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## Polychaeta

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Well over 200 species of the class Polychaeta are found in waters off the shores of the Pacific Northwest. Larval descriptions are not available for the majority of these species, though descriptions are available of the larvae for at least some species from most families. This chapter provides a dichotomous key to the polychaete larvae to the family level for those families with known or suspected pelagic larva. Descriptions have been gleaned from the literature from sites worldwide, and the keys are based on the assumption that developmental patterns are similar in different geographical locations. This is a large assumption; there are cases in which development varies with geography (e.g., Levin, 1984).

Identifying polychaetes at the trochophore stage can be difficult, and culturing larvae to advanced stages is advised by several experts in the field (Bhaud and Cazaux, 1987; Plate and Husemann, 1994).

### Reproduction, Development, and Morphology

Within the polychaetes, the patterns of reproduction and larval development are quite variable. Sexes are separate in most species, though hermaphroditism is not uncommon. Some groups undergo a process called epitoky at sexual maturation; benthic adults develop swimming structures, internal organs degenerate, and mating occurs between adults swimming in the water column. Descriptions of reproductive pattern, gamete formation, and spawning can be found in Strathmann (1987). Larval polychaetes generally develop through three stages: the trochophore, metatrochophore, and nectochaete stages. Trochophores are ciliated larvae (see Fig. 1). A band of cilia, the prototroch, is used for locomotion and sometimes feeding. Trochophore larvae are generally broad anteriorly and taper posteriorly. The anterior and posterior sections of the larva are called the episphere and hyposphere, respectively. They are usually pelagic.

By the metatrochophore stage, two to three segments have usually formed. Parapodia (with or without setae) may by this developmental stage become apparent. Doral and ventral podia are known as neuropodia and notopodia, respectively. The anterior-most segment is called the prostomium. Just posterior

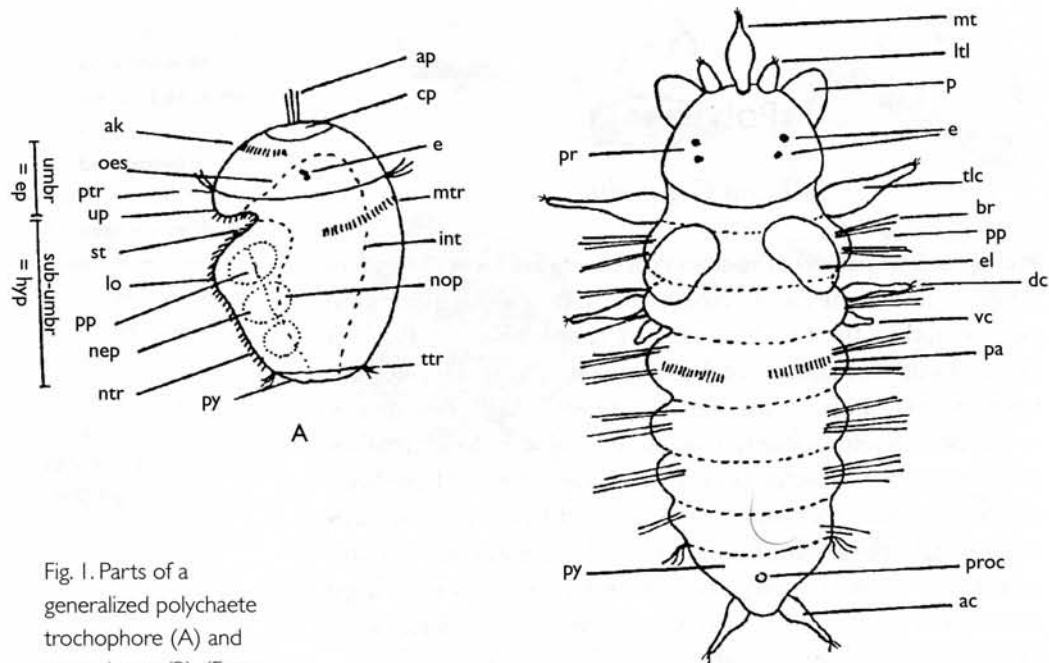


Fig. 1. Parts of a generalized polychaete trochophore (A) and nectochaete (B). (From Korn, 1960)

ac, anal cirrus; ak, acrotroch; ap, apical tuft; br, chaetae; cp, cerebral plate; dc, dorsal cirrus; e, eye; el, elytra; ep, episphere; hyp, hyposphere; int, intestine; lo, lower lip; ltl, lateral tentacle; mt, median tentacle; mtr, metatroch; nep, neuropod; nop, notopod; ntr, neurotroch; oes, oesophagus; p, palp; pa, paratroch; pp, parapod; pr, prostomium; proc, proctodaeum; ptr, prototroch; py, pygidium; st, stomodaeum; sub-umbr, subumbrella; tlc, tentacular cirrus; ttr, telotroch; umbr, umbrella; up, upper lip; vc, ventral cirrus

to the prostomium is the peristomium. These two anterior segments form the head. Eyes and antennae form in the prostomium. The mouth, palps, or tentacular cirri form in the peristomium. Larvae may be planktotrophic and develop a mouth and gut while in the plankton. Others are lecithotrophic and survive on yolk substances. Once a larva has developed setae, the segments with setae are called setigers. The most posterior segment is called the pygidium. New segments develop from the pygidium in a stepwise manner.

Advanced larvae are called nectochaetes (see Fig. 1). Nectochaetes typically have many more setigers than metatrochophores. Depending on the species, the larval ciliation may have been lost and the larvae may no longer be pelagic. After settlement, larvae may go through a benthic stage called the erpochaete stage, or they may metamorphose to become juvenile worms (Strathmann, 1987).

Polychaete larvae are morphologically complex and diverse. Because of this complexity, a large number of technical terms have been coined to help describe larval anatomy. Fig. 1 and the following glossary should help to make sense of this "foreign language." The definitions in the glossary are from Lacalli (1980) and Bhaud and Cazaux (1987).

**achaetous:** without setae

**acicula (pl. aciculae):** a stout chitinous rod embedded in one or both parapodial lobes

**acrotroch:** circlet of cilia in front of the prototroch

**antenna:** sensory appendage arising from the anterior or the dorsal surface of the prostomium

- anal cirrus:** elongated appendage arising from the pygidium
- apical tuft:** bundle or group of a few cilia projecting from the anterior pole of the larva
- capillary seta:** hairlike bristle that may be ornamented
- chevron:** V-shaped teeth laterally on the proboscis
- ciliated pit:** small dorsal ciliated cavity in segment 1, 2, or 3, limiting posteriorly the neurotroch of the spionidae
- cirrus:** respiratory and tactile appendage of the setiger; without blood vessel
- compound seta:** jointed bristle most often composed of two parts: the base and the distal part
- crest (nuchal crest):** mediodorsal zone of the cephalic area in the Spionidae bounded by two ciliated grooves
- elytron (pl. elytra):** dorsal scale, inserted on the dorsal side of the parapodium, arising from transformation of some dorsal cirri
- erpochaeta:** creeping stage, moving on or in the sediment using its setae
- erposoma:** creeping stage, without setae, moving by undulation or contraction of the body
- gastrotroch:** ventral troch
- geniculate seta:** seta that is bent but not articulated
- hooded hook:** seta that is curved distally and covered with a transparent envelope
- limbate seta (spatulate seta):** seta with a bladelike flattened margin
- melanophore:** black pigment cell or group of cells
- meniscotroch:** crescent-shaped area of short cilia in the region anterior to the prototroch; the cilia of the central part are longer, bent, and form a pointed brush
- mesotroch:** transversal ciliated ring in the middle part of the larval body
- metatrochophore:** larval planktonic stage with marked segmentation; if parapodia are not yet formed, stage 1; if parapodia are present but not yet functioning, stage 2
- monostichious:** troch made of one ring of long cilia
- nectochaeta:** developmental stage bearing functioning parapodia serving locomotion
- neuropodium:** ventral section of the parapodium
- neuroseta:** seta of the neuropodium
- neurotroch:** row of short cilia running along the ventral side of the larva
- notopodium:** dorsal section of the parapodium
- notoseta:** seta of the notopodium
- palea (pl. paleae):** simple and stout seta, often enlarged as an oar (palea of parapodium) or simple and stout seta, not enlarged, but regularly tapering (opercular palea)
- palpi:** paired projections arising from the prostomium, used for food gathering and tactile purposes
- papilla (pl. papillae):** conus-like projection
- parapodium:** lateral segment footlike projections, composed of two parts, neuropodia and notopodia, each bearing a cirrus and setae
- peristomium:** buccal segment
- polystichious:** troch made of several rings of long cilia

- proboscis:** eversible anterior portion of the alimentary tract; with or without papillae
- prostomium:** preoral lobe that contains the cerebral ganglia and bears the most important sense organs; posteriorly and ventrally, the prostomium is delimited by the peristomium
- prototroch:** on the equatorial part of the trochophore, a ring of cilia anterior to the mouth; the single ciliated ring of certain trochophores
- pygidium:** posterior part of the body bearing the anus, always devoid of coelomic cavity
- serrated seta:** seta or part of seta with one or two edges notched like a saw
- seta (pl. setae):** slender chitinous structure projecting from the parapodium, used for locomotion and defense
- setiger:** segment bearing setae
- simple seta:** unjointed bristle
- telotroch:** ring of cilia near the anus
- troch:** ciliated ring of embryonic or larval stage, used in locomotion
- trochophore:** free pelagic larval stage, top-shaped structure, without visible segmentation, bearing one or two equatorial ciliated rings; in the latter case, the metatroch is situated behind the mouth
- uncini:** stout spines curved at the distal part; referred to as hooded hooks when the distal part is protected by hoods (see hooded hook); when they are more or less rectangular, with numerous teeth, they are called uncini

## Description and Identification of Local Taxa

### Key to larvae of polychaete families from the Pacific Northwest (adapted from Bhaud and Cazaux, 1987; Plate and Husemann, 1994)

- 1a. Larval tube present
- a1. Tube transparent with diameter constant throughout length, larva bearing 1—several large tentacles, always directed toward body and equaling at least half its length ..... TEREBELLIDAE (p. 73)
- a2. Tube nontransparent and conical, no large tentacles, external paleae directed forward ..... PECTINARIDAE (p. 73)
- 1b. Larva without tube ..... 2
- 2a. Larva bearing 1 or several stout anterior tentacles ..... TEREBELLIDAE (p. 73)
- 2b. No stout anterior tentacles present ..... 3
- 3a. Trochophore or metatrochophore with 2 large prototrochal-ventral lobes fused into funnel, resulting in dorsoventral asymmetry ..... PECTINARIDAE (p. 73)
- 3b. Lateral lobes not present ..... 4
- 4a. Presence of heavy projecting acicular sickle-shaped hooks on notopodium of several segments ..... PILARGIDAE (p. 60)

- 4b. Dorsal sickle-shaped acicular hooks not present ..... 5
- 5a. Body and prostomium covered with stout spherical papillae .....  
..... SPHAERODORIDAE (p. 63)
- 5b. Spherical papillae not covering body ..... 6
- 6a. Larva with 50–100+ segments .....  
..... TROCHOCHAETIDAE (p. 72)
- 6b. Larva with <50 segments ..... 7
- 7a. Setae absent ..... 8
- 7b. Setae present ..... 13
- 8a. Prostomium broad with marked frontal notch .....  
..... TOMOPTERIDAE (p. 64)
- 8b. Prostomium rounded or conical ..... 9
- 9a. Prototroch present with no other ciliary bands .....  
..... LOPADORHYNCHIDAE (p. 56)
- 9b. Multiple ciliary bands present, or atrochus ciliation covering  
majority of larva ..... 10
- 10a. Ciliation present as broad and definitive prototroch,  
metatroch, telotroch, and neurotroch ..... EUNICIDAE (p. 49)
- 10b. Ciliation in distinctly narrow bands or not in defined bands .....  
..... 11
- 11a. Eyespots absent, or if present only in conjunction with  
segmentation ..... CIRRATULIDAE (p. 67)
- 11b. Segmentation absent, eyespots present ..... 12
- 12a. Cilia arranged in narrow bands at segment definitions, with or  
without short cilia covering rest of larva .....  
..... DORVILLEIDAE (p. 49)
- 12b. Cilia long and nearly covering entire larva .....  
..... LUMBRINERIDAE (p. 50)
- 13a. 2 bundles of well-delineated setae ..... 14
- 13b. Setae not clumped in 2 bundles but distributed on numerous  
parapodia or segments ..... 20
- 14a. Pair of well-developed tentacles present ..... 15
- 14b. No such pair of tentacles ..... 17
- 15a. 2 long tentacles, covered with adhesive papillae and internal  
blood vessel, without ciliated groove, tentacles motile and often  
coiled in spiral ..... MAGELONIDAE (p. 68)
- 15b. Tentacles not papillated, with 1–2 ciliated grooves, not coiled ..  
..... 16
- 16a. Tentacles with 2 ciliated grooves, tentacles projecting dorsally  
and not laterally, conical prostomium without terminal antenna.  
..... AMPHINOMIDAE (p. 46)
- 16b. 2 laterodorsal tentacles, each with 1 ciliated groove; 2 narrow  
lateral bundles of setae, slightly bent and armed with regular  
denticulated collars ..... SABELLARIIDAE (p. 73)

- 17a. Top-shaped larva with roughly conical episphere ..... 18  
 17b. Umbrella-, bell- or mushroom-shaped larva ..... 19
- 18a. Transparent body; 2 lateral bundles of slender setae that are smooth or slightly serrated and bright ..... OPHELIDAE (p. 51)  
 18b. Opaque body; 2 lateral bundles of bent larval setae that are thick, dark, and coarsely serrated on the convex side; transversely striated notosetal spines and paleae; neither tentacles or palpi present ..... CHRYSOPETALIDAE (p. 53)
- 19a. Umbrella-shaped larva; main part of larval body a transparent, unpigmented umbrella; setal sacs set close together inside umbrella ..... OWENIIDAE (p. 52)  
 19b. Mushroom-shaped body with umbrella and foot; umbrella opaque, with pigmentation; separate setal sacs set laterally ..... SABELLARIIDAE (p. 73)
- 20a. Compact, barrel-shaped larva nearly as wide as long ..... 21  
 20b. Larva clearly longer than wide, formed by series of similar segments ..... 23
- 21a. 1–2 narrow ciliated rings, 1 pygidial cirrus present, adult setae present in early planktonic stages ..... CHAETOPTERIDAE (p. 67)  
 21b. 1–2 broad ciliated bands present; no or 2 anal cirri present ..... 22
- 22a. Metatrochophore with broad ciliary bands covering most of larva; erpochaete with bulbous prostomium ..... LUMBRINERIDAE (p. 50)  
 22b. Metatrochophore with broad prototroch, remaining bands narrow; prostomium rounded or spatulate ..... EUNICIDAE (p. 49)
- 23a. 1–2 pairs of palps on prostomium ..... 24  
 23b. No palps on prostomium ..... 25
- 24a. 1 palp projecting from each side of prostomium; larval setae on notopodia and neuropodia on each segment; body opaque and often with pigment spots ..... SPIONIDAE (p. 68)  
 24b. 2 palps projecting from each side of prostomium; 3 pairs of palps projecting from peristomium; setae on neuropodium ..... LOPADORHYNCHIDAE (p. 56)
- 25a. 2 distinct nuchal organs; slight pigmentation with transverse spots ..... OPHELIDAE (p. 51)  
 25b. Nuchal organs absent ..... 26
- 26a. Ocular spots large ..... 27  
 26b. Ocular spots small ..... 30
- 27a. Jaws and anal cirri present ..... NEREIDAE (p. 56)  
 27b. Jaws and anal cirri absent ..... 28

- 28a. 2 pairs of anterior tentacles at extreme end of prostomium ....  
..... ALCIOPIDAE (p. 53)
- 29b. Prostomial tentacles absent ..... 29
- 29a. Prostomial collar extending posteriorly to third segment .....  
..... SPIROBIDAE (p. 66)
- 29b. Prostomium without collar ..... SERPULIDAE (p. 65)
- 30a. Trochophore and metatrochophore elongated with diameter  
not varying substantially along length of body; larva at least 3 to  
4 times longer than wide ..... 31
- 30b. Trochophore and metatrochophore bulky; nectochaeta with  
dorsal elytra, lamellar or elongated dorsal cirri ..... 39
- 31a. Prostomium and pygidium with large zones of short cilia .... 32
- 31b. Prostomium and pygidium with only 1 ring of long cilia ..... 35
- 32a. 2 pairs of eyes; 3 antennae, possibly short; poorly developed  
acrotroch, prototroch, and metatroch present, telotroch absent  
in early trochophore; peristomium achaetous, remaining  
segments uniramous ..... SYLLIDAE (p. 64)
- 32b. No or 1 pair of eyes ..... 33
- 33a. Ciliated zones reduced to prototroch and telotroch; conical  
prostomium with rudiment of the first tentacle; no statocyst .....  
..... TEREBELLIDAE (p. 73)
- 33b. Larva with multiple ciliary bands, including acrotroch (in early  
forms), prototroch, metatroch, telotroch, and neurotroch ..... 34
- 34a. Larva lacking observable mouth; possessing 13 tufts of cilia on  
apical end of prostomium; larva with 3 setigerous segments  
bearing 1 pair of short and 1 pair of long notopodial setae on  
each segment ..... SABELLIDAE (p. 65)
- 34b. Larva with defined mouth; buccal segment lacking setae,  
following segment bearing metatroch; first setae on third  
segment of nectochaete ..... ORBINIIDAE (p. 51)
- 35a. Parapodia present ..... 36
- 35b. Parapodia absent ..... 38
- 36a. Prostomium flat, rectangular, and short, without antennae; 1  
unpaired anal cirrus; parapodia developed from first segment  
onward ..... NEPTYIIDAE (p. 56)
- 36b. Prostomium conical and annulated, with 4 terminal antennae;  
2 anal cirri; parapodia reduced on first and/or second segment .  
..... 37
- 37a. Parapodia uniramous; 0–4 eyes; parapodia of first segment  
reduced; erpochaeta bearing chevrons on proboscis; no jaws,  
opaque body, brown pigmentation ..... GONIADIDAE (p. 54)
- 37b. Parapodia reduced and uniramous on first and second  
segments; parapodia biramous from third segment onward; eyes  
absent; proboscis of erpochaeta lacking chevrons; 4 jaws; body  
transparent and colorless ..... GLYCERIDAE (p. 53)

- 38a. Each setigerous segment bearing 1 pair of capillary and 1 pair of spatulate setae; prostomium the largest segment .....ARENICOLIDAE (p. 47)
- 38b. Each setigerous segment bearing 1 pair of capillary setae; posterior segments bearing hooked setae .....CAPITELLIDAE (p. 47)
- 39a. Trochophore with curved acrotroch and tuft of long, thin cilia pressed against hyposphere at level of prototroch; elytra present on dorsal surface of metatrochophore ..... 40
- 39b. Trochophore with equatorial ciliated ring; long tuft of cilia absent from hyposphere or present on episphere; metatrochophore without elytra ..... 42
- 40a. Tentacular cirri present on peristomium .....APHRODITIDAE (p. 53)
- 40b. Tentacular cirri absent on peristomium ..... 41
- 41a. 4-5 pairs of elytra; segments lacking elytra bearing dorsal cirri; simple setae; 7-10 larval segments ..... POLYNOIDAE (p. 61)
- 41b. Four pairs of elytra or elytraphores; dorsal cirri absent or present only in third segment; setae of neuropodia compound, of notopodia simple; 5-6 larval segments .....SIGALIONIDAE (p. 63)
- 42a. Trochophore with ventral menisotroch; metatrochophore with 2 pairs of eyes and segmentation indistinct; nectochaeta with 4-5 antennae, unarmed proboscis, lamellate dorsal cirri, several pairs of smooth and nonarticulate tentacular cirri, compound and spinigerous notosetae and neurosetae .....PHYLLODOCIDAE (p. 58)
- 42b. Trochophore lacking ventral menisotroch; metatrochophore with >2 pairs of eyes; clearly delineated segments; anterior part broad; nectochaeta with long and cylindrical dorsal cirri, jointed tentacular cirri, compound and bent neurosetae .....HESIONIDAE (p. 55)

### Order Amphinomida

**Family Amphinomidae** (Local Species 2, Local Species with Described Larvae 0). Development of this family includes a rostraria larva (Fig. 2). Amphinomids are called fire worms because of the discomfort caused when coming in contact with the spines of the adult worms (Fauchald, 1977).

*Chloeia entypa* (*Notopygos labiatus*)

*Chloeia pinnata*

**Family Euphrosinidae** (Local Species 2, Local Species with Described Larvae 0). Euphrosinids are considered closely related to, but distinct from, the Amphinomidae (Fauchald

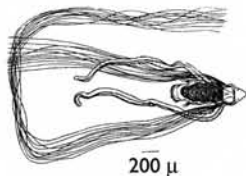


Fig. 2. Rostraria larva, family Amphinomidae. (From Mileikovskii, 1961)



1977). Adults are short and thick-bodied with one pair of antennae, tufts of neurosetae, and no palps. Development is not described.

*Euphrosine bicirrata*  
*Euphrosine hortensis*

### Order Capitellida

**Family Arenicolidae** (Local Species 4, Local Species with Described Larvae 2). Arenicolid worms spawn freely, brood larvae in burrows, or produce benthic egg masses. Larvae are non-feeding. Two local species (\*) are briefly pelagic during larval development prior to settling (Strathmann, 1987). *Abarenicola pacifica* develops in gelatinous masses that are brooded within adult tubes. *Branchiomaldane vincenti* undergoes direct development.

*Abarenicola claparedi oceanica* (*A. vagabunda oceanica*,  
*Arenicola pusilla*)\*  
*Abarenicola pacifica* (*Arenicola pusilla*, in part)  
*Arenicola marina*\*  
*Branchiomaldane vincenti* (*B. simplex*, *Protocapitella*)

#### Key to pelagic arenicolid larvae (Fig. 3)

- 1a. Larva bearing apical tuft, broad prototroch; vague indentations marking segments; brown eyes ..... *Arenicola marina*  
1b. Larva lacking apical tuft; narrow prototroch; red eyes .....  
..... *Abarenicola claparedi*

**Family Capitellidae** (Local Species 8, Local Species with Described Larvae 2). Intratubular brooding of larvae is quite common among the Capitellidae, though some species are known to broadcast spawn. Likewise, development ranges from direct within the parental tube to lecithotrophic and planktotrophic swimming larvae (Rouse, 1992). *Capitella capitata* appears to have two different developmental strategies: direct development from jelly masses, and a short pelagic phase. *Capitella capitata* may be a complex of six sibling species (see Strathmann, 1987), and therefore it is likely that different sibling species use different developmental strategies. *Heteromastus filiformis* egg masses are attached to the end of the female's tube, and larvae develop to the trochophore stage before release into the plankton (Rasmussen, 1956). Generalization of the development of capitellids based on trochophores is difficult because of generic differences (Lacalli, 1980).

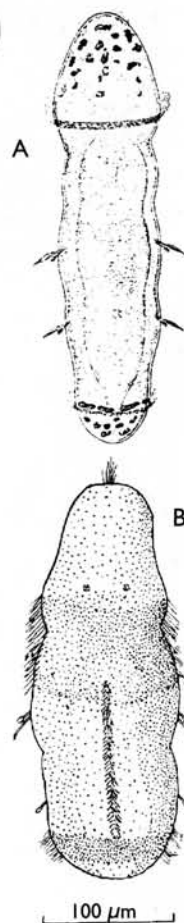


Fig. 3. (A) *Arenicola marina* and (B) *Arenicola claparedi*, Family Arenicolidae. (From Okuda, 1946; Newell, 1948)

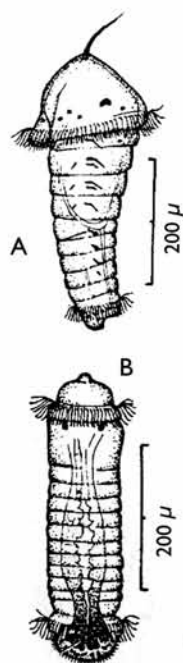


Fig. 4. (A) *Heteromastus filiformis* and (B) *Capitella capitata*, family Capitellidae. (From Lacalli, 1980)

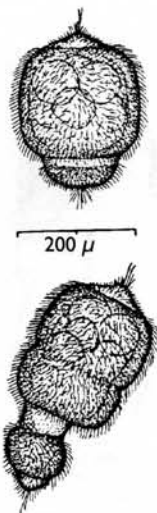


Fig. 5. Example of a pelagic maldanid larva, *Clymenella torquata*; not a local species. (From Lacalli, 1980).

- Capitella capitata*
- Heteromastus filiformis*
- Heteromastus filobranchus*
- Mediomastus californiensis*
- Notomastus giganteus* (*N. magnus*)
- Notomastus lineatus*
- Notomastus magnus*
- Notomastus tenuis* (*N. lineatus* var. *balanoglossi*)

#### Key to pelagic capitellid larvae (Fig. 4)

- 1a. Long apical tuft present; gut subdivided into several sections;  
body light green ..... *Heteromastus filiformis*
- 1b. Apical tuft absent or reduced; gut not subdivided .....  
..... *Capitella capitata*

**Family Maldanidae** (Local Species 13, Local Species with Described Larvae 0). Development for the maldanids was presumed to be primarily nonpelagic by Thorson (1946). Rouse (1992) cites two examples of free-spawned lecithotrophic larvae in the genera *Euclymene* and *Axiiothella*. Wilson (1983) suggests that *Axiiothella rubrocincta* is a sibling pair with one type brooding larvae and the other broadcasting demersal lecithotrophic larvae (Fig. 5).

- Asychis disparidentata*
- Axiiothella rubrocincta*
- Euclymene reticulata*
- Isocirrus longiceps*
- Maldane sarsi*
- Maldanella harai* (*Maldane robusta*)
- Nicomache lumbricalis*
- Nicomache personata*
- Notoproctus pacificus*
- Praxillella affinis* var. *pacifica*
- Praxillella gracilis*
- Rhodine bitorquata*

#### Order Cossurida

**Family Cossuridae** (Local Species 1, Local Species with Described Larvae 0). Adult cossurids are common in sand and deep slope and abyssal muds, where they apparently feed on detritus through a pharynx (Fauchald, 1977). Development is not described.

- Cossura modica*

## Order Ctenodrilida

**Family Ctenodrilidae** (Local Species 1, Local Species with Described Larvae 0). Fauchald (1977) describes adult worms of this family as small and grub-shaped. They are especially common in areas of aquaculture and may be commensal with *Flabelliderma commensalis* and *Strongylocentrotus purpuratus*. Bhaud and Cazaux (1987) warn that some species of this family are also holoplanktonic, and adults are often confused for larval stages.

*Ctenodrilus serratus*

## Order Eunicida

**Family Arabellidae** (Local Species 4, Local Species with Described Larvae 0). Arabellids are often parasitic on other animals, especially polychaetes and echiurans. Parasitism may be a larval stage or a lifelong condition. For example, Allen (1952) found larvae through young worms of *Arabella iricolor* present in a single *Diopatra cuprea* host. Descriptions and figures of arabellid development are not known, though Pettibone (1957) indicates that *A. iricolor* spawns throughout the summer.

*Arabella iricolor*

*Drilonereis falcata*

*Drilonereis filum*

*Notocirrus californiensis*

**Family Dorvilleidae** (Local Species 4, Local Species with Described Larvae 1). Adult dorvilleids are mainly small and common in shallow water (Fauchald, 1977). The described larva, *Schistomeringos longicornis* (Fig. 6), is free-spawned, lecithotrophic, and has been collected swimming at the water surface (Moore, 1903).

*Dorvillea moniloceras*

*Dorvillea pseudorubrovittata*

*Protodorvillea gracilis* (*Dorvillea*, *P. kefersteini*, *P. recuperata*, *Stauronereis*)

*Schistomeringos longicornis* (*Dorvillea*, *Stauronereis*, *D. rudolphi*, *D. atlantica*, *Stauronereis articulata*)

**Family Eunicidae** (Local Species 3, Local Species with Described Larvae 0). Eunicids are large polychaetes, mostly associated with hard substrates and shallow water, mainly carnivorous, burrowers, and tube builders (Fauchald, 1977). *Eunice valens* is known to brood benthic non-feeding larvae (Akesson, 1967). Richards (1967) describes several species that produce benthic egg masses in which the larvae develop.

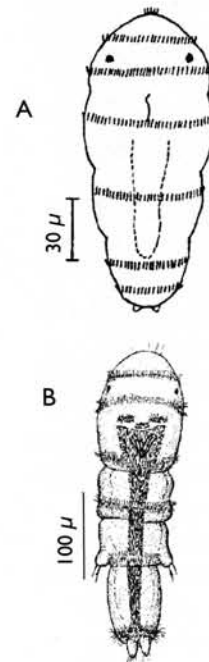


Fig. 6. *Schistomeringos longicornis* larvae, family Dorvilleidae: (A) late trochophore, (B) metatrochophore. (From Richards, 1967)

*Eunice segregata*

*Eunice valens* (*E. kobeensis*)

*Marphysa stylobranchiata*

**Family Lumbrineridae** (Local Species 8, Local Species with Described Larvae 2). Adults brood directly developing larvae in the two local species (\*) for which development has been described. Lumbrinerids are mostly free-living burrowers in sand and mud or in algal holdfasts. They occur in shallow and deep water (Fauchald, 1977).

*Lumbrineris* aff. *abyssicola*

*Lumbrineris bicirrita* (*L. bifurcata*)

*Lumbrineris californiensis*

*Lumbrineris cruzensis*

*Lumbrineris japonica*

*Lumbrineris latreilli*\*

*Lumbrineris zonata*\*

*Ninoe gemmea*

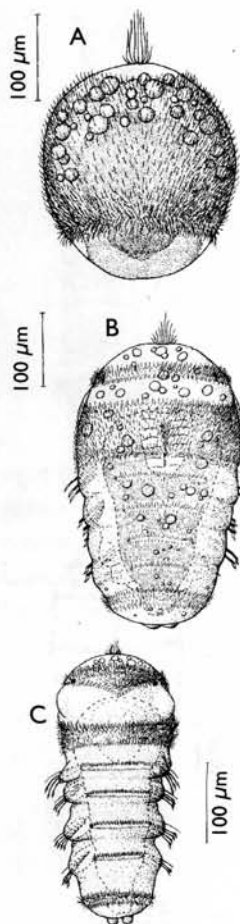


Fig. 7. *Sarsonuphis elegans* larvae, family Onuphidae: (A) trochophore, (B) metatrochophore, (C) nectochaete. (From Blake, 1975a)

**Family Onuphidae** (Local Species 7, Local Species with Described Larvae 1). Onuphid development is either lecithotrophic or direct, with only one known example of planktotrophy (*Sarsonuphis elegans*, Fig. 7; Blake, 1975a). *Diopatra cuprea* broods larvae in egg masses attached to the adult tube and produces either nonpelagic (Monro, 1924) or swimming larvae (Allen, 1959).

*Diopatra ornata* (*Onuphis longibranchiata*)

*Mooreonuphis stigmatis* (*Nothria*)

*Nothria occidentalis* (*Onuphis*)

*Nothria geophiliformis* (*Onuphis*)

*Nothria iridescens* (*Onuphis*)

*Sarsonuphis elegans* (*Onuphis*, *Nothria*)

*Sarsonuphis lepta* (*Onuphis*, *Nothria*, *N. abyssalis*)

#### Order Fauveliopsida

**Family Fauveliopsidae** (Local Species 1, Local Species with Described Larvae 0). This deep-water family is not well known. Adults are smooth-bodied without anterior appendages (Fauchald, 1977).

*Fauveliopsis armata*

#### Order Flabelligerida

**Family Flabelligeridae** (Local Species 3, Local Species with Described Larvae 0). Development has not been described for

any local species. Thorson (1946) suggests that *Flabelligera affinis* larvae are non-pelagic.

- Flabelligera affinis* (*F. infundibularis*)
- Pherusa inflata* (*Stylaroides*, *Trophonia*)
- Pherusa plumosa* (*Stylaroides*, *P. papillata*, *P. neopapillata*)

Order Ophelida

**Family Ophelidae** (Local Species 7, Local Species with Described Larvae 2). Ophelids have either direct or pelagic development. *Armandia brevis* is planktotrophic and settles at the 20 setiger stage (Hermans, 1978). *Euzonus mucronata* larvae are lecithotrophic and pelagic.

- Armandia brevis* (*A. bioculata*)
- Euzonus mucronata* (*Thoracophelia*)
- Euzonus williamsi* (*Thoracophelia*)
- Ophelia limacina* (*O. borealis*)
- Ophelina acuminata* (*Ammotrypane aulogaster*)
- Travisia brevis*
- Travisia pupa* (*T. carnea*)

**Key to pelagic ophelid larvae (Fig. 8)**

- 1a. Apical tuft present in metatrochophore; setae long, extending to or past pygidium ..... *Euzonus mucronata*
- 1b. Apical tuft absent; setae not extending past pygidium; 2–3 pairs of setae per setiger ..... *Armandia brevis*

**Family Scalibregmidae** (Local Species 3, Local Species with Described Larvae 0). Thorson (1946) collected young polychaetes of this family at 2 m above the sea bottom and therefore assumes that larvae are able to swim or float. Further developmental characteristics are not available:

- Asclerocheilus beringianus*
- Hyboscolex pacificus* (*Oncoscolex*)
- Scalibregma inflatum*

Order Orbiniida

**Family Orbiniidae** (Local Species 7, Local Species with Described Larvae 4). Three of the four described local species (\*) develop in gel masses and spend only a short time swimming as nectochaetes after hatching. *Scoloplos armiger* larvae have been described as nonpelagic (Blake, 1980) and pelagic (Plate and Husemann, 1994).

- Leitoscoloplos elongatus* (*Scoloplos*, *Haploscoloplos*, *L. pugettensis*)\*

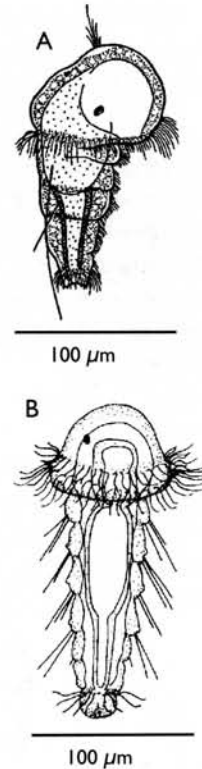


Fig. 8. Larvae of (A) *Euzonus mucronata* and (B) *Armandia brevis*, family Ophelidae. (From Dales, 1952; Hermans, 1977)

*Leitoscoloplos panamensis* (*Scoloplos*, *Haploscoloplos*, *H. alaskensis*)

*Naineris dendritica* (*N. laevigata*)\*

*Naineris uncinata* (*N. berkeleyorum*)

*Phylo felix* (*Aricia michaelsoni*, *Orbinia*)

*Scoloplos acmeiceps*

*Scoloplos armiger*\*

### Key to pelagic orbiniid larvae (Fig. 9)

- 1a. Prototroch band continuous dorsally ..... 2  
 1b. Prototroch discontinuous dorsally ..... *Scoloplos armiger*
- 2a. Pygidium deeply grooved; prototroch and metatroch of nearly equal width in metatrochophore and nectochaete stage .....  
 ..... *Naineris dendritica*
- 2b. Pygidium rounded or not grooved; prototroch and metatroch of unequal widths in metatrochophore or nectochaete stage ..... 3
- 3a. Prototroch widest ciliary band in nectochaete stage .....  
 ..... *Leitoscoloplos elongatus*
- 3b. Metatroch as wide as prototroch in nectochaete stage .....  
 ..... *Scoloplos acmeiceps*

**Family Paraonidae** (Local Species 5, Local Species with Described Larvae 0). Development of Oregon species is not known.

*Aedicira pacifica*

*Allia ramosa* (*Aricidea*)

*Aricidea wassi*

*Cirrophorus lyra* (*Paraonis*)

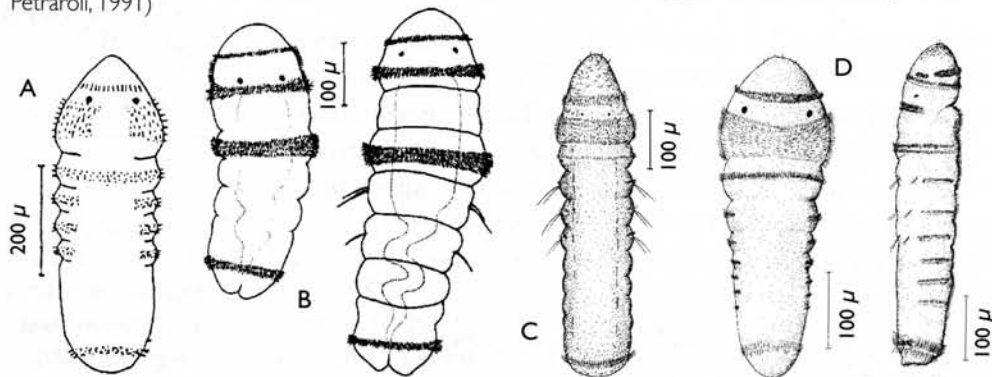
*Tauberia gracilis* (*Paraonis*, *P. ivanovi*)

### Order Oweniida

**Family Oweniidae** (Local Species 2, Local Species with Described Larvae 2). Oweniidae worms live in tubes and spawn or deposit stalked gelatinous egg masses. Trochophores are

Fig. 9. Larvae from the family Orbiniidae.

(A) *Scoloplos armiger*;  
 (B) *Naineris dendritica*,  
 (left) metatrochophore,  
 (right) nectochaete.  
 (C) *Leitoscoloplos elongatus*. (D) *Scoloplos acmeiceps*, (left) metatrochophore, (right) nectochaete. (From Anderson, 1959; Blake, 1980; Giangrande and Petraroli, 1991)



planktotrophic and develop into a characteristic stage called the mitraria, in which they have triangular bodies with undulating ciliated margins and numerous long flotation bristles (Strathmann, 1987).

*Myriochele oculata* (*M. heeri*)

*Owenia fusiformis* (*Ammochaeres*)

**Key to pelagic oweniid larvae (Fig. 10)**

- 1a. Umbrellar lobes evident (except at early stages); prototroch broad with yellow pigment ..... *Owenia fusiformis*
- 1b. Umbrellar margin continuous, lacking lobes; greenish gut, irregular yellow-orange pigment around girdle, red blotches near mouth during metamorphosis ..... *Myriochele oculata*

**Order Phyllodocidae**

**Family Alciopidae** (Local Species 2, Local Species with Described Larvae 0). Descriptions of larvae of local species are not known, though an undetermined alciopid larva is illustrated in Srikrishnadhas and Ramamoorthi (1975); see Fig. 11. Adults of this family are slender-bodied, exclusively pelagic, and known for their large and complex eyes (Fauchald, 1977). Because alciopids are holoplanktonic, adults are often confused with larval stages (Bhaud and Cazaux, 1987).

*Alciopa reynaudi*

*Alciopina tenuis* (*Plotohelmis*)

**Family Aphroditidae** (Local Species 5, Local Species with Described Larvae 0).

*Aphrodita japonica*

*Aphrodita longipalpa*

*Aphrodita magellanica*

*Aphrodita parva*

*Aphrodita refulgida*

**Family Chrysopetalidae** (Local Species 2,, Local Species with Described Larvae 1). The larvae of *Paleanotus bellis* (Fig. 12) are known for their sluggish behavior, presence of dorsal paleae, and red coloration of the gut (Blake, 1975b). Cazaux (1968) described similar features for *Chrysopetalum debile*, which may indicate that these characteristics are general for the family.

*Paleanotus bellis* (*P. chrysolepis*)

*Paleanotus occidentale* (*Chrysopetalum*)

**Family Glyceridae** (Local Species 8, Local Species with Described Larvae 4). Glycerids adults are long, slender-bodied

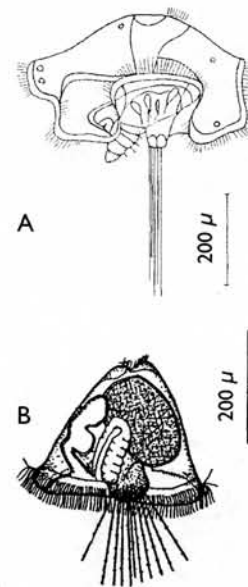


Fig. 10. Larvae of (A) *Owenia fusiformis* and (B) *Myriochele oculata*, family Oweniidae. (From Korn, 1960; Lacalli, 1980)

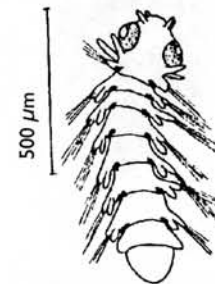
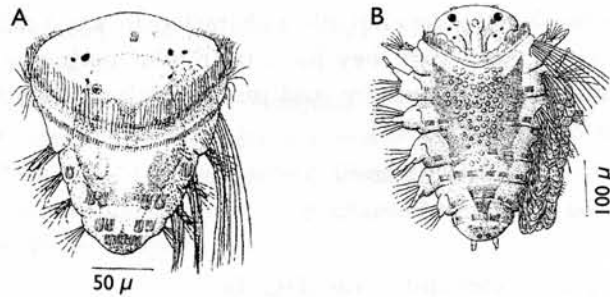


Fig. 11. General alciopid larva. (From Srikrishnadhas and Ramamoorthi, 1975)

Fig. 12. *Paleanotus bellis*, (A) late metatrochophore, (B) nectochaete, family Chrysopetalidae. (From Blake, 1975b)



with numerous segments, mainly carnivorous, have a long eversible pharynx with four black jaws at the tip, and live in soft sand or mud. Larvae are planktotrophic as trochophores and later, during a benthipelagic stage, they feed on detritus and algae until their jaws are formed (Strathmann, 1987).

*Glycera americana*  
*Glycera capitata* (*G. nana*)  
*Glycera convoluta*  
*Glycera gigantea*  
*Glycera oxycephala* (*G. tenuis*)  
*Glycera robusta*  
*Glycera tessellata*  
*Hemipodus borealis*

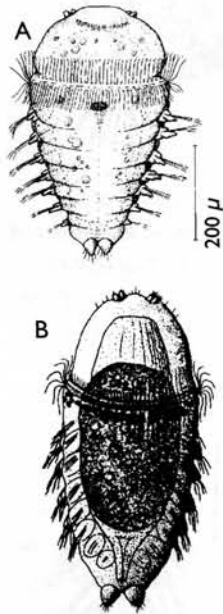


Fig. 13. (A) *Hemipodus borealis*, late metatrochophore, and (B) *Glycera convoluta*, late metatrochophore, family Glyceridae. (From Bhaud and Cazaux, 1987; Plate and Husemann, 1994)

#### Key to glycerid metatrochophores (Fig. 13)

- 1a. Metatrochophore conical, narrowing posteriorly; menisotroch present ..... *Hemipodus borealis*  
 1b. Metatrochophore barrel- or cigar-shaped; lacking menisotroch .  
 ..... *Glycera convoluta*

#### Key to glycerid nectochaetes (Fig. 14)

- 1a. Prototroch present ..... 2  
 1b. Prototroch absent; weak annulations of prostomium .....  
 ..... *Glycera oxycephala*  
 2a. Prototroch a double band of cilia ..... 3  
 2b. Prototroch a single band of cilia ..... *Hemipodus borealis*  
 3a. Prostomium with distinct annulations; body clear with red chromatophores near prototroch; 9 setigers ..... *Glycera capitata*  
 3b. Annulations on prostomium less distinct; 8 setigers; possible brownish pigment near prototroch ..... *Glycera convoluta*

**Family Goniadidae** (Local Species 4, Local Species with Described Larvae 2). Goniadids resemble glycerids in form, but their pharyngeal organs are much larger. Goniadid species may also be distinguished by differences in pharyngeal teeth (Fauchald, 1977).



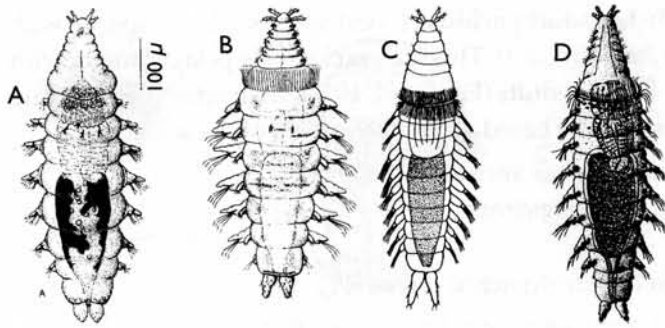


Fig. 14. (A) *Glycera oxycephala*, (B) *Hemipodus borealis*, (C) *Glycera capitata*, and (D) *Glycera convoluta*, family Glyceridae. (From Blake, 1975b; Bhaud and Cazaux, 1987; Plate and Husemann, 1994)

- Glycinde armigera*
- Glycinde polygnatha*
- Glycinde picta*
- Goniada brunnea*

**Key to goniadid nectochaetes (Fig. 15)**

- 1a. Body pale green with red eyes and deep red intestine; prostomium broadly tapering anteriorly ..... *Glycinde armigera*
- 1b. Body with numerous reddish granular pigment markings on each segment and on parapodial lobes of medial and posterior setigers; prostomium narrowly tapered ..... *Glycinde polygnatha*

**Family Hesionidae** (Local Species 2, Local Species with Described Larvae 2). There are few descriptions of hesionid larvae. Direct development and short pelagic lecithotrophic larvae have been described for a few species. *Ophiodromus pugettensis* produces lecithotrophic larvae with a short pelagic phase (Blake, 1975). Adults are common in shallow water and hard substrates; they are fragile and fragment easily (Fauchald, 1977).

- Ophiodromus pugettensis* (Podarke)
- Podarkeopsis brevipalpa* (*Gyptis arenicola glabra*; *Gyptis*)

**Key to hesionid metatrochophores (Fig. 16)**

- 1a. Metatrochophore with several long tentacular cirri, some reaching nearly to posterior margin of body ..... *Podarkeopsis brevipalpa*
- 1b. Elongated tentacular cirri, none extending to posterior end of body; 2 lateral antennae on prostomium ..... *Ophiodromus pugettensis*

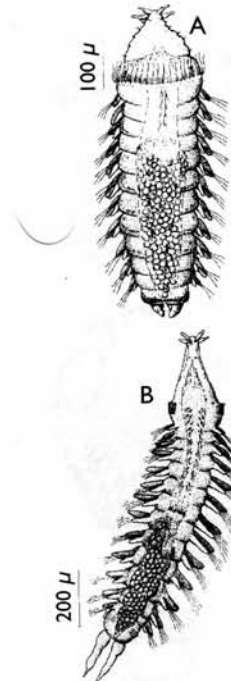


Fig. 15. Larvae of (A) *Glycinde armigera* and (B) *G. polygnath*, family Goniadidae. (From Blake, 1975b)

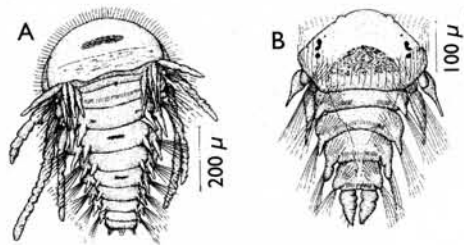
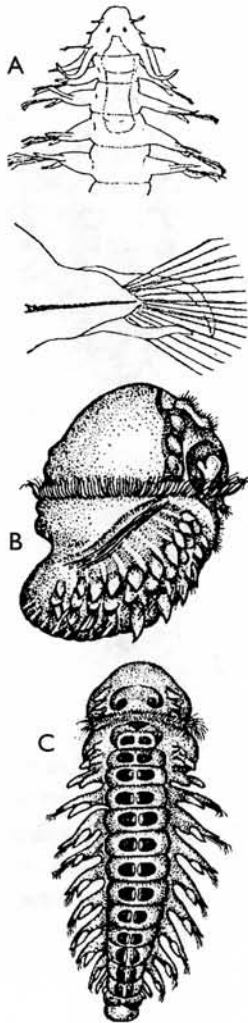


Fig. 16. Larvae of (A) *Podarkeopsis brevipalpa* and (B) *Ophiodromus pugettensis*, family Hesionidae. (From Blake, 1975b)

Fig. 17. (A) *Pelagobia longicirrata* nectochaete and cirri structure and (B, C; not to scale) *Lopadorhyncus uncinatus* metatrochophore and nectochaete, family Lopadorhynchidae. (From Muss, 1953; Akesson, 1966)



**Family Lopadorhynchidae** (Local Species 2, Local Species with Described Larvae 1). This is an exclusively pelagic family with short-bodied adults (Fauchald, 1977). Distinction between the local species is based on characteristics of the setae.

*Lopadorhyncus uncinatus* (*L. varius*)

*Pelagobia longicirrata*

**Key to lopadorhynchid larvae (Fig. 17)**

- 1a. Dorsal and ventral cirri long and digitiform ..... *Pelagobia longicirrata*  
 1b. Dorsal and ventral cirri thick and lanceolate ..... *Lopadorhyncus uncinatus*

**Family Nephtyidae** (Local Species 12, Local Species with Described Larvae 1). Worms of the genus *Nephtys* are predatory, free-spawn, and have pelagic development. Typical trochophores have a large dome-shaped episphere, one pair of eyes, and a barrel-shaped trunk with simple setae. Larvae are predatory as well (Strathmann, 1987). Lacalli (1980) suggests that the pigmentation pattern of irregular ruby red to red-brown bands on the larval tegument near the prototroch and pygidium is typical of larvae of the genus. *Nephtys caeca* (Fig. 18) has brownish pigmentation on the episphere and developing prostomium and pygidium, an olive-colored gut, and no blue pigmentation typical of other larvae in this family.

*Nephtys assignis*

*Nephtys caeca*

*Nephtys caecoides*

*Nephtys californiensis*

*Nephtys cornuta cornuta*

*Nephtys cornuta franciscana*

*Nephtys ferruginea*

*Nephtys longosetosa*

*Nephtys paradoxa*

*Nephtys punctata*

*Nephtys rickettsi* (*N. discors*)

*Nephtys schmitti*

**Family Nereidae** (Local Species 17, Local Species with Described Larvae 5). Nereid embryos develop in the plankton or in gelatinous benthic egg masses. Larvae do not feed until lipid drops in the gut are depleted and feeding structures have developed (Strathmann, 1987). Nereids either hatch as nectochaetes or proceed rapidly to the nectochaete stage if hatched at an earlier stage of development (Lacalli, 1980).

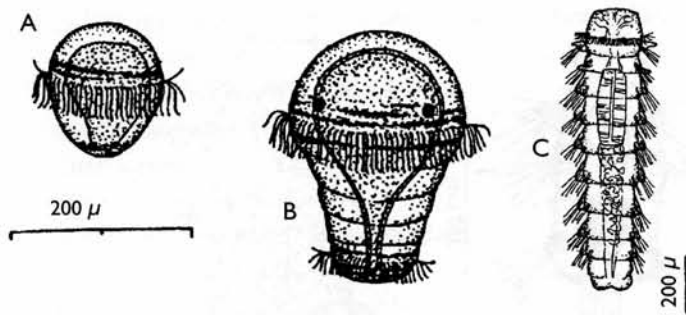


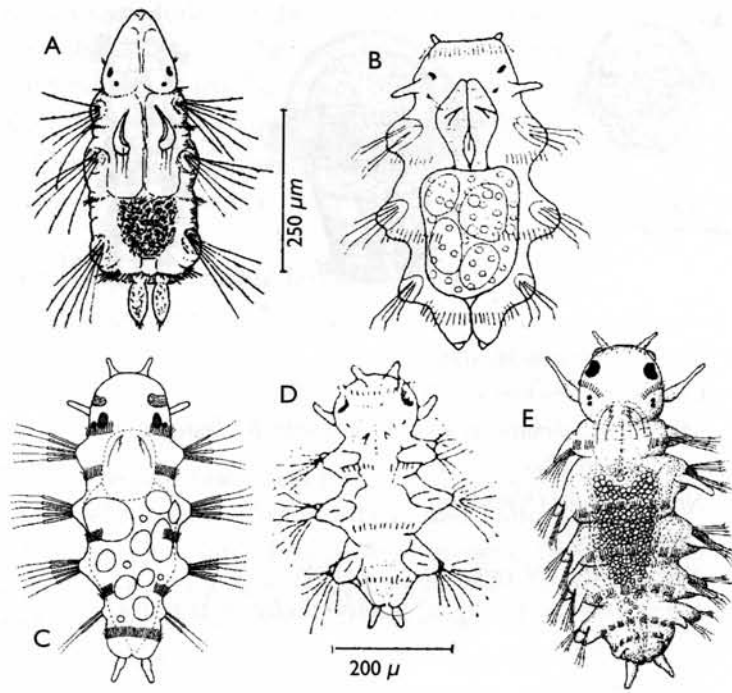
Fig. 18. (A, B) *Nephtys caeca* trochophore and metatrochophore and (C) general *Nephtys* nectochaete, family Nephtyidae. (From Lacalli, 1980)

- Ceratonereis paucidentata*
- Cheilonereis cyclurus*
- Micronereis nanaimoensis* (*M. variegata*, *M. bodegae*,  
*Phyllodocella*)
- Nereis brandti* (*Neanthes*)
- Nereis eakini*
- Nereis grubei* (*N. callaona*, *N. mediator*)
- Nereis limnicola* (*N. lighti*, *N. diversicolor*, *N. japonica*,  
*Neanthes*)
- Nereis natans*
- Nereis neoneanthes*
- Nereis pelagica*
- Nereis procera*
- Nereis vexillosa*
- Nereis virens* (*Neanthes*)
- Nereis zonata*
- Nicon moniloceras* (*Platynereis*)
- Perinereis monterea*
- Platynereis bicanaliculata* (*P. dumerili* var. *agassizi*)

**Key to nereid nectochaetes (Fig. 19)**

- 1a. Tentacular cirri present ..... 2
- 1b. Tentacular cirri absent ..... *Micronereis nanaimoensis*
- 2a. Prostomium rounded ..... 3
- 2b. Prostomium blunt or indented slightly at anterior margin .....  
..... *Nereis limnicola*
- 3a. Pygidium conical or bilobed; telotroch present but  
discontinuous ..... 4
- 3b. Pygidium rounded with distinct and continuous telotroch .....  
..... *Nereis pelagica*
- 4a. Eyes posterior to prototroch at setiger stage 3, yolk reserves  
minimal; pygidium lacks posterior cleft ..... *Nereis virens*
- 4b. Eyes anterior to or at level of prototroch at setiger stage 3,  
abundant blue-green oil droplets in gut; posterior cleft in  
pygidium ..... *Platynereis bicanaliculata*

Fig. 19. Larvae of local species from the family Nereidae. (A) *Micronereis nanaimoensis* (B) *Nereis limnicola*, (C) *Nereis pelagica*, (D) *Nereis virens* (E) *Platynereis bicanaliculata*. (From Dales, 1950; Berkeley and Berkeley, 1953; Korn, 1960; Blake, 1975b; Plate and Husemann, 1994)



**Family Pholoididae** (Local Species 1, Local Species with Described Larvae 0). Though development of this family is not known, elytra may be seen in larval forms since the family is part of the scale worm group.

*Pholoides aspera*

**Family Phyllodoceidae** (Local Species 19, Local Species with Described Larvae 6). Female phyllodoceids spawn near the bottom or deposit strings of small eggs in benthic gelatinous masses. Larvae hatch and spend several weeks in the plankton. Nectochaetes are large and predatory (Strathmann, 1987). No illustrations of local *Phyllodoce* larvae are available, but descriptions of the genera from Bhaud and Cazaux (1987) are included in the key.

*Anaitides groenlandica* (*Phyllodoce*)

*Anaitides hartmanae* (*Phyllodoce*)

*Anaitides medipapillata* (*Phyllodoce*)

*Anaitides mucosa* (*Phyllodoce*)

*Anaitides multiseriata* (*Phyllodoce*)

*Anaitides williamsi* (*Phyllodoce*)

*Eteone californica*

*Eteone longa*

*Eteone pacifica* (*E. bistriata*, *E. maculata*, *E. spitsbergensis* var. *pacifica*)

*Eulalia bilineata*

*Eulalia levicornuta*

- Eulalia nigrimaculata* (*Bergstroemia*, *Eumida*, *Genetyllis*, *Phyllodoce*)
- Eulalia quadrioculata* (*E. aviculiseta*)
- Eulalia sanguinea* (*Eumida*)
- Eulalia viridis*
- Notophyllum imbricatum*
- Notophyllum tectum* (*Hesperophyllum*)
- Phyllodoce castanea* (*Genetyllis*)
- Phyllodoce polynoides* (*Paranaitis*)

**Key to phyllodocid metatrochopores (Fig. 20)**

- 1a. 2-3 pairs of tentacular cirri ..... 5
- 1b. 4 pairs of tentacular cirri ..... 2
- 2a. Well-developed proboscis; cirri are foliaceous ..... *Phyllodoce*
- 2b. Dorsal cirri just budding, proboscis not well developed ..... 3
- 3a. Prototroch a distinct double band of cilia ..... 4
- 3b. Prototroch with 1 band of cilia facing anteriorly on ventral surface; larva grayish olive green ..... *Anaitides groenlandica*
- 4a. Prototroch with thick, long anterior cilia band and thin posterior band; uniform dark green color with deep red eyes ..... *Anaitides williamsi*
- 4b. Bands of prototroch of equal thickness; larva light green; eyes red ..... *Anaitides mucosa*
- 5a. 2 pairs of tentacular cirri; anal cirri not distinct in metatrochophore ..... *Eteone longa*
- 5b. 3 pairs of tentacular cirri; anal cirri distinct ..... *Eulalia sanguinea*

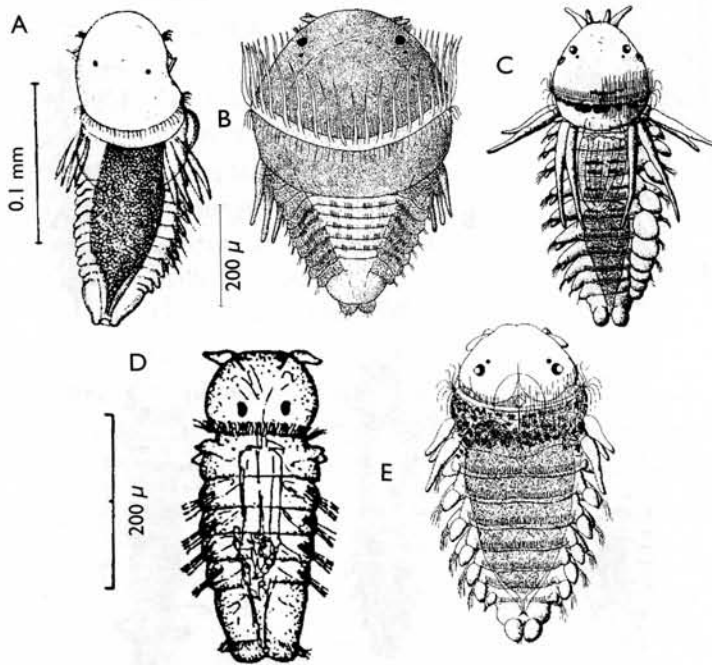


Fig. 20. (A) *Anaitides groenlandica*, (B) *A. williamsi*, (C) *A. mucosa*, (D) *Eteone longa*, and (E) *Eulalia sanguinea*, family Phyllodocidae. (From Thorson, 1946; Blake, 1975b; Lacalli, 1980; Bhaud and Cazaux, 1987; Plate and Husemann, 1994)

**Key to phyllodocid nectochaetes (Fig. 21)**

- 1a. Rounded or oval prostomium..... 2  
 1b. Triangular prostomium, no dorsal cirri on setiger 1; pigmented prostomium and pygidium ..... *Eteone longa*
- 2a. Oval dorsal cirri ..... 3  
 2b. Rounded dorsal cirri ..... 4
- 3a. 1 pair of red eyes; 1 pair of rounded anal cirri; slight olive-brown to dark green gut; olive-brown pygidium ..... *Eulalia viridis*  
 3b. 2 pairs of red eyes; 1 pair of tapering anal cirri; body greenish with yellow-white pigmentation posterior to prototroch; dark brown gut ..... *Eulalia sanguinea*
- 4a. Dorsal cirri foliaceous and not glandular ..... *Phyllodoce*  
 4b. Dorsal cirri broadly rounded, palmlike, and glandular; first 2 pairs of dorsal cirri digitated ..... 5
- 5a. Prototroch strongly present or reduced ..... 6  
 5b. Prototroch absent; body grayish olive green; anal cirri spaced slightly apart and bulbous ..... *Anaitides groenlandica*
- 6a. Dorsal ciliation beginning on setiger 6 ..... *Anaitides williamsi*  
 6b. Dorsal ciliation beginning prior to setiger 6 ..... *Anaitides mucosa*

**Family Pilargiidae** (Local Species 4, Local Species with Described Larvae 0). Adults of this family are found in moderately coarse mixed sediments at shelf depths (Fauchald, 1977). Development of local species has not been described, but an unidentified *Ancistrostylis* (Fig. 22) is described in Blake (1975b).

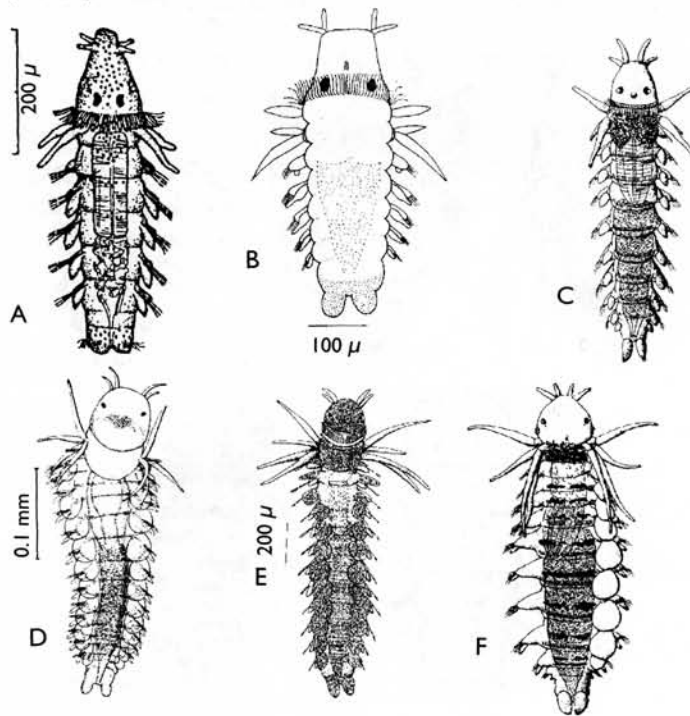


Fig. 21. (A) *Eteone longa*, (B) *Eulalia viridis*, (C) *E. sanguinea*, (E) *A. williamsi*, and (F) *A. mucosa*, family Phyllodocidae. (From Thorson, 1946; Blake, 1975b; Lacalli, 1980; Bhaud and Cazaux, 1987; Plate and Husemann, 1994)

*Ancistrosyllis* aff. *groenlandica*  
*Pilargus berkeleyi*  
*Sigambra tentaculata*  
*Syhelmis* aff. *klatti*

**Family Polynoidae** (Local Species 21, Local Species with Described Larvae 5). This is the most common family of the scale worm complex. Those polynoids with smooth elytra are often commensal, whereas those with heavily ornamented elytra are free-living (Fauchald, 1977). Some species brood early embryos beneath dorsal elytra; other species spawn freely. Larvae are pelagic for long periods (Strathmann, 1987). *Harmothoe brevisetosa* larvae develop in the plankton, as do *H. imbricata* and *Lepidonotus squamatus*. *Harmothoe extenuata* and *Harmothoe multisetosa* larvae are brooded for a period of time between the parapodia (Pettibone, 1954, 1963).

*Arctonoe fragilis*  
*Arctonoe pulchra*  
*Arctonoe vittata*  
*Byglides macrolepida* (*Antinoella*, *Antinoe*)  
*Eunoe nodosa*  
*Eunoe oerstedii* (*E. barbata*)  
*Eunoe senta* (*Gattyana*)  
*Halosydna brevisetosa*  
*Harmothoe extenuata* (*Lagisca*, *H. triannulata*, *L. rarispina*)  
*Harmothoe fragilis*  
*Harmothoe imbricata* (*H. hartmanae*)  
*Harmothoe lunulata* (*Malmgrenia*, *M. nigralba*)  
*Harmothoe multisetosa* (*Lagisca*)  
*Harmothoe tenebricosa* (*H. pellucelytris*)  
*Hermadion truncata*  
*Hesperonoe adventor*  
*Hesperonoe complanata*  
*Lepidasthenia longicirrata*  
*Lepidonotus squamatus* (*L. caekorus*)  
*Polynoe canadensis* (*Enipo*)  
*Polynoe gracilis* (*Enipo*, *Enipo cirrata*)

#### Key to polynoid late trochophores (Fig. 23)

- 1a. Episphere flattened and careened orally .. *Halosydna brevisetosa*  
 1b. Episphere domed ..... 2  
 2a. Flat lenticular body, colorless tegument; ventral side of intestine green, diameter at prototroch 160  $\mu$ m ..... *Harmothoe extenuata*  
 2b. Spherical lenticular body ..... 3

Figure 22. *Ancistrosyllis* sp. nectochaete. (From Blake, 1975b)

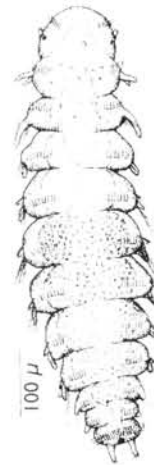


Fig. 23. Late trochophores of species in the family Polynoidae. (A) *Halosydna brevisetosa*, (B) *Harmothoe extenuata*, (C) *Harmothoe imbricata*, (D) *Harmothoe lunulata*, and (E) *Lepidonotus squamatus*. (From Blake, 1975b; Lacalli, 1980; Bhaud and Cazaux, 1987; Plate and Husemann, 1994)

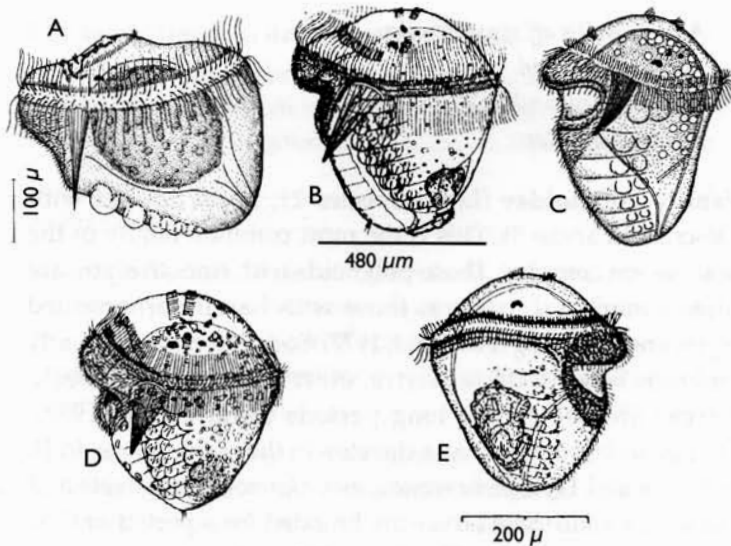
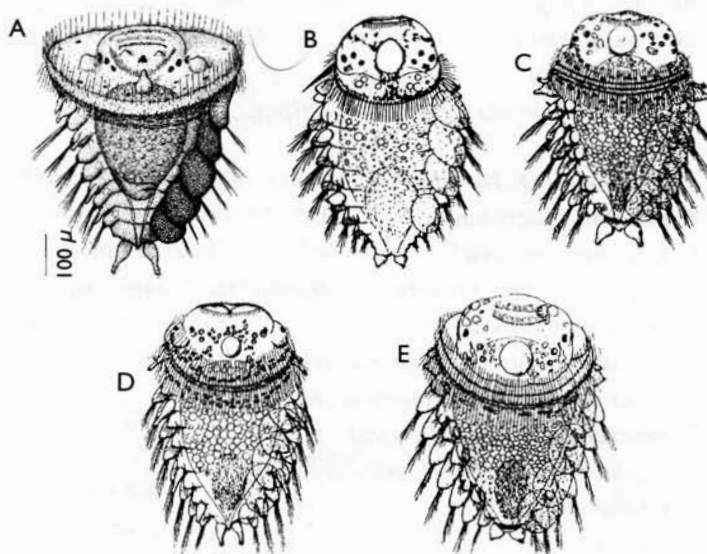


Fig. 24. Metatrochophores of species in the family Polynoidae. (A) *Halosydna brevisetosa*, (B) *Harmothoe extenuata*, (C) *Harmothoe imbricata*, (D) *Harmothoe lunulata*, and (E) *Lepidonotus squamatus*. (From Blake, 1975b; Lacalli, 1980; Bhaud and Cazaux, 1987; Plate and Husemann, 1994)



- 3a. Ventral side of intestine brown, diameter 180  $\mu\text{m}$  .....  
 ..... *Harmothoe imbricata*  
 3b. Ventral side of intestine purplish violet, diameter 240  $\mu\text{m}$  .....  
 ..... *Harmothoe lunulata*  
 3c. Ventral side of intestine greenish blue, diameter 200  $\mu\text{m}$  .....  
 ..... *Lepidonotus squamatus*

#### Key to polynoid metatrochophores (Fig. 24)

- 1a. 8 segments ..... *Lepidonotus squamatus*  
 1b. 9 segments ..... 2  
 2a. Prostomium broad and flattened ..... *Halosydna brevisetosa*  
 2b. Prostomium rounded ..... 3



- 3a. 4 pairs of elytra ..... 4
- 3b. 5 pairs of elytra, ventral side of intestine light yellow-green .....  
..... *Harmothoe lunulata*
- 4a. Pale red-brown pigmentation on prostomium, peristomium, and mouth ..... *Harmothoe extenuata*
- 4b. Pale yellow spots, ventral side of intestine purple-brown .....  
..... *Harmothoe imbricata*

**Key to polynoid nectochaetes (Fig. 25)**

- 1a. 8 segments, 4 pairs of elytra, short dorsal cirri .....  
..... *Lepidonotus squamatus*
- 1b. More than 8 segments, 5 pairs of elytra ..... 2
- 2a. Dorsal cirri almost twice as long as neuropodia ..... 3
- 2b. Dorsal cirri only slightly longer than neuropodia; light red-brown pigment on prostomium and mouth .....  
..... *Harmothoe extenuata*
- 3a. Elytra with papillae; whitish intestine ..... *Harmothoe imbricata*
- 3b. Elytra without papillae; purple-brown intestine .....  
..... *Harmothoe lunulata*

**Family Sigalionidae** (Local Species 4, Local Species with Described Larvae 1). Larvae of this family are quite similar to those of the Polynoidae. They are somewhat smaller, the elytra are less developed, and they have compound setae rather than simple setae (Lacalli, 1980). *Sthenelais* lack all dorsal elytra; *Pholoe* have dorsal elytra (Plate and Husemann, 1994). Blake (1975b) notes that nectochaetes of *Pholoe caeca* (Fig. 26) feed on algae in culture, though the yolky gut seen in early larval stages suggests that they are lecithotrophic as early larvae. Other members of this family are also described as planktotrophic.

- Neoleanira areolata* (*Leanira calcis*)
- Pholoe caeca* (*Pholoe tuberculata*, *P. minuta*)
- Sthenelais berkeleyi* (*S. fusca*)
- Sthenelais verruculosa*

**Family Sphaerodoridae** (Local Species 4, Local Species with Described Larvae 0). Development mode has been described only for *Sphaerodoropsis minuta*. Mileikovskii (1967) states that development is direct and nonpelagic for this species.

- Sphaerodoropsis biserialis* (*Sphaerodorum*, *Sphaerodoridium*)
- Sphaerodoropsis sphaerulifer* (*Ephesia*, *Sphaerodoridium*)
- Sphaerodorum papillifer* (*Ephesia*)
- Sphaerodoropsis minuta* (*Sphaerodorum*, *Ephesiella*, *Sphaerodoridium*)

Fig. 25. Nectochaetes of species in the family Polynoidae. (A) *Harmothoe imbricata*, (B) *Harmothoe lunulata*, (C) *Lepidonotus squamatus*, and (D) *Harmothoe extenuata*. (From Blake, 1975b; Lacalli, 1980; Bhaud and Cazaux, 1987; Plate and Husemann, 1994)

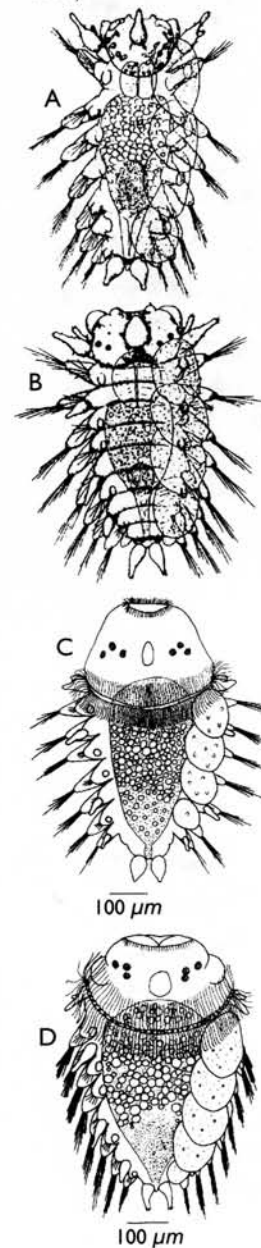


Fig. 26.

(A) Metatrochophore and (B) nectochaete of *Pholoe caeca*, family Sigalionidae. (From Blake, 1975b)

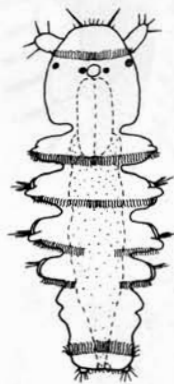
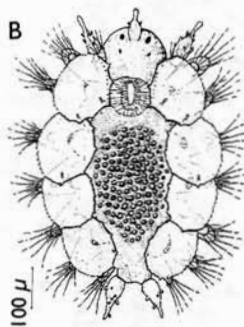
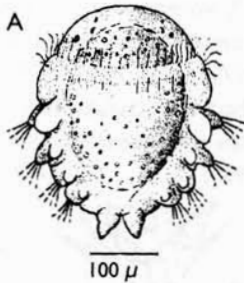


Fig. 27. *Autolytus* sp., family Syllidae (From Plate and Husemann, 1994)

**Family Syllidae** (Local Species 25, Local Species with Described Larvae 1). Several species are known to have direct development (\*), and Pocklington and Hutcheson (1983) suggest that all *Exogone* species are direct developers (Fig. 27).

*Amblysyllis* sp. (*A. lineata* var. *alba*)\*

*Autolytus cornutus* (*A. prismaticus*)

*Autolytus varius*

*Ehlersia cornuta* (*Syllis*, *S. heterochaeta*, *S. alternata*, *S. oerstedii*, *Langerhansia*)

*Eusyllis assimilis*

*Eusyllis blomstrandii*

*Exogone lourei* (*E. uniformis*)\*

*Exogone naidina* (*E. gemmifera*)\*

*Exogone verugera*\*

*Haplosyllis spongicola*

*Odontosyllis parva*

*Odontosyllis phosphorea* (*O. phosphorea* var. *nanaimoensis*)

*Pionosyllis gigantea*

*Sphaerosyllis californiensis*

*Sphaerosyllis hystrix*\*

*Sphaerosyllis pirifera*

*Syllis adamantea* (*S. spenceri*, *Typosyllis*)

*Syllis alternata* (*Typosyllis*)

*Syllis armillaris* (*Typosyllis*)

*Syllis elongata* (*Typosyllis*)

*Syllis hyalina* (*Typosyllis*)

*Syllis pulchra* (*Typosyllis*)

*Syllis variegata* (*Typosyllis*)

*Trypanosyllis gemmipara*

*Trypanosyllis ingens*

**Family Tomopteridae** (Local Species 3, Local Species with Described Larvae 0). There are no descriptions of local tomopterid larvae. Adults of this family are holoplanktonic, transparent, and flattened (Fauchald, 1977).

*Tomopteris cavalli*

*Tomopteris pacifica* (*T. elegans*, *T. renata*)

*Tomopteris septentrionalis*

**Family Typhloscolecidae** (Local Species 2, Local Species with Described Larvae 0). This is a poorly known family. Adults are holoplanktonic, transparent, and fusiform (Fauchald, 1977).

*Sagitella kowalevskii*

*Travisiopsis lobifera*

## Order Sabellida

**Family Sabellidae** (Local Species 25, Local Species with Described Larvae 2). Patterns of development in this family include brooded lecithotrophs, direct developers, freely spawned eggs developing into lecithotrophic larvae, and those that develop in gel masses (reviewed by McEuen et al., 1983).

*Chone ecaudata* (*C. minuta*, *C. gracilis*)  
*Chone gracilis*  
*Chone infundibuliformis* (*C. teres*)  
*Chone magna*  
*Chone mollis*  
*Demonax media* (*Sabella*, *S. aulaconota*, *Distylia rugosa*,  
*Parasabella*, *P. maculata*, *Potamilla californica*)  
*Euchone analis*  
*Euchone* sp. cf. *hancocki*  
*Euchone incolor* (*E. rosea*, *E. trisegmentata*, *E. barnardi*)  
*Eudistylia polymorpha*  
*Eudistylia vancouveri* (*E. tenella*, *E. plumosa*, *E. abbreviata*)  
*Fabricia brunnea* (*F. sabella*)  
*Fabricia oregonia*  
*Fabricia sabella* (*F. dubia*)  
*Fabriciola berkeleyi* (*F. pacifica*, *F. sabella*)  
*Megalomma splendida* (*Branchiomma burrardum*)  
*Myxicola aesthetica*  
*Myxicola infundibulum*  
*Oriopsis gracilis*  
*Potamilla intermedia* (*Pseudopotamilla*, *P. reniformis*)  
*Potamilla neglecta*  
*Potamilla ocellata* (*Pseudopotamilla*)  
*Sabella crassicornis*  
*Schizobranhia insignis*

**Key to pelagic sabellidae larvae (Fig. 28)**

- 1a. 3 setigers at metatrochophore stage; otocysts absent; telotroch absent or reduced ..... *Demonax media*  
 1b. 3-4 setigers; otocysts and telotroch present .....  
 ..... *Chone infundibuliformis*

**Family Serpulidae** (Local Species 7, Local Species with Described Larvae 1). Adults of this family build calcareous tubes (Fig. 29).

*Apomatus geniculatus*  
*Apomatus timsi*  
*Crucigera irregularis*  
*Crucigera zygophora*

Fig. 28. Larvae  
(A) *Demonax media* and  
(B) *Chone infundibuli-*  
*formis*, family Sabellidae.  
(From Okuda, 1946;  
McEuen et al., 1983)

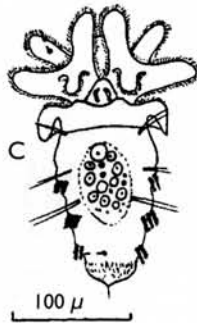
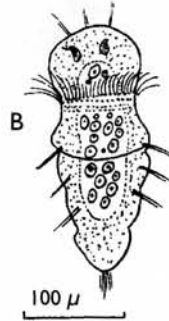
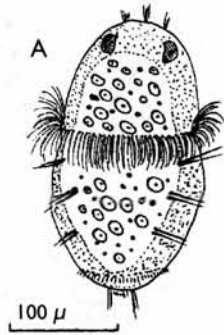
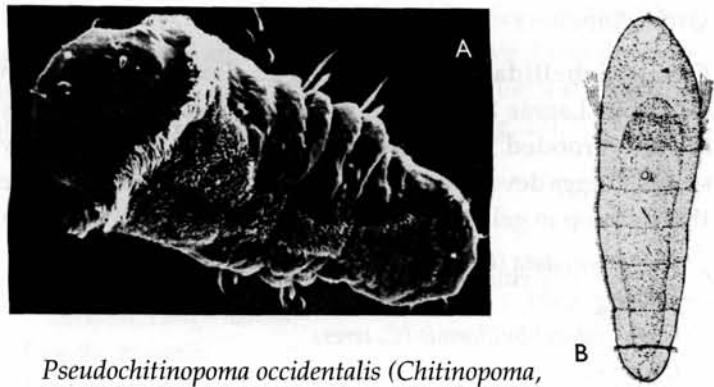


Fig. 29. (A) Late trochophore, (B) metatrochophore, and (C) late metatrochophore larvae of *Salmacina tribranchiata*, family Serpulidae. (From Rullier, 1960)

*Pseudochitinopoma occidentalis* (*Chitinopoma*,  
*C. groenlandica*)  
*Salmacina tribranchiata* (*S. dysteri* var. *tribranchiata*)  
*Serpula columbiana* (*S. vermicularis*)

**Family Spirorbidae** (Local Species 11, Local Species with Described Larvae 2). All spirorbid genera found in Pacific Northwest waters brood their larvae, either within the adult tube or externally (Fauchald, 1977). Larvae have a characteristic complex of gland cells in the ventral and lateral ectoderm of the thorax.

*Circeis americana* (*C. spirillum*, *Spirorbis rugatus*)  
*Circeis spirillum* (*Dexiospira*, *Spirorbis*)  
*Janura rugata* (*Spirorbis*, *Dexiospira*)  
*Paradexiospira violacea*  
*Paradexiospira vitrea* (*Laeospira*, *Eulaeospira*, *Spirorbis*,  
*S. variabilis*, *S. semidentatus*, *S. racemosus*)  
*Pileolaria langerhansii*  
*Pileolaria potswaldi* (*Laeospira*, *Spirorbis*, *S. moerchi*)  
*Pileolaria quadrangularis*  
*Protolaeospira eximia* (*Spirorbis*, *S. ambilateralis*)  
*Sinistrella media* (*Spirorbis*, *Laeospira*, *Romanchella*)  
*Spirorbis bifurcatus*

#### Key to pelagic spirorbid larvae (Fig. 30)

- 1 a. Body and pygidium of metatrochophore tapering narrowly;  
collar extending over setiger 1 ..... *Circeis spirillum*  
1 b. Pygidium flanged; collar extending over setiger 2 ..... *Pileolaria potswaldi*

#### Order Spionida

**Family Acrocirridae** (Local Species 1, Local Species with Described Larvae 0). Little is known about the larval development in this family. It may be similar to that in the Cirratulidae and Flabelligeridae (Banse, 1969).

*Acrocirrus heterochaetus*

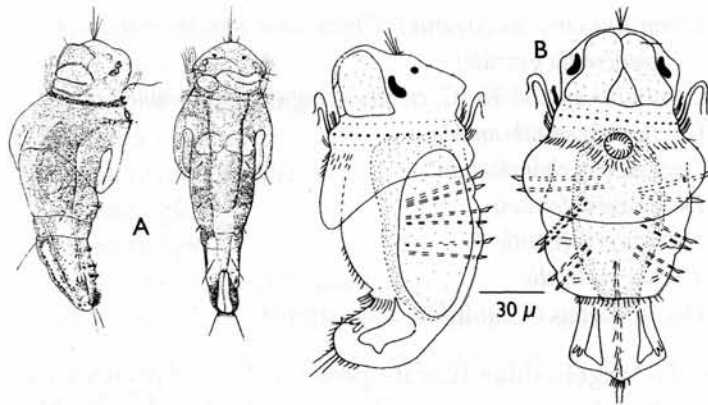


Fig. 30. Larvae of species in the family Spirorbidae. (A) *Circeis spirillum*, lateral and dorsal views, (B) *Pileolaria potswaldi*, lateral and ventral views. (From Okuda, 1946; Potswald, 1978)

**Family Apistobranchidae** (Local Species 1, Local Species with Described Larvae 0). Development in this family has not been described. Adults are tube dwellers but can exist outside tubes in loosely constructed burrows. They are common in shelly sands and muds (Fauchald, 1977).

*Apistobranchus ornatus*

**Family Chaetopteridae** (Local Species 4, Local Species with Described Larvae 2). Chaetopterid larvae are separated by comparison of the modified setae on the fourth anterior segment.

*Chaetopterus variopedatus*

*Mesochaetopterus taylori*

*Phyllochaetopterus prolifica*

*Spiochaetopterus costarum* (*Telepsavus*)

**Key to chaetopterid genera (Fig. 31)**

- 1a. 1 pair of setae on setiger 4 ..... 2
- 1b. Several setae on setiger 4 ..... 3
- 2a. Modified setae with enlarged heart-shaped distal section ..... *Spiochaetopterus*
- 2b. Setae not enlarged distally ..... *Phyllochaetopterus*
- 3a. Distal part of setae blade-shaped ..... *Mesochaetopterus*
- 3b. Distal part of setae with lateral tip ..... *Chaetopterus*

**Family Cirratulidae** (Local Species 11, Local Species with Described Larvae 1). Development in this family includes many species that produce lecithotrophic larvae (\*) that hatch from eggs laid in a gel mass as well, as species that are direct developers (†). Christie (1985) notes that all larvae of this family are large and yolky (Fig. 32).

*Caulleriella alata*

*Caulleriella hamata* (*Tharyx*)

*Chaetozone setosa*\*

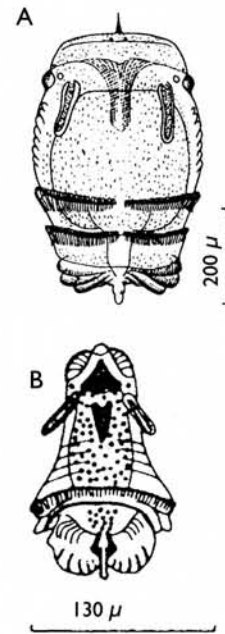


Fig. 31. (A) *Chaetopterus variopedatus* and (B) *Spiochaetopterus costarum*, family Chaetopteridae. (From Bhaud and Cazaux, 1987)

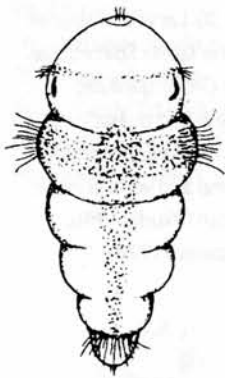


Fig. 32. Larva of *Dodecaceria fewkesi*, family Cirratulidae. (From Berkeley and Berkeley, 1954)

*Cirratulus cirratus cirratust* (*Chaetozone berkeleyorum*,  
*Caulleriella gracilis*)  
*Cirratulus spectabilis* (*C. cirratus cingulatus*, *C. robustus*)  
*Cirriformia spirabanchia*  
*Dodecaceria choncharum*\*  
*Dodecaceria fewkesi*  
*Dodecaceria fistulicola*  
*Tharyx multifilis*  
*Tharyx parvus* (*T. multifilus* var. *parvus*)

**Family Magelonidae** (Local Species 1, Local Species with Described Larvae 0). An unknown magelonid, possibly *Magelona cerae*, is often found in plankton samples taken from Coos Bay, Oregon (K. Johnson, pers. comm.). Adults are common in sandy substrates and move through the sediment with a shovel-like prostomium and thread-like body. Larvae of this family have characteristically long larval tentacles that are flexible and often coiled. *Magelona alleni* illustrates characteristics of the family (Fig. 33), but it is not a species known to be in local waters.

*Magelona* sp.

**Family Spionidae** (Local Species 27, Local Species with Described Larvae 18). The spionids are a large and diverse group of polychaetes. Adult habitat and development modes vary across the family. A large number of larvae of local species have been described.

*Boccardia columbiana* (*Polydora*)  
*Boccardia polybranchia*  
*Boccardia proboscidea* (*B. californica*)  
*Boccardiella hamata* (*Boccardia*, *B. uncata*, *Polydora*)  
*Laonice cirrata* (*Nerine*)  
*Paraprionospio pinnata* (*Prionospio*, *P. ornata*)

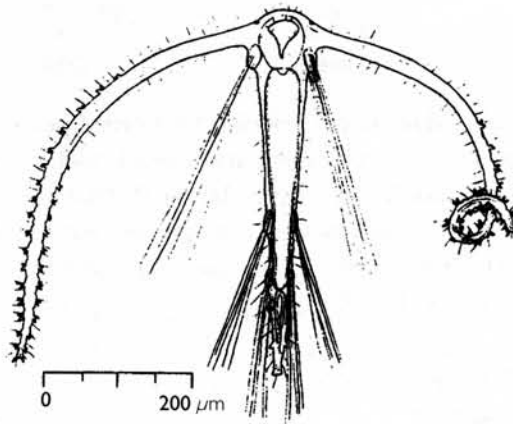


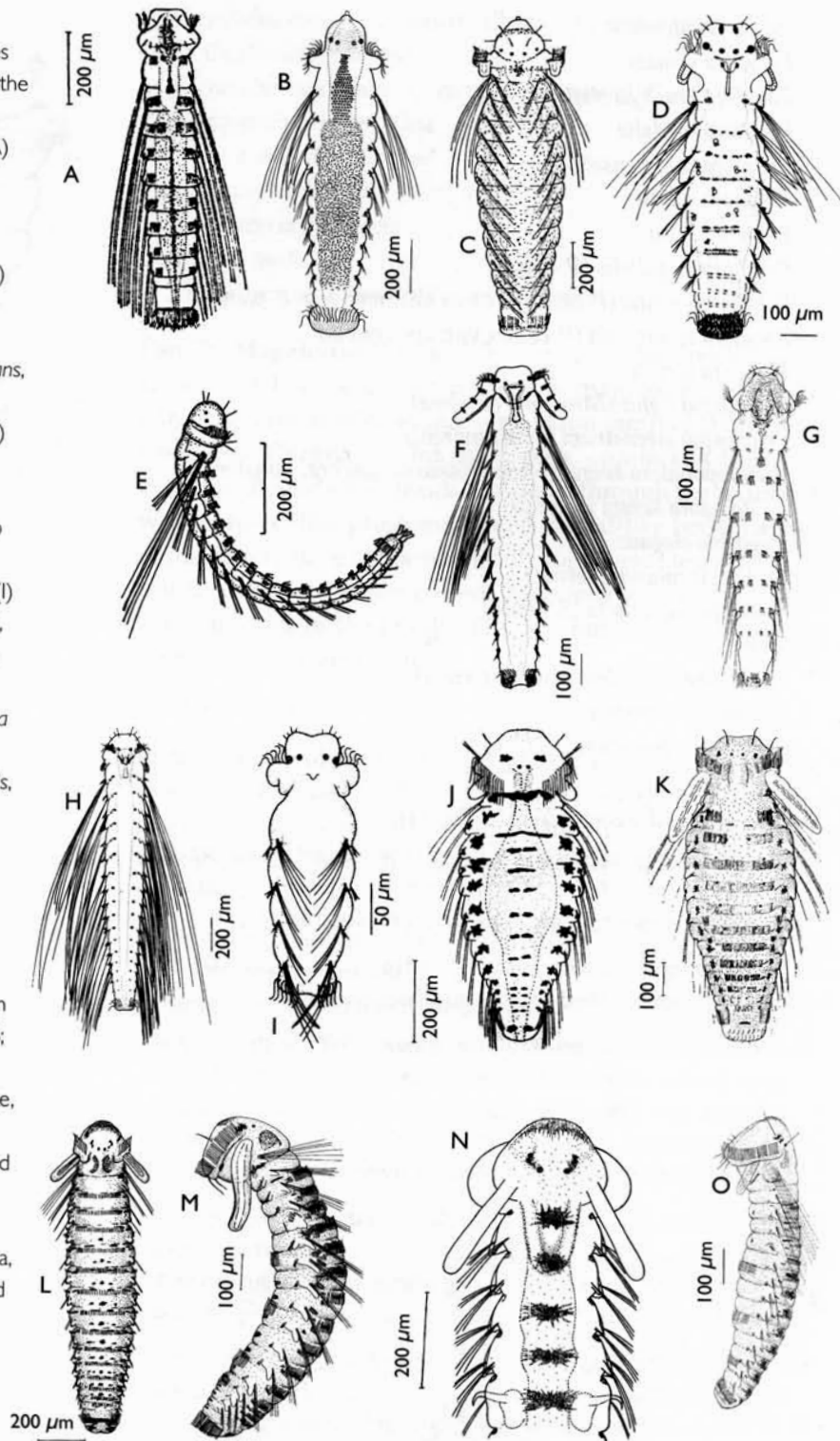
Fig. 33. Late metatrochophore of *Magelona alleni*, family Magelonidae. (From Wilson, 1982)

*Polydora alloporis*  
*Polydora armata*  
*Polydora brachycephala*  
*Polydora cardalia*  
*Polydora commensalis*  
*Polydora giardi*  
*Polydora ligni*  
*Polydora pygidialis* (*P. ciliata*)  
*Polydora socialis* (*P. caeca*, *P. caeca* var. *mangna*, *P. plena*)  
*Polydora spongicola* (*P. ciliata* var. *spongicola*)  
*Polydora websteri*  
*Prionospio lighti* (*Minuspio cirrifera*)  
*Prionospio steenstrupi* (*P. malmgreni*)  
*Pseudopolydora kempfi* (*Neopygospio laminiifera*, *Polydora*,  
*Polydora kempfi japonica*)  
*Pygospio elegans*  
*Scolelepis foliosa* (*Nerine*)  
*Scolelepis squamata* (*S. acuta*)  
*Spio filicornis*  
*Spiophanes berkeleyorum* (*S. cirrata*)  
*Spiophanes bombyx*  
*Streblospio benedicti*

#### Key to spionid nectochaetes (Fig. 34)

- 1a. Branchiae absent; setiger 1 with 1–2 large curved neuropodial spines in addition to normal capillaries..... *Spiophanes bombyx*  
 1b. Branchiae present; setiger 1 without specialized setae ..... 2  
 2a. Setiger 5 modified, with specialized setae ..... 11  
 2b. Setiger 5 not modified, without specialized setae ..... 3  
 3a. Prostomium distally pointed (may appear conical with rounded apex in extremely contracted specimens), with or without subdistal lateral horns ..... 4  
 3b. Prostomium not distally pointed, with distal lateral or frontal horns, broadly rounded or incised on anterior margin ..... 5  
 4a. Prostomium bell-shaped, orange-pigmented; gut blue-green .....  
 ..... *Scolelepis squamata*  
 4b. Prostomium triangular and lacking orange pigment; gut blackish-brown ..... *Scolelepis foliosa*  
 5a. Branchiae limited to middle and posterior setigers except for single pair on setiger 2 in males ..... *Pygospio elegans*  
 5b. Branchiae beginning on setiger 1 or 2 and continuing for variable number of setigers ..... 6  
 6a. Branchiae concentrated in anterior setigers 1–2, absent posteriorly ..... 7  
 6b. Branchiae present over most of body ..... 10

Fig. 34.  
Nectochaetes  
of species in the  
family  
Spionidae. (A)  
*Spiophanes  
bombyx*, (B)  
*Spiophanes  
squamata*, (C)  
*Spiophanes  
foliosa*, (D)  
*Pygospio elegans*,  
(E) *Prionospio  
steenstrupi*, (F)  
*Polydora lighti*,  
(G)  
*Paraprionospio  
pinnata*, (H)  
*Spio filicornis*, (I)  
*Laonice cirrata*,  
(J) *Bocardiella  
hamata*, (K)  
*Pseudopolydora  
kempi*, (L)  
*Polydora socialis*,  
(M) *Polydora  
ligni*, (N)  
*Polydora  
commensalis*,  
and (O)  
*Polydora  
websteri*. (From  
Hannerz, 1956;  
Hatfield, 1965;  
Dean and Blake,  
1966; Blake,  
1969; Blake and  
Woodwick,  
1975; Lacalli,  
1980; Yokoyama,  
1981; Plate and  
Husemann,  
1994)

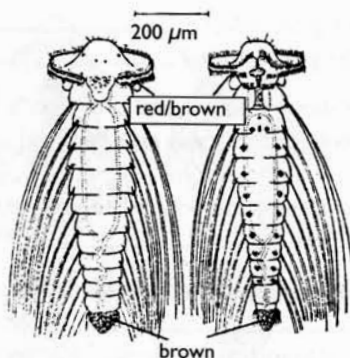




- 7a. Branchiae beginning on setiger 1 ..... 9  
 7b. Branchiae beginning on setiger 2 ..... 8
- 8a. Peristomial palps short; 1 pair of anal cirri in early larvae, 2 pairs of anal cirri present in later larvae; eyes dark red ..... *Prionospio steenstrupi*  
 8b. Peristomial palps differentiate only in late larval stages; 1 pair of anal cirri in late larvae ..... *Prionospio lighti*
- 9a. 1 pair of cirriform branchiae; dorsal collar across setiger 2 ..... *Streblospio benedicti*<sup>a</sup>  
 9b. 3 or more pairs of branchiae; no dorsal collar on setiger 2 ..... *Paraprionospio pinnata*
- 10a. Branchiae beginning on setiger 1; hooded hooks only in neuropodia ..... *Spio filicornis*  
 10b. Branchiae beginning on setiger 2; prostomium broad, bluntly rounded or squared on anterior margin; branchiae free from dorsal lamellae ..... *Laonice cirrata*
- 11a. Branchiae beginning on setiger 2 ..... 12  
 11b. Branchiae beginning on setigers 6–12 ..... 13
- 12a. Major spines of setiger 5 of one type: simple, falcate, with smaller companion setae ..... *Bocardiella hamata*  
 12b. Major spines of setiger 5 of two types: first with expanded ends bearing cusps or bristles, second simple, falcate ..... *Boccardia proboscidea*<sup>b</sup>
- 13a. Setiger 5 slightly to moderately modified, usually with prominent parapodia; major spines of two types: first simple, acicular or falcate, second pennoned with both types usually arranged in U- or J-shaped row. Hooded hooks with secondary tooth placed close to main fang ..... *Pseudopolydora kempfi*  
 13b. Setiger 5 greatly modified, with reduced parapodia; major spines of one or two types in curved row, neither J- or U-shaped; hooded hooks with prominent angle between teeth 14
- 14a. Larvae with distinct ventral chromatophores (black, yellow-green, or iridescent) ..... 15  
 14b. Larvae without ventral pigment, or if present not in distinct chromatophores ..... 16
- 15a. Ventral pigment black ..... *Polydora socialis*  
 15b. Ventral pigment yellow-green or iridescent ..... *Polydora ligni*
- 16a. Single dorsal row of melanophores present, at least posterior to segment 3 ..... *Polydora commensalis*  
 16b. Multiple rows of dorsal melanophores present ..... 17
- 17a. Prostomium with yellow-brown pigment; gastrotrochs on segments 7, 10, 13, 15 ..... *Polydora websteri*  
 17b. Edges of prostomium with black pigment; gastrotrochs on segments 3, 5, 7, 10, 13, 15, 17, 19 ..... *Polydora pygidialis*

<sup>a</sup>Levin (1991) illustrates lecithotrophic pelagic larvae that lack swimming setae.  
<sup>b</sup>Development of this species is described in Woodwick (1977).

Fig. 35. Representative trochochaetid larva, *Disoma multisetosum*. (From Hannerz, 1961)



**Family Trochochaetidae** (Local Species 1, Local Species with Described Larvae 0). This is a small family (nine species) of non-tubicolous worms that live in soft substrates in mainly shallow water. Adults are cylindrical with a slightly flattened body (Fauchald, 1977). An image of *Disoma multisetosum* is included for reference (Fig. 35).

*Trochochaeta multisetosa* (*T. franciscanum*)

#### Order Sternaspida

**Family Sternaspidae** (Local Species 1, Local Species with Described Larvae 0). This small family has approximately ten recognized species. Adults are common in sand and mud at all depths, but usually at 100–200 m. Adults are rarely found in large numbers, are burrowers, and have dark yellow or reddish chitinized shields (Fauchald, 1977).

*Sternaspis scutata* (*S. fossor*, *S. affinis*)

#### Order Terebellidae

**Family Ampharetidae** (Local Species 14, Local Species with Described Larvae 0). Thorson (1946) suggests that several species (\*) in this family are direct developers. Nyholm (1950), however, describes *Melinna cristata* as a free-spawned lecithotrophic larva. This is a fairly large, deep-water family (Fauchald, 1977).

*Amage anops*

*Ampharete acutifrons* (*A. grubei*)\*

*Ampharete finmarchica* (*A. arctica*)\*

*Ampharete goesi goesi*

*Amphicteis mucronata*

*Amphicteis scaphobranchiata*

*Amphisamytha bioculata*

*Anobothrus gracilis* (*Ampharete gagarae*)\*

*Asabellides lineata* (*Pseudosabellides*)

- Asabellides sibirica*
- Hobsonia florida* (*Amphicteis gunneri floridus*)\*
- Lysippe annectens*
- Melinna cristata* (*M. denticulata*)
- Schistocomus hiltoni*

**Family Pectinariidae** (Local Species 3, Local Species with Described Larvae 3). Trochophores of this family are easily confused with nephtyid larvae (Lacalli, 1980). Pectinariids construct and live in fragile tusk-shaped tubes (Fauchald, 1977).

- Amphictene moorei* (*A. auricoma*, *Pectinaria*)
- Cistenides granulata* (*C. brevicoma*, *Pectinaria*)
- Pectinaria californiensis* (*P. belgica*)

**Key to pectinariid metatrochophores (Fig. 36)**

- 1a. Prototroch and telotroch pronounced ..... 2
- 1b. Cilia of prototroch and telotroch short or reduced .....  
..... *Pectinaria californiensis*
- 2a. Eyes red, body surface with regular rows of round dark red to brown spots; lobes of oral hood blunt and indented .....  
..... *Cistenides granulata*
- 2b. Oral hood winglike and large, neurotroch present, oral cilia long .....  
..... *Amphictene moorei*

**Family Sabellariidae** (Local Species 4, Local Species with Described Larvae 0). Larval morphology is quite similar among sabellariid species (Ecklebarger, 1975, 1977). Opercular characteristics are useful for distinguishing genera according to Bhaud and Cazaux (1987). The key below is modified from Bhaud and Cazaux (1987) for the two local genera. *Sabellaria alveola* (Fig. 37) is not a local species.

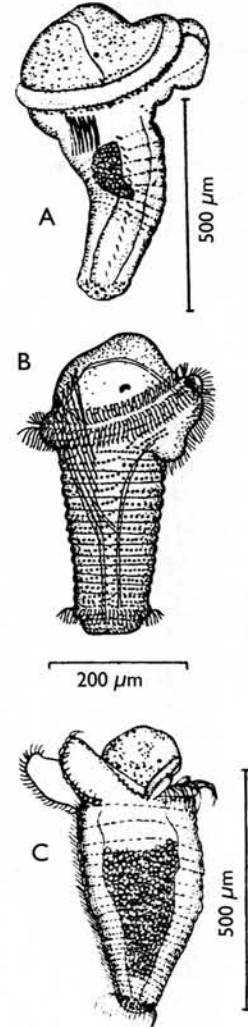
- Idanthysus armatus*
- Idanthysus ornamentatus*
- Sabellaria cementarium*
- Sabellaria gracilis*

**Key to sabellariid genera**

- 1a. Opercular peduncles fused; lacking opercular hooks ... *Sabellaria*
- 1b. Opercular peduncles not completely fused; opercular hooks present ..... *Idanthysus*

**Family Terebellidae** (Local Species 20, Local Species with Described Larvae 2). Terebellids are common shallow-water polychaetes and are found in a diversity of environments. They inhabit permanent tubes from which they extend a crown of elongated extensile tentacles that they use to capture small food

Fig. 36. (A) *Pectinaria californiensis*, (B) *Cistenides granulata*, and (C) *Amphictene moorei*, family Pectinariidae. (From Thorson, 1946; Korn, 1960; Lacalli, 1980)



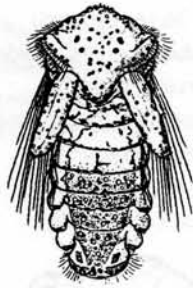
width 8  $\mu\text{m}$ ; length 600  $\mu\text{m}$ 

Fig. 37. Larvae of *Sabellaria alveola*, family Sabellaridae; this not a local species. (From Bhaud and Cazaux, 1987)

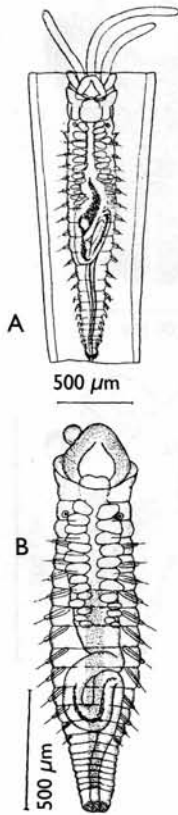


Fig. 38. (A) *Lanice conchilega* and (B) *Amphitrite cirrata*, outside tube, family Terebellidae. (From Thorson, 1946)

particles from the surface of the substrate or water (Fauchald, 1977).

*Amphitrite cirrata* (*A. palmata*)  
*Artacama coniferi*  
*Eupolymnia heterobranchia* (*E. crescentis*)  
*Lanice conchilega*  
*Loimia medusa*  
*Neoamphitrite robusta* (*Amphitrite*, *A. scionides dux*)  
*Neoleprea spiralis*  
*Pista brevibranchiata* (*P. fasciata*)  
*Pista cristata*  
*Pista elongata*  
*Pista fasciata*  
*Pista fimbriata* (*P. brevibranchiata*)  
*Pista moorei*  
*Pista pacifica*  
*Polycirrus californicus* (*P. caliendrum*)  
*Scionella japonica*  
*Thelepus cincinnatus* (*T. hamatus*)  
*Thelepus crispus*  
*Thelepus hamatus*  
*Thelepus setosus*

#### Key to terebellidae larvae (Fig. 38)

- 1a. Larva with peristomial tentacles; colorless with pale olive-green intestine and faint brownish anal pigment; tentacles yellow-brown; each parapodium with 2-3 setae adhering at distal ends; eyes yellow-brown ..... *Lanice conchilega*  
 1b. No tentacles present; anal segment yellowish-brown; 1 pair of setae per setiger; eyes red ..... *Amphitrite cirrata*

**Family Trichobranchidae** (Local Species 3, Local Species with Described Larvae 0). Developmental patterns for *Artacamella* and *Trichobranchus* are not known. *Terebellides stroemi* develops directly in egg masses (Thorson, 1946).

*Artacamella hancocki*  
*Terebellides stroemi*  
*Trichobranchus glacialis*

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