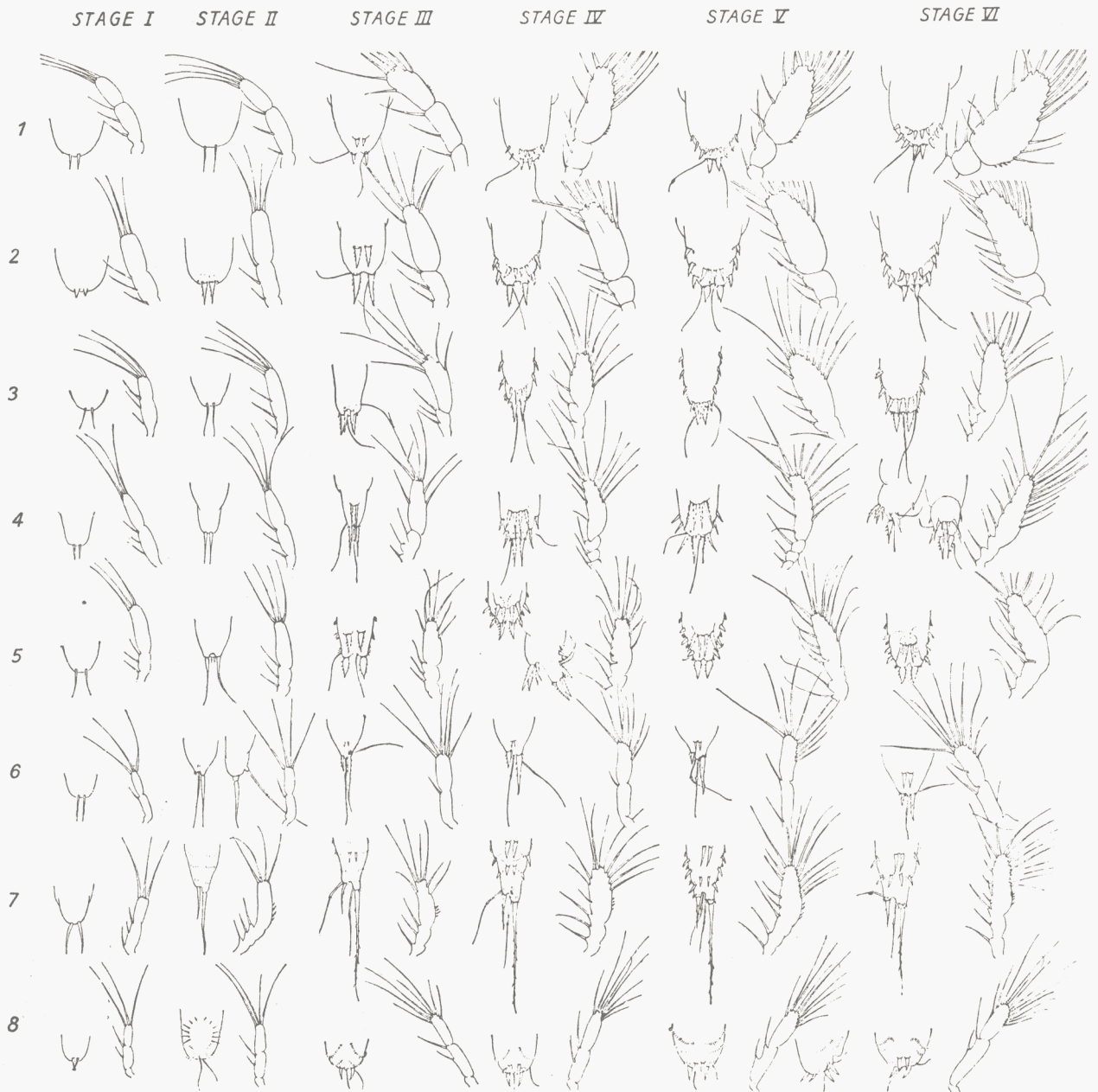


CONSEIL INTERNATIONAL POUR L'EXPLORATION DE LA MER

**Zooplankton.**  
Sheet 50.

**COPEPOD NAUPLII (I)**  
(By Helen S. Ogilvie)  
**1953.**

This sheet deals only with some of the copepod nauplii most commonly found  
in the northern North Sea and adjacent waters.



The posterior end of the body and the distal segment of the 1st antenna in each of the six nauplius stages of: 1, *Calanus finmarchicus*; 2, *Pseudocalanus minutus*; 3, *Paracalanus parvus*; 4, *Microcalanus pusillus*; 5, *Metridia lucens*; 6, *Centropages typicus*; 7, *Temora longicornis*; 8, *Acartia clausi*.

THE characters used for the identification of the six stages of the various species are the number and arrangement of the spines at the posterior end of the body and the number and arrangement of the setae on the distal segment of the 1st antenna. From stage II onwards one of the terminal setae of the antenna is more slender than the others and is known as the aesthete: the setae are enumerated on the dorsal and ventral sides of the aesthete to produce the formula given in the table. Stage I has three setae and stage II has four setae (including the aesthete), all terminal. Stage VI may be further distinguished by the two pairs of swimming feet.

| Fig. No. | Species                                      | Stage | Average body length in mm. and formula for the 1st Antenna (a = aesthete) |         |       |         |      |         |      |         |      |         |      |         |
|----------|--|-------|---|---------|-------|---------|------|---------|------|---------|------|---------|------|---------|
|          |  |       | I.  |         | II.   |         | III. |         | IV.  |         | V.   |         | VI.  |         |
|          |  |       | mm.   | formula | mm.   | formula | mm.  | formula | mm.  | formula | mm.  | formula | mm.  | formula |
| 1.       | <i>Calanus finmarchicus</i><br>(Gunnerus)    |       | 0.22  | 3       | 0.27  | 4(1a2)  | 0.40 | 3a3     | 0.48 | 5a5     | 0.55 | 7a6     | 0.61 | 9a7     |
| 2.       | <i>Pseudocalanus minutus</i><br>(Krøyer)     |       | 0.176   | 3       | 0.187 | 4(1a2)  | 0.26 | 3a3     | 0.33 | 5a5     | 0.38 | 7a6     | 0.44 | 7a7     |
| 3.       | <i>Paracalanus parvus</i><br>(Claus)         |       | 0.09  | 3       | 0.105 | 4(1a2)  | 0.16 | 3a3     | 0.21 | 5a5     | 0.24 | 7a6     | 0.25 | 7a?     |
| 4.       | <i>Microcalanus pusillus</i><br>G. O. Sars   |       | 0.08  | 3       | 0.09  | 4(1a2)  | 0.13 | 3a3     | 0.16 | 5a5     | 0.18 | 7a6     | 0.21 | 9a7     |
| 5.       | <i>Metridia lucens</i><br>Boeck              |       | 0.19  | 3       | 0.21  | 4(1a2)  | 0.27 | 3a3     | 0.34 | 5a5     | 0.41 | 7a6     | 0.46 | 7a7     |
| 6.       | <i>Centropages typicus</i><br>Krøyer         |       | 0.106   | 3       | 0.15  | 4(1a2)  | 0.18 | 3a2     | 0.19 | 5a2     | 0.22 | 7a2     | 0.29 | 7a3     |
| 7.       | <i>Temora longicornis</i><br>(O. Fr. Müller) |       | 0.112   | 3       | 0.16  | 4(1a2)  | 0.21 | 3a3     | 0.26 | 5a5     | 0.32 | 7a6     | 0.38 | 9a7     |
| 8.       | <i>Acartia clausi</i><br>Giesbrecht          |       | 0.12  | 3       | 0.14  | 4(1a2)  | 0.16 | 3a3     | 0.19 | 4a3     | 0.23 | 5a3     | 0.28 | 7a4     |

#### Further Information on Identification

##### 1. *Calanus* spp.

The diagnostic characters of *Calanus* and *Pseudocalanus* are the same except for the antennal formula in stage VI. They can be separated by size differences, by the heavier posterior armature of *Pseudocalanus*, and by the presence in *Calanus* from stage III onwards of four small bristles on the dorsal edges of segment 3 of the antenna proximal to the setae. The illustrations are of *C. finmarchicus*, those given by Lebour are probably of *C. helgolandicus*, and Sømme figures *C. hyperboreus*. The sizes given in the above table are typical of *C. finmarchicus* from the northern North Sea, but sizes appear to vary according to locality. — Gibbons, 1933, Table 2; Grobben, 1881; Lebour, 1916; Sømme, 1934; Wiborg, 1948, Table 2.

##### 2. *Pseudocalanus minutus*.

Oberg's figure of stage I is really stage II. The bristle he has drawn on the ventral edge of segment 3 of the antenna does not exist in stage II. — Oberg, 1906, Tafel I, pp. 48—49.

##### 3. *Paracalanus parvus*.

This may be distinguished from the two preceding species chiefly by its much smaller size and the slimmness of the body. In stage VI the setae on the ventral edge of segment 3 of the antenna vary in number; typically five, they are very delicate and frequently one or more is missing. — Oberg, 1906, Tafel I, pp. 48—49.

##### 4. *Microcalanus pusillus*.

Very similar to *Paracalanus* in size especially in the early stages, but the terminal and ventral body spines are more pronounced. From stage III onwards the seta next the aesthete and ventral to it bears an accessory seta in stages III, IV, and V, and three accessory

setae in stage VI. This is believed to be the first published description of this nauplius.

##### 5. *Metridia lucens*.

Similar in size to *Pseudocalanus* but distinguished by the greater distance between the terminal and ventral spines and by the angle at which the latter are set (see Fig. 5, stage IV). The spines composing the posterior armature are stronger than in *Pseudocalanus*. The two distal setae on the dorsal edge of the antenna arise from the same notch. — Gibbons, 1938, pp. 493—497, (but note that all six stages exist).

##### 6. *Centropages* spp.

Oberg and Gurney describe the development of *C. hamatus*. *C. typicus* is figured here. In the later stages the two species can be distinguished by the terminal spines which are shorter in *C. typicus* than in *C. hamatus*. The combs and the second pair of ventral spines figured by these authors are absent in *C. typicus*. The two species can be separated from stage III onwards. — Oberg, 1906, Tafel II, pp. 50—51; Gurney, 1931, pp. 87—89, Figs. 99, 100.

##### 7. *Temora longicornis*.

The figures on this sheet agree with Oberg's but there are four small bristles on the dorsal edge of segment 3 of the antenna proximal to the setae, which he does not show. — Oberg, 1906, Tafel III, pp. 52—53.

##### 8. *Acartia* spp.

Oberg's figures refer to *A. longiremis* and *A. bifilosa*. The figures of *A. clausi* illustrated here agree substantially with his except for slight variations in the spinulation on the body which may be specific. — Oberg, 1906, Tafel IV, pp. 54—55; Gurney, 1931, p. 218, Fig. 307.

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