COPEPOD NAUPLII (II)
(By T. Lovegrove)
1956.
This sheet is a continuation of Sheet 50, and includes the nauplii of 6 other copepod genera which are found in the area covered.

<table>
<thead>
<tr>
<th>Figure</th>
<th>Author</th>
<th>Species</th>
<th>Average Body Length in mm.</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Johnson</td>
<td>Eucalanus elongatus (Dana)</td>
<td>0.224 0.296 0.492 0.664 0.819 0.970</td>
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<tr>
<td></td>
<td>Gibbons</td>
<td>Eucalanus elongatus</td>
<td>— 0.42 0.72 0.88 1.09 1.23</td>
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<tr>
<td>B</td>
<td>Gurney</td>
<td>Rhincalanus nasutus Giesbrecht</td>
<td>— 0.46 0.68 0.85 1.0 1.16</td>
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<tr>
<td></td>
<td>Gurney</td>
<td>Rhincalanus cornutus Dana</td>
<td>— — — 1.0 1.2 1.33</td>
</tr>
<tr>
<td></td>
<td>Steuer</td>
<td>Rhincalanus gigas Brady</td>
<td>— — 0.86 1.18 1.52 1.80</td>
</tr>
<tr>
<td>C</td>
<td>Nicholls</td>
<td>Pareuchaeta norvegica (Boeck)</td>
<td>0.55 0.60 0.64 0.68 0.73 0.78</td>
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<tr>
<td>D</td>
<td>Gibbons &amp; Ogilvie</td>
<td>Oithona helgolandica Claus</td>
<td>0.115 0.130 0.140 0.165 0.190 0.215</td>
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<tr>
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<td>Gibbons &amp; Ogilvie</td>
<td>Oithona spinirostris Claus</td>
<td>0.130 0.150 0.170 0.200 0.235 0.270</td>
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<td>Murphy</td>
<td>Oithona nana Giesbrecht</td>
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<td>Oithona nana Giesbrecht</td>
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<td>E</td>
<td>Nicholls</td>
<td>Longipedia coronata Claus</td>
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<tr>
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<td>Longipedia scotti G.O.Sars</td>
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<td>Ogilvie</td>
<td>Longipedia minor T. &amp; A. Scott</td>
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<td>Ogilvie</td>
<td>Microsetella norvegica (Boeck)</td>
<td>0.11 0.13 0.15 0.18 0.21</td>
</tr>
</tbody>
</table>

Further Information on Identification

A. Eucalanus elongatus (Dana).

The figures for this species are taken from Johnson. Gibbons' description agrees with them except that he does not describe the first naupliar stage. Johnson describes E. elongatus var. bungii Giesbrecht but it only differs significantly from the other varieties, e.g., v. hyalinus and v. inermis, in the number of setae on the second basipod of the mandible — which is also a recognition feature for separating the adults. Although there is a certain resemblance in general form between the nauplii of this genus and Rhincalanus, it is possible to distinguish them fairly readily by examination of the furcal region. Note that although Gibbons' description of the furcal region of a stage VI nauplius is correct in having three pairs of setae on the second basipod of the mandible; this is also a recognition feature for separating the adults. Mitchell and Nicholls worked on laboratory reared specimens and Nicholls states that it is difficult to separate individuals into their correct stage by measurement as the growth between stages is small and considerable variations occur in the size of each stage. No "aesthete" bristle occurs on the antennule of these nauplii. Mitchell, J. F., 1928; Nicholls, A. G., 1934.

B. Rhincalanus spp.

Gurney describes five naupliar stages of R. nasutus Giesbrecht, also the last three naupliar and first copepodite stage of R. cornutus Dana, whilst Gibbons' material contained only R. nasutus. Neither worker found the first naupliar stage and Gibbons states that in his opinion suppression on this stage occurs and that the second naupliar stage emerges directly from the egg. Steuer describes the late naupliar and early copepodite stages of R. gigas Brady. Gibbons' description differs in the setation of R. nasutus from that given by Gurney but the differences are only slight and may be due to the mixed nature of Gurney's material. As mentioned above this genus can be readily separated from the rather similar genus Eucalanus by examination of the furcal region. Gibbons, S. G., 1936; Giesbrecht, W., 1893; Gurney, R., 1934; Steuer, A., 1935.

C. Pareuchaeta norvegica (Boeck).

Both Mitchell and Nicholls worked on laboratory reared specimens and Nicholls states that it is difficult to separate individuals into their correct stage by measurement as the growth between stages is small and considerable variations occur in the size of each stage. No "aesthete" bristle occurs on the antennule of these nauplii. Mitchell, J. F., 1928; Nicholls, A. G., 1934.
D. Oithona spp.

Gibbons & Ogilvie in dealing with the development of O. helgolandica Claus and O. spinirostris Claus state that the differences between the species are nowhere very pronounced. The first and second naupliar stages are distinguished chiefly by their size and shape together with a small feature in the labrum armature, whilst later stages are separated by the armature of the hind end of the body. Murphy’s paper on the life cycle of O. nana Giesbrecht gives no details of setation etc. but there are drawings of the labrum armature, whilst later stages are separated by the size of species from rock pools (Brian, 1921; Fraser, 1936; Johnson and Olsen, 1948) and fresh water (Dietrich, 1915; Gurney, 1931). Most have five naupliar stages but some have six, e.g., Longipedia and some fresh water species, whilst in others there are often fewer than five (Gurney, 1931). Cyclopoids may have six naupliar stages as in Oithona or five as in Cyclops. Semi-parasitic and parasitic copepods usually have smaller numbers. Ravera, 1953, worked out the stages of Hetercope saliens and Eudiaptomus vulgaris as well as some fresh water cyclopoids. Brian, 1921; Dietrich, 1915; Fraser, J. H., 1936; Gurney, R., 1931, 1932; Johnson and Olsen, 1948; Ravera, O., 1963.

E. Longipedia coronata Claus.

Gurney described the naupliar stages of three species of Longipedia without allocating them. Nicholls later described and separated the three species L. coronata Claus, L. scotti Sars and L. minor Scott. Hansen fully described the larva of Longipedia as that of an unknown copepod in 1899 and he in turn refers to Claus who recognized this larva as that of a copepod in 1863. Claus, C., 1863; Hansen, H. J., 1899; Gurney, R., 1930, 1931, 1932; Nicholls, A. G., 1935.

F. Microsetella norvegica (Boeck).

This is believed to be the first published description of this nauplius and is taken from a manuscript prepared by Helen S. Ogilvie. It is hoped to publish a fuller description in the future. As is usual in Harpactacoida there are only five naupliar stages in Microsetella.

Other species.

No nauplii of other truly planktonic harpactacoid species appear to have been described, but there are many descriptions of species from rock pools (Brian, 1921; Fraser, 1936; Johnson and Olsen, 1948) and fresh water (Dietrich, 1915; Gurney, 1931). Cyclopoids may have six naupliar stages as in Oithona or five as in Cyclops. Semi-parasitic and parasitic copepods usually have smaller numbers. Ravera, 1953, worked out the stages of Hetercope saliens and Eudiaptomus vulgaris as well as some fresh water cyclopoids. Brian, 1921; Dietrich, 1915; Fraser, J. H., 1936; Gurney, R., 1931, 1932; Johnson and Olsen, 1948; Ravera, O., 1963.

References.


Giesbrecht, W., 1892. Flora u. Fauna Neapel, 19, p. 149.


Prepared by T. Lovegrove with grateful acknowledgement to Dr. J. H. Fraser and to Miss H. S. Ogilvie who did the original work on Microsetella and who had herself intended to produce this and further sheets on copepod nauplii.