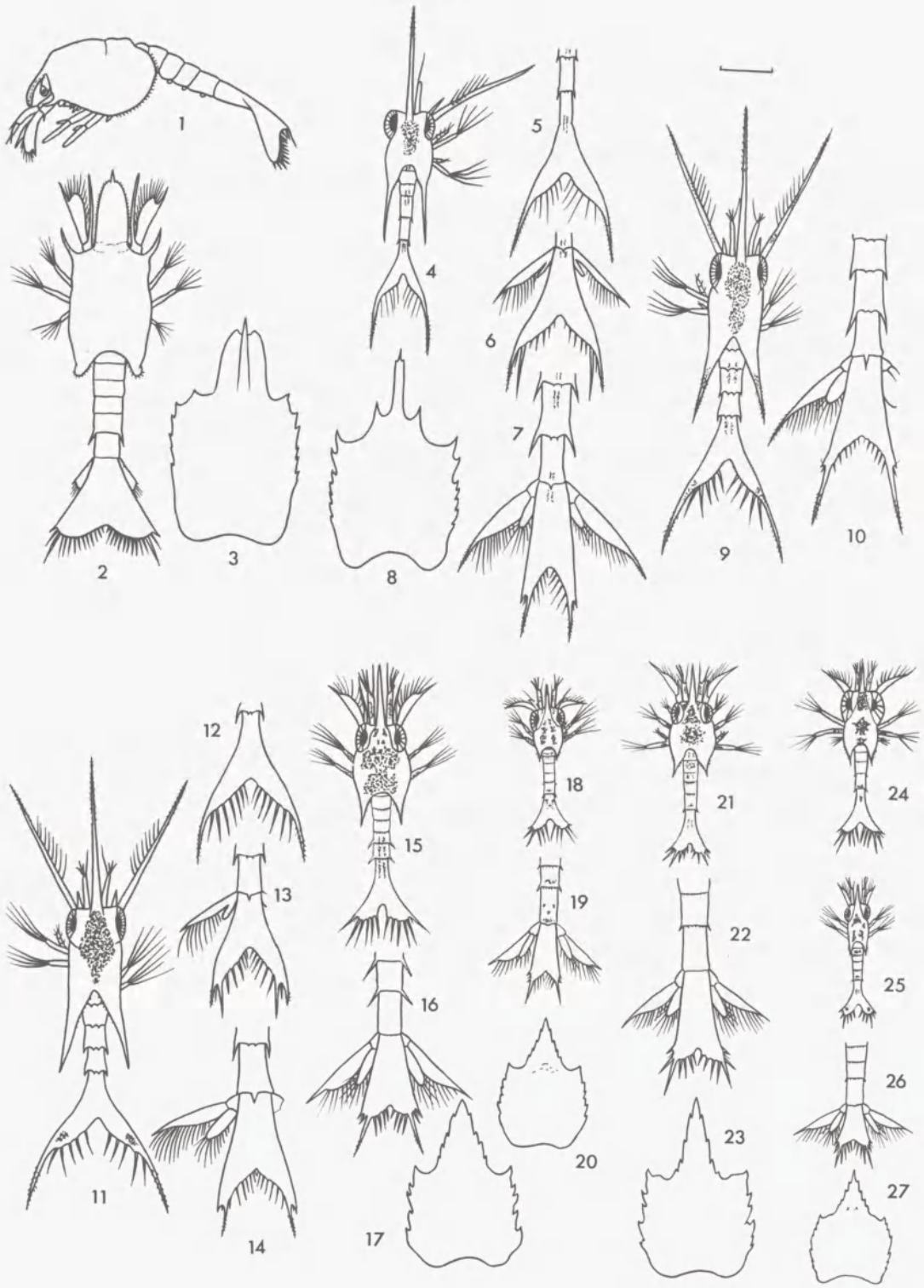
CONSEIL INTERNATIONAL POUR L'EXPLORATION DE LA MER

Zooplankton
Sheet 139

CRUSTACEA
DECAPODA: LARVAE
X. GALATHEIDEA

(By R. B. Pike and D. I. Williamson)

1972



Figs. 1–3. *Munidopsis tridentata*: 1, zoeal stage I; 2, last zoeal stage; 3, carapace of megalopa. – Figs. 4–8. *Munida rugosa*: 4, zoeal stage I; 5–7, posterior abdomen of zoeal stages II–IV; 8, carapace of megalopa. – Figs. 9–10. *Munida intermedia sarsi*: 9, zoeal stage I; 10, posterior abdomen of last zoeal stage. – Figs. 11–14. *Munida tenuimana*: 11, zoeal stage I; 12–14, posterior abdomen of zoeal stages II–IV. – Figs. 15–17. *Galathea strigosa*: 15, zoeal stage I; 16, posterior abdomen of last zoeal stage; 17, carapace of megalopa. – Figs. 18–20. *Galathea squamifera*: 18, zoeal stage I; 19, posterior abdomen of last zoeal stage; 20, carapace of megalopa. – Figs. 21–23. *Galathea dispersa*: 21, zoeal stage I; 22, posterior abdomen of last zoeal stage; 23, carapace of megalopa. – Fig. 24. *Galathea nexa*: zoeal stage I. – Figs. 25–27. *Galathea intermedia*: 25, zoeal stage I; 26, posterior abdomen of last zoeal stage; 27, carapace of megalopa.

Figs. 28, 29. *Porcellana platycheles*: 28, zoeal stage I; 29, megalopa. – Figs. 30, 31. *Pisidia longicornis*: 30, zoeal stage I; 31, megalopa. Scale-line approximately 1 mm: Figs. 28–31.

[Figs. 1–3, 10 after Sars; 8, 15–23, 25–31 after Lebour; 9, 11–14 after Huus; 24 after Bull; 4–7 original R.B.P.].

Family Chirostylidae

No larvae described. Development probably abbreviated or direct.

Genus *Chirostylus* Ortmann

1. *C. formosus* (Filhol).

Genus *Uroptychus* Henderson

2. *U. rubrovittatus* (A. Milne Edwards). Eggs 1.5–2 mm (Zariquiey Alvarez, 1968).
3. *U. nitidus* (A. Milne Edwards) subsp. *concolor* (A. Milne Edwards & Bouvier). Eggs 1.3 mm (Bouvier, 1940). Embryo described by Bouvier, 1892.
4. *U. bouvieri* Caullery. Eggs 1.0–1.5 mm (Kemp, 1910).

Family Galatheidae

KEY TO SPECIES IN ZOEAL STAGES

I. Rostrum much broader than diameter of eye; posterior margin of carapace rounded ..... *Munidopsis tridendata*
Rostrum narrower than diameter of eye; carapace with posterior spine on each side II

II. Antennal exopod aciculate; larvae exceeding 6 mm in all stages (*Munida*) III
Antennal exopod flattened; larvae less than 6 mm except last zoeal stage of some species (*Galathea*) V

III. Stages I and II (i.e. without uropods): outermost telson spine about as long as posterior width of telson (between bases of long spines). Stage III (uropods but no pleopods present): 10 setae between longest spines on posterior margin of telson. Stage IV (pleopods and uropods present): longest telson spine longer than width of abdomen, 11–13 setae between longest spines IV
Stages I and II: outermost telson spine shorter than posterior width of telson. Stage III: 12–14 setae between longest spines on posterior margin of telson. Stage IV: longest telson spine about equal to width of abdomen, 14–16 setae between longest spines ..... *Munida tenuimana*

IV. Lateral spines on abd. 4 more than half length of those on abd. 5 ..... *Munida rugosa*
Lateral spines on abd. 4 about half length of those on abd. 5 ..... *Munida intermedia sarsi*

V. Distinct lateral spines on abd. 4 and 5 VI
Lateral spines distinct on abd. 5, minute or absent on abd. 4 VIII

VI. Lateral spines on abd. 4 about half length of those on abd. 5 ..... *Galathea nexa*
Lateral spines on abd. 4 distinctly more than half length of those on abd. 5 VII

VII. Lateral spines on abd. 4 and 5 each longer than half width of abdomen ..... *Galathea strigosa*
Lateral spines on abd. 4 and 5 each shorter than half width of abdomen ..... *Galathea squamifera*

VIII. Posterior carapace spines reaching to or beyond anterior margin of abd. 4 ..... *Galathea dispersa*
Posterior carapace spines not reaching as far as anterior margin of abd. 3 ..... *Galathea intermedia*

KEY TO GENERA IN MEGALOPA STAGE

I. Rostrum tapering, with lateral spines ..... *Galathea*
Rostrum almost parallel-sided, without lateral spines except near tip II
II. Rostrum broader than diameter of eye ..... *Munidopsis*
Rostrum narrower than diameter of eye ..... *Munida*

The megalopas of *Munida rugosa* and *M. intermedia sarsi* are very similar (Fig. 8); that of *M. tenuimana* has a slightly tapering rostrum with smaller subterminal spines. Described megalopas of *Galathea* spp. show specific differences in the shape and armature of the rostrum and carapace (Figs. 17, 20, 23, 27).

Genus *Munidopsis* Whiteaves

5. *M. tridentata* (Esmark). (Figs. 1–3). Only 2 zoeal stages known; leicotrophic; 6–7 mm. Sars, 1890, Pl. 4 (zoeal stages and megalopa, as *Galathodes*). H. C. Williamson, 1915, Figs. 254–260 (zoeal stages, as *Galathea*, after Sars).
6. *M. crassa* Smith. Larvae not described.
7. *M. curvirostra* Whiteaves. Larvae not described. Eggs few, 1.2–1.4 mm (Selbie, 1914).

Genus *Munida* Leach

Four zoeal stages.

8. *M. rugosa* (Fabricius) [= *M. bamffia* (Pennant)]. (Figs. 4–8). Chromatophores on intestine in abdomen, none on lobes of telson. Telson spines longer than in other spp. of genus. Ca. 6.3 mm (stage I) – 11.5 mm (stage IV). Lebour, 1930, Pl. 1 (zoeal stages and megalopa, as *M. banffica*).
9. *M. intermedia* A. Milne Edwards & Bouvier subsp. *sarsi* Brinkmann. (Figs. 9, 10). Chromatophores similar to *M. rugosa*. Ca 7.5 mm (stage I) – 13 mm (stage IV). Sars, 1890, Pl. 6 (1st and last zoeal stages and megalopa, as *M. rugosa*). Stephensen, 1913, Fig. 36 (zoeal stage III, as *M. tenuimana*). H. C. Williamson, 1915, Figs. 239–246 (1st and last zoeal stages and megalopa, as *Galathea rugosa*, after Sars), Fig. 261 (zoeal stage III, as *M. tenuimana*, after Stephensen). Huus, 1935, Fig. 1a (zoeal stage I, as *M. sarsi*).
10. *M. tenuimana* M. Sars. (Figs. 11–14). Chromatophore on each lobe of telson, none on intestine in abdomen. Ca 7.5 mm (stage I) – 13.5 mm (stage IV). Huus, 1935, Figs. 1b, 2, 3, 6, Pls. 1–4 (zoeal stages and megalopa). Stephensen, 1913, Fig. 35 (zoeal stage IV). H. C. Williamson, 1915. Figs. 262–266 (zoeal stage IV, after Stephensen).
11. *M. perarmata* A. Milne Edwards & Bouvier. Larvae not described.
12. *M. microphthalma* A. Milne Edwards. Larvae not described.

Genus *Galathea* Fabricius

Four or five zoeal stages.

13. *G. strigosa* (Linn.). (Figs. 15–17). Ca 3.5 mm (stage I) – 7 mm (last zoea). H. C. Williamson, 1915, Figs. 250–253 (zoeal stage I). Lebour, 1930, Pl. 2 (zoeal stages and megalopa). Gurney, 1942, Fig. 103A (last zoeal stage).
14. *G. squamifera* Leach. (Figs. 18–20). Ca 2.2 mm (stage I) – 5 mm (last zoea). Sars, 1890, Figs. 5–15 (appendages and telson of zoeal stage I). Lebour, 1931, Pl. 1, Figs. A–E (zoeal stages and megalopa).
15. *G. dispersa* Bate. (Figs. 21–23). Ca 2.5 mm (stage I) – 6.7 mm (last zoea). Sars, 1890, Pl. 5, Figs. 1–4, 16–27 (zoeal stage I as *G. nexa*, last zoeal stage and megalopa as *G. intermedia*). H. C. Williamson, 1915, Figs. 229–231, 233–238 (1st and last zoeal stages and megalopa, later stages as *G. intermedia*, largely after Sars). Lebour, 1930, Pl. 3 (zoeal stages and megalopa).
16. *G. nexa* Embleton. (Fig. 24). Ca 2.8 mm (stage I); later stages not described. Bull, 1937, Pl. 6, Fig. 1 (zoeal stage I).
17. *G. intermedia* Lilljeborg. (Figs. 25–27). Ca 2.2 mm (stage I) – 4 mm (last zoea). Megalopa with 2 dorsal spines at base of rostrum. Lebour, 1931, Pl. 1, Figs. F–J (zoeal stages and megalopa).

Family Porcellanidae

European species pass through only 2 morphological zoeal stages, but larvae may moult with little change of form.

KEY TO SPECIES IN ZOEAL STAGES

Posterior carapace spines at least half length of rostrum in both stages, without conspicuous ventral spines in stage I; pleopods on abd. 2–5 in stage II; distal half of rostrum and of each posterior spine pigmented ..... *Porcellana platycheles*

Posterior carapace spines less than half length of rostrum in both stages, with 2 conspicuous ventral spines near base in stage I; pleopods on abd. 2–4 in stage II; pigment in bands on rostrum and at tips of posterior spines ..... *Pisidia longicornis*

KEY TO SPECIES IN MEGALOPA STAGE

Propodus of cheliped about 3 times as long as maximum width, outer margin with long hairs and small teeth, inner margin with 2 large teeth
Porcellana platycheles

Propodus of cheliped about 5 times as long as maximum width, outer margin with small teeth only, inner margin almost smooth
Pisidia longicornis

Genus *Porcellana* Lamarck

18. *P. platycheles* (Pennant). (Figs. 28, 29). Ca 8 mm between tips of rostrum and posterior spine (stage I), ca 11 mm (stage II). H. C. Williamson, 1915, Figs. 494–497 (zoeal stage I). Lebour, 1943, Figs. 1, 4b, 8c, 10, 11, (zoeal stages and megalopa). Le Roux, 1961 (no fig.).

Genus *Pisidia* Leach

19. *P. longicornis* (Linn). (Figs. 30,31). Ca 5 mm (stage I), ca 10 mm (stage II). Sars, 1890, Pl. 7, Figs. 1–26 (zoeal stages, as *Porcellana*). H. C. Williamson, 1915, Figs. 488–493 (zoeal stage I and megalopa, as *Porcellana*), Figs. 498, 499 (megalopa, as *Porcellana platycheles*, after Stebbing). Gurney, 1942, Fig. 105 (zoeal stage II, as *Porcellana* sp.). Lebour, 1943, Figs. 2a, b, 3, 4a, 5, 6, 7, 8a, b, 9 (zoeal stages and megalopa, as *Porcellana*). Le Roux, 1966, Figs. 1–3 (zoeal stage II and megalopa, as *Porcellana*).

Distribution of Adults

Region	*Species*
Baltic, inc. Gulf of Bothnia	
Gulf of Finland and Belt Sea	–
Kattegat	13, 14, 17
Skagerak	10, 13, 14, 17
Northern North Sea	8, 9, 13, 14, 15, 16, 17, 18, 19
Southern North Sea	13, 14, 17, 18, 19
English Channel	13, 14, 15, 16, 17, 18, 19
Bristol Ch., Irish Sea, S.W. Scotland ..	8, 13, 14, 15, 16, 17, 18, 19
Faroe, Shetland, N. Scotland	8, 9, 10, 13, 15, 17, 18, 19
Faroe-Iceland Area	2, 7, 9, 10, 15
Western Ireland and Atlantic	1, 2, 3, 5, 7, 8, 10, 14, 15, 17, 18, 19
Bay of Biscay	1, 2, 3, 4, 5, 6, 8, 11, 12, 13, 14, 15, 17, 18, 19
Barents Sea	13
Norwegian Sea	5, 8, 9, 10, 13, 15, 17, 19

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