the base	12
12a (11b).	Abdominal uncini with a large main fang and a crest of smaller teeth	*Jasmineira*
12b (11b).	Abdominal uncini with major teeth in two or more rows	13
13a (12b).	More than ten pairs of radioli in the tentacular crown	*Dialychone*
13b (12b).	Maximally five pairs of radioli in the tentacular crown	14
14a (13b).	Radioles externally distinctly ridged	*Oriopsis*
14b (13b).	Radioles externally rounded	*Desdemona*
15a (2b).	Thoracic neuropodial companion setae absent	16
15b (2b).	Thoracic neuropodial companion setae present	21
16a (15a).	Radioli with external stylodes	17
16b (15a).	Radioles without external stylodes	18
17a (16a).	Four thoracic setigers, external stylodes very small	*Pseudobranchiomma*
17b (16a).	Eight thoracic setigers; external stylodes well developed	*Branchiomma*
18a (16b).	Thoracic spatulate notosetae present	19
18b (16b).	Thoracic spatulate notosetae absent	20
19a (18a).	Thoracic uncini with gently curved, long handles	*Fabrisabella*
19b (18a).	Thoracic uncini with sharply bent handles	*Laonome*
20a (18b).	Collar reduced, radioli basally united by a web	*Euratella*
20b (18b).	Collar well developed; radioli free to the base	*Sabellastarte*
21a (15b).	Tentacular crown with radioli arranged in one or two spirals	22
21b (15b).	Tentacular crown with radioli in two semicircles	26
22a (21a).	Posterior thoracic notopodia with lancet-shaped, transversely striated setae	*Bispira*
22b (21a).	Lancet-shaped notopodial setae absent	23
23a (22b).	Collar two-lobed	24
23b (22b).	Collar four-lobed	25
24a (23a).	Anterior ventrum irregularly rugose	*Distylidia*
24b (23a).	Anterior ventrum smooth, apart from the glandular fields	*Demonan*
25a (23b).	One half of tentacular crown very much larger than the other; spatulate setae absent . .	*Spirographis*
25b (23b).	Both parts of the tentacular crown similar in size; spatulate setae present	*Eudistylia*
26a (21b).	Large subdistal compound eyes on a few dorsal radioli	*Megalomma*
26b (21b).	Eyes, if present, smaller and scattered over most of the radioli	27
27a (26b).	Collar reduced or absent, a triangular ventral projection at base of tentacular crown present	Amphiglena
27b (26b).	Collar well developed; triangular ventral projection absent	28
28a (27b).	Notosetae of the collar-segment in a long row	*Hypsicomus*
28b (27b).	Notosetae of the collar-segment in a tuft	29
29a (28b).	Radioli dichotomously branching	*Schizobranchia*
29b (28b).	Radioli not divided	30
30a (29b).	Spatulate thoracic notosetae absent	*Sabella*
30b (29b).	Spatulate thoracic notosetae present	31
31a (30b).	Thoracic uncini at least in part nearly straight and long-handled	32

31b (30b).	Thoracic uncini sharply bent, long- or short-handled	33
32a (31 a).	Abdominal uncini long-handled and nearly straight	*Potaspina*
32b (31 a).	Abdominal uncini short-handled and strongly bent	*Potamethus*
33a (31b).	Thoracic uncini long-handled	*Panousea*
33b (31b).	Thoracic uncini short-handled	*Potamilla*

Generic Definitions

Amphiglena Claparede 1864, *Amphicora mediterranea* Leydig 1851; 3 species.

SABELLINAE. Radioles in semi-circles; external stylodes, eyes and webbing absent. Collar absent; triangular ventral projection present at base of tentacular crown. Approximately eight thoracic setigers present; abdominal uncini strongly bent, crested.

Augeneriella Banse 1957, *A. hummelincki* Banse 1958; 4 species.

FABRICINAE. Three pairs of radioli, branchial heart present; collar dorsally low, ventrally higher. Forked ventral vascularized filament present. Eight thoracic and three abdominal setigers; abdominal uncini long-handled.

Bispira Kroyer 1856, *Amphitrite volutacornis* Montagu 1804; 3 species.

SABELLINAE. Radioles in spirals; eyes present, stylodes and webbing absent. Collar two- or four-lobed. Number of thoracic segments variable. Spatulate thoracic notosetae absent; late thoracic notopodia with lancent-shaped, transversely striated setae.

Branchiomma Kolliker 1858, *Amphitrite bombyx* Dalyell 1853; 21 species.

SABELLINAE. Radioles sometimes spiralled, sometimes in semicircles; eyes and external stylodes present, webbing absent. Collar well developed. Thoracic spatulate setae absent; thoracic neuropodial companion setae absent. Eight thoracic segments

Chone Kroyer 1856, C. *infundibuliformis* Kroyer 1856; 26 species.

FABRICINAE. More than five, usually many pairs of radioli present; distinct webbing present between the radioli. Collar well developed. Abdominal uncini with short, quadrangular base and crested tip. Abdomen with several setigers.

Demonax Kinberg 1867b, *D. leucaspis* Kinberg 1867b; 8 species.

SABELLINAE. Radioli in spiral; eyes present; webbing and external stylodes absent. Collar bilobed. Spatulate notosetae and neuropodial companion setae present in thorax. Both thoracic and abdominal uncini with long handles, but very sharply and distinctly bent and distally crested.

Desdemona Banse 1957, *D. ornata* Banse 1957; only species.

FABRICINAE. Three pairs of radioli, radiolar backs rounded, webbing absent. Collar divided dorsally and united ventrally. Abdominal uncini with short, quadrangular bases and teeth in two rows along one side. Abdomen with four to 12 setigers.

Dialychone Claparede 1870a, *D. acustica* Claparede 1870a; only species.

FABRICINAE. Twelve or more pairs of radioli; webbing absent. Collar well developed on both sides. Abdominal uncini with short, quadrangular base and teeth in two or more rows along one side. Abdomen with several setigers.

Distylidia Hartman 1961, *Distylia rugosa* Moore 1904b; 2 species.

SABELLINAE. Radioles spiralled; eyes present, external stylodes and webbing absent. Collar bilobed. Both thoracic and abdominal uncini long-handled, but sharply bent. Anterior ventrum irregularly rugose.

Euchone Malmgren 1866, *Sabella analis* Kroyer 1856; 30 species.

FABRICINAE. Numbers of radioles variable; webbing present. Collar usually well developed. Last abdominal setigers flanged laterally to form a deep spoon-shaped cavity. Abdominal uncini avicular. Abdomen with numerous setigers.

Euchonella Fauchald 1972, *E. magna* Fauchald 1972; only species.

FABRICINAE. Twelve pairs of radioli; webbing and eyes absent. Collar well developed, highest ventrally. Pygidium expanded to a large dorsal horse-shoe covering the last seven setigers. Abdominal uncini avicular. Abdomen with numerous setigers.

Eudistylia Bush 1904a, *Sabella vancouveri* Kinberg 1867b; 3 species.

SABELLINAE. Radioles spiralled; eyes present, webbing and external stylodes absent. Collar four-lobed. Spatulate thoracic notosetae present. Abdominal uncini avicular.

Euratella Chamberlin 1919c, *Laonome salmacidis* Claparede 1870a; 2 species.

SABELLINAE. Radioli in semi-circles; webbing and eyes present; external stylodes absent. Collar reduced.

Spatulate thoracic notosetae and neuropodial thoracic companion setae absent. Both thoracic and abdominal uncini avicular, with short, strongly bent handles.

Fabricia Blainville 1828, *Amphicora sabella* Ehrenberg 1837; 18 species.

FABRICINAE. Three pairs of radioli and branchial hearts present. Collar often very low dorsally and united ventrally. Abdomen with long-handled uncini. Three abdominal setigers.

Fabriciola Friedrich 1939, *Manayunkia pacifica* Annenkova 1934; 6 species.

FABRICINAE. Three pairs of radioles and branchial hearts present. Collar distinct dorsally, united ventrally. Abdominal uncini short-handled. Three abdominal setigers.

Fabrisabella Hartman 1969, *F. vasculosa* Hartman 1969; 2 species.

FABRICINAE. Radioles in semi-circles; webbed, eyes and external stylodes absent. Collar high, but deeply and widely separated dorsally. Spatulate thoracic notosetae present; thoracic neuropodial companion setae absent. Thoracic uncini long-handled and gently curved; abdominal ones strongly bent. Numerous pairs of radioles present; abdomen with numerous setigers.

Hypsicomus Grube 1870b, *Sabella phaeotaenia* Schmarda 1861; 12 species.

SABELLINAE. Radioles in semi-circles; webbing, and external stylodes absent; eyes present. Collar well developed. Spatulate thoracic notosetae present; first notosetae in a long, straight or gently curved row. Abdominal uncini avicular.

Jasmineira Langerhans 1880, *J. caudata* Langerhans 1880; 13 species.

FABRICINAE. Eight or more pairs of radioli; webbing and *eyes* absent. Collar well developed. Abdominal uncini avicular; several abdominal setigers present.

Laonome Malmgren 1866, *L. kroeyeri* Malmgren 1866; 4 species.

SABELLINAE. Radioles in semi-circles; external stylodes and webbing absent; eyes usually present. Collar bilobed. Spatulate thoracic notosetae present; thoracic neuropodial companion setae absent. Both thoracic and abdominal uncini with short, flattened base and avicular head.

Manayunkia Leidy 1859, *M. speciosa* Leidy 1859; 10 species.

FABRICINAE. Two pairs of radioli, ventrally in addition a pair of palplike, vascularized smooth filaments. Webbing absent. Collar well developed; abdomen with three setigers; abdominal uncini long-handled.

Megalomma Johansson 1926, *Amphitrite vesiculosa* Montagu 1815; only species.

SABELLINAE. Radioles in semi-circles; external stylodes and webbing absent. Very large, compound eyes present subdistally on a few dorsal radioli, otherwise absent. Collar two- or four-lobed. Spatulate thoracic notosetae present. Abdominal uncini avicular.

Monroika Hartman 1951 b, *Manayunkia africana* Monro 1939b; only species.

FABRICINAE. Six pairs of radioles, in part united by a web. Collar ventrally high, dorsally incised. Vascularized filaments absent. Two abdominal setigers; abdominal uncini long-handled.

Myxicola Koch *in* Renier 1847, *Terebella infundibulum* Renier 1804; 5 species.

MYXICOLINAE. Radioles in semi-circles, strongly webbed, external stylodes and eyes absent. Thoracic uncini minute and long-handled. Abdominal uncini avicular, in nearly complete cinctures around the posterior part of the body. Tube mucoid.

Oriopsis Caullery and Mesnil 1896, *Fabricia armandi* Claparede 1864; 22 species.

FABRICINAE. Three to five pairs of radioles; radioles externally flanged, webbing and eyes absent. Collar divided dorsally and fused ventrally. Abdomen with four or more setigers; abdominal uncini with short, quadrangular handles and teeth in several rows along one margin.

Panousea Rullier and Amoureux 1970, *P. africana* Rullier and Amoureux 1970; only species.

SABELLINAE. Radioles in semicircles. Webbing, eyes and external stylodes absent. Collar four-lobed. Thoracic uncini long-shafted, neuropodial companion setae present.

Potamethus Chamberlin 1919c, *Potamilla malmgreni* Hansen 1878; 10 species.

SABELLINAE. Radioles in semi-circles; eyes, external stylodes and webbing absent. Collar very low, except ventrally where it is produced into a pair of triangular lobes. Thoracic uncini with long, nearly straight handles; abdominal uncini short-stemmed. Companion setae present.

Potamilla Malmgren 1866, *Sabella neglecta* Sars 1850; 30 species.

SABELLINAE. Radioles in semi-circles; external stylodes and webbing absent; eyes present. Collar two- or four-lobed. Spatulate thoracic notosetae present. Thoracic uncini short-handled.

Potaspina Hartman 1969, *P. pacifica* Hartman 1969; only species.

SABELLINAE. Radioles in semi-circles; eyes, external stylodes and webbing absent. Collar low dorsally, high and bifid ventrally. Anterior thoracic neuropodia with avicular uncini; last thoracic neuropodia with thick, acicular spines. Spatulate setae and companion setae present. Abdominal uncini small, acicular.

Pseudobranchiomma Jones 1962, *P. emersoni* Jones 1962; only species.

SABELLINAE. Radioles in semi-circles; eyes absent, webbing absent; external stylodes present, but small. Thoracic uncini short-handled, companion setae absent. Four thoracic setigers.

Pseudofabricia Cantone 1972, *P.* aberrans Cantone 1972; only species.

FABRICINAE. Eight radioles on a greatly prolonged, distally bifid anterior end and an extended rounded, lower lip. Abdominal uncini with short base and several rows of teeth. Three abdominal setigers.

Sabella Linnaeus 1767, S. penicillus Linnaeus 1767; 35 species.

SABELLINAE. Radioles in semi-circles; eyes present, external stylodes and webbing absent. Collar four-lobed. Spatulate thoracic notosetae absent.

Sabellastarte Savigny 1818, *Eurato* sanctijosephi Gravier 1906; 8 species.

SABELLINAE. Radioles spiralled; eyes present, webbing and external stylodes absent. Collar well developed, widely separated dorsally. Spatulate and companion setae absent.

Schizobranchia Bush 1904a, S. insignis Bush 1904a; 2 species.

SABELLINAE. Radioles in semi-circles; dichotomously divided. Eyes present; external stylodes and webbing absent. Collar four-lobed. Thoracic uncini long-handled, but bent; companion setae present.

Spirographis Viviani 1805, S. *spallanzani* Viviani 1805, 4 species.

SABELLINAE. Radioles spiralled, with one half very much larger than the other, only one part spiralled. Stylodes and webbing absent; *eyes* present. Collar four-lobed. All uncini avicular.

Taxonomic Notes

The sub-families as accepted here are based on the structure of the neuropodial uncini of the thorax, in that members of the FABRICINAE have gently curved, long-handled uncini, and members of SABELLINAE have strongly bent, avicular uncini. However, all sabellids with thoracic neuropodial companion setae have been included in the SABELLINAE, irrespective of the structure of the uncini.

The genus *Pseudopotamilla* Bush is considered here a junior synonym of *Potamilla* and the genus *Trichosobranchella* Dybowski 1929, is referred to Manayunkia.

Jones (1974a) revised the original material of Monroika and pointed out that the character used to separate this genus from all other FABRICIIN genera is incorrect; it does not have the webbed tentacular crown claimed by Hartman. Members of this genus will key out with Manayunkia above. It differs from the latter in that it has short limbate setae in both the first setigers; Manayunkia has such setae only in the first setiger and they are much longer. Furthermore, *Monroika* has two rather than three abdominal setigers. Jones (1974a) also described a new genus, *Brandtika* (genotype: B. asiatica), which will key out in the same complex. It differs from other genera in this complex in that it has pilose setae in the last three thoracic setigers. This genus could not be included in the key, since it was based on dried material, and no information was available about the structure of the tentacular crown.

Invalid Genera

Amphicora Ehrenberg 1837, *see Fabricia*
Amphicorina Quatrefages 1866, *see Oriopsis*
Anamobaea Kroyer 1856, see *Hypsicomus*
Arippasa Johnston 1865, see Myxicola
Aspeira Bush 1904a, see *Potamilla*
Branchiomma Claparede 1870a, see *Megalomma*
Chaponella Rullier 1972, see Euchone
Dasychone Sars 1862, see *Branchiomma*
Dasychonopsis Bush 1904a, see *Branchiomma*
Distylia Quatrefages 1866, see *Bispira*
Dybowscella Nusbaum 1901, see Manayunkia
Eriographis Grube 1850, see *Myxicola*
Eurato Saint-Joseph 1894, see *Hypsicomus*
Fabriciella Zenkevitch 1935, *see Fabriciola*
Garjaiowella Dybowskii 1929, see Manayunkia
Gorbunovia Annenkova 1952, *see Potamethus*
Gymnosoma Quatrefages 1866, see *Myxicola*
Haplobranchus Bourne 1883, see Manayunkia
Hypsicomatides Augener 1922, see Hypsicomus
Hypsicomatopsis Augener 1922, see *Hypsicomus*
Laonomedes Chamberlin 1919c, see *Potamilla*
Leiobranchus Quatrefages 1850, see *Myxicola*
Leptochone Claparede 18706, see Myxicola
Megachone Johnson 1901, see *Chone*
Metachone Bush 1904a, see *Chone*
Metalaonome Bush 1904a, *see Bispira*
Notaulax Tauber 1879, *see Hypsicomus*
Oria Quatrefages 1866, see *Oriopsis*
Oriades Chamberlin 1919c, see *Oriopsis*
Oridia Rioja 1917, *see Oriopsis*
Othonia Johnston 1835, questionably *Fabricia*
Parachonia Kinberg 1867b, see *Chone*
Parasabella Bush 1904a, *see Demonax*
Potamis Ehlers 1887, see *Potamethus*
Protulides Webster 1884, see Hypsicomus
Pseudopotamilla Bush 1904a, see Potamilla
Sabellina Dujardin 1839a, indeterminable
Sabina Williams 1851, indeterminable

Sitophaga Gistel 1848, see *Fabricia*
Trichosobranchella Dybowski 1929, see *Manayunkia*

FAMILY CAOBANGIIDAE JONES 1974b

Small, short-bodied sabelliform polychaetes with three pairs of radioli in a tentacular crown. Digestive tract U-shaped with the anus opening dorsally and far anteriorly on the body. First setiger with neurosetal palmate hooks, remainder of the thoracic setigers without hooks; two kinds of avicular hooks present in a posterior region.

This family was recently proposed by Jones (1974b) for a series of small polychaetes that live in close association with molluscs in freshwater in Southeast Asia. Most of the forms burrow in the shell of the host. The family consists of a single genus, *Caobangia* Giard 1893, with type-species C. *billeti* Giard 1893 and a total of seven known species. Up to this time, the genus has been considered among sabellid *enigmaticae,* but the demonstration of a series of forms spread over a larger geographical region, made the recognition of a new family necessary.

FAMILY SABELLONGIDAE HARTMAN 1969

Body cylindrical with few thoracic and many abdominal segments. Peristomium forms a bevelled collar around the prostomium (tentacular crown absent). Setae include long-handled uncini with companion setae and giant falcate spines.

The family is known for a single genus and species, *Sabellonga disjuncta* Hartman 1969 from northern Baja California. The specimen resembles a sabellid that has lost its tentacular crown. However, there is no trace of the loss of a tentacular crown, or that such has ever been present. The presence of the giant falcate spines in far posterior setigers also is characteristic. Otherwise, the setal equipment is largely what one would expect in a member of the SABELLINAE.

FAMILY SERPULIDAE JOHNSTON 1865

Body separated into two regions; a thorax with a thoracic membrane (absent in rare instances) and dorsal capillary or limbate setae and an abdomen with ventral setae and dorsal uncini. One radiole often transformed into an operculum. Tube calcareous.

The serpulids and the closely allied spirorbids represent a sub-specialty of their own within the polychaetes. The family has been reviewed on a couple of occasions; Saint-Joseph (1894) published an extensive review and Southward (1963) gave a key to all known genera. The generic sub-divisions within the family are nevertheless debatable. The older taxonomic groupings placed emphasis on the structure of the operculum and on the overall body-construction (development of the thoracic membrane and collar, presence or absence of setae in specified segments, etc.). More recently, some authors (especially Zibrowius) have placed more emphasis on the detailed structure of the uncini and setae. The key below represents a compromise, and may, as such, be difficult to use.

Key to Genera

Ia.	Operculum absent	2
lb.	Operculum present	7
2a (Ia).	Abdominal setae trumpet-shaped	*Pseudoserpula*
2b (Ia).	Abdominal setae marginally dentate and geniculate, limbate or capillary	3
3a (2b).	Slender capillary or limbate collar setae present	4
3b (2b).	Collar setae modified	6
4a (3a).	Thoracic membrane absent	*Salmacinopsis*
4b (3a).	Thoracic membrane present	5
5a (4b).	Thoracic membrane reaches setiger 5	*Subprotula*
5b (4b).	Thoracic membrane reaches setiger 7	*Salmacina*
6a (3b).	Abdominal setae geniculate	*Salmacina*
6b (3b).	Abdominal setae slender, nearly straight capillaries	*Protis*
7a (Ib).	Operculum carried on a branchial radiole	8
7b (ib).	Operculum carried on a modified stalk	12
8a (7a).	Five thoracic setigers present	9
8b (7a).	Six or more thoracic setigers present	10
9a (8a).	Collar setae slender and limbate; long asetose region present between thorax and abdomen	*Josephella*
9b (Sa).	Collar setae basally dentate; thorax and abdomen not separated by a long asetose region	*Dipomatus*
l0a (8b).	Collar setae simple and tapered limbate	*Appmatus*

l0b (8b).	Collar setae with a few coarse teeth basally and a limbate denticulate blade distally	11
I la (l0b).	Operculum a shallowly depressed cone on a spherical swelling of the opercular stalk ...	*Filogranula*
I lb (l0b).	Operculum a depressed cone; stalk without the subdistal swelling	*Filograna*
12a (7b).	Opercular stalk flattened and ribbonlike	*Metavermilia*
t2b (7b).	Opercular stalk oval or circular in cross-section (sometimes with wings or spines)	13
13a (12b).	Opercular stalk with wings or spines	14
13b (12b).	Opercular stalk without wings or spines	26
14a (13a).	Opercular stalk with spines	15
14b (13a).	Opercular stalk with wings (sometimes produced into points distally)	17
15a (l4a).	Opercular stalk with spines on one side only; six thoracic setigers present	*Spirodiscus*
15b (14a).	Opercular stalk with four spines in a cross; seven thoracic setigers present	16
16a (15b).	Thoracic neuropodia widely separated anteriorly and approaching posteriorly; collar setae all of one kind, with basal pilose boss and distal spines	*Spirobranchus*
16b (15b).	Thoracic neuropodia equidistant in all setigers; collar setae of two kinds; either capillary or with a smooth double-boss basally and smooth tapering tips	*Crucigera*
17a (13a).	Collar setae absent	18
17b (13a).	Collar setae present	19
18a (17a).	Operculum with two projections	*Olga*
l8b (17a).	Operculum without projections	*Pomatoleios*
19a (17b).	Collar setae limbate or capillary	20
19b (17b).	Collar setae with two separate limbations (bayonet-type), with a basal boss or setose	23
20a (19a).	Anterior abdominal setae stout, acute spines	*Paumotella*
20b (19a).	Anterior abdominal setae trumpet-shaped or geniculate	21
21a (20b).	Opercular cap black and chitinous	*Crosslandiella*
21b (20b).	Opercular cap calcareous	22
22a (21b).	Opercular cap flat, with or without spines	*Pomatoceros*
22b (21b).	Operculum distally excavated, bordered by two eccentrically placed thorns connected by a low ridge	*Pseudopomatoceros*
23a (19b).	At least anterior abdominal setae trumpet-shaped	24
23b (19b).	Anterior abdominal setae geniculate	25
24a (23a).	Operculum conical, collar setae basally pilose	*Conopomatus*
24b (23a).	Operculum with slanting distal plate, collar setae bayonet-shaped	*Temporaria*
25a (23b).	Uncini with anterior peg pointed	*Omphalopomopsis*
25b (23b).	Uncini with anterior peg gouge-shaped (hollowed out from beneath)	*Pomatostegus*
26a (13b).	Collar setae absent	27
26b (13b).	Collar setae present	33
27a (26a).	Abdominal setae absent; abdominal uncini present	*Rhodopsis*
27b (26a).	Abdominal setae present; uncini usually present	28
28a (27b).	At least some abdominal setae geniculate	29
28b (27b).	All abdominal setae slender capillaries	30
29a (28a).	Uncini with numerous teeth	*Placostegus*
29b (28a).	Uncini with seven to nine teeth	*Marifugia*
30a (28b).	Abdominal uncini absent	*Bonhourella*
30b (28b).	Abdominal uncini present	31
31a (30b).	Tube free, tusk-shaped and smooth	*Ditrupa*
31b (30b).	Tube at least partly attached	32
32a (31b).	Opercular stalk calcified; operculum funnel-shaped	*Sclerostyla* (in part)
32b (31b).	Opercular stalk not calcified; operculum spherical	*Dasynema*
33a (26b).	Opercular spines movable	*Galeolaria*
33b (26b).	Opercular spines, if present, immovable	34
34a (33b).	Abdominal setae slender capillaries	*Schizocraspedon*
34b (33b).	Abdominal setae trumpet-shaped or geniculate	35
35a (34b).	Abdominal setae trumpet-shaped	36
35b (34b).	Abdominal setae geniculate	39
36a (35a).	Operculum a simple funnel	37

36b (35a).	Operculum with a basal funnel and in addition various spines or hoods forming a distal part	38
37a (36a).	Collar setae basally minutely hirsute	*Paraserpula*
37b (36a).	Collar setae basally dentate	*Serpula*
38a (36b).	Operculum with a large, glandular hood-shaped distal part	*Olgaharmania*
38b (36b).	Operculum with series of distal spines and, sometimes, smaller hoods	*Hydroides*
39a (35b).	Sicle setae *(Apomatus-setae)* absent	40
39b (35b).	Sicle setae present	49
40a (39a).	Collar setae with few coarse teeth in one or two marginal rows	41
40b (39a).	Collar setae at least in part limbate	45
41a (40a).	Operculum distally ornamented	42
41b (40a).	Operculum distally smooth, rounded or excavate	43
42a (41 a).	Operculum with concentric series of teeth, nearly radial in structure	*Neopomatus*
42b (41 a).	Operculum with a single series of long, strong teeth, making it bilaterally symmetrical .	*Mercierella*
43a (416).	Collar setae with teeth in two rows	*Sphaeropomatus*
43b (41b).	Collar setae with teeth in a single row	44
44a (43b).	Operculum distally rounded	*Ficopomatus*
44b (43b).	Operculum distally excavate	*Merciere/lopsis*
45a (40b).	At least some collar setae with a basal dentate or hirsute region	46
45b (40b).	All collar setae limbate	48
46a (45a).	Simple limbate collar setae present, in addition to some with a basal group of spines	*Omphalopoma*
46b (45a).	All collar setae with basal denticulated or hirsute region	47
47a (46b).	Six thoracic setigers present	*Hyalopomatus*
47b (46b).	Seven thoracic setigers present	*Pseudochitinopoma*
48a (45b).	Opercular stalk calcified; abdominal setae with only a short geniculate tip	*Sclerostyla* (in part)
48b (45b).	Opercular stalk not calcified; abdominal setae with about one-half of the exposed setae in the geniculate tip	*Neovermilia*
49a (39b).	Opercular stalk annulated	*Calcareopomatus*
49b (39b).	Opercular stalk not annulated	50
50a (49b).	Collar setae limbate	51
50b (49b).	Collar setae with a basal boss in addition to the limbate distal portion	52
51a (50a).	Both thoracic and abdominal uncini with all teeth in a single row; anterior peg entire . .	*Vermiliopsis*
51b (50a).	Thoracic uncini with teeth in a single row, anterior peg furcate; abdominal uncini with teeth in several rows	*Pseudovermilia*
52a (51 a).	Both thoracic and abdominal uncini with teeth in several rows	*Filogranula* (in part)
52b (51 a).	Thoracic uncini with teeth in a single row	53
53a (52b).	Operculum distally rounded	*Chitinopomoides*
53b (52b).	Operculum distally excavate	54
54a (53b).	Opercular stalk with three distal bulbs	*Janita*
54b (53b).	Opercular stalk without swellings	*Chitinopoma*

Generic Definitions

Apornatus Philippi 1844, A. *ampuiliferus* Philippi 1844; 8 species.

SERPULINAE. Seven thoracic setigers; globular operculum on a radiole. Collar setae simple limbates; sicle setae present. Uncini with teeth in several rows in both thorax and abdomen; anterior peg very long.

Bonhourella Gravier 1905b, B. *insignis* Gravier 1905b; only species.

SERPULINAE. Six thoracic setigers; operculum flat or lightly convex, opercular stalk distinct. Collar setae absent; abdominal setae capillary; abdominal uncini absent. Thoracic uncini with anterior peg gouge-shaped.

Calcareopomatus Straughan 1967a, C. *dewae* Straughan 1976a; only species.

SERPULINAE. Seven thoracic setigers; operculum with a globular base and a flat, calcareous plate; stalk annulated. Collar setae small and limbate; side setae present. Thoracic uncini with anterior peg bifid.

Chitinopoma Levinsen 1884, *Hydroides norvegica groenlandica* Morch 1863; 2 species.

SERPULINAE. Seven thoracic setigers; operculum conical without wings or spines on the stalk. Collar setae of fin and blade construction; sicle setae present; abdominal setae geniculate with triangular blade. Thoracic uncini with teeth in a single row; abdominal ones with teeth in several rows.

Chitinopomoides Benham 1927, C. wilsoni Benham 1927; only species.

SERPULINAE. Seven thoracic setigers; operculum rounded, stalk without spines or wings. Collar setae with large boss below a limbate zone; sicle setae present; abdominal setae geniculate with long triangular blade. Thoracic uncini with teeth in a single row; abdominal ones with teeth in several rows.

Conopomatus Pillari 1960, C. *acuiconus* Pillai 1960; 2 species.

SERPULINAE. Seven thoracic setigers; operculum conical, stalk winged. Collar setae present, pilose at base; side setae present; other thoracic setae limbate; abdominal setae trumpet-shaped.

Crosslandiella Monro 1933, C. *multispinosa* Monro 1933; 2 species.

SERPULINAE. Seven thoracic setigers; operculum with black, chitinous plate, surmounted by a spinose column; stalk winged. Collar setae lancet-shaped and tapering; side setae present. Abdominal setae geniculate.

Crucigera Benedict 1887, C. *websteri* Benedict 1887; 5 species.

SERPULINAE. Seven thoracic setigers; operculum with simple funnel, distal end of stalk with four large spines forming a cross. Collar setae limbate; side setae absent; abdominal setae trumpet-shaped. Uncini with few teeth; anterior peg very large.

Dasynema Saint-Joseph 1894, *Serpula chrysogyrus* Grube 1878; only species.

SERPULINAE. Seven thoracic setigers; operculum spherical, opercular stalk smooth. Collar setae and side setae absent; all thoracic setae limbate, abdominal ones capillaries.

Dipoinatus Ehlers 1913, *D. serpulides* Ehlers 1913; only species.

SERPULINAE. Five thoracic setigers; two operculae with branchial filaments on peduncle; each distally funnel-shaped and marginally dentate. Collar-setae basally dentate.

Ditrupa Berkeley 1835, *Dentalium* arietinum O.F. Muller 1776; 8 species.

SERPULINAE. Tube free, tusk-shaped; operculum an inverted cone with a chitinous plate. Collar setae absent; thoracic setae limbate and capillaries; abdominal setae capillaries. Uncini with numerous teeth in several rows.

Ficopomatus Southern 1921, F. *macrodon* Southern 1921; 2 species.

FICOPOMATINAE. Seven thoracic setigers; operculum pear-shaped, soft or chitinous; stalk smooth. Some collar setae with dentate boss, others serrated limbates. Sicle setae absent. Abdominal setae geniculate with a dentate, slender tip. Uncini with few teeth in a single row.

Filograna Oken 1815, *F. implexa* Berkeley 1828; only species.

FILOGRANINAE. Six to 12 thoracic setigers; rounded operculum on one of the radioles. Collar setae notched with limbate expansion at the base. Sicle setae and limbate setae present in thorax; abdomen with geniculate setae. Uncini with numerous teeth in several rows.

Filogranula Langerhans 1884, F. *gracilis* Langerhans 1884; 3 species.

FILOGRANINAE. Seven thoracic setigers; operculum a small cone on a small, spherical base; stalk either frondose or smooth; only four radioles present. Collar setae present; side setae present; uncini with numerous teeth in several rows.

Galeolaria Savigny 1818, G. *caespitosa* Savigny 1818; 5 species.

SERPULINAE. Seven thoracic setigers; operculum with calcareous plate surmounted by movable spines; opercular stalk winged. Collar setae present and very short and slender.

Hyalopomatus Marenzeller 1878, H. *claparedii* Marenzeller 1878; 4 species.

SERPULINAE. Six thoracic setigers; operculum bladder-shaped; stalk smooth. Collar setae of fin and blade construction; side setae absent. Abdominal setae with only the distalmost tip geniculate. Uncini with teeth in several rows; anterior peg furcate.

Hydroides Gunnerus 1768, H. *norvegica* Gunnerus 1768; 85 species.

SERPULINAE. Seven thoracic setigers; operculum basally with a marginally dentate funnel, distally with a crown of spines or smaller hoods, or a second, distal funnel present; stalk without spines or wings. Collar setae limbate; side setae absent; abdominal setae trumpet-shaped.

Janita Saint-Joseph 1894, *Serpula fimbriata* delle Chiaje 1828; only species.

SERPULINAE. Seven thoracic setigers; operculum infundibular with three large distal bulbs on the stalk; opercular plate chitinous with a single large spine. Collar setae basally dentate; side setae present; abdominal setae geniculate.

Josephella Caullery and Mesnil 1896, *J. marenzelleri* Caullery and Mesnil 1896; 2 species.

SERPULINAE. Five thoracic setigers; operculum at end of normal radiole, rounded. Collar setae slender limbate; uncini with double rows of teeth; anterior peg deeply bifid.

Marifugia Absalon and Hrabe 1930, *M. cavatica* Absalon and Hrabe 1930; only species.

SERPULINAE. Six thoracic setigers; operculum conical and distally smooth; stalk without spines or wings. Collar setae and side setae absent; thoracic setae slender and straight; abdominal setae geniculate. Uncini with teeth in a single row, maximally nine teeth present in thoracic uncini.

Membranopsis Bush 1910,M. *inconspicua* Bush 1910; only species.

SERPULINAE. Nine thoracic setigers; operculum unknown. Thoracic membrane fused over the back at ninth setiger; collar setae limbate. Uncini similar to those in *Protula.*

Mercierella Fauvel 1923b, M. *enigmatica* Fauvel 1923b; only species.

FICOPOMATINAE. Seven thoracic setigers; operculum distally oblique with chitinous plate covered by series of curved spines. Collar setae marginally dentate; side setae absent; uncini with teeth in one row in thorax, partially in two rows in abdomen.

Mercierellopsis Rioja 1945, *M. prietoi* Rioja 1945; only species.

FICOPOMATINAE. Seven thoracic setigers; operculum smooth, distally cup-shaped; stalk smooth. Collar setae dentate; side setae absent. Uncini with few teeth (7-12), anterior peg undercut.

Metavermilia Bush 1904a, *Vermilia multicristata* Philippi 1844; 4 species.

SERPULINAE. Seven thoracic setigers; operculum bladder-shaped; stalk flattened, ribbon-shaped. Collar setae limbate; side setae present; abdominal setae geniculate or capillaries. Thoracic uncini with teeth in a single row; abdominal ones with teeth in one or several rows.

Neopomatus Pillai 1960, *N. uschakovi* Pillai 1960; 2 species.

FICOPOMATINAE. Seven thoracic setigers; operculum with series of concentric rows of teeth, nearly radial in structure; stalk smooth. Collar setae dentate; side setae absent. Uncini with few teeth.

Neovermilia Day 1961, *N. capensis Day* 1961; 2 species.

SERPULINAE. Seven thoracic setigers; operculum spherical or slightly cup-shaped; stalk smooth. Collar setae limbate; side setae absent. Abdominal setae geniculate, finely dentate capillaries. Thoracic uncini with few teeth in a single row.

Olga Jones 1962, 0. *elegantissima* Jones 1962; only species.

SERPULINAE. Six thoracic setigers; operculum with a central tooth and paired lateral horns, stalk winged. Collar setae absent, side setae absent; thoracic setae limbate; uncini with about twenty teeth; anterior peg gouge-shaped.

Olgaharmania Rioja 1941b, *Hydroides glandiferum* Rioja 1941a; only species.

SERPULINAE. Seven thoracic setigers; operculum with basal corona of spines surmounted by very large, glandular chitinous hood equipped on one side with four large spines. Collar setae basally with paired bosses; side setae absent. Uncini with numerous teeth; anterior peg very large.

Omphalopoma Morch 1863, 0. *umbilicata* Morch 1863; 2 species.

SERPULINAE. Six or seven thoracic setigers; operculum cup-shaped, sometimes ornamented; stalk smooth. Collar setae of two kinds, simple limbates and fin and blade setae. Side setae present. Thoracic uncini with teeth in a single row; abdominal ones with teeth in several rows; anterior peg furcate.

Omphalopomopsis Saint-Joseph 1894, *Omphalopoma langerhansii* Marenzeller 1884; 2 species.

SERPULINAE. Seven thoracic setigers. Operculum distally smooth; opercular stalk with wings. Collar setae of two kinds, slender capillaries and limbate with a pilose subdistal boss. Sicle setae present; abdominal setae geniculate with a triangular blade. Thoracic uncini with teeth in a single row; anterior peg entire.

Paraserpula Southward 1963, *P. planorbis* Southward 1963; only species.

SERPULINAE. Seven thoracic setigers; operculum funnel-shaped, marginally dentate; stalk smooth. Collar setae bayonet-shaped and finely pilose; side setae absent; abdominal setae trumpet-shaped. Thoracic uncini with teeth in a single row; abdominal ones with teeth in several rows; anterior peg large.

Paumotella Chamberlin 1919c, *P. takemoana* Chamberlin 1919c; only species.

SERPULINAE. Seven thoracic setigers present; operculum conical and distally flattened, margin entire, stalk with wings. Collar setae limbate; side setae absent; anterior abdominal setae stout acute spines; posterior ones fine capillaries.

Placostegus Philippi 1844, *Serpula tridentata* Fabricius 1780; 18 species.

SERPULINAE. Seven thoracic setigers; operculum funnel-shaped with chitinous distal plate; stalk smooth. Collar setae absent; abdominal setae geniculate with widely triangular dentate distal plates. Uncini with numerous teeth.

Pomatoceros Philippi 1844, *Serpula triquetra* Linnaeus 1767; 13 species.

SERPULINAE. Seven thoracic setigers; operculum a flat calcareous plate, with or without spines; stalk with broad wings. Collar setae small and limbate; thoracic setae limbate; abdominal setae trumpet-shaped. Sicle setae absent. Uncini with numerous teeth.

Pomatoceios Pixell 19136, P. *crosslandi* Pixell 19136; 3 species.

SERPULINAE. Seven thoracic setigers; operculum distally flat; stalk winged. Collar setae and side setae absent; abdominal setae trumpet-shaped with one long spine at one side. Uncini with about ten teeth in both thorax and abdomen.

Pomatostegus Schmarda 1861, P. *macrosoma* Schmarda 1861; 8 species.

SERPULINAE. Seven thoracic setigers; operculum with chitinous plate surmounted by a column with several discs; stalk winged. Collar setae with subdistal pilose boss; side setae present; abdominal setae geniculate. Uncini with teeth in a single row; anterior peg simple.

Protis Ehlers 1887, P. *simplex* Ehlers 1887; 3 species.

SERPULINAE. Seven thoracic setigers; operculum absent. Collar setae of fin and blade construction with basal dentate fin well separated from the blade. Sicle setae present; abdominal setae nearly capillary. Thoracic uncini with teeth in a single row; abdominal ones with teeth in several rows.

Protula Risso 1826, *Serpula tubularia* Montagu 1803 *in* McIntosh 1923; 23 species.

SERPULINAE. Seven thoracic setigers; operculum absent. Collar setae simple limbates; side setae present. Uncini with teeth in several rows; anterior peg very long.

Pseudochitinopoma Zibrowius 1969, *Hyalopomatopsis occidentalis* Bush 1904a; only species.

SERPULINAE. Seven thoracic setigers; operculum bladder-shaped; stalk without wings. Collar setae with fin and blade construction and little separation between the basal fin and the distal blade. Sicle setae absent; abdominal setae geniculate with narrow blade. Thoracic uncini with teeth in a single row; anterior peg furcate; abdominal uncini with teeth in several rows.

Pseudopomatoceros Holly 1936, *Pomatoceropsis roxasi* Holly 1935; only species.

SERPULINAE. Seven thoracic setigers; operculum distally cup-shaped with two eccentrically placed thorns connected by a low ridge; stalk winged. Collar setae fine capillaries; side setae absent, thoracic setae limbate, abdominal setae with flat crown and a long spike. Uncini with numerous teeth; anterior peg furcate.

Pseudoserpula Straughan 1967b, *P. rugosa* Straughan 1967b; 2 species.

SERPULINAE. Seven thoracic setigers; operculum absent. Collar setae limbate; side setae absent; abdominal setae trumpet-shaped. Uncini with few teeth; anterior peg large, blunt.

Pseudovermilia Bush 1907b, *Spirobranchus* occidentalis McIntosh 1885; 5 species.

SERPULINAE. Seven thoracic setigers; operculum distally ornamented; stalk smooth. Collar setae limbate, side setae present; abdominal setae geniculate with triangular blades. Thoracic uncini with teeth in a single row; anterior peg furcate; abdominal ones with teeth in several rows.

Rhodopsis Bush 1904a, *R. pusillus* Bush 1904a; only species.

SERPULINAE. Seven thoracic setigers; operculum covered distally with chitinous plate with spines arranged in a rosette; shaft smooth. Collar setae absent; abdominal setae absent. Uncini with teeth in a single row.

Salmacina Claparede 1870a, S. incrustans Claparede 1870a; 8 species.

FILOGRANINAE. Five to nine thoracic setigers; operculum absent. Collar setae notched with limbate subdistal and distal parts; side setae present. Abdominal setae geniculate. Uncini with teeth in several rows.

Salmacinopsis Bush 1910, S. *setosa* Bush 1910; only species.

FILOGRANINAE. Nine thoracic setigers; operculum absent. Collar setae capillary; other thoracic setae capillary and limbate with a few serrate setae in posterior thoracic setigers; abdominal setae geniculate and serrated. Uncini with numerous very fine teeth; anterior peg large and blunt. Thoracic membrane absent.

Schizocraspedon Bush 1904a, *Serpula furcifera* Grube 1878; only species.

SERPULINAE. Seven thoracic setigers; operculum on a modified radiole; distally with a chitinous cover consisting of two concentric funnels, one inside the other; both marginally split with long, slender processes. Collar setae present. Abdominal setae capillary; superior thoracic setae geniculate with conspicuous spines at the base.

Sclerosryla M6rch 1863, S. ctenactis Morch 1863; 2 species.

SERPULINAE. Seven thoracic setigers; operculum funnel-shaped; opercular stalk smooth, calcified, collar setae present or absent, if present finely limbate; side setae absent; abdominal setae nearly capillary, with very short geniculate tips. Thoracic uncini with teeth in a single row; abdominal ones with teeth in several rows.

Serpula Linnaeus 1767, *S. vermicularis* Linnaeus 1767; 17 species.

SERPULINAE. Seven thoracic setigers; operculum funnel-shaped with crenulated margin; opercular stalk smooth. Collar setae either limbate or with a dentate boss; side setae absent. Abdominal setae trumpet-shaped. Uncini with few teeth; anterior peg large.

Sphaeropomatus Treadwell 1934, *S. miamiensis* Treadwell 1934; only species.

FICOPOMATINAE. Seven thoracic setigers; operculum soft and vesicular; stalk smooth. Collar setae spinose with teeth in two rows; side setae absent; other setae slender capillaries.

Spirobranchus Blainville 1818, *Serpula gigantea* Pallas 1766; 30 species.

SERPULINAE. Seven thoracic setigers; operculum with calcareous distal plate, usually ornamented; opercular stalk winged. Collar setae bayonet-shaped and pilose; some forms have limbate collar setae; side setae absent. Abdominal setae trumpet-shaped. Thoracic uncini with teeth in a single row; anterior peg furcate. Thoracic neuropodia are separated widely anteriorly and approaching in late thoracic setigers.

Spirodiscus Fauvel 1909, *S. grimaldii* Fauvel 1909; only species.

FILOGRANINAE. Six thoracic setigers; operculum funnel-shaped on a small ampulla; stalk with dorsal spines. Collar setae flattened and lancet-shaped. Uncini with numerous teeth.

Subprotula Bush 1910, *S. longiseta* Bush 1910; 2 species.

SERPULINAE. Seven thoracic setigers; operculum absent. Collar setae capillaries. Uncini with about 15 teeth; anterior peg very large. Thoracic membrane to fifth setiger only; collar tri-lobed.

Temporaria Straughan 19676, *Vermilia polytrema* Philippi 1844; 2 species.

SERPULINAE. Seven thoracic setigers; operculum with slanting calcareous plate; stalk winged. Collar setae bayonet-shaped with both regions limbate, separated by a notch. Abdominal setae trumpet-shaped. Thoracic uncini with at least ten teeth.

Vermiliopsis Saint-Joseph 1894, *Serpula infundibulum* Linnaeus 1758; 35 species.

SERPULINAE. Seven thoracic setigers; operculum rounded or flattened, stalk without wings. Collar and sidle setae present. Thoracic uncini with teeth in a single row; anterior peg entire; abdominal uncini with teeth in a single row.

Taxonomic Notes

The genus *Membranopsis* Bush 1910, included in the generic definitions, has been omitted from the key, since the structure of the operculum remains unknown.

The genus *Hydroides* has been defined here to include *Eupomatus* Philippi 1844, as is customarily done by most specialists today. It may be of some value to recognize the difference between *Hydroides SeNsu STRICTO* and *Eupomatus* at the sub-generic level.

Invalid Genera

Apomatopsis Saint-Joseph 1894, see *Apomatus*
Cystopomatus Gravier 191 Ia, see *Hyalopomatus*
Eucarphus Morch 1863, see *Hydroides*
Eupomatus Philippi 1844, see *Hydroides*
Filigrana Morch 1863, see *Filograna*
Filopora Fleming 1825, see *Filograna*
Glossopsis Bush 1904a, see *Hydroidess*
Helena Castelnau 1842, see *Serpula*
Hyalopomatopsis Saint-Joseph 1894, see *Hyalopomatus*
Microserpula Dons 1931, see *Chitinopoma*
Paravermilia Bush 1907b, see *Vermiliopsis*
Piratesa Templeton 1835, indeterminable
Placostegopsis Saint-Joseph 1894, see *Placostegus*
Podioceros Quatrefages 1866, see *Poinatoceros*
Polyphragma Quatrefages 1866, see *Hydroides*
Pomatoceropsi.s Gravier 1905b, see *Spirobranchus*
Pomatoceropsis Holly 1935, see *Pseudopomatoceros*
Proplacostegus Bush 1904a, see *Placostegus*
Psymobranchus Philippi 1844, see *Protula*
Siliquaria Savigny 1818, indeterminable
Spiramella Blainville in Quatrefages 1866, see *Protula*
Vermilia Savigny 1818, see *Spirobranchus*
Zopyrus Kinberg 1867b, see *Serpula*

FAMILY SPIRORBIDAE PILLAI 1970

Body separated into two regions; a thorax with a thoracic membrane, dorsal setae and ventral uncini and an abdomen with ventral setae and dorsal uncini. One radiole transformed into an operculum; tube calcareous. Body asymmetrical and tube coiled in a spiral; thorax with setigerous rudiments of three, four or five segments.

The spirorbids are rather difficult to work with since identification requires precise and accurate work with compound microscopes; prior to that of course, the specimens must be dissected out from their tubes as completely as possible. Recent reviews by Bailey-Brock, Knight-Jones and Vine has clarified the generic sub-division of the group considerably and is largely followed here (references to articles can be found below). Where the above-mentioned authors have yet to treat a genus, Pillai (1970) has been followed.

The family is most frequently considered a subfamily under the serpulids.

Key to Genera

Ia.	With three or more pairs of thoracic tori	2
lb.	With two pairs of thoracic tori	5
2a (1 a).	With four or more pairs of thoracic tori or at least rudiments of a fourth pair present on the concave side	3
2b (Ia).	With three pairs of thoracic Lori	17
3a (2a).	With at least four complete thoracic tori present	4
3b (2a).	With remnants of a fourth thoracic torus present	21
4a (3a).	Four pairs of thoracic tori present	*Anomalorbis*
4b (3a).	Approximately seven pairs of thoracic tori present	*Neomicrorbis*
5a(lb).	Sicle setae absent	6
5b (lb).	Sicle setae present	10
6a (5a).	Margins of collar fused to form dorsal tunnel	*Dexiospira*
6b (5a).	Margins of collar not fused	7
7a (6b).	Dextrally coiled	*Pillaiospira*
7b (6b).	Sinistrally coiled	8
8a (7b).	Collar setae limbate	*Leodora*
8b (7b).	Collar setae of fin and blade construction	9
9a (8b).	Thoracic uncini with simple, blunt anterior peg	*Simplicaria*
9b (8b).	Thoracic uncini with broadly indented anterior peg	*Eulaeospira*
10a (5b).	Dextrally coiled	11
l0b (5b).	Sinistrally coiled	12
I la (l0a).	Collar setae of fin and blade construction	*Spirorbella*

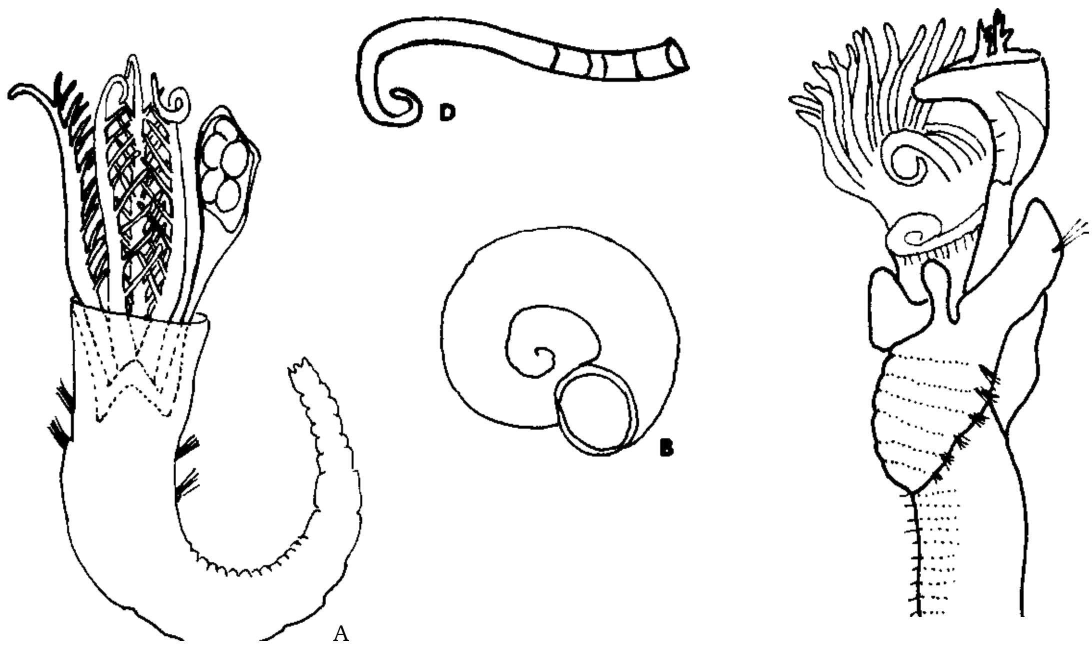


FIGURE 38. (A), Family SPIRORBIDAE, *Laeospira sp.*, simplified after Day 1964, 15x; (B), *Promlaeospira patagonica*, tube, after Day 1967, about 15x; (C), Family SERPULLDAE, *Spirobranchus spinosuA*, after Hartman, 1969, *5x; (D), Serpula vermicularis*, tube, natural size.

I I b (l0a).	Collar setae simply limbate	Janua
12a (l0b).	Collar setae simply limbate	13
12b (lob).	Collar setae of fin and blade construction	15
13a (12a).	Collar fused dorsally to form tunnel	*Romanchella*
13b (12a).	Collar not fused dorsally	14
14a (13b).	Incubation of larvae in opercular chamber; abdominal setae with blades as those of the collar setae	*Fauveldora*
14b (13b).	Incubation in the tube; abdominal setae very small with short blades	*Bushiella*
15a (12b).	Thoracic uncini with several rows of teeth	*Spirorbis*
l5b (12b).	Thoracic uncini with a single row of teeth	16
16a (15b).	Two or more opercular plates on top of each other on the operculum	*Duplicaria*
l6b (15b).	A single opercular plate present	*Pileolaria*
17a (2b).	Sicle setae present	18
17b (2b).	Sicle setae absent	20
18a (17a).	Collar setae of fin and blade construction	*Paralaeospira*
18b (17a).	Collar setae simply limbate	19
19a (18b).	Incubation of larvae in opercular chamber	*Protoleodora*
l9b (18b).	Larvae attached to stalk in faecal groove	*Metalaeospira*
20a (17b).	Tube tightly coiled along its whole length	Circeis
20b (17b).	Tube coiled only basally, most of the tube uncoiled	*Helicosiphon*
21 a (3b).	Three thoracic tori and four fascicles of setae on the convex side; four thoracic tori and five fascicles of setae on the concave side	*Amplaria*
21b (3b).	Fourth setiger represented by a rudiment of the torus on the concave side	22
22a (21b).	Sinistrally coiled	23
22b (21b).	Dextrally coiled	24
23a (22a).	Sicle setae present	*Protolaeospira*
23b (22a).	Sicle setae absent	*Capeospira*
24a (22b).	Collar setae simply limbate	*Prodexiospira*
24b (22b).	Collar setae of fin and blade construction	25
25a (24b).	Thoracic uncini with furcate anterior peg	*Dextralia*
25b (24b).	Thoracic uncini with bluntly rounded anterior peg	*Paradexiospira*

The key given above suggests that all named taxa are at the same level. Vine (1972) and Knight-Jones (1973) used several of the contained taxa at the sub-generic level, as indicated in Table 3. 1 believe that this difference in approach is relatively unimportant for the time being.

TABLE 3

Alphabetic list of genera and sub-genera of Spirorbidae as suggested by Vine (1972) and Knight-Jones (1973).

Genus	*Amplaria*		Genus	*Paralaeospira*	
	Anomalorbis			*Pileolaria*	
	Capeospira			subgenus	*Duplicaria*
	Circeis				*Pileolaria*
	Eulaeospira				*Protoleodora*
	Helicosiphon				*Simplicaria*
	JanUn			*Prodexiospira*	
	subgenus	*Dexiospira*		*Protolaeospira*	
		Fauveldora		subgenus	*Dextralia*
		Janua			*Protolaeospira*
		Leodora		*Romanchella*	
		Pillaiospira		subgenus	*Bushiella*
	Metalaeospira				*Romanchella*
	Neomicrorbis			*Spirorbis*	
	Paradexiospira			subgenus	*Spirorbella*
					Spirorbis

Generic Definitions

Amplaria Knight-Jones 1973, *A. spiculosa* Knight-Jones 1973; only species.

Sinistrally coiling; four thoracic tori and four fascicles of setae on the concave side; three thoracic tori and five fascicles of setae on the convex side. Fin and blade collar setae without cross-striations; side setae in third and fourth thoracic fascicle. Thoracic uncini with blunt anterior peg; abdominal setae geniculate, less than one fourth the size of the sicle setae. Abdomen somewhat asymmetrical; incubation in the operculum.

Anomalorbis Vine 1972, *A.* manuatus Vine 1972; only species.

Probably dextrally coiling; four complete thoracic setigers and remnants of a fifth. Collar setae limbate; side setae absent. Pronounced abdominal asymmetry; incubation probably in tube.

Bushiella Knight-Jones 1973, *Spirorbis evolutus* Bush 19046; 4 species.

Sinistrally coiling; two pairs of thoracic tori present; collar setae limbate, numerous. Sicle setae present in third fascicle. Thoracic uncini with blunt anterior peg. Margin of collar unfused; abdomen not strongly asymmetrical. Incubation in faecal groove with attachment stalk for the embryos.

Capeospira Pillai 1970, *Spirorbis (Paralaeospira) adeonella* Day 1963; only species.

Sinistrally coiling; thorax with three complete and a fourth rudimentary setiger; collar setae of fin and blade construction; side setae absent. Incubation in the tube.

Circeis Saint-Joseph 1894, *Serpula spirillum* Linnaeus 1758; 3 species.

Dextrally coiled; three thoracic setigers present; collar setae limbate. Sicle setae absent. Incubation in the tube.

Dexiospira Caullery and Mesnil 1897, *Serpula cor-*rugata Montagu 1803; 23 species.

Usually dextrally coiled; two pairs of thoracic tori present. Collar setae limbate; abdominal setae with blades as long as those in the collar seta; side setae absent. Margins of collar fused to form dorsal tunnel; incubation in operculum.

Dextralia Knight-Jones 1973, *Spirorbis (Paradexio-*spira) *falklandica* Pixell 1913a; only species.

Dextrally coiled; three rows of tori on the concave side and traces of a fourth on the convex side. Collar setae of fin and blade construction; side setae in third and fourth fascicle. Thoracic uncini with bilobed anterior peg. Abdominal setae with vestigial brush-top. Incubation in faecal groove on attachment stalk.

Duplicaria Vine 1972, *Spirorbis (Laeospira) koehleri* Caullery and Mesnil 1897; 3 species.

Sinistrally coiled; two pairs of thoracic tori present. Collar setae of fin and blade construction, not cross-striated. Sicle setae present; thoracic uncini with several rows of teeth. Anterior abdominal tori divided into two parts. Operculum with two or more plates stacked on top of each other; incubation in the operculum.

Eulaeospira Pillai 1970, *Spirorbis (Laeospira) orientalis* Pillai 1960; 2 species.

Sinistrally coiled; two pairs of thoracic tori. Collar setae of fin and blade construction, without cross-striations. Sicle setae absent. Uncini with teeth in several rows; anterior peg bifid or multifid. Incubation in groove along posterior abdomen.

Fauveldora Knight-Jones 1972, *Janua (Fauveldora) kayi* Knight-Jones 1972; only species.

Sinistrally coiled; two pairs of thoracic tori present; collar setae limbate; abdominal setae with blades as big as those in the collar setae; side setae in third fascicle present. Uncini with teeth in several rows. Incubation in the operculum.

Helicosiphon Gravier 1907, H. *biscoeensis* Gravier 1907; only species.

Sinistrally coiled, or almost uncoiled; three thoracic setigers on concave side. Collar setae limbate; side setae absent. Thoracic uncini with blunt anterior peg. Abdominal tori distinctly larger on concave side. Incubation in faecal groove attached by stalk.

Janua Saint-Joseph 1894, *Spirorbis pagenstecheri* Quatrefages 1865; 7 species.

Dextrally coiled; two pairs of thoracic tori present; collar setae limbate; side setae in third fascicle present. Abdominal setae with blades as big as those in the collar seate. Uncini with teeth in several rows. Incubation in the operculum.

Leodora Saint-Joseph 1894, *Spirorbis laevis* Quatrefages 1865; 8 species.

Sinistrally coiled; two pairs of thoracic tort present; collar setae limbate, not dentate; side setae absent. Abdominal setae with blades as big as those in the collar setae. Uncini with teeth in several rows. Incubation in the operculum.

Metalaeospira Pillai 1970, *Spirorbis pixelli* Harris 1969; 4 species.

Sinistrally coiled; three thoracic tori on the concave side. Collar setae with limbate blades; side setae present. Both thoracic and abdominal uncini more numerous on concave side. Thoracic uncini with blunt anterior peg. Incubation in faecal groove; attachment stalk absent.

Neomicrorbis Roverto 1904, *Serpula crenatostriatus* Goldfuss 1833; 3 species.

Sinistrally or dextrally coiled; approximately seven thoracic setigers. Collar setae of fin and blade construction; side setae present in posterior thoracic setigers from the third.

Paradexiospira Caullery and Mesnil 1897, *Serpula vitrea* Fabricius 1780; 3 species.

Dextrally coiled; three complete and one fourth incomplete thoracic setiger. Collar setae of fin and blade construction; side setae present in the third fascicle. Incubation in the tube.

Paralaeospira Caullery and Mesnil 1897, *Spirorbis (Paralaeospira) aggregata* Caullery and Mesnil 1897; 8 species.

Sinistrally coiled; three thoracic tori on the concave side; collar setae of fin and blade construction without cross-striations; side setae present in the third fascicle. Thoracic and abdominal uncini more numerous on the concave side; thoracic uncini with blunt anterior pegs. Incubation in faecal groove; attachment stalk absent.

Pileolaria Claparede 1870a, *P. militaris* Claparede 1870a; 20 species.

Sinistrally coiled; two pairs of thoracic tori present; collar setae of fin and blade construction; blades usually coarsely dentate, cross-striated. Side setae present. Incubation in operculum.

Pillaiospira Knight-Jones 1973, *Janua (Pillaospira) trifurcata* Knight-Jones 1973; only species.

Dextrally coiled; two pairs of thoracic tori; collar setae limbate, abdominal setae with blades as long as those in the collar setae; side setae absent. Incubation in the operculum.

Prodexiospira Pillai 1970, *Spirorbis violaceus* Levinsen 1884; only species.

Dextrally coiled; three complete and a fourth incomplete setiger present. Collar setae limbate; side setae present in the third fascicle. Incubation in the tube.

Protolaeospira Pixell 1912, P. *ambilateralis* Pixell 1912; 7 species.

Sinistrally coiled; three pairs of tort and in addition a fourth incomplete present. Collar setae of fin and blade construction; side setae in third and fourth fascicle. Thoracic uncini with bilobed anterior pegs. Incubation in faecal groove; attachment stalk present.

Protoleodora Pillai 1970, *Spirorbis asperatus* Bush 1904b; only species.

Sinistrally coiled; three (two?) setigers in the thorax; collar setae limbate; side setae present. Incubation in operculum.

Romanchella Caullery and Mesnil 1897, R. *perrieri* Caullery and Mesnil 1897; 4 species.

Sinistrally coiled; two pairs of thoracic tort present; collar setae limbate, few in number. Side setae in third fascicle. Thoracic uncini with blunt, gouge-shaped pegs. Margin of collar fused dorsally. Incubation in faecal groove, attachment stalk present.

Simplicaria Knight-Jones, 1973, *Spirorbis (Laeospira) pseudomilitaris* Thiriot-Quievreux, 1965; 3 species.

Sinistrally coiled; two pairs of thoracic tori present; collar setae of fin and blade construction; blades usually coarsely dentate, cross-striated. Side setae absent. Incubation in operculum.

Spirorbella Chamberlin 1919, *Spirorbis (Dexiospira) marioni* Caullery and Mesnil 1897; 3 species.

Dextrally coiled; two pairs of thoracic tori; collar setae of fin and blade construction; side setae in third fascicle. Thoracic uncini with broad anterior pegs. Incubation in tube, attachment stalk absent.

Spirorbis Daudin 1800, *Spirorbis borealis* Daudin 1800; 48 species.

Sinistrally coiled; thorax with two pairs of tori; collar setae of fin and blade construction; side setae present in the third fascicle. Thoracic uncini with broad anterior pegs. Incubation in the tube, attachment stalk absent.

Taxonomic Notes

Vine (1972) pointed out that the coiling of the spirorbids may not be a character of particularly high value and that even within one species, the coiling may vary from sinistral to dextral. It is thus of the utmost importance that great care be taken in using the key and definitions given above and that all the important features be checked carefully. It is quite possible that the coiling will turn out to be of great value in most of the genera, even if the character should turn out to be useless in certain instances.

Invalid Genera

Charybs Montfort *in* Morch 1863, questionably *Spirorbis*
Coretus Baster 1762, *see Circeis*
Dexiorbis Chamberlin 1919c, see *Dexiospira*
Heterodisca Fleming 1825, indeterminable
Laeospira Caullery and Mesnil 1897, see *Spirorbis*
Marsipospira Bailey 1969, see *Protolaeospira*
Mera Saint-Joseph 1894, see Janua
Neodexiospira Pillai 1970, see *Dexiospira*

Pixellia Pillai 1970, see *Protolaeospira*
Sinistrella Chamberlin 1919c, see *Leodora*
Spirorbides Chamberlin 1919c, see *Paradexiospira*
Stoa Serres 1855, indeterminable

FIVE "ARCHIANNELIDAN" FAMILIES

The following five families usually are considered as belonging to a separate order, Archiannelida. They are characterized, as pointed out by Hermans (1969), by features adaptive to life in the mesopsammon, and the features in which they resemble each other are exactly those that have been considered to be of selective advantage for the mesopsammon (Swedmark 1964; Hermans 1969). In agreement with Jouin (1971) and Westheide (1971), 1 find it difficult to retain the concept of the Archiannelida (Fauchald 1974a) and presently consider them free-standing families of the Polychaeta. Like Jouin and Westheide, I find it difficult to associate the five families, separately or as a unit, to any known polychaete family, and have for that reason listed them below, in alphabetical order. I do not think the five families are particularly closely related to each other.

FAMILY DINOPHILIDAE REMANE 1932

Very small, usually distinctly segmented polychaetes, without appendages, setae and parapodia; some forms with adhesive glands posteriorly. Ciliary bands on ventral side present, and, usually segmentally arranged, ciliary tracts present.

The family recently was reviewed by Jouin (1971) and by Westheide (1971).

Key to Genera

Ia.	Muscular pharynx absent	*Apharyngtus*
l b.	Muscular pharynx present	2
2a (1b).	Body slender and elongated; prostomium trilobed	*Trilobodrilus*
2b (Ib).	Body short, more or less inflated; prostomium rounded	3
3a (2b).	Pygidium with two adhesive glands; eyes absent	*Diurodrilus*
3b (2b).	Pygidium conical, without adhesive glands; *eyes* usually present	*Dinophilus*

Generic Definitions

Apharyngtus Westheide 1971, *A. punicus* Westheide 1971; only species.

Slender, distinctly segmented bodies; pharyngeal apparatus absent; in addition to the regularly arranged ciliary bands, very fine cuticular hairs covering the body.

Dinophilus Schmidt 1848, *D. vorticoides* Schmidt 1848; 8 species.

Short-bodied, indistinctly segment dinophilids; pygidium rounded or conical. Pharyngeal apparatus present and well developed. Some forms distinctly sexually dimorphic.

Diurodrilus Remane 1925, *D. minimus* Remane 1925; 5 species.

Body short, inflated and indistinctly segmented. Pygidium with paired adhesive glands ending distally on conical projections of various shapes. Pharyngeal apparatus well developed.

Trilobodrilus Remane 1925, *T. heideri* Remane 1925; 3 species.

Body long and slender; prostomium trilobed; eyes absent; pygidium rounded or conical, without adhesive glands. Pharyngeal apparatus well developed.

FAMILY NERILLIDAE LEVINSEN 1883

Interstitial small forms with few segments. Prostomium with paired palps, nuchal organs and up to three antennae. Ventral eversible pharynx with four jaws or unarmed. Uniramous parapodia with capillary setae or composite setae in a single fascicle. Parapodial cirri usually present.

The key to genera and definitions given below have been modified after Jouin (1971). The main changes involve terminology to fit the terms used in this paper.

Key to Genera

la.	Body with nine segments including the post-peristomial pharyngeal segment	2
lb.	Body with less than nine segments	4
2a (Ia).	Composite setae present	*Mesonerilla*
2b (Ia).	Simple capillary setae present	3
3a (2b).	Three antennae present	*Nerilla*
3b (2b).	Maximally one antenna present	*Meganerilla*

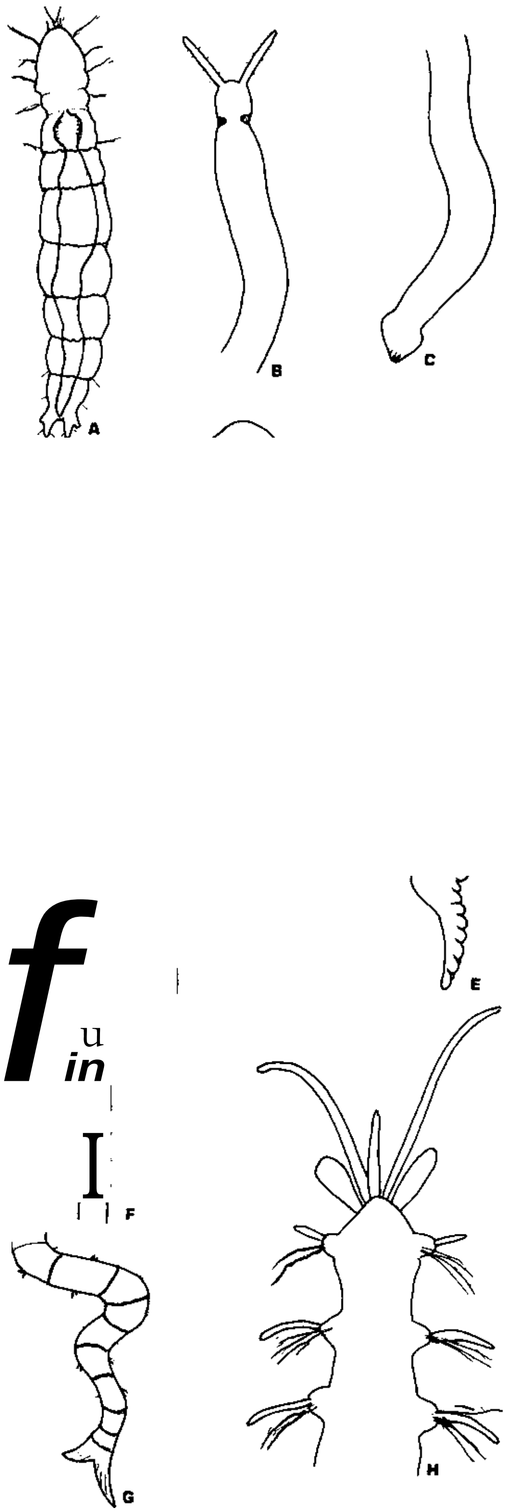


FIGURe 39. (A), Family DINOPHILIDAE, *Diurodrilus ankeli,* from Jouin, 1971, about 50x; (B), Family POLYGORDIIDAE, *Polygordius neapolitanus,* after Jouin, 1971, about 15x; (C), posterior end of the above, about 15x; (D), Family SACCOCIRRIDAE, *Saccocirrus polycercus,* after Jouin, 1971, about 25x; (E), posterior end of the above, about 25x; (F), Family PROTODRILIDAE, *Protodrilus hatscheki,* after Jouin, 1971, about 15x; (G), posterior end of the above, about 15x; (H), Family NERILLIDAE, *Mesonerilla* sp., after Jouin, 1971, about 25x.

4a (I b).	Eight segments, including the post-peristomial pharyngeal segment	5
4b (1 b).	Seven segments present	8
5a (4a).	Both simple and composite setae present	*Nerillidopsis*
5b (4a).	All setae either composite or simple	6
6a (5a).	All setae composite	*Thalassochaetus*
6b (5a).	All setae simple and capillary	7
7a (6b).	Pharyngeal segment asetigerous, antennae absent; freshwater	*Troglochaetus*
7b (6b).	Pharyngeal segment with setae, two antennae present; marine	*Nerillidium*
8a (4b).	Composite setae; parapodial cirri absent, palps reduced	*Paranerilla*
Sb (4b).	Setae simple and capillary; parapodial cirri present except on last segment	*Psanunoriedlia*

Generic Definitions

Meganerilla Boaden 1961, M. *swedmarki* Boaden 1961; 2 species.

Body with nine segments including the pharyngeal segment. Two large palps and maximally one antenna present. All setae simple capillaries.

Mesonerilla Remane 1949, M. *luederitzi* Remane 1949; 6 species.

Body with nine segments including the pharyngeal segment. Two palps and three antennae present. All setae composite.

Nerilla Schmidt 1848, *N. antennata* Schmidt 1848; 7 species.

Body with nine segments including the pharyngeal segment. Three antennae and two palps present. All setae simple capillaries.

Nerillidium Remane 1925, N. *gracile* Remane 1925; 5 species.

Body with eight segments including the pharyngeal segment. Pharyngeal segment with setae; maximally two antennae present, may be absent. All setae simple capillaries.

Nerillidopsis Jouin 1967, N. hyalina Jouin 1967; only species.

Body with eight segments including the pharyngeal segment. Anterior and posterior setae simple capillaries; intermediate segments with composite setae.

Paranerilla Jouin and Swedmark 1965, P. limicola Jouin and Swedmark 1965; only species.

Body with seven segments including the pharyngeal segment. Antennae and parapodial cirri absent; palps reduced to triangular lateral corners on the prostomium. Mud-dwelling forms. Setae composite.

Psammoriedlia Kirsteuer 1966, *P. ruperti* Kirsteuer 1966; only species.

Body with seven segments including the pharyngeal segment. Antennae absent; two palps present; parapodial cirri present, except on last segments. Setae simple capillaries.

Thalassochaetus Ax 1954, *T. palpifoliaceus* Ax 1954; only species.

Body with eight segments including the pharyngeal segment. Antennae and parapodial cirri absent; palps present. All setae composite spinigers.

Troglochaetus Delachaux 1921, *T. beranecki* Delachaux 1921; only species.

Body with eight segments, including the pharyngeal segment. Antennae absent; palps present; pharyngeal segment asetigerous. All setae simple capillaries. Freshwater and caves.

FAMILY POLYGORDIIDAE CZERNIAVSKY 1881a

Slender, mainly interstitial forms. Prostomium with two solid antennae and nuchal slits. Eversible or non-eversible muscular pharynx ventral. Eyes and parapodia absent; setae absent in most forms; segmentation and ciliation poorly developed.

Key to Genera

Ia.	Setae present in posterior segments	*Chaetogordius*
lb.	Setae absent	*Polygordius*

Generic Definitions

Chaetogordius Moore 1904a, C. canaliculatus Moore 1904a; only species.

Prostomium conical with paired, slightly articulated antennae and large nuchal organs. Segmentation indistinct anteriorly, more distinct posteriorly. Single slender capillary setae in each of the last 10-12 segments; only one segment with paired setae on either side; all others with a single seta on either side.

Polygordius Schneider 1868, *P. lacteus* Schneider 1868; 15 species.

Prostomium rounded or conical with paired, usually smooth antennae and large nuchal organs. Segmentation usually indistinct along the whole body. Posterior end of body usually slightly wider than the rest of the body. Setae absent.

FAMILY PROTODRILIDAE CZERNIAVSKY 1881a

Interstitial slender forms. Prostomium with paired, hollow or solid antennae; eyes present. Pharynx muscular, but not eversible. Segmentation and parapodia poorly developed, setae absent in most known species; parapodia always absent.

The family has been reviewed recently by Jouin (1966).

Key to Genera

Ia.	Setae or segmentally arranged adhesive organs present	*Protodriloides*
l b.	Setae and segmentally arranged adhesive organs absent	*Protodrilus*

Generic Definitions

Protodriloides Jouin 1966, *Protodrilus chaetifer* Remane 1926; 2 species.

Salivary glands and lateral organs absent; antennae solid. Setae or segmentally arranged adhesive glands present.

Protodrilus Czerniavsky 1881a, *P. mirabilis* Czerniavsky 1881a; 20 species.

Salivary glands and lateral organs present; antennae hollow. Setae and segmentally arranged adhesive glands absent.

FAMILY SACCOCIRRIDAE CZERNIAVSKY 1881a

Interstitial slender forms. Prostomium with paired hollow antennae; eyes present. Proboscis a ventral muscular pad, present in most forms, but may be absent. Parapodia uniramous, with simple, chisel-shaped setae.

The family is known for a single genus, *Saccocirrus* Bobretzky 1872, with genotype, S. *papillocercus* Bobretzky 1872 and about 12 species. Jouin (1971) gave a key to species.

GLOSSARY

The glossary does not contain terms in general use in zoology or in biology in general, such as distal and proximal, anterior and posterior, etc. Generally, these terms can be found in a good dictionary. The glossary contains the terms characteristically used in systematic polychaete literature and explanation of idiosyncratic usage where terms are used in a different sense from the usual lexicographic one. Number in parenthesis refer to the specific example of this feature illustrated in the appended illustrations.

abdomen-posterior part of the body, behind the thorax, sometimes followed by a tail (2).

aciculum (a)-stout supportive setae found internally in each parapodial ramus where these project from the body. Acicular setae are thick, projecting setae (5).

aileron-accessory jaw plate in the glycerids (9).

anal cirrus (i)-one or more elongated projections from the pygidium (11).

antenna (e)-sensory projection arising from the dorsal, lateral or frontal surface of the prostomium; innervated from the first part of the brain (12,61).

apodous-without parapodia (66).

aristate-about setae: simple setae with smooth shaft and a tuft of hairs or a single spine distally (17).

arborescent-branching (like a tree) (18).

asetigerous-without setae (66).

auricular-ear-shaped (19).

avicular-beaked (shaped like a bird's head) (20).

biarticulate-with two joints; used about antennae, tentacles and palps (13).

bidentate-with two teeth (21).

bifid-split in two (22).

bifurcate-with two prongs (23).

bilimbate-simple setae with two wings or flattened margins (24).

bipinnate-formed like a feather with a main stem and two rows of side branches (26).

biramous-with two branches; usually used about parapodia having both noto- and neuropodia present (6).

branchia (e)-any extension of the body wall with a loop of the vascular system or which is well-equipped with capillary blood-vessels; a gill (27).

buccal-pertaining to the mouth.

capillary (ies)-in polychaete literature used either as an adjective in the combination capillary seta or as a noun characterizing long, slender tapering setae.

caruncle-posterior sensory organ projecting from the prostomium sometimes over the first several segments (28).

cephalon-head.

cephalic cage-long protective setae enclosing and protecting the head.

cephalic rim-flange encircling the head (25).

cephalic veil-hoodlike membrane between the paleae and the buccal tentacles in pectinariids.

ceratophore-basal joint of an antenna (30).

ceratostyle-distal joint of an antenna (29).

chevron-V-shaped chitinized jaw piece at the base of the eversible pharynx in some goniadids (31).

cirriform-slender and cylindrical (41).

cirrophore-basal joint of a cirrus (35).

cirrostyle-distal joint of a cirrus (34).

cirrus (i)-sensory projection, usually slender and cylindrical, from the superior part of the notopodium (dorsal cirrus) or from the inferior part of the neuropodium (ventral cirrus) (36,38,78,80).

clavate-club-shaped (32).

companion setae-small, simple setae in rows, accompanying, or alternating with larger setae, usually hooks of some kind.

compound (or composite) setae-jointed setae (37).

deciduous-liable to fall off (like leaves).

dentate-with teeth (39).

denticulate-with small teeth (40).

digitiform-finger-shaped (42).

elytron (a)-dorsal scales found in the aphroditoids; homologous with the dorsal cirrostyles (43).

elytrophore-aphroditoid cirrophore carrying an elytron (44).

epitoke-modified reproductive stage or specimen, often swarming.

facial tubercle-projecting ridge or lobe on the upper lip of certain polychaetes (especially scaleworms).

falcate-distally curved, usually blunt (used about setae) (45).

falciger-distally blunt and curved setae (45).

filiform-slender and threadlike (46).

foliaceous-leaflike (47).

fusiform-cigar- or spindle-shaped (48).

geniculated-bent (like a knee) (49).

harpoon seta-stout pointed seta with recurved barbs near the tip (50).

hemigomph articulation -with asymmetrical articulation nearly at right angles to the long axis of the shaft (52).

heterogomph articulation-with articulation clearly oblique to the long axis of the shaft (53).

homogomph articulation-with articulation distinctly and symmetrically at right angles to the long axis of the shaft (54).

hooded setae-setae distally covered by a delicate chitinous envelope or guard (51).

hook-general term used about stout-shafted, blunt, often distally curved and dentate setae; smaller hooks arranged in single or double rows are often referred to as uncini.

imbricated-overlapping (like tiles).

inferior-the more ventral (of two or more structures).

ligule-finger-shaped major process on a parapodium (55).

limbate-simple seta with a flattened margin or wing (56).

lobe-major parapodial process, used mainly about flattened kinds, but also more generally about all kinds of major parapodial processes (8).

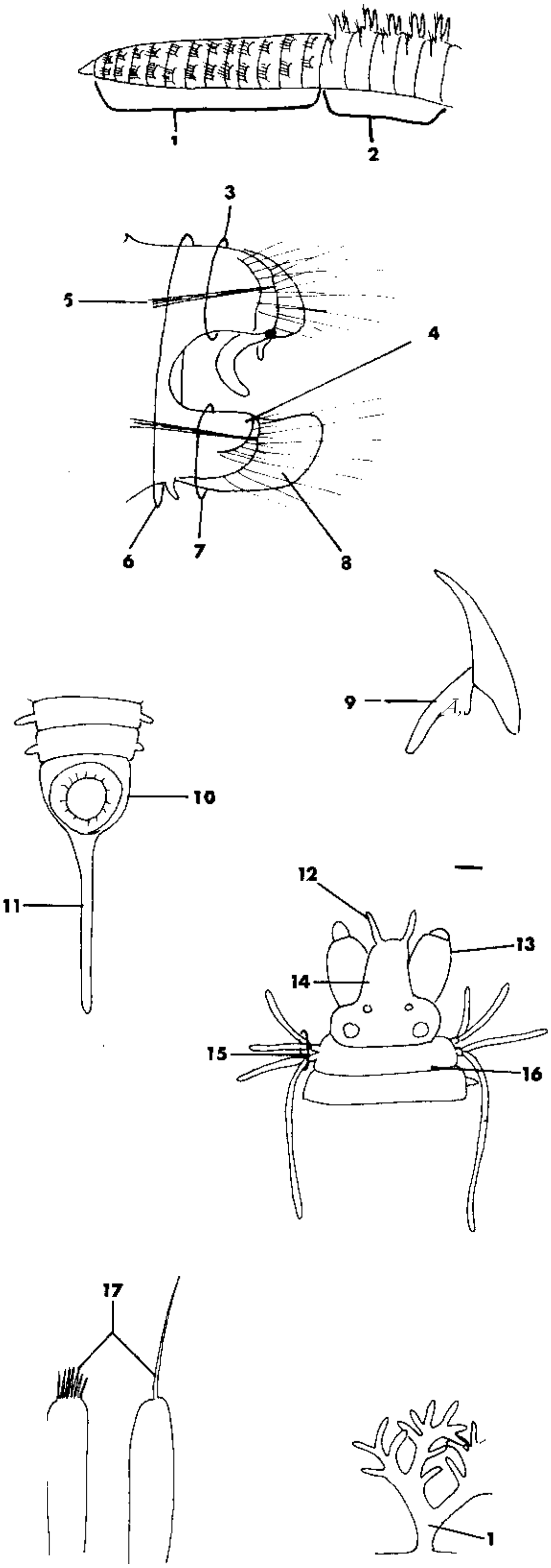
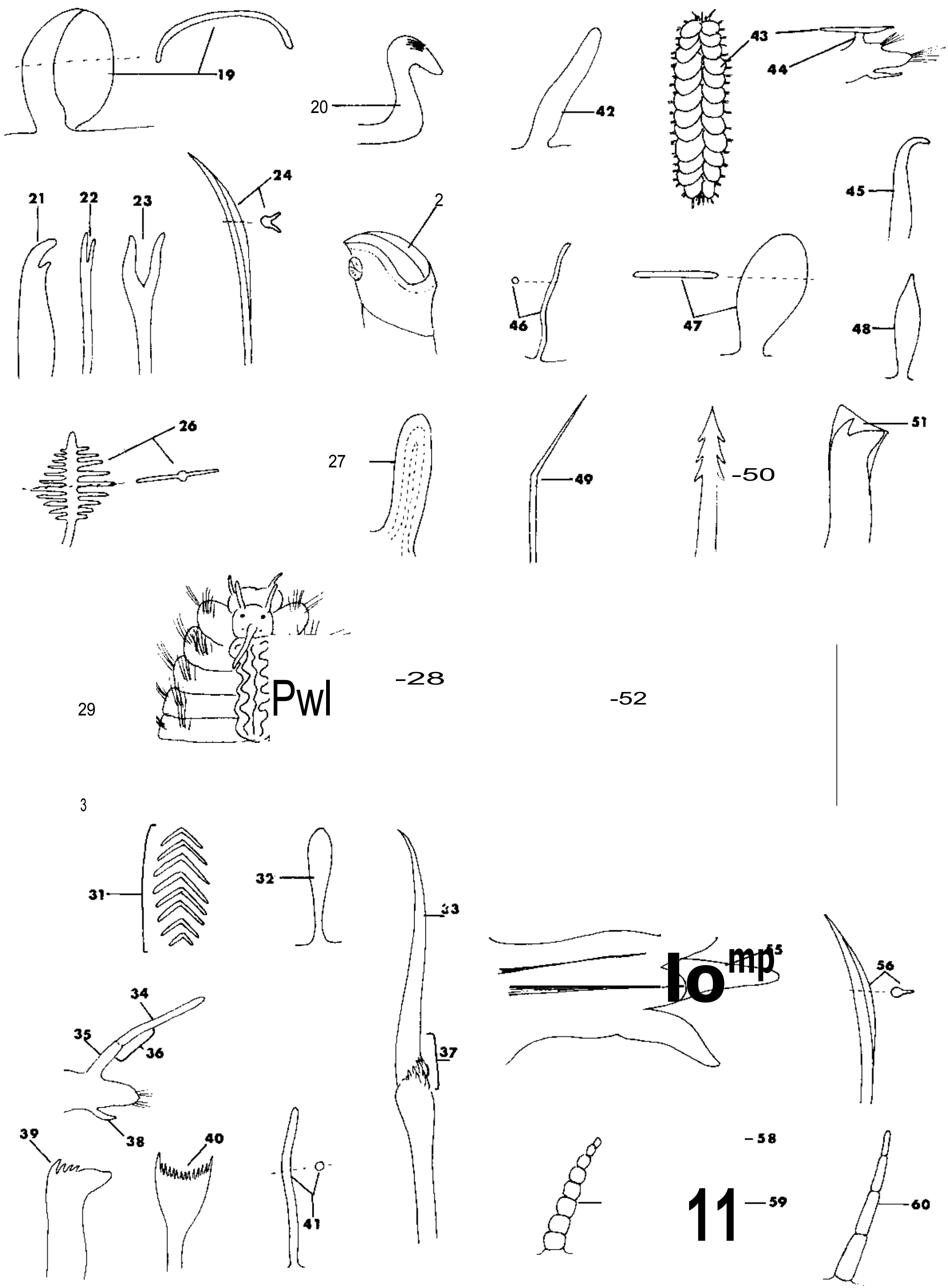


FIGURe 40. Diagram of selected terms defined in the Glossary #1-18.



Ficuan 41. Diagram of selected tens defined in the Glossary #19-60.

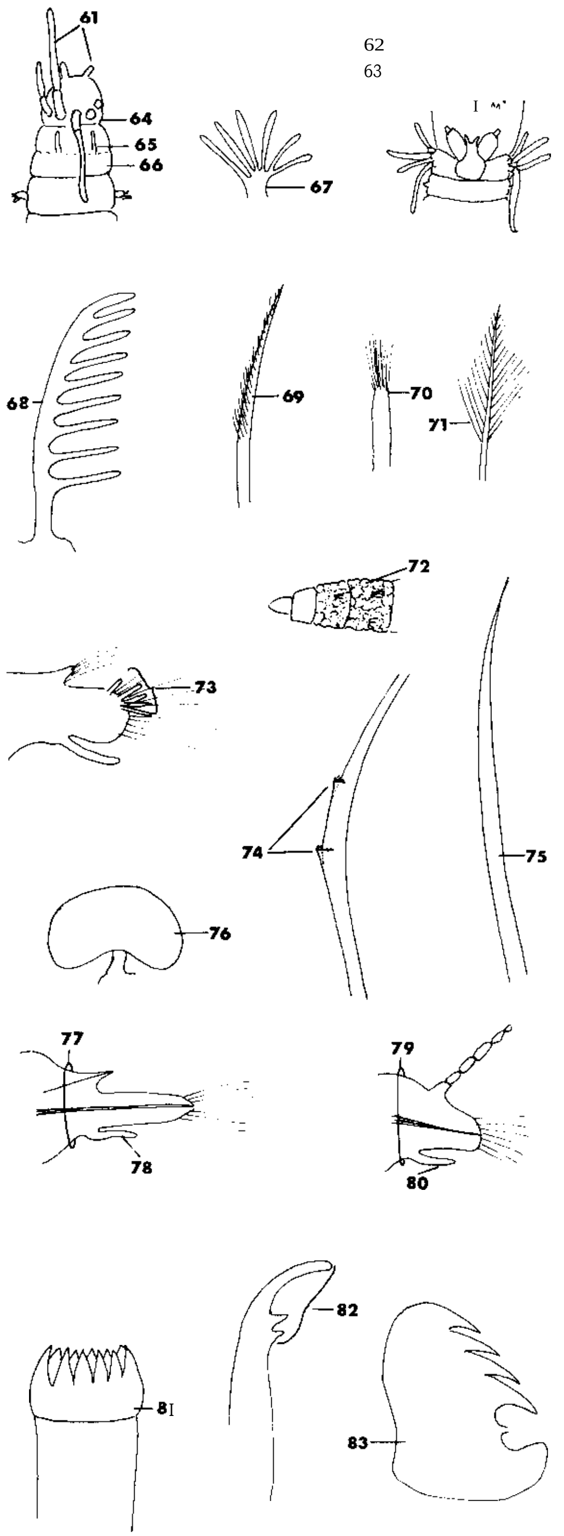


FIGURE 42. Diagram of selected terms defined in the Glossary #61-83.

long-handled-used about uncini, with a long basal rod supporting the uncinus

metastomium-rarely used term covering the segmented body between the prostomium and pygidium, but including neither.

moniliform-beaded or beadlike (57).

mucro-with a sharp point or tip; abruptly tapered (58).

multiarticulated-with several joints (60).

natatory-swimming.

neuropodium (a)-ventral branch (ramus) of a parapodium (7).

neurosetae-setae of the neuropodium.

notopodium (a)-dorsal branch (ramus) of a parapodium (3).

notosetae-setae of a notopodium.

nuchal-pertaining to the neck; used about sensory organs found on the posterodorsal side of the head and variously developed as paired or single processes, pits or grooves, sometimes as paired epaulettes stretching posterolaterally from the prostomium.

occipital-pertaining to the posterodorsal part of the prostomium (64).

ocular-pertaining to the eyes.

ocular peduncle-projecting structure supporting the eyes, especially in the polyodontids.

ommatophore-see ocular peduncle.

operculum (a)-literally a lid; used about a structure some tubicolous worms use as stoppers for their tubes when the occupant is retracted; see Sabellariidae and Serpulidae.

palea (e)-strong or broad, usually flattened setae.

palmate-resembling the fronds of a palm (67).

palp (s)-sensory or feeding structures innervated from the posterior part of the brain or from the circumesophagal nerve ring; anteroventral and sensory in the Phyllodocida; posterodorsal and used in feeding in the spioniform worms (13).

paragnath-chitinous denticle in the pharyngeal cavity of nereids (63).

parapodium (a)-segmentally arranged projections carrying setae; foot (16).

pectinate-comblike; with series of projections arranged like the teeth of a comb (68).

penicillate-brushlike (70).

peristomium (a)-first distinct post-prostomial region; strictly including only the region around the mouth, in practice including also segments fused to this structure, forming the posterior part of the recognizable head (16,66).

pharynx (ges)-anterior part of the digestive tract; often eversible, always modified for feeding purposes, sometimes also for burrowing (62).

pinnate-featherlike, with a main stem and lateral branches, see also bipinnate (71).

plumose-resembling down; hairy (69).

postsetal-posterior to the setae; used about parapodial lobes or ligules (8).

presetal-anterior to the setae; used about parapodial lobes or ligules (4).

prostomium (a)-anteriormost, a pre-segmental part of the body anterior to the mouth, enclosing at least the anterior part of the brain, often with antennae and eyes (14,64).

proventricle-muscularized region of the anterior digestive tract in syllids, found posterior to the pharynx.

pygidium (a)-post-segmental terminal part of the body carrying the anus (10).

radiole-one of the main tentacles in the tentacular crown of sabellids and serpulids.

ramose-branched.

reniform-kidney-shaped (76).

rugose-roughened, lumpy (72).

scaphe-flattened caudal appendage of pectinariids.

secondary tooth-the second of two teeth, the first being the apical, terminal or primary one.

segment-any part of the body, apart from the prostomium and pygidium set off internally or externally by septa or otherwise from the preceding and following parts.

Sensory p

seta-secretion from the parapodia forming the armature of these structures.

setiger-segment carrying setae.

short-handled-used about uncini, without a long rod-shaped support, fine threads may be present.

simple seta-unjointed seta.

spatulate-blade-shaped, usually blunt-tipped, sometimes with a mucro (59).

spiniger-seta that tapers to a fine point; most frequently used about composite setae (33).

spinous pocket-enlarged, pocketlike serration along the margin of the setae of some scale-worms (74).

stylode-small, fingerlike projection associated with a parapodium, usually small and distinctly longer than wide (73).

sub-biramous-pertaining to parapodia in which the neuropodia are well developed and the notopodia reduced (77).

subulate-awl-shaped; tapering to a fine point (75).

superior-the more dorsal (of two or more structures).

tentacular cirrus-sensory projections arising either from the peristomium or from cephalized segments, in the latter case considered homologous with the dorsal and ventral cirri of normal. prst-cephalic parapodia (15,65).

thorax-anterior region of the body, Posterior to the head (1).

trepan-chitinized, anteriorly toothed part of the eversible pharynx of some worms, especially syllids (81).

tridentate-with three teeth (82).

nations (i)-general term covering sharply dentate, deeply imbedded setae, often with a platelike base; or small, S-shaped setae with a distinct beak. Uncini usually are arranged in rows transverse to the long axis of the animal (83).

unciniger-segment carrying uncini.

unidentate-distally entire (45).

uniramous-with one branch only; used about parapodia in which one ramus, most frequently the notopodium, is absent (79).

vertical muscular pad

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