

CONSEIL INTERNATIONAL POUR L'EXPLORATION DE LA MER

**Zooplankton**

**Sheet 91**

**POLYCHAETA: LARVAE**

**Families: SPIONIDAE,  
DISOMIDAE,  
POECILOCHAETIDAE**

**(By L. Hannerz)**

**1961**

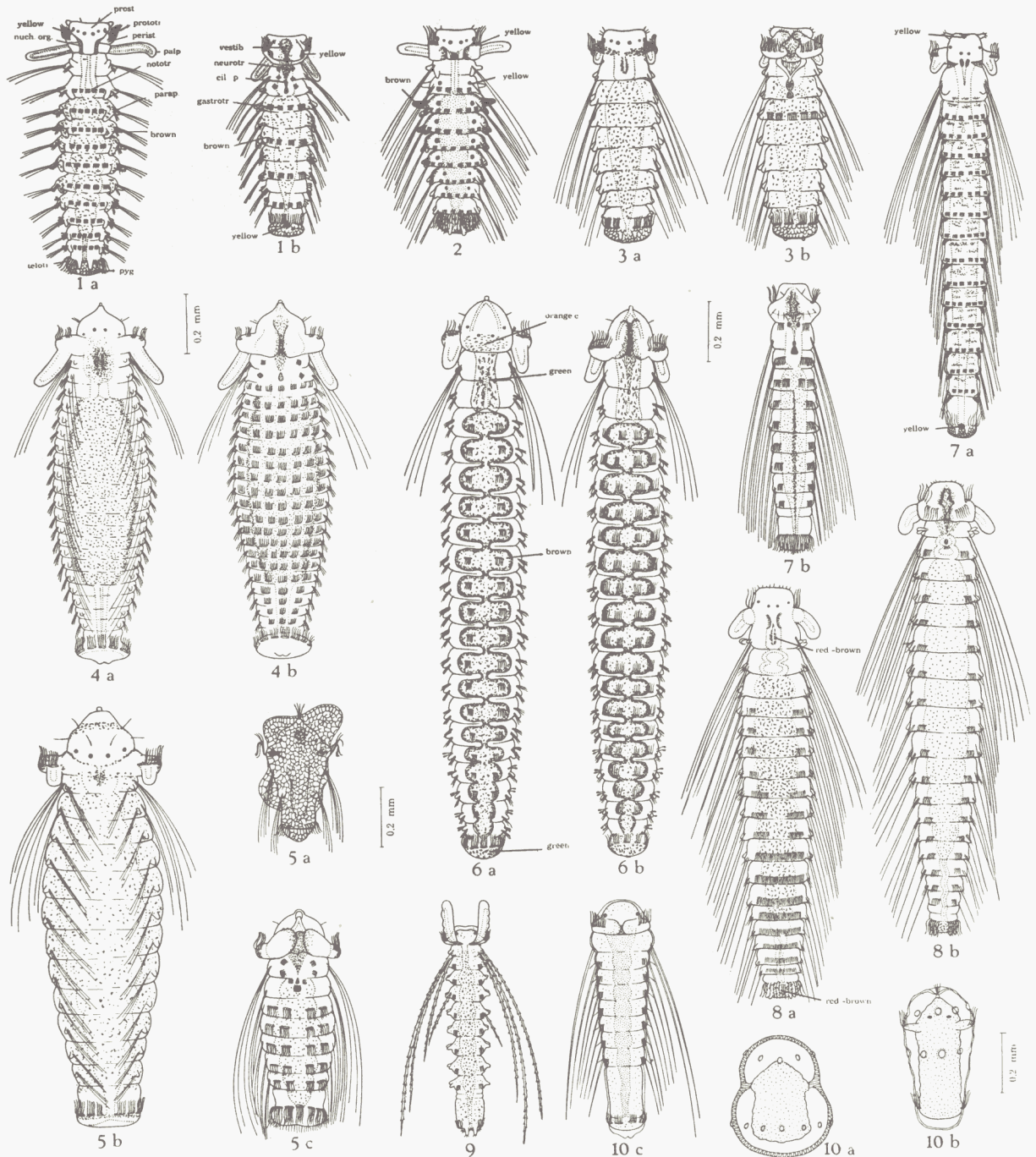


Plate I.

Fig. 1. *Scolelepis ciliata* (Keferslein). a, Dorsal view. b, Ventral view. (prost.=prostomium; prototr.=prototroch; perist.=peristomium; nuch. org.=nuchal organ; palp.=tentacular palp; nototr.=nototroch; parap.=parapodium; pyg.=pygidium; vestib.=vestibulum; neurotr.=neurotroch; cil.p.=‘ciliated pit’; gastrot.=gastrotroch.)  
 Fig. 2. *Scolelepis fuliginosa* (Claparède). Dorsal view.  
 Fig. 3. *Scolelepis girardi* (Quatrefages). a, Dorsal view. b, Ventral view.  
 Fig. 4. *Nerine tridentata* Southern. a, Dorsal view. b, Ventral view.

Fig. 5. *Nerine foliosa* (Audouin & Milne-Edwards). a, Young 2-segmented stage. b, Large larva, dorsal view. c, 7-segmented stage, ventral view.  
 Fig. 6. *Nerine cirratulus* (Delle Chiaje). a, Dorsal view. b, Ventral view.  
 Fig. 7. *Spiophanes bombyx* (Claparède). a, Dorsal view. b, Ventral view.  
 Fig. 8. *Spiophanes krøyeri* Grube. a, Dorsal view. b, Ventral view.  
 Fig. 9. *Aonides paucibranchiata* Southern. Dorsal view.  
 Fig. 10. *Aonides oxycephala* (Sars). a, Young trochophore. b, Older trochophore, dorsal view. c, Larva ready to metamorphose, dorsal view.

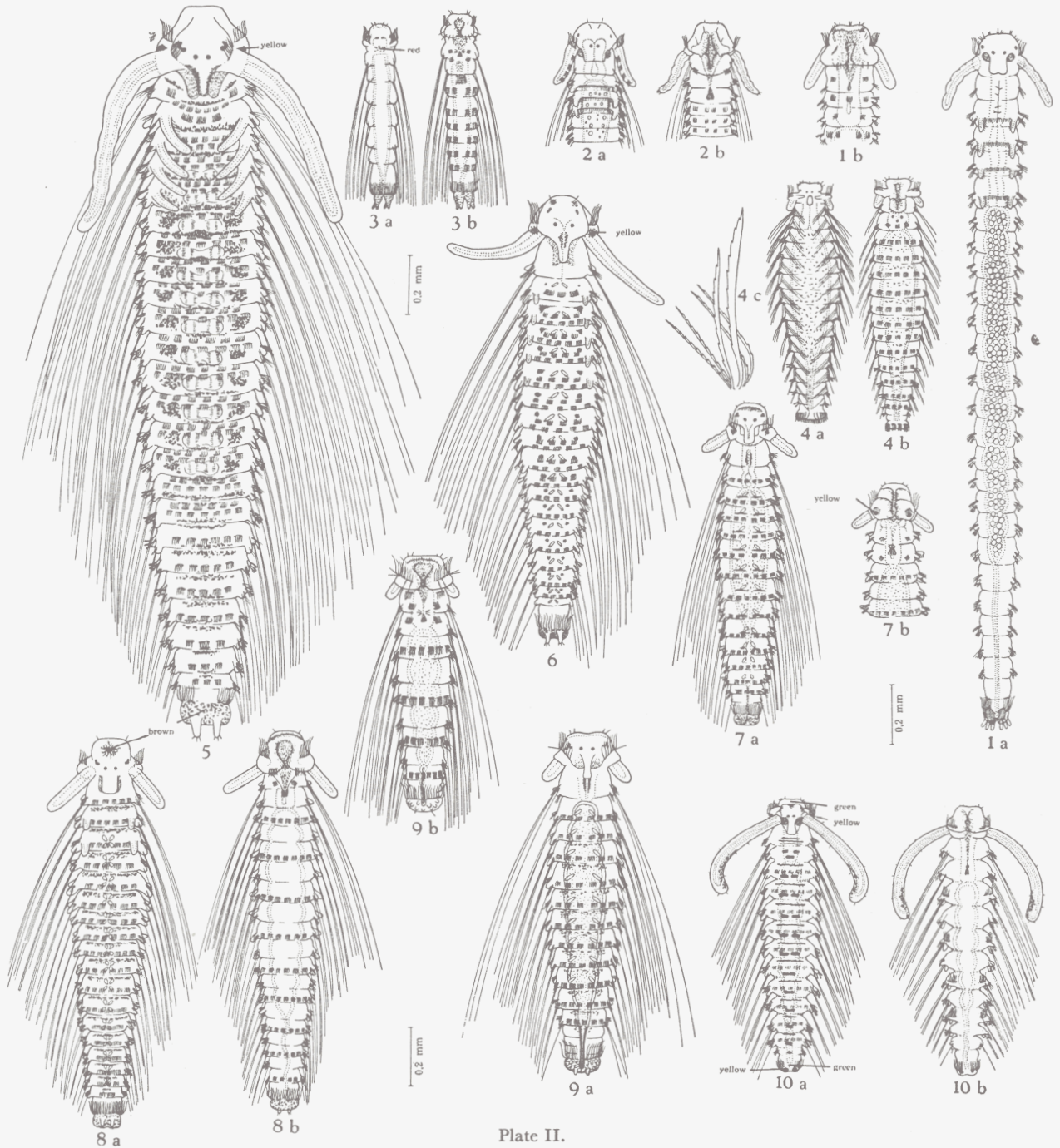


Plate II.

- Fig. 1. *Prionospio malmgreni* Claparède. a, Dorsal view. b, Forepart, ventral view.  
 Fig. 2. *Prionospio cirrifera* Wirén. Forepart. a, Dorsal view. b, Ventral view.  
 Fig. 3. *Prionospio steenstrupi* Malmgren. Young larva. a, Dorsal view. b, Ventral view.  
 Fig. 4. *Laonice cirrata* (Sars). a, Dorsal view. b, Ventral view. c, Larval setae (abt.  $\times 500$ ).

- Fig. 5. *Spio martinensis* Mesnil. Larval type II, dorsal view.  
 Fig. 6. *Spio martinensis* Mesnil. Larval type I, dorsal view.  
 Fig. 7. *Spio filicornis* (O. F. Müller). a, Dorsal view. b, Ventral view of forepart; larval setae shed.  
 Fig. 8. *Spio theeli* (Söderström). a, Dorsal view. b, Ventral view.  
 Fig. 9. *Spio multiocculata* (Rioja)? a, Dorsal view. b, Ventral view.  
 Fig. 10. *Microspio atlantica* (Langerhans). a, Dorsal view. b, Ventral view.



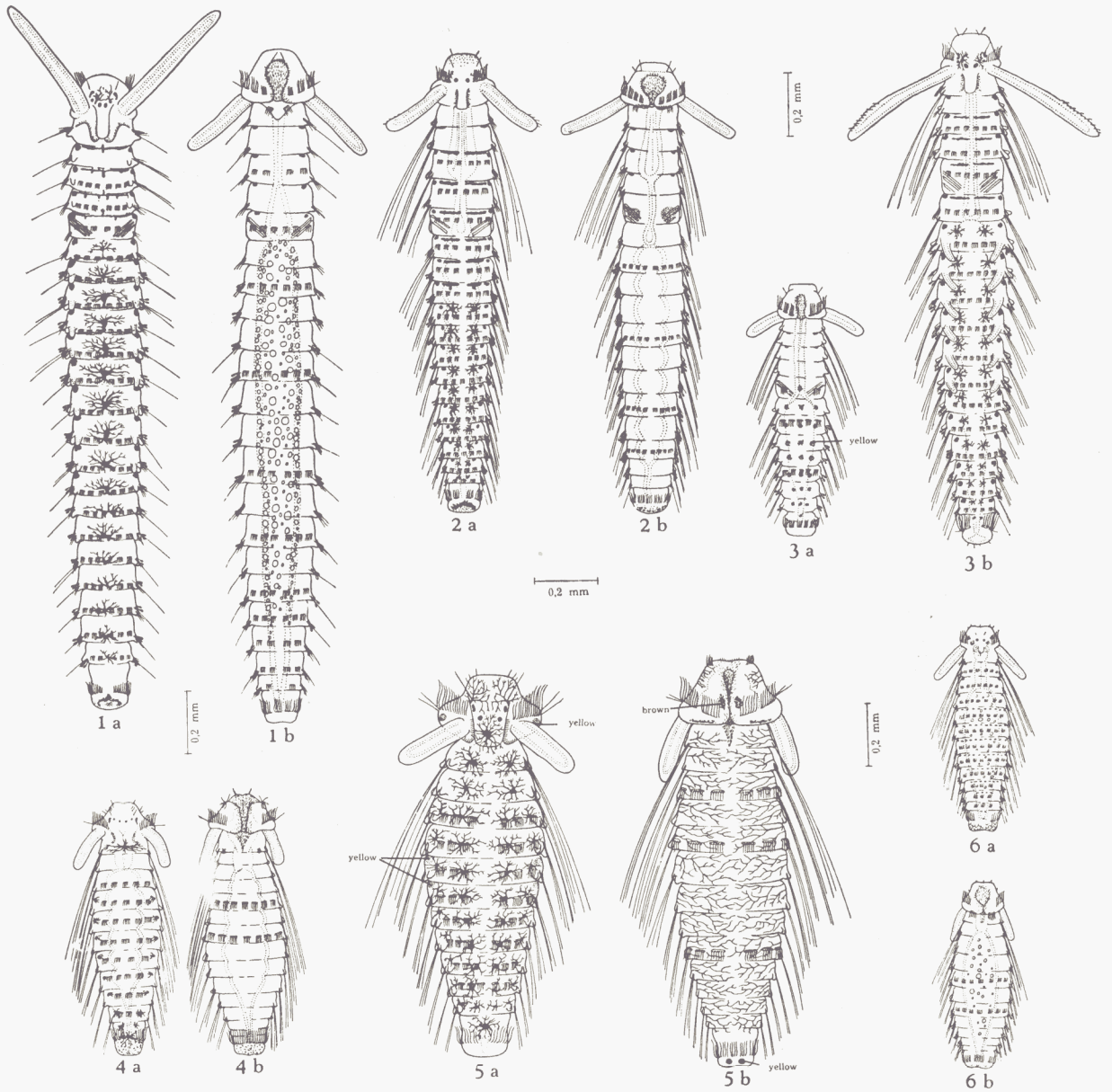


Plate III.

- Fig. 1. *Polydora hermafroditica* Hannerz. a, Dorsal view. b, Ventral view.  
 Fig. 2. *Polydora ciliata* (Johnston). a, Dorsal view. b, Ventral view.  
 Fig. 3. *Polydora ligni* Webster. a, Dorsal view. b, Ventral view.  
 Fig. 4. *Polydora antennata* Claparède. a, Dorsal view. b, Ventral view.  
 Fig. 5. *Polydora pulchra* Carazzi. a, Dorsal view. b, Ventral view.  
 Fig. 6. *Pygospio elegans* Claparède. a, Dorsal view. b, Ventral view.

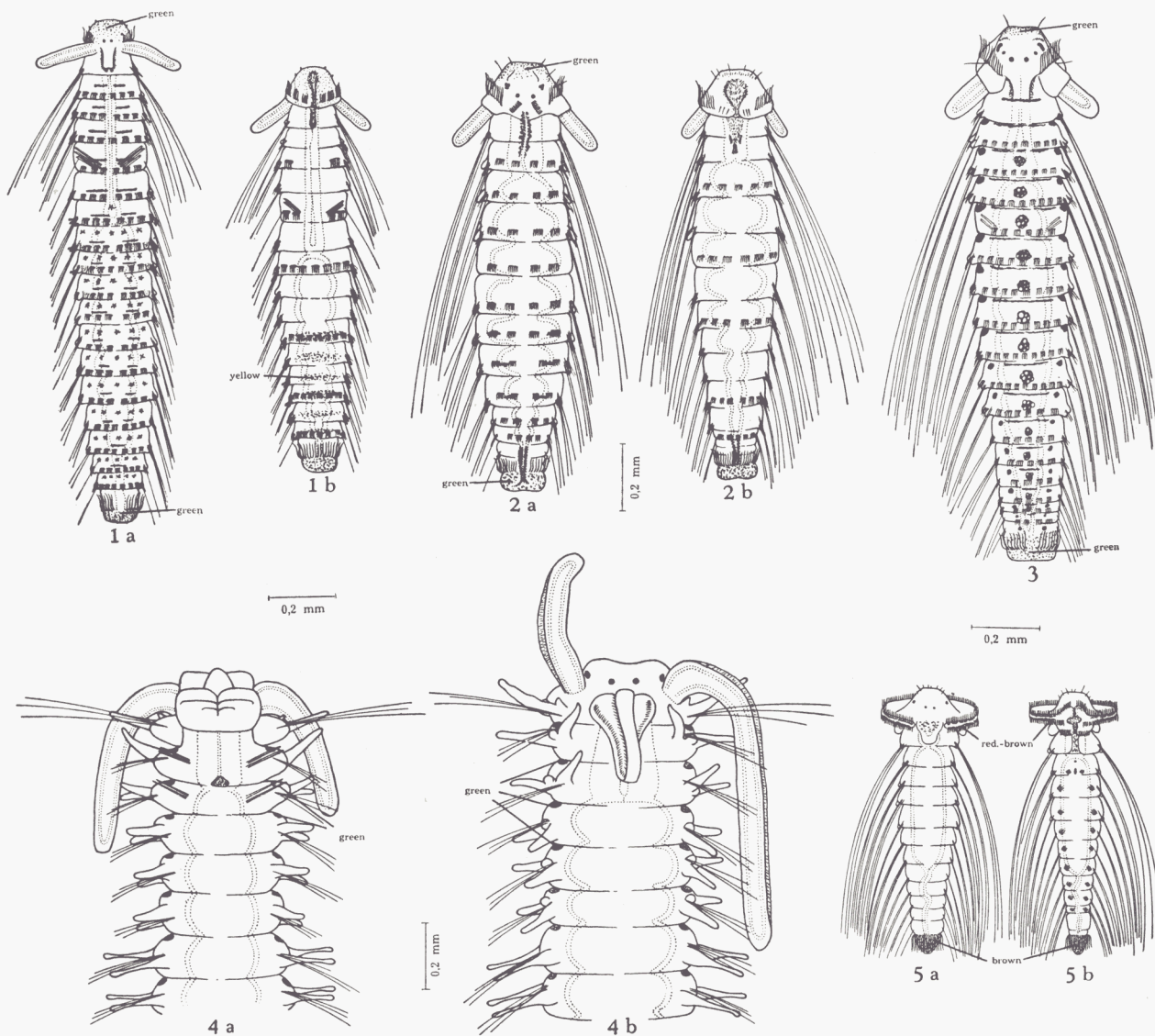


Plate IV.

- Fig. 1. *Polydora flava* Claparède. a, Dorsal view. b, Ventral view.  
 Fig. 2. *Polydora caulleryi* Mesnil. a, Dorsal view. b, Ventral view.  
 Fig. 3. *Polydora coeca* (Oersted). Dorsal view.  
 Fig. 4. *Poecilochaetus serpens* Allen. Forepart of large pelagic larva (abt. 50 segments). a, Ventral view. b, Dorsal view.  
 Fig. 5. *Disoma multisetosum* Oersted. a, Dorsal view. b, Ventral view.

## General Remarks

### Types of development

The duration of the pelagic development is different in different species. Many of the species of the families treated here have an entirely pelagic development, others have a development which partly takes in structures produced by the parent animals. During the planktonic development the larvae gradually acquire many of the characteristics of the adult animal, and the metamorphosis to a benthic life is often affected by profound morphological changes.

### Stages considered

Young larvae are often difficult to identify, and therefore, with a few exceptions, only late larval stages are dealt with here.

### Body form and pigmentation

All the larvae dealt with are drawn from life and the colours mentioned are those of the living larvae. The body form and colouration are often changed on preservation.

### Variability

One species (or what is considered one species) can have more than one type of development and of pelagic larvae. It is conceivable that the treated species may have larval stages in addition to those described. The pigmentation of some of the larvae is variable with a general tendency to increasing pigmentation with increasing age.

### Area considered

Only larvae found in the European coastal waters of the Atlantic Ocean are included.

### General characteristics of the larva

The larva is elongated and as a rule develops a relatively large number of segments. It has posteriorly directed, long finely serrated larval setae (they are shed in older individuals in some species). The larval ciliation consists of a proto and a telotroch as well as intervening gastro- and nototrochs though the latter are lacking in a number of species. A neurotroch is usually found. It is very short and never extends farther caudally than up to and including segment 2. Posteriorly it ends, with a few exceptions, in a 'ciliated pit' (Plate I, Fig. 1b).

## Key to Families and Genera

1. Prostomium and peristomium fused into a large, relatively outspread shield . . . . . DISOMIDAE  
One species (Pl. IV, Fig. 5) . . . . . *D. multisetosus*  
Prostomium and peristomium not fused in this manner . . . . .
2. The larvae become very large (up to 50 segments). The pigmentation is slight. Only green, lateral chromatophores occurring in each segment are obvious. Larval setae and ciliation are shed in older stages . . . . . POECILOCHAETIDAE  
One species (Pl. IV, Fig. 4) . . . . . *P. serpen*  
Larvae of fair size (max. 30 segm.). Larval setae and ciliation are as a rule not lost during the pelagic stage . . . . . SPIONIDAE
3. Complete gastrotrochs are found in all segments caudal to the 'ciliated pit'. There are two pairs of simple, red eyes (exception *Prionospio malmgreni*). The pigmentation is often weak. The body form is very different in different species. The prostomium is usually clearly distinct from the peristomium . . . . .  
Gastrotrochs are not found in all segments caudal to a 'ciliated pit'. There are three pairs of black eyes of which the most lateral are compound . . . . .
4. Parts of the prostomium and the peristomium are anteriorly drawn out into a tip (Pl. I, Figs. 4–6) . . . . . *Nerinides* and *Neris*  
The prostomium is not formed in this manner . . . . .
5. Long, very thin larvae. The peristomium is less well demarcated. The pigmentation is slight (Pl. II, Figs. 1–3) . . . . . *Prionosp*  
Small and medium-sized larvae, not as thin as the foregoing . . . . .



6. The body is not transparent due to abundance of yolk, which in reflected light is yellowish-white. The larval setae are long and straight. Small larvae (Pl. I, Figs. 9—10) ..... *Aonides*  
The body is not rich in yolk ..... 7
7. The larval setae are flattened, unilaterally serrated, and occur both dorsally and ventrally. Small larvae (Pl. II, Fig. 4) ..... *Laonice*  
The larval setae are not flattened and occur only dorsally. Medium-sized larvae. Large larvae have curved bristles in segment 1 (Pl. I, Figs. 7—8) ..... *Spiophanes*
8. The prostomium is well demarcated from the peristomium. The palpi are attached relatively laterally. Small larvae (max. 12—13 segm.). The parapodia become highly differentiated (Pl. I, Figs. 1—2) ..... *Scolecipis*  
The peristomium is not well demarcated from the prostomium. The palpi are attached more medially. The nototrochs are well developed ..... 9
9. The gastrotrochs occur regularly in every other segment caudal to a 'ciliated pit' ..... 10  
The gastrotrochs are not regularly arranged. A 'ciliated pit' is usually lacking. Specialized bristles appear in segment 5 (Pl. IV, Figs. 1—3) ..... *Polydora*  
No permanent specialized bristles in segment 5. Small larvae (max. 15 segm.) (Pl. III, Fig. 6) ..... *Pygospio*
10. The 'ciliated pit' is well developed (Pl. II, Figs. 5—10) ..... *Spio* and *Microspio*

## Key to Species and Further Information on Identification

### Family SPIONIDAE Sars

#### Genus *Scolecipis* Blainville (sensu Mesnil)

Small and vividly coloured larvae with three pairs of black eyes. The prostomium is broad and somewhat notched, the lateral parts of the peristomium are clearly demarcated from the prostomium. Gastrotrochs do not occur in every segment caudal to the 'ciliated pit'.

1. Yellow pigment is completely lacking. The prostomium and the peristomium are darkly pigmented (Pl. I, Fig. 3) ..... *Scolecipis girardi*  
Yellow pigment occur ..... 2
2. Dorsal, yellow pigment spots laterally from segment 2 onwards. The ventral cirri in segment 3 are considerably longer than in segment 2 (Pl. I, Fig. 2) ..... *Scolecipis fuliginosa*  
No dorsal pigment spots. The ventral cirri in segment 3 are not appreciably larger than in segment 2 (Pl. I, Fig. 1) ..... *Scolecipis ciliata*

*Scolecipis girardi* (Quatrefages). The larva is found in the plankton in the early summer. In comparison with the larvae of the other two species of this genus the lack of yellow pigment is characteristic, and the tentacular palpi and the parapodial cirri are not so well developed during the pelagic stage. HANNERZ, 1956.

*Scolecipis fuliginosa* (Claparède). The larva is encountered in the plankton in the summer, autumn, and early winter. It differs from that of *S. ciliata* mainly in the pigmentation (pairs of dorsal chromatophores along the dorsal side) and the more robustly developed cirri in segment 3. DAY, 1934; HANNERZ, 1956.

*Scolecipis ciliata* (Keferstein). The larva occurs in the plankton during the middle and the later part of the summer. The prostomium has a yellowish-green colour. On each side there is ventral to the proximal parts of the palpi a large chromatophore, which is yellowish-white in reflected light. Segments nos. 1 and 2 are almost colourless. The remainder of the body has a chocolate-brown pigmentation. One or two yellowish-white chromatophores may occur on the pygidium. The inside of the pharynx is most often pigmented black and the stomach brown. HANNERZ, 1956.

### Genera *Nerine* Mesnil and *Nerinides* Johnstone

The prostomium is drawn out into an anteriorly directed tip encasing a muscular process originating from the peristomium. The lateral parts of the peristomium are clearly demarcated from the prostomium. There are two pairs of red eyes. The telotroch is markedly robust. The larval setae are relatively short, strong and somewhat curved. A 'ciliated pit' is found in segment 2. Gastrotrochs occur in all segments from nos. 2 or 3.

1. The intestinal canal is coloured green and brown ..... 2  
The intestinal canal is not coloured in this manner ..... 3
2. The pharynx is coloured orange. Long and slender larvae (Pl. I, Fig. 6). ..... *Nerine cirratulus*

3. The pharynx is distinctly black pigmented. Orange pigment (reflected light) occurs laterally in the anterior segments. The prototroch is divided into two contiguous sections (Pl. I, Fig. 4) ..... *Nerinides tridentata*  
The pharynx is not distinctly black pigmented. The prototroch is not divided into two contiguous sections (Pl. I, Fig. 5) ..... *Nerine foliosa*

*Nerine cirratulus* (Delle Chiaje). This species is encountered in the plankton during the summer and autumn. It is characterized by its vivid colouration (chocolate-brown stomach, green oesophagus, orange coloured pharynx, green epidermis, and brick-coloured prostomium) and its slender form. CLAPARÈDE & METSCHNIKOW, 1869; HÄCKER, 1896; MESNIL, 1896; HANNERZ, 1956.

*Nerinides tridentata* Southern. The larva occurs in the plankton in the summer and autumn. It agrees in type with *Nerine foliosa*, and it is relatively difficult to distinguish the two at a glance. It is, however, characterized by its very distinctly pigmented pharynx, by the fact that the prototroch is clearly divided into two contiguous sections, by the orange coloured pigment laterally in the anterior segments of older larvae, and later stages by its ventral, triserrated, hooded crochets. HANNERZ, 1956.

*Nerine foliosa* (Audouin & Milne-Edwards). The species occurs in the plankton in the late winter and early spring. The larva ready to metamorphose is characterized by its large size and a blackish-brown pigmentation, which increases with increasing age. There are ventral, diserrated, hooded crochets from about the tenth segment onwards. CUNNINGHAM & RAMAGE, 1888; HANNERZ, 1956.

### Genus *Spiophanes* Grube

Medium-sized larvae with two pairs of red eyes. The pygidium is equipped with numerous cirri in older larvae. The larval setae are thin and lustreless. In old larvae the generically typical curved bristles in segment 1 are developed. Gastrotrochs occur in all segments from the third onwards.

*Spiophanes bombyx* (Claparède) (Pl. I, Fig. 7). This species occurs in plankton from late spring to early winter. It is easily recognizable by the intensive yellow pigment on the prostomium and the pygidium, and also the black pigmentation in the pharynx and proctodaeum. It has a characteristic angular position when swimming. MESNIL, 1896; McINTOSH, 1915; HANNERZ, 1956.

*Spiophanes krøyeri* Grube (Pl. I, Fig. 8). The larva of this species occurs in the plankton during the winter months. It is almost completely colourless. Reddish-brown pigment occurs, however, on the pygidium and on the inside of the 'pharynx'. In segments nos. 4 and 5 of older larvae are anlagen to parapodial glands appearing as sausage-shaped structures extending far into the body. HANNERZ, 1956.

### Genus *Aonides* Claparède

The pelagic larva is in all stages characterized by its abundant yolk which gives it a yellowish, opaque appearance. Two pairs of red eyes are formed. Pigmentation is lacking. The larval setae are long and straight. Gastrotrochs are found in all segments from the second onwards.

1. Larval setae strongly developed and coarsely serrated (Pl. I, Fig. 9) ..... *Aonides paucibranchiata*
2. Larval setae thin and slightly serrated (Pl. I, Fig. 10) ..... *Aonides oxycephala*

*Aonides paucibranchiata* Southern. Larvae of this species are found in the plankton in the autumn. In contrast to *A. oxycephala* the palpi are developed during the pelagic stage. The parapodia are well demarcated from the body and have small anlagen to cirri. The most posterior segments have ventral, triserrated, hooded crochets. HANNERZ, 1956.

*Aonides oxycephala* (Sars). The larva is encountered in the plankton during the late summer and early spring. The young trochophore does not completely fill the egg membrane, which is gradually transformed into a larval cuticle. The egg membrane has two rows of membrane vesicles which are arranged in two planes perpendicular to the length axis of the larva. The parapodia and the pygidium remain undifferentiated during the pelagic stage. Among adult bristles are ventral, diserrated, hooded crochets. HANNERZ, 1956.

### Genus *Laonice* Malmgren

One species *Laonice cirrata* (Sars) (Pl. II, Fig. 4).

The larva of this species has been found in the plankton during two widely separated periods, viz. mid-winter and early autumn. It is small and has a prostomium that is somewhat notched at the tip. The lateral parts of the peristomium are well demarcated from the prostomium. There are two pairs of red eyes. The larval setae are of a special type ('Chaetosphæra' setae). A 'ciliated pit' is found in segment no. 2. In older larvae gastrotrochs occur in all segments from the third onwards. HANNERZ, 1956.



### Genus *Prionospio* Malmgren

The body of the larva is long and slender. The prostomium is rounded. The lateral parts of the peristomium are not especially well demarcated from the prostomium. Two pairs of eyes are found. The larvae are relatively weakly pigmented. A 'ciliated pit' is located in segments nos. 1, 2, or 3. Gastrotrochs occur in all the following segments. The larval setae are thin and lustreless.

- |  |                             |
|--|-----------------------------|
| 1. Red eyes .....  | 2                           |
| Black eyes .....   | 3                           |
| 2. Dorsally red pigment. Palpi are lacking or very insignificant even in large larvae (Pl. II, Fig. 3) . <i>Prionospio steenstrupi</i> |                             |
| Dorsally no pigmentation. The palpi become more developed (Pl. II, Fig. 2).....  | <i>Prionospio cirrifer</i>  |
| 3. Black eyes (Pl. II, Fig. 1).....  | <i>Prionospio malmgreni</i> |

*Prionospio steenstrupi* Malmgren. The larva occurs in plankton of the late winter and early spring. Along the entire dorsal side of the larva is a diffusely scattered red pigmentation which is accentuated in the 'neck' and at the pygidium. The nuchal organs are narrow and nototrochs are missing. The palpi remain insignificant. HANNERZ, 1956.

*Prionospio cirrifer* Wirén. The larva is encountered during the middle and later part of the summer. It is slightly thicker and more robust than that of *P. malmgreni*. The palpi become relatively large and the pygidium acquires 4 cirri. The most anterior part of the stomach has a weak bluish colouration; the pygidium is pigmented yellowish-brown; otherwise the larva is unpigmented. HANNERZ, 1956.

*Prionospio malmgreni* Claparède. The larva is encountered in the plankton in the summer. It is characterized by its black eyes and by the fact that the palpi remain insignificant even in old larvae. The pygidium acquires three pairs of cirri and is brown pigmented. HANNERZ, 1956.

### Genera *Spio* Fabricius and *Microspio* Mesnil

The pelagic larva has a stumpy prostomium which is slightly notched at the tip. The lateral parts of the peristomium are usually weakly demarcated from the prostomium. There are three pairs of black eyes. The parapodia become usually well differentiated. The 'ciliated pit' is located in segment 2. Gastrotrochs are found in alternate segments from the third onwards.

#### Key to Species

- |   |                                   |
|---|-----------------------------------|
| 1. Light yellow pigment is found.....   | 2                                 |
| Light yellow pigment is lacking.....  | 6                                 |
| 2. The melanin is collected in distinct melanophores .....  | 3                                 |
| Abundant melanin but not collected in distinct melanophores. A pair of longitudinal pigment bands in the 'neck' (Pl. II, Fig. 5)..... | <i>Spio martinensis</i> , Type II |
| 3. The pharynx is black pigmented. Melanophores more or less branched and largest in segment 3 (Pl. II, Fig. 6) .....                 | <i>Spio martinensis</i> , Type I  |
| The pharynx is not black pigmented.....   | 4                                 |
| 4. Three distinct melanophores in segment 2. Small larvae. Long palpi (Pl. II, Fig. 10) .....   | <i>Microspio atlantica</i>        |
| Without three distinct melanophores in segment 2. ....  | 5                                 |
| 5. Melanophores in the form of bands (Pl. II, Fig. 7).....  | <i>Spio filicornis</i>            |
| 6. Melanin almost completely lacking except in the first two segments in older larvae (Pl. II, Fig. 9) <i>Spio multiocculata</i> ?    |                                   |
| More or less abundant black pigment. A median melanophore on the prostomium (Pl. II, Fig. 8).....                                     | <i>Spio theeli</i>                |

*Spio martinensis* Mesnil. Two types of larvae are found both of which metamorphose into an adult stage characteristic of the species.

Type I. This larval type occurs in the plankton from the middle of the summer until autumn. The prostomium is pale brown. Ventrally on the peristomium a pair of yellow chromatophores is found. The palpi are often provided with small yellowish-white chromatophores. The dorsal parapodial cirri are black-tipped. The dorsal side of segment 1 is completely colourless. In segment 2 and the succeeding segments there is a pair of melanophores which are most strongly developed in segment 3. In the centres of these melanophores there is often a little spot of white pigment. Ventral, triserrated, hooded crochets occur from the 11th segment onwards.

Type II. The larva occurs most abundantly in the middle of the summer. It is characterized by its size (a 27-segmented larva is more than 3 mm long) and diffusely scattered fairly pronounced black pigmentation on the dorsal side. On the edges of the nuchal crest melanin forms a pair of narrow bands. In addition to the melanin there is a diffuse yellowish-

brown pigmentation which is especially prominent in the prostomium. The pharynx is brown pigmented. Ventral, triserated, hooded crochets are found from the 11th segment onwards.

*Microspio atlantica* (Langerhans). The larva appears as a typical midsummer form in the plankton. It is appreciably smaller than those belonging to *Spio*. The prostomium is broad and slightly notched terminally. The palpi are fairly long and robust, and are always borne in a characteristic manner extending from the body. They are distally pigmented yellow-brown. The parapodia are differentiated early and are well demarcated from the body. The pygidium and the prostomium have a yellowish-green pigmentation. In segment no. 1 melanin forms narrow, dense, transverse bands. In segment no. 2 it is concentrated into three, distinct, square melanophores triangularly placed. In the following segments there is an anterior diffuse band of melanin and, behind, two distinct square melanophores. Ventral to the proximal parts of the palpi there is a pair of yellowish-white chromatophores. HANNERZ, 1956.

*Spio filicornis* (O. F. Müller). The larva occurs in the plankton of the late winter and early spring. It is characterized by yellow pigment ventrally at the bases of the palpi and on the ventral side of the pygidium, by one pair of band-shaped melanophores in every segment from the third onwards and by a black-pigmented proctodaeum. In old larvae there are ventral, diserrated crochets from the ninth segment. THORSON, 1946; OKUDA, 1946; HANNERZ, 1956.

*Spio multioculata* (Rioja)? The identity of the larva described is not completely established. It is encountered in the plankton in the late winter and early spring. The larva is characterized chiefly by its slight pigmentation in the epidermis, where there is only a little scattered melanin. The prostomium is broad and terminally slightly notched. The pygidium is pigmented greenish-brown and acquires a pair of dorsal anlagen to cirri. The pharynx is most frequently pigmented reddish-brown but can be black or blackish-brown. Ventral, diserrated, hooded crochets are found from the 10th segment onwards. HANNERZ, 1956.

*Spio theeli* (Söderström). The larva is encountered in the plankton in the late spring and early summer. It is distinguished from the larva of *S. multioculata* by its denser dorsal pigmentation and by a median melanophore on the prostomium. The pygidium is brown pigmented and acquires a pair of dorsal cirri. Ventral, hooded crochets with two relatively short serrations are found from the 11th segment onwards. HANNERZ, 1956.

### Genus *Pygospio* Claparède

One species: *Pygospio elegans* Claparède (Pl. III, Fig. 6).

The larva is found in the midsummer plankton. It is small and thick in relation to its length. The prostomium is stumpy, and the peristomium demarcated from the prostomium. There are three pairs of black eyes. Nototrochs occur from segment 2 onwards. The pygidium is rounded and lacks appendages. There is no 'ciliated pit'. Gastrotrochs occur in segments nos. 5 and 7. From segment 3—4 onwards there is found in each segment a transverse band of small distinct melanophores. Ventral, diserrated, hooded crochets occur from the 8th segment onwards. HANNERZ, 1956.

### Genus *Polydora* Bosc

Size and body form differ considerably in the different species. There are three pairs of black eyes. The pygidium lacks appendages. The pigmentation is vivid and melanophores are present. The adult bristles are developed early. In older larvae there are specialized bristles in segment 5. A 'ciliated' pit is usually lacking (exception *P. caulleryi*). Gastrotrochs occur in an irregular pattern.

### Key to Species

1. Short and thick larvae. A dorsal, median melanophore is found on the posterior part of the prostomium, and on the pygidium..... 2  
Slender larvae. Without median melanophore on the prostomium and the pygidium..... 3
2. Four rows of dorsal ramified melanophores in the segments. Yellow and green pigments are found (Pl. III, Fig. 5)..... *Polydora pulchra*  
Only two rows of ramified melanophores. Yellow and green pigments are lacking (Pl. III, Fig. 4)... *Polydora antennata*
3. A dorsal median row of melanophores is found at least caudal to segment no. 5..... 4  
Without median row of melanophores..... 5
4. The dorsal, median melanophores are abundantly ramified (Pl. III, Fig. 1)..... *Polydora hermafroditica*  
The dorsal, median melanophores are not ramified but attached to a vesicular tissue (Pl. IV, Fig. 3)... *Polydora coeca*
5. 'Pharynx' and 'proctodaeum' strongly black pigmented. Melanophores only in the posterior third of the body (Pl. IV, Fig. 2)..... *Polydora caulleryi*  
'Pharynx' and 'proctodaeum' unpigmented. Dorsal pairs of melanophores at least from segment no. 5 onwards... 6

6. One pair of dorsal median melanophores in all segments. From the 7th segment onwards a transverse row of small star-shaped melanophores in every segment (Pl. IV, Fig. 1)..... *Polydora flava*  
Without pairs of median melanophores at least in the first two segments. No transverse rows of small star-shaped melanophores..... 7
7. The first four to five pairs of median melanophores are band-shaped, thereafter star-shaped. Ventral, yellow pigment collected in three longitudinal rows of chromatophores (Pl. III, Fig. 3)..... *Polydora ligni*  
The first six to seven pairs of median melanophores are band-shaped, thereafter star-shaped. If yellow pigment occurs ventrally, it is not concentrated in distinct melanophores (Pl. III, Fig. 2)..... *Polydora ciliata*

*Polydora pulchra* Carazzi. The larva of this species occurs in the plankton from early summer to late autumn. It differs from that of the preceding species primarily by its larger size and more vivid pigmentation. The short palpi are usually yellowish-green and black pigmented (younger larvae may lack this pigmentation). The melanophores on the body are large, ramified and variable in form, depending upon the intensity of light. Dorsally on the segmented part of the body there are four rows of ramified melanophores. The lateral rows begin first in the third segment. One single melanophore is situated on the 'neck' and one on the pygidium. There is a large yellowish-white chromatophore ventrally on the base of each palp and one or two similar chromatophores ventrally on the pygidium. Yellowish-white chromatophores are also found laterally in the middle segments. The inside of the pharynx is pigmented reddish-brown or blackish-brown. There is no 'ciliated pit'. The gastrotrochs appear irregularly. MESNIL, 1896; CASANOVA, 1952; HANNERZ, 1956.

*Polydora antennata* Claparède. The larva occurs in the plankton during midsummer. With its short, thick body, like that of *P. pulchra*, this larva differs from the usual *Polydora* type, but it is smaller and lesser pigmented. The only pigment that is found consists of melanin. In segment no. 1 there is a large median melanophore. In each segment from the 4th there is a pair of lateral melanophores which branch towards the median line of the larva. A ramified melanophore is also found medially on the dorsal side of the pygidium. The stomach is pigmented brown. The larval setae are almost non-iridescent in reflected light. There is no 'ciliated pit'. Gastrotrochs occur in the 5th and 7th segment. HANNERZ, 1956.

*Polydora hermafroditica* Hannerz. The larva is encountered in the late summer and autumn. It is primarily characterized by its considerable size. The prostomium is laterally pigmented yellowish-brown. The nuchal organs are strongly developed and S-shaped. The dorsal melanin pigmentation consists of two systems: (1) There is a small unramified pigment spot in the anterior two thirds of the body laterally on the anterior side of each segment beginning with the second. (2) Along the dorsal median line of the larva there is a row of melanophores, which in segments nos. 2–4 are band-shaped, but in the following segments are more or less ramified. Large larvae have always male sexual products in the coelom which give them a whitish, opaque appearance. HANNERZ, 1956.

*Polydora coeca* (Oersted). The larva is encountered in the plankton in the early spring. It usually contracts when placed between the object glass and the cover glass, or when killed. When stretched out the largest larvae are thin and considerably more than 2 mm long. The prostomium and the pygidium have an intense yellowish-green colour. The dorsal pigmentation of melanin is in three systems. Laterally, on the anterior side of each segment, there is a melanophore; in the anterior part of each segment there is a melanin band running across the body; and from segment no. 3 onwards there is a median concentration of melanin surrounding a number of blister-shaped cells. In segment no. 1 the neurotroch runs down into a shallow groove. Gastrotrochs occur in segments nos. 3, 5, 7, 9, and all following segments. THORSON, 1946; HANNERZ, 1956.

*Polydora caulleryi* Mesnil. This species occurs in the plankton during the late winter and spring. The prostomium and the pygidium are coloured green. Melanin occurs only sparsely in the epidermis. From segment no. 7 onwards, however, there is a pair of band-shaped melanophores in each segment. The pygidium has dorsal streaks of melanin. The inside of the 'pharynx' and the 'proctodaeum' are richly pigmented with melanin. The neurotroch is broad and runs into a 'ciliated pit' in segment 2. Gastrotrochs occur in segments nos. 3, 5, 10, and 12. Modified bristles of a special type with a 'hood' of fine fibrils are developed in segment 5 of older larvae. HANNERZ, 1956.

*Polydora flava* Claparède. The larva is encountered in the plankton from late summer to late autumn. The prostomium is bluntly rounded and relatively small. Laterally on each segment there is a melanophore on the anterior side of the parapodium. Furthermore, there is a pair of transversally extended median melanophores in all segments including the first. Anterior to those from the 7th segment onwards there is a band of smaller, star-shaped melanophores in each segment. The prostomium and the pygidium are coloured green. The larval setae are short and strongly iridescent in reflected light. Gastrotrochs are found in segments nos. 3, 5, 7, 10, 13, 15, 17, etc. On the ventral side of the posterior part of the body there is a diffuse yellow pigmentation. HANNERZ, 1956.

*Polydora ligni* Webster. The larva is found in the plankton in the summer and autumn. For a comparison with *P. ciliata*, see that species. HANNERZ, 1956.

*Polydora ciliata* (Johnston). This species occurs as adult in very varying substrata, e.g., subfossil shells, shells of living molluscs, in calcareous algae, in sponges, in stalks of *Zostera*, in mud and in sand. There are two different spawning



periods; one in the spring and one in the autumn. Moreover there are several slightly different larval types. From a systematical point of view *Polydora ciliata* may be regarded as a dubious species. The larva is very similar to that of *P. ligni*. Characteristic of all the different larval types of *P. ciliata* however, is that there are more than five pairs of band-shaped melanophores and no distinct ventral yellow chromatophores. MESNIL, 1896; LESCHKE, 1903; WILSON, 1928; HANNERZ, 1956.

### Family POECILOCHAETIDAE Hannerz

#### Genus Poecilochaetus Claparède

*Poecilochaetus serpens* Allen (Pl. IV, Fig. 4). This species occurs in the plankton during the summer. It has two pelagic stages: I, the metatrochophora stage swims with the aid of well-developed trochs and has provisional setae of the same type as those found in Spionidae; II, in the nectosoma stage the trochs and provional setae are eliminated and locomotion takes place by means of serpentine movements of the body. In this later stage an occipital tentacle is developed.

The metatrochophore stage lasts until the larva has attained about 35–40 segments. The nectosoma stage grows to over 10 mm. The larva is easily recognized in all stages due to the almost complete lack of pigment, but there are small green melanophores in the lateral parts of the body segments. EHLERS, 1874; GRAVELY, 1909; FAUVEL, 1916; FLATTELY, 1923; THORSON, 1946; HANNERZ, 1956.

### Family DISOMIDAE Mesnil

#### Genus Disoma Oersted

*Disoma multisetosum* Oersted (Pl. IV, Fig. 5). The larva of this species occurs in the plankton in late winter and spring. It attains a length of about 1.25 mm. The prostomium and the peristomium are fused into an outspread 'umbrella' the edge of which becomes reddish-brown pigmented. The prototroch consists of two rows of ciliated cells. The palpi are formed relatively late and are unequal in length. The pygidium is tapered and pigmented brown. Nuchal organs and nototrochs are lacking. In young individuals there are gastrotrochs in all segments from the third onwards, but they are later discarded. In young individuals larval setae are found in all segments, but are gradually discarded except in segment no. 1. The larva is faintly pigmented. The 'ciliated pit' which consists of two contiguous divisions is located in segment no. 2. The old larva swims folded in a doubled-up position. HANNERZ, 1956.

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