

Zooplankton

Sheet 112

CRUSTACEA

(PELAGIC ADULTS)

ORDER: DECAPODA

V. CARIDEA

**Families: Pasiphaeidae, Oplophoridae,
Hippolytidae and Pandalidae**

(By A. L. RICE)

1967

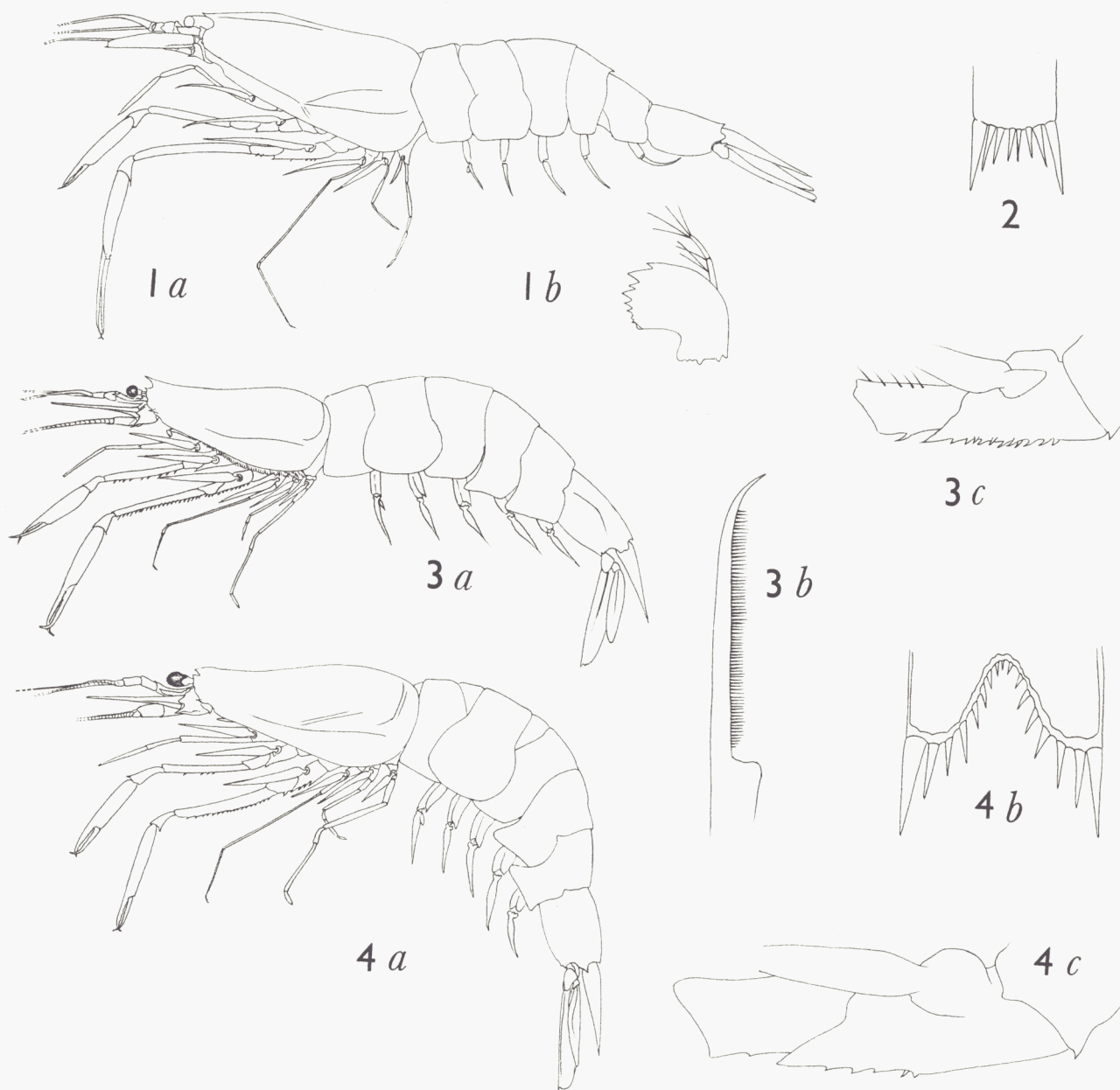


Figure 1. *Parapasiphae sulcatifrons* Smith. (a) lateral view (after KEMP). (b) mandible (after SMITH). – Figure 2. *Pasiphaea sivado* (Risso). Tip of telson. – Figure 3. *Pasiphaea multidentata* Esmark. (a) lateral view (after KEMP). (b) immovable finger of second leg. (c) basis and ischium of second leg. – Figure 4. *Pasiphaea tarda* Krøyer. (a) lateral view (after KEMP). (b) tip of telson. (c) basis and ischium of second leg.

DECAPODA CARIDEA

Anterior three pairs of thoracic limbs differentiated from the posterior five pairs as maxillipeds. Pleura of the second abdominal segment overlapping those of the first and third segment. No chelae on the third legs.

This definition distinguishes the Caridea from the Penaeidea, which have the pleura of the second abdominal segment not overlapping those of the first segment and also have chelate third legs, and from the Euphausiacea in which none of the thoracic limbs are modified as maxillipeds.

(Several of the species dealt with in this sheet probably spend a good deal of their time as adults on or close to the sea bottom and make only occasional mid-water excursions. Some of the species are large and quite powerful swimmers and should perhaps be considered as nektonic rather than planktonic; they are included since they are often taken in large or high speed plankton samplers).

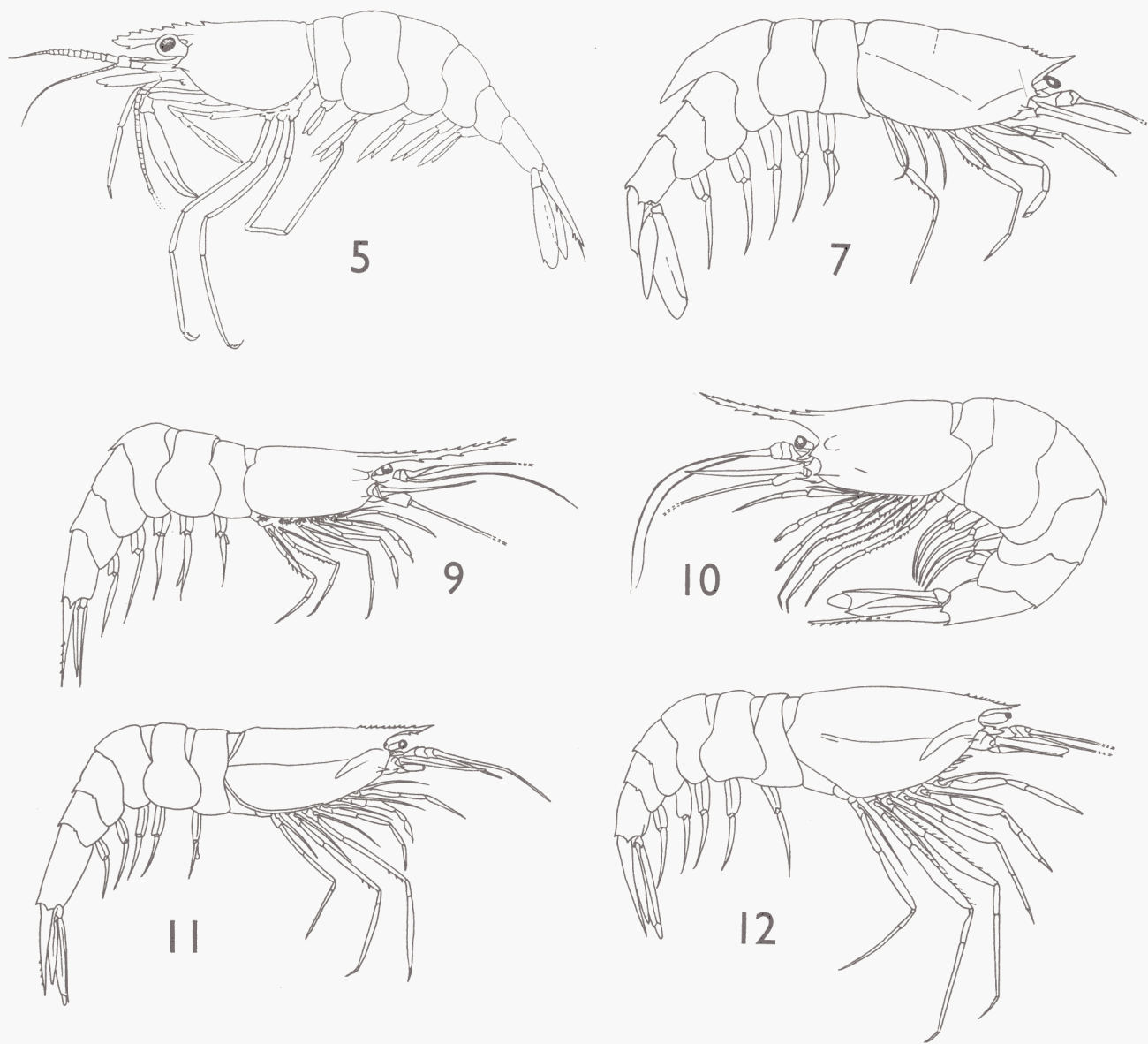


Figure 5. *Caridion gordonii* (Bate). (After LEBOUR). – Figure 7. *Acantheephyra brevisrostris* Smith (After CHACE). – Figure 9. *Acantheephyra purpurea* A. Milne-Edwards (After CHACE). – Figure 10. *Acantheephyra pelagica* (Risso). (After CHACE). – Figure 11. *Meningodora vesca* (Smith). (After CHACE). – Figure 12. *Meningodora mollis* Smith. (After CHACE).

KEY TO THE SPECIES

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|------------------------------------------------------------------------------------------------------------------------|-----------------------------------|---|
| 1. Fingers of all chelae slender, their cutting edges pectinate (Figure 3b) | Pasiphaeidae | 2 |
| Cutting edges of fingers not all pectinate | | 5 |
| 2. Mandible without palp. Rostrum formed by an erect postfrontal spine | <i>Pasiphaea</i> | 3 |
| Mandible with a two-segmented palp (Figure 1b). Rostrum a normal forwardly directed prolongation of the carapace | <i>Parapasiphaea sulcatifrons</i> | |
| 3. Telson not forked (Figure 2) | <i>Pasiphaea sivado</i> | |
| Telson forked (Figure 4b) | | 4 |
| 4. Basis of leg 2 with 7–12 spines (Figure 3c) | <i>Pasiphaea multidentata</i> | |
| Basis of leg 2 with 0–5 spines (Figure 4c) | <i>Pasiphaea tarda</i> | |
| 5. Carpus of second legs divided into two or more subsegments | | 6 |
| Carpus of second legs not sub-divided | Oplophoridae | 8 |

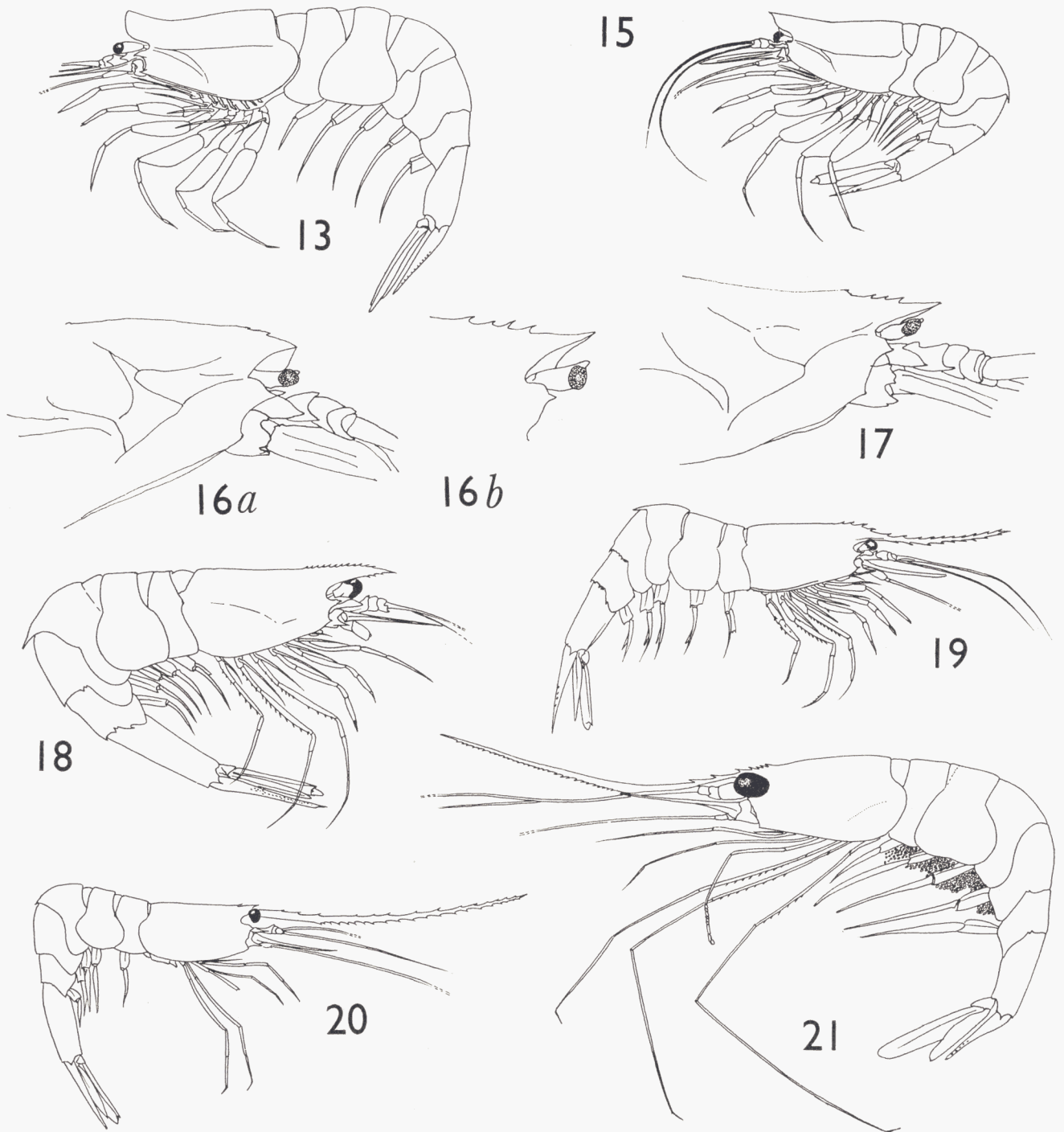


Figure 13. *Ephyrina hoskynii* Wood-Mason. (After CHACE). - Figure 15. *Ephyrina bifida* Stephensen. (After CHACE). - Figure 16. *Hymenodora glacialis* (Buchholz). (a) and (b) anterior part of the body showing variation in the form of the rostrum. (After SIVERTSEN and HOLTHUIS). - Figure 17. *Hymenodora gracilis* Smith. Anterior part of the body (after SIVERTSEN and HOLTHUIS). - Figure 18. *Systellaspis braueri* (Balss). (After CHACE). - Figure 19. *Systellaspis debilis* (A. Milne-Edwards). (After CHACE). - Figure 20. *Parapandalus richardi* (Coutière). (After CHACE). - Figure 21. *Plesionika martia* (A. Milne-Edwards). (After KEMP).

6. Chelae of first pair of pereopods distinct Hippolytidae 7
 Chelae of first pair of pereopods microscopically small or absent Pandalidae 20
7. Rostrum reaches beyond the antennular peduncle. Postero-lateral angle of fourth abdominal segment without a spine (Figure 5) *Caridion gordonii*
 Rostrum does not reach the end of the antennular peduncle. Spine present on the postero-lateral angle of the fourth abdominal segment
 *Caridion steveni*
8. Sixth abdominal segment with a dorsal carina 9
 Sixth abdominal segment never carinate dorsally 14
9. Straight ridge or carina running the length of the lateral surface of the carapace from the orbit to, or almost to, the hind margin. Hind margin
 of hepatic groove cut off abruptly from branchial region by an oblique ridge (Figure 11) *Meningodora* 13
 No lateral ridge on carapace as above. Hind margin of the hepatic groove not cut off abruptly by a ridge *AcanthePHYra* 10
10. Integument thin and soft. Third abdominal segment with the posterior projection overreaching 4th segment (Figure 7) *AcanthePHYra brevis*
 Integument hard and firm. Posterior projection of the 3rd abdominal segment not overreaching the 4th Segment 11
11. Eyes minute, very much narrower than the eyestalks *AcanthePHYra microphthalmia*
 Eyes slightly broader than the eyestalks 12
12. Four pairs of dorso-lateral spines on the telson. Dorsal carina of 4th abdominal segment usually ends bluntly without a tooth *AcanthePHYra purpurea*
 Seven to eleven pairs of telson spines. Tooth present at the end of the dorsal carina of the 4th abdominal segment (Figure 10)
 *AcanthePHYra pelagica*
13. Integument soft but firm. Sixth abdominal segment more than twice as long as 5th *Meningodora vesca*
 Integument very thin and fragile. Sixth abdominal segment one and one half times as long as fifth *Meningodora mollis*
14. Ischial and meral joints of legs very broad and much compressed laterally (Figures 13 and 15) *Ephyrina* 15
 Legs normal 17
15. No posterior tooth on the third abdominal segment. Ten to thirteen pairs of lateral spines on the telson *Ephyrina hoskynii*
 Posterior tooth present on the third abdominal segment. Less than ten, or at least twenty pairs of lateral spines on the telson 16
16. Posterior tooth on the third abdominal segment triangular. Twenty to twenty-five pairs of lateral spines on the telson *Ephyrina benedicti*
 Posterior tooth on the third abdominal segment broad and bifid at the tip (this character is not obvious in specimens with a carapace length
 less than about 7 mm (see CHACE, 1940)). Five to eight pairs of lateral spines on the telson *Ephyrina bifida*
17. Eyes very small and poorly pigmented. Anterior margin of first abdominal segment entire. Telson ends in a truncate, spinose tip
 *Hymenodora* 18
 Eyes very large and well pigmented. Anterior margin of first abdominal segment armed with a lobe or tooth overlapping the hind margin
 of the carapace. Telson ends in a sharp pointed end-piece armed laterally with spines *Systellaspis* 19
18. Groove running more or less vertically between the cervical and cardiac carapace grooves (Figure 16a) *Hymenodora glacialis*
 No groove between the cervical and cardiac carapace grooves (Figure 17) *Hymenodora gracilis*
19. Rostrum triangular and less than half as long as carapace. Hind margins of 4th and 5th abdominal segments not denticulate. Sixth segment
 at least twice length or 5th *Systellaspis braueri*
 Rostrum slender and longer than the carapace. Hind edge of 4th and 5th abdominal segments denticulate. Sixth segment less than twice
 length of 5th *Systellaspis debilis*
20. No epipods on any of the legs. Rostrum dorsally dentate throughout its length *Parapandalus richardi*
 Epipods present on all but the last pair of legs. Rostrum dorsally smooth beyond antennular peduncle *Plesionika martia*

Family PASIPHAEIDAE

Genus PARAPASIPHAE Smith

1. *Parapasiphae sulcatifrons* Smith. (Figures 1a and 1b). Total length up to 83 mm. Vertical range 500–5400 m.
 HANSEN, 1908, p. 79; KEMP, 1910, p. 47, pl. v, figs. 1–21; STEPHENSEN, 1923, p. 40; BALSS, 1925, p. 236, fig. 10, pl. 20; STEPHENSEN, 1935,
 p. 34; SIVERTSEN and HOLTHUIS, 1956, p. 30.

Genus PASIPHAEA Savigny

2. *Pasiphaea sivado* (Risso). (Figure 2). Total length up to 100 mm. Vertical range 0–1000 m, but probably lives mainly on or near the bottom,
 KEMP, 1910, p. 37, pl. IV, fig. 12; SUND, 1912, p. 17; STEPHENSEN, 1923, p. 31, figs. 11–14; BALSS, 1925, p. 237; SIVERTSEN and HOLTHUIS,
 1956, p. 29.
3. *Pasiphaea multidentata* Esmark. (Figures 3a–c). Total length up to 100 mm. Vertical range 10–2000 m, largely pelagic.
 KEMP, 1910, p. 39, pl. IV, figs. 8–11 (as *P. tarda*); SUND, 1912, p. 14; SIVERTSEN and HOLTHUIS, 1956, p. 27, Figures 19–21.
4. *Pasiphaea tarda* Krøyer. (Figures 4a–c). Total length up to 215 mm. Vertical range 250–2400 m.
 HANSEN, 1908, p. 78; KEMP, 1910, p. 42, pl. IV, figs. 1–7 (as *P. princeps*); SUND, 1912, p. 6, Figures 5–7, 9a–f (as *P. princeps*); p. 14, Figures 8,
 9g–n (as *P. principalis*); SIVERTSEN and HOLTHUIS, 1956, p. 23, Figures 17 and 18.

Family HIPPOLYTIDAE

Genus CARIDION Goës

5. *Caridion gordoni* (Bate). (Figure 5). Total length up to 27 mm. Vertical range 20–500 m.
HANSEN, 1908, p. 70; KEMP, 1910, p. 109, pl. XVI, Figures 1–12; LEBOUR, 1930, p. 184, pl. IV, Figure 1.
6. *Caridion steveni* Lebour. (Figure 6). Total length up to 27 mm. Shallow water form, may not be pelagic.
LEBOUR, 1930, p. 185, pl. I, pl. IV, Figure 2.

(Although *C. gordoni* is the only member of the Hippolytidae commonly taken in mid-water in the north-east Atlantic region there is a single record of a specimen of *Bythocaris simplicirostris* Sars taken pelagically in the Faroe-Iceland Channel (FRASER, 1961, p. 44). The genus *Bythocaris* can be easily distinguished from *Caridion* by the presence in the former of a pair of supraocular carapace spines and a backward extension of the dorsal posterior margin of the third abdominal segment. *Bythocaris* also lacks the mandibular palp which is present in *Caridion*. In the North-east Atlantic area four species of *Bythocaris* are recorded and differences between these are given in SIVERTSEN and HOLTHUIS (1956) and HANSEN (1908).

Family OPLOPHORIDAE

Genus ACANTHEPHYRA A. Milne-Edwards

7. *AcanthePHYRA brevisrostris* Smith. (Figure 7). Carapace length up to 25.5 mm (British Museum specimen). Vertical range 800–5300 m. Probably rare in the area considered.
HANSEN, 1908, p. 77, pl. IV, Figure 2a (as *A. batei*); CHACE, 1940, p. 148, Figure 25; CHACE, 1947, p. 20; SIVERTSEN and HOLTHUIS, 1956, p. 5.
8. *AcanthePHYRA microphthalmia* Smith. Carapace length up to 20 mm (British Museum specimen). Vertical range 2000–4700 m. Probably rare in the area considered.
SIVERTSEN and HOLTHUIS, 1956, p. 5.
9. *AcanthePHYRA purpurea* A. Milne-Edwards. (Figure 9). Carapace length up to 20.5 mm (CHACE, 1940), total length up to 147 mm (KEMP, 1939). Most commonly found at depths between 200 and 600 m.
HANSEN, 1908, p. 75; STEPHENSEN, 1923, p. 48; BALSS, 1925, p. 252; KEMP, 1939, p. 576; CHACE, 1940, p. 134, Figure 11; CHACE, 1947, p. 11; SIVERTSEN and HOLTHUIS, 1956, p. 6.
10. *AcanthePHYRA pelagica* (Risso). (Figure 10). Carapace length up to 25.5 mm. Most commonly found at depths of 900–1650 m, that is much deeper than *A. purpurea*. *A. pelagica* appears to be typical of much colder water than *A. purpurea* and extends much further north.
STEPHENSEN, 1935, p. 30 (as *A. multispina*); CHACE, 1940, p. 140, Figure 18, (as *A. haeckelii*); SIVERTSEN and HOLTHUIS, 1956, p. 7.

Genus MENINGODORA Smith

11. *Meningodora vesca* (Smith). (Figure 11). Carapace length up to 17 mm. Vertical range 750–5300 m.
CHACE, 1940, p. 153, Figures 29 and 30; CHACE, 1947, p. 21 (both as *Notostomus vescus*); SIVERTSEN and HOLTHUIS, 1956, p. 13.
12. *Meningodora mollis* Smith (Figure 12). Carapace length up to 19.5 mm. Vertical range 900–3000 m.
BALSS, 1925, p. 266; CHACE, 1940, p. 164, Figure 38; CHACE, 1947, p. 24 (all as *Notostomus*); SIVERTSEN and HOLTHUIS, 1956, p. 12.

Genus EPHYRINA Smith

13. *Ephyrina hoskynii* Wood-Mason. (Figure 13). Total length up to 110 mm. Probably rare in the area considered.
KEMP, 1910, p. 68, pl. VII, Figures 1–6; CHACE, 1940, p. 173, Figure 44; CHACE, 1947, p. 29.
14. *Ephyrina benedicti* Smith. Carapace length up to 16.5 mm. (British Museum specimen). Vertical range 1400–4400 m.
KEMP, 1910, p. 71, pl. VII, Figure 7; BALSS, 1925, p. 269; STEPHENSEN, 1923, p. 59, Figure 19; STEPHENSEN, 1935, p. 31; SIVERTSEN and HOLTHUIS, 1956, p. 15, Figure 10.
15. *Ephyrina bifida* Stephensen. (Figure 15). Carapace length up to 37.5 mm. Vertical range 720–4000 m. Rare in the area considered.
STEPHENSEN, 1923, p. 58, Figure 18; CHACE, 1940, p. 174, Figure 45; CHACE, 1947, p. 29; SIVERTSEN and HOLTHUIS, 1956, p. 14, Figure 9.

Genus HYMENODORA Sars

16. *Hymenodora glacialis* (Buchholz). (Figure 16). Carapace length up to 20 mm. Vertical range down to 3900 m. This species is basically bathypelagic but may approach the surface. It is apparently mainly Arctic, recorded mostly from north of the Wyville-Thompson ridge (see STEPHENSEN, 1935).
- HANSEN, 1908, p. 79; KEMP, 1910, p. 72, pl. VIII, Figures 1–3; STEPHENSEN, 1923, p. 59; BALSS, 1925, p. 270; STEPHENSEN, 1935, p. 31, Figure 13; CHACE, 1947, p. 31; SIVERTSEN and HOLTHUIS, 1956, p. 15, Figures 11 and 12.

17. *Hymenodora gracilis* Smith (Figure 17). Carapace length up to 15 mm. Vertical range 500–5300 m. This is a more southerly species than *H. glacialis*, being typical of the area south of the Wyville-Thompson ridge. STEPHENSEN, 1923, p. 60; STEPHENSEN, 1935, p. 33, Figure 13; CHACE, 1940, p. 175, Figures 46–49; CHACE, 1947, p. 32; SIVERTSEN and HOLTHUIS, 1956, p. 16, Figure 13.

Genus SYSTELLASPIS Bate

18. *Systellaspis braueri* (Balss). (Figure 18). Carapace length up to 16 mm. Vertical range 1300–4000 m. BALSS, 1925, p. 245, Figures 16–19, pl. 21; CHACE, 1940, p. 180, Figure 50; SIVERTSEN and HOLTHUIS, 1956, p. 19.
19. *Systellaspis debilis* (A. Milne-Edwards). (Figure 19). Total length up to 85 mm. Vertical range 25–3000 m. KEMP, 1910, p. 59, pl. VI, Figures 1–15 (as *Acanthephyra*); BALSS, 1925, p. 242; CHACE, 1940, p. 181, Figure 51; CHACE, 1947, p. 35; SIVERTSEN and HOLTHUIS, 1956, p. 17.

Family PANDALIDAE

Genus PARAPANDALUS Borradaile

20. *Parapandalus richardi* (Coutière). (Figure 20). Carapace length up to 9.0 mm. Taken with as little as 25 m of wire out at night (STEPHENSEN, 1923) and as deep as 1800 m from the surface during the day (CHACE, 1940). Probably not common in the area considered, being more typical of warmer waters. MURRAY and HJORT, 1912, pp. 585, 668 (as *Plesionika nana*); STEPHENSEN, 1923, p. 80 (as *Pandalus (Stylopandalus) richardi*); CHACE, 1940, p. 192, Figures 58–61; SIVERTSEN and HOLTHUIS, 1956, p. 34, Figures 25.

Genus PLESIONIKA Bate

21. *Plesionika martia* (A. Milne-Edwards). (Figure 21). Carapace length up to 26 mm. Vertical range 165–2100 m. Apparently primarily a benthic species but is occasionally taken in mid-water. KEMP, 1910, p. 93, pl. XII, Figures 1–4; BALSS, 1925, p. 278; CHACE, 1940, p. 190, Figure 57; SIVERTSEN and HOLTHUIS, 1956, p. 36.

DISTRIBUTION

Baltic	–	Faroe, Shetland, North Scotland	1, 2, 3, 4, 5, 9, 10, 16, 19
Kattegat	2, 5	Faroe-Iceland area	1, 2, 3, 4, 5, 9, 10, 11, 16, 19
Skagerak	2, 3, 4, 5, 6	Norwegian Sea	2, 3, 4, 5, 16
North Sea	2, 4, 5, 6	Barents Sea	2, 3, 4, 5, 16
English Channel	2, 5, 6, 9, 19	W. Ireland and Atlantic	all species except 6
Bristol Channel, Irish Sea	2, 5, 6, 9	Bay of Biscay	all species except 6, 7, 8, 11 and 21

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