# Report on the Amphipoda (Gammaridea and Caprellidea) of the Coast of Tropical West Africa

*by*

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## Introductory Note.

The Amphipoda collected on this expedition (Bruun 1950) are of interest in that they comprise a great many of the usual "northern" forms, i. e. forms originally described from the European seas and the Mediterranean. Besides these there are the so-called cosmopolitan forms.

Comparatively few southern forms occur in the collection and one wonders what would have appeared had the expedition carried its investigations a little further to the south. As it is, most of the area is within the influence of the south-going current, which might be expected to carry with it the northern species.

The north-going current (if indeed there be a current) seems to have but little effect.

Tribute must here be paid to the work done by Chevreux (1900) and Schellenberg (1925) in this area. Many of their species have re-appeared in this collection. However, Schellenberg has caused me some difficulties in the naming of the species of *Ampelisca.*

He recognised the difficulty in sorting out the species of this genus and when he found a form which was close to, yet distinctly different from, a well-marked species he, to keep it associated, made it a sub-species. Thus *A. brevicornis* represents one of the clearest species-groups so he considered it better to call any new form a sub-species rather than a new species. Until the genus is revised I have no choice but to follow him.

As will be seen, I have been unable to identify a large number of ampeliscids—the amount of variation is enormous—and though there is a good deal of material there is far too little for any sort of reasonable revision. This revision must be left for someone with considerable time and a passion for order.

The great number of intersexes, especially in *Ampelisca,* should be noted.

I found myself in the usual difficulty of what to do with the single specimen which is obviously different from any known species. Of course such could be ignored but that seems very unsatisfactory, especially if the specimen is very clearly distinguishable. I have, therefore, done what I consider to be the only possible thing and described it; having done so it is logical to fit it with a name. This may not be good practice but I really do not see what else one can do.

It will be noticed that I have not given long lists of references and synonyms. I feel that in a work of this type such standard repetition is mostly unnecessary, so my references are only to such works as contain descriptions and figures of that particular species; or to works describing the species under another name. In the case of the older species long lists of references will be found in STEBBING (1906).

I have also modified the description of the distribution. Instead of giving such information as Ceylon, Seychelle Isl., etc., I have combined them as the "Indian Ocean". Some cases, of course, cannot be so combined and they are specifically stated. This course has been taken because I believe it gives a wrong impression to tie almost any marine amphipod to one definite locality. The more collecting that is done the wider the distribution of most species appears to be.

Finally, I would say a word about the abandon with which species have, in this group, been made in the past as well as the present. It is temptingly easy to find new ones. Their habit of breeding at different sizes and consequent different body-proportions, or even shapes, is a fruitful source of confusion. (It will be noticed in the following pages that comment is made on small and large ovigerous females.) Constant notes on small differences between the "type" and forms described in this and other works should also be a warning against the trap into which workers (myself included) have fallen. If I have "lumped" forms together, I have drawn attention to the differences they show.

The collection is kept in the Zoological Museum of the University of Copenhagen.

## Intersexes.

The frequence of the occurrence of intersexes in the Gammaridea in general and particularly in *Ampelisca* in this collection challenges one to find the explanation. It is, unfortunately, not possible to do much with the material collected under such circumstances. The methods of preservation are not those usually necessary for fine cytological work. One can at this stage only review the possibilities.

Normally it can be said that sex is determined by the arrangement of the chromosomes during fertilisation. Thus in those organisms with X and Y chromosomes XX may determine the female and XY the male.

However, this is only part of the story and there are many abnormal cases of a most perplexing nature which seem to involve the mass effect of the autosomes (*Drosophila*); the effect of the environment (e. g. *Bonellia*); the effect of neighbours (e. g. *Crepidula plana*); the effect of parasites (tuberculosis in birds, *Sacculina* in crabs, protozoan parasites in copepods); effects of age (i. e. young forms always male, older forms female, e. g. *Pandalus borealis, Crepidula* sp., *Asterias gibbosa, Myxine glutinosa*); effect of prolonged fasting (e. g. newt); the effect of "opposition" between two genetically similar but geographically different races (e. g. *Lymantria dispar*). There are probably other causes.

As far as can be discovered the intersex amphipods fall into none of the foregoing categories though disease cannot be ruled out entirely.

In the case of the intersex *Allorchestes* (p. 247) the youngest specimens (2 mm.) have the heavy gnathopod II characteristic of the male, while they also possess rudimentary brood-plates. This would seem to suggest that disease may be ruled out and that the condition is due to an abnormal chromosomal aggregation which had brought both male and female forces to bear in about equal quantities (judged solely by the appearance of the animals). When the adult stage is reached the gonad may be an ovary, a testis or a mixture. Since it is functional and produces eggs it must be, in greater part at least, an ovary.

If one dare argue from similar cases in *Drosophila* it is possible to suppose that these forms are triploid as far as the autosomes are concerned but have the normal sex-chromosomes of the female. This, in *Drosophila*, produces an intersex which is sterile. These begin as males and later develop female characteristics.

It is known that such an intersex which had an additional fragment of an X chromosome was fertile (had it had the complete X chromosome it would have been a complete triploid female). This is perhaps more clearly shown diagramatically:—

2A: XY = male
2A: 2X = female
3A: 2X = intersex (sterile)
3A: $2^1/_2$X= intersex (fertile)

The additional part of the X-chromosome is enough to induce fertility but the mass effect of the three autosomes cause the retention of male somatic characteristics.

Whatever may be the value of this explanation as far as *Allorchestes* (egg-laying males) is concerned, it will not explain the phenomenon in *Ampelisca* where the form is that of a female with male characteristics. These forms have the female antennae (with some male "sensory" bristles), copulatory hooks and no brood plates, they could thus have been males slightly femalised or females much malised.

I do not see that it would explain the case of an intersex *Jassa* which, having developed brood-plates, fertilised the eggs of a normal female, and some of whose offspring were also intersexes.

For a discussion of this subject see Genetics by E. Altenburg, p. 117 et seq. London, 1945, and Principles of Genetics by E. W. Sinnot & L. C. Dunn, p. 261 et seq. New York and London, 1939.

# Station Data (Bruun 1950).

| St. no. | Latitude | Longitude | Date | Hour | Bottom | Gear | Depths (m.) | Bottom tp.celc. |
|---|---|---|---|---|---|---|---|---|
| 24 | 27°23′ N | 16°36′ W | 30.XI.45 | 11–12 | .. | S 100 | > 2000 | .. |
| 39 | San Pedro Bay, St. Vincent | | 10.XII.45 | $14^{40}$ | foraminifera, corals | DT | 41–50 | .. |
| 40 | Off S. Pedro Bay, Cape Verde Isl. | | 11.XII.45 | $8^{45}$ | foraminifera, sand | PG | 100 | .. |
| 43 | Praia–S. Iago, Cape Verde Isl. | | 13.XII.45 | $14^{40}$ | corals | ST | 22 | .. |
| 44 | 10°22′ N | 16°22′ W | 17.XII.45 | $9^{00}$–$20^{00}$ | br. sand, shells | DT, ST, OT | 41–55 | .. |
| 45 | 9°23′ N | 15°07′ W | 18.XII.45 | $15^{00}$–$20^{00}$ | sand & fine yellow sand | ST, OT, VG | 30–36 | .. |
| 49 | 7°29′ N | 13°38′ W | 30.XII.45 | $8^{20}$ | muddy sand | ST | 74–79 | 16.5° (70 m.) |
| 51 | 7°14′ N | 12°57′ W | 31.XII.45 | $15^{50}$ | sand, mud | VG | 108 | 15.8° |
| 52 | off Monrovia, Liberia | | 3.I.46 | $9^{00}$ | sand | VG | 11 | .. |
| 53 | off Port Marshall, Liberia | | 4.I.46 | $20^{30}$ | .. | NDL | 0–12 | .. |
| 54 | 6°05′ N | 10°25′ W | 8.I.46 | $7^{10}$ | coarse sand | VG | 25 | .. |
| 55 | 6°03′ N | 10°25′ W | — | $8^{45}$ | sandy mud | PG | 44 | 20.7° (40 m.) |
| 57 | 5°59′ N | 10°26′ W | — | $10^{55}$ | muddy sand | VG | 62 | 19.4° |
| 58 | 5°50′ N | 10°30′ W | — | $13^{10}$ | — | VG | 95 | 16.5° |
| 59 | 5°47′ N | 10°32′ W | — | $14^{10}$ | — | VG | 280 | 10.2° |
| 60 | 5°06′ N | 9°34′ W | 9.I.46 | $9^{50}$ | sand, mud | ST | 78 | .. |
| 62 | 4°16′ N | 8°18′ W | 10.I.45 | $20^{00}$ | .. | S 200 | .. | .. |
| 65 | 4°24′ N | 7°05′ W | 11.I.46 | $14^{45}$ | muddy sand | VG | 78 | 17.4° (75 m.) |
| 68 | 4°38′ N | 6°18′ W | 12.I.46 | $10^{00}$–$14^{00}$ | mud | ST, OT | 80–90 | .. |
| 69 | Port Bouet, Ivroy coast | | 14.I.46 | $9^{15}$ | fine sand | VG | 16 | .. |
| 72 | 4°52′ N | 1°42′ W | 23.I.46 | $8^{45}$ | muddy sand | VG | 24 | .. |
| 73 | 4°50′ N | 1°40′ W | — | $10^{18}$ | sand | VG | 33 | 18.2° |
| 75 | 4°44′ N | 1°36′ W | 23.I.46 | $16^{20}$ | muddy sand | DT | 46 | 17.4° (45 m.) |
| 76 | 4°50′ N | 1°17′W | — | $22^{00}$ | — | S 100 | .. | .. |
| 77 | Anchorage, Accra, Gold Coast | | 29.I.46 | $7^{30}$ | muddy sand | VG | 10 | .. |
| 85 | 5°37′ N | 0°38′ E | 30.I.46 | $12^{00}$–$16^{00}$ | mud | OT | 28–40 | .. |
| 86 | 5°45′ N | 0°57′ E | 31.I.46 | $7^{30}$ | — | DT | 17 | .. |
| 101 | 5°59′ N | 4°36′ E | 15.II.46 | $14^{40}$ | — | VG | 17 | 28.5° |
| 110 | off Opobo, Bonny River, Niger Delta | | 21.II.46 | $16^{35}$ | soft grey mud | PG | 16 | .. |
| 112 | 4°12′ N | 7°05′ E | 22.II.46 | $13^{00}$ | clayish mud | PG | 19 | 28.9° (18 m.) |
| 113 | 4°05′ N | 7°09′ E | — | $15^{10}$ | mud | PG | 32 | 27.7° |
| 114 | 4°01′ N | 7°12′ E | — | $16^{40}$ | — | PG | 52 | 20.9° (50 m.) |
| 129 | 6°02′ S | 12°20′ E | 15.III.46 | $7^{30}$ | muddy sand | PG | 12 | 24.6° |
| 130 | 6°00′ S | 12°14′ E | — | $9^{15}$ | sandy mud | PG | 25 | .. |
| 141 | Off Freetown, Sierra Leone | | 9.IV.46 | $10^{30}$–$14^{20}$ | sand | CT | 15 | .. |
| 145 | 9°20′ N | 14°15′ W | 13.IV.46 | $7^{45}$–$10^{00}$ | shells, foraminifera | ST, OT | 32 | .. |
| 146 | 9°27′ N | 14°48′ W | — | $14^{20}$–$16^{00}$ | — | ST, OT | 50–51 | .. |
| 147 | 9°28′ N | 14°58′ W | 14.IV.46 | $8^{55}$ | — | ST | 45 | .. |
| 148 | 9°57′ N | 15°22′ W | — | $16^{25}$ | shells, hydroids | ST | 25 | .. |
| 150 | 10°22′ N | 16°34′ W | 15.IV.46 | $20^{00}$ | .. | S. 100 | .. | .. |
| 151 | 10°40′ N | 16°44′ W | 16.IV.46 | $8^{55}$ | .. | ST | 65 | .. |
| 153 | 10°49′ N | 16°39′ W | — | $13^{20}$ | coarse sand | ST | 42 | 17.6° (40 m.) |
| 154 | 11°54′ N | 17°14′ W | 17.IV.46 | $11^{00}$–$12^{00}$ | bluish sand | ST, OT | 55 | .. |
| 155 | off Bathurst, Gambia | | 22.X.45<br>28.IX.45 | ..<br>.. | scrapings from bottom of ships & buoys | | | |
| 160 | — | | 24.IV.46 | $12^{15}$ | very fine sand | PG | 14 | 18.8° |
| 161 | — | | — | $13^{00}$–$14^{00}$ | — | DT, OT | 18 | .. |
| 163 | 13°43′ N | 17°23′ W | 25.IV.46 | $10^{00}$–$11^{30}$ | .. | ST, OT | 65–89 | .. |
| 166 | Horta, Fayal, Azores | | 16.V.46 | .. | tidal zone | .. | .. | .. |

**Explanation of the letters used to indicate the gear.**

| | |
|---|---|
| CT, | Commercial Otter Trawl. |
| DT, | Triangular Dredge 45 cm. (toothed). |
| NDL, | Dip Net used at light. |
| OT, | Otter Trawl. |
| PG, | Petersen Grab (Bottom-sampler) 0.1 sq.m. |
| ST, | Agassiz Trawl (Sigsbee Trawl) 100 cm. |
| S. 100, | Stramin Net 100 cm. |
| VG, | van Veen Grab (Bottom-sampler) 0.1 sq.m. |

## LYSIANASSIDAE

### **Lysianassa ceratina** (Walker), 1889.

*Lysianassa longicornis*, STEBBING 1906, p. 39.
*Lysianax ceratinus*, WALKER 1889, p. 200.
*Lysianassa ceratina*, SCHELLENBERG 1925, p. 113.
*Lysianassa ceratina*, RUFFO 1938, p. 154.
*Lysianassa ceratina*, BARNARD 1940, p. 439.

Station 44. 1 ♂ 7 mm., 2 ♀ max. 9 mm., 1 juv.
— 145. 22 ♂ max. 6 mm., 84 ♀ max. 8 mm., many juvs.
— 146. 19 small individuals.
— 147. 2 ♀ small.
— 148, 1 ♀ small.

**Remarks:** SCHELLENBERG (1928) has united *L. cinghalensis* Stebbing, 1897, with *L. ceratina* (Walker), explaining that he cannot find any valid differences between them. The present specimens agree in some of their features with *L. ceratina* (e. g. number of segments of antenna I and the tooth on segment 1 of its peduncle). It agrees with *L. longicornis* Stebbing in the shape and proportions of the telson and the breadth of the outer plate of the maxilliped. However, the inner plate of the maxilliped terminates in a series of bristles reminiscent of that of *L. ceratina*.

I find it difficult to agree that BARNARD has made out a case for retaining *cinghalensis* as a distinct species.

Since STEBBING (1906) has joined *ceratina* with *longicornis* I can only conclude (in view of the foregoing) that all three species are but one which, as is only to be expected, is not cast in a rigidly constant mould.

**Distribution:** English Channel, West Europe, Mediterranean, West Tropical Atlantic, East Africa, Red Sea, Indian Ocean.

### **Socarnes erythrothalmus** Robertson 1892.

*Socarnes erythrothalmus*, Robertson 1892, p. 200.
*Socarnes erythrothalmus*, Stebbing 1906, p. 57.

Station 44. 1 ♀ 5 mm.

**Remarks:** This individual is slightly different from the northern form. Its head-lobe is not noticeably serrated: segment 2 of leg VI is rounded posteriorly: that of leg VII has a rounded concavity posteriorly. Despite these differences the specimen does not offer enough evidence to warrant its being considered a separate species.

**Distribution:** British Coasts to Sierra Leone.

### **Orchomenella nana** (Krøyer) 1846.

*O. ciliata*, G. O. Sars 1890, p. 69.
*O. nana*, Stebbing 1906, p. 81.
*O. nanus*, Schellenberg 1925, p. 118.

Station 145. 5♀ max. 3 mm., 6 juvs.
— 146. 3♀ max. 3 mm.

**Further distribution:** North Sea, West Coast of Europe, Indian Ocean.

### **Orchomenella crenata** Chevreux & Fage 1925.

*O. crenata*, Chevreux Ed., & L. Fage 1925, p. 71.

Station 147. 3♀ ovig. 2.5 mm.

**Remarks:** These specimens agree well with the original description. However, the crenations on the posterior border of epimeral plate III are less distinct than those figured.

**Further distribution:** Villefranche.

### **Acidostoma obesum** (Bate) 1862.

*Anonyx obesus*, Bate 1862, p. 74.
*Acidostoma obesum*, Lilljeborg 1865, p. 34.
*Acidostoma obesum*, Sars 1890, p. 38.

Station 141. 4 juvs., ?♀

**Further distribution:** Southern North Sea.

## **Tmetonyx bruuni** n. sp.

(Fig. 1).

Station 160. 8 ♂ max. 7 mm., 31 ♀ max. 7 mm.
— 161. 1 ♀ juv.
— 147. 1 ♂ 6 mm.

**Description:** Male. Eyes absent. Headlobe pointed. Side-plates I—III little expanded ventrally; posterior corner of the ventral border of each has a small notch with a delicate bristle set in it. Epimeral plate II usually has its anterior free corner extended into a sharp spike, the posterior corner may be drawn out into a conspicuous tooth or it may be little produced (as shown in Fig. 1). Epimeral plate III is strongly produced backwards to a large pointed tooth which is hardly or not upturned.

Antenna I is about $^4/_5$ body length but in young males may be only $^1/_2$ body length. Antenna II is longer than the body. Gnathopod I has the anterior border of segment 6 about twice the length of the posterior border; the palm is obliquely sloping and is delimited by a group of 3 or so spines.

Gnathopod II is very long and thin, about twice as long as gnathopod I; segment 6 is ovoid and beset with bristles; there is a roughened pad on the postero-distal end of segment 5.

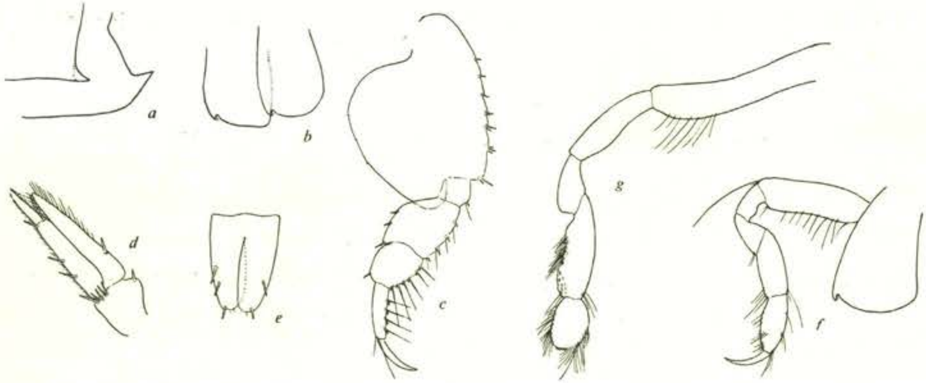


Fig. 1. *Tmetonyx bruuni* (female). a, epimeral plates II and III; b, side plates I and II; c, leg V; d, uropod III; e, telson; f, gnathopod I; g, gnathopod II.

Segments 4 and 5 of leg V are almost as broad as long; those of legs VI and VII are progressively narrower; posterior border of segment 2 of leg VII sharply serrated.

Uropods I and II, peduncle set dorsally with a row of long upright spines; the outer rami also bear one or two such spines. Uropod III, peduncle dorsally humped, rami unequal, the inner longer than segment 1 of the outer; both rami bear bristles as well as spines, those on the inner ramus being long and plumed but those on the outer ramus very short and delicate.

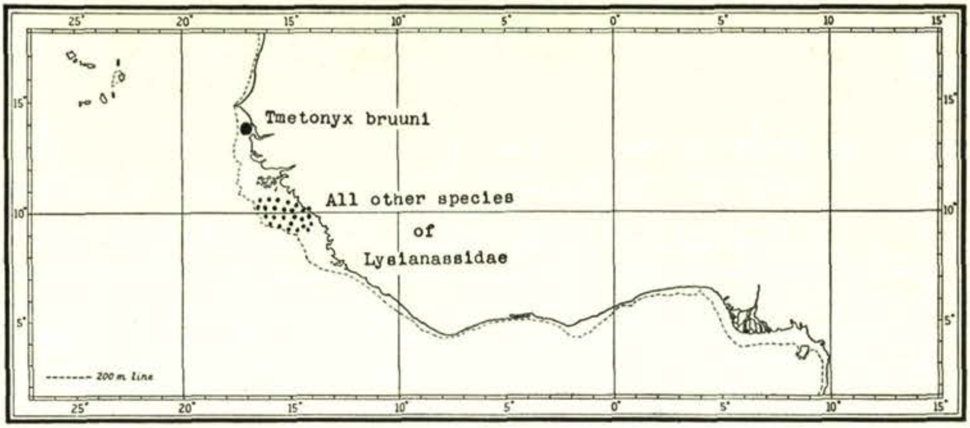


Fig. 2. Distribution of the Lysianassidae.

The female differs from the male in that the antennae are short. Antenna I passes just beyond the peduncle of antenna II. The latter reaches to about the end of body segment IV.

## AMPELISCIDAE

### Variation in ampeliscids.

There is no genus of the Amphipoda in which there is so much diversity of form as in *Ampelisca*. There are, however, several more or less well-defined groups within the genus, but within these it is often well-nigh impossible to determine the species. The difficulty in this determination has frequently been caused by differences in specific values—i. e. what is called a variety by one worker might be clearly a species to another and I fear that many "species" have been created on very small differences. Once a great number of varieties or species have been named (and perhaps inadequately described and figured) confusion is bound to result as more forms are found.

But besides this, there appears to be a great range of real minor variations which is very strange considering the great constancy of characteristics in many species in other genera. It is impossible to rely on finding in some individuals all the characteristics given for any particular species.

The fact that many of the species are cosmopolitan in range does not help to reduce the tangle: were individuals from great distances apart or from greatly different habitats to be the only ones to show the variations, the problem would be simplified. However, that is not so. A collection from the one locality may contain individuals few of which are identical, though they may be nearly so.

The extent to which variation may occur is shown in the following few species:—

*spinimana* may or may not have palmar spines;
*rubella* may or may not have corneal lenses;
*diadema* (Costa) 1853 is only one of several species which has ventral hooks, and such hooks may appear in groups of 2 to 6;
*serraticaudata* may not have serrations on uropod III.

Is it possible that we have here a group of animals in a state of rapid evolutionary change? Breeding experiments would, I think, well repay the time and labour involved.

Rather feebly, perhaps, I have decided to present the tangle as it is without making any attempt to straighten it out. This decision has been taken because I have neither the time nor the material for such a study, nor is this the place for it.

### **Ampelisca typica** (Bate) 1856.

*Tetromatus typica*, Bate 1856, p. 58.
*Ampelisca typica*, Boeck 1871, p. 222.
*Ampelisca typica*, Sars 1891, p. 165.

Station 45. 1♀ ovig. 5 mm.
— 49. 1♀ non-ovig. 5 mm.
— 57. 1♂ 8 mm.
— 161. 1♂ 8 mm.

**Remarks:** The specimens are typical though small.

**Further distribution:** Southern North Sea; West Coast of Europe, Mediterranean.

### **Ampelisca sarsi** Chevreux 1888.

*Ampelisca sarsi*, Chevreux 1888, p. 666.
*Ampelisca sarsi*, Chrvreux & Fage 1925, p. 85.

Station 49. 1♀ 5.5 mm.
— 51. 1♀ ovig. 8 mm.
— 155. 1♀ ovig. 8 mm.

**Remarks:** The specimens are undoubtedly *sarsi* but the rami of uropods III have a few long bristles on their edges distally.

**Further distribution:** West Coast of France.

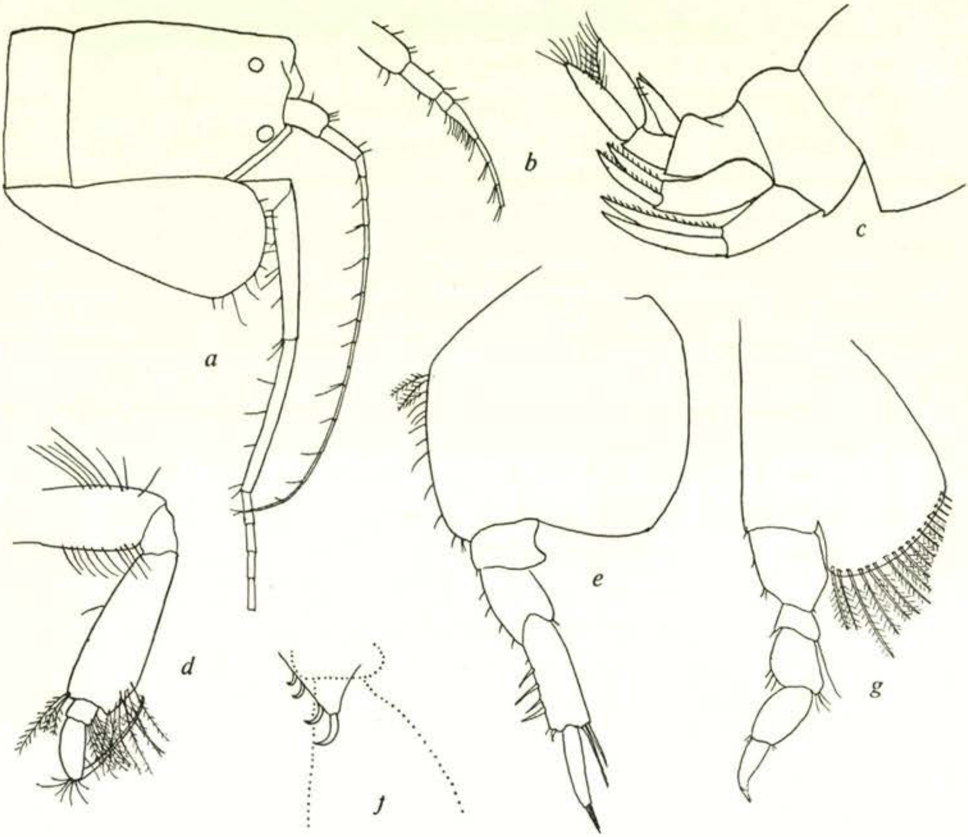


Fig. 3. *Ampelisca latifrons*. a, head of female; b, antenna I of intersex; c, urosome of female; d, leg III; e, leg VI; f, ventral hooks between legs VII of male; g, leg VII.

## **Ampelisca latifrons** Schellenberg 1925.

(Fig. 3).

*A. latifrons*, Schellenberg 1925, p. 121.

Station 49. 1 ♀ 8 mm.
— 51. 1 ♀ 5.5 mm.
— 58. 1 ♂ intersex with 4 copulatory hooks. 7 mm.
— 60, 1 ♂ intersex with 3 copulatory hooks (damaged). 7 mm.
— 76. 1 ♀ 9 mm.

**Remarks:** Despite the fact that I offer no further description of this species I have included a few diagrams to amplify Schellenberg's meagre supply.

**Distribution:** Not known outside the area.

## **Ampelisca spinifer** n. sp.

(Fig. 4).

Station 49. 2♀ 10 mm.

**Description:** Female. Head short, squarely truncated. Lower eye touching angle of head. Epimeral plate II with the posterior border slightly sigmoid, carrying a few short bristles and ending in a sharp corner. Epimeral plate III is less sigmoid and has the free corner almost rectangular.

Segment I of the urosome is raised to a peak-ended carina. Antenna I segment 1 is raised dorsally and is somewhat overhanging anteriorly: segment 2 is very thin and $1^1/_2$ times the length of segment 1; segment 3 is short, the flagellum is missing. Antenna II is missing.

Segment 6 of gnathopod I has a fairly distinct palmar border; gnathopod II is simple.

The claw of legs III and IV is longer than the last 2 segments of the limb. Leg V has a small wing on segment 2; segment 5 is much longer

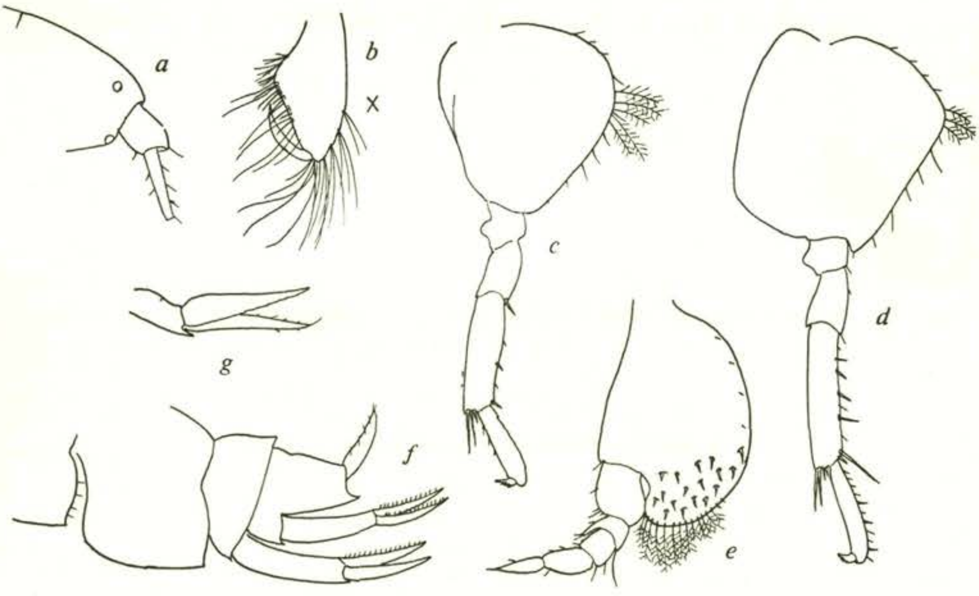


Fig. 4. *Ampelisca spinifer* (female). a, head; b, gnathopod I enlarged; c, leg V; d, leg VI; e, leg VII; f, urosome; g, uropod III.

than the two preceding ones. Segment 2 of leg VI is almost square: segment 5 is much longer than the two preceding. The wing of segment 2 of leg VII is evenly rounded, and bears a number of spines on its surface; the other leg segments are all short, segment 4 is produced downwards in front.

Uropods I and II are armed (except for the outer ramus of I) with many short, closely set bristles. Uropod III is lanceolate with, apparently, few

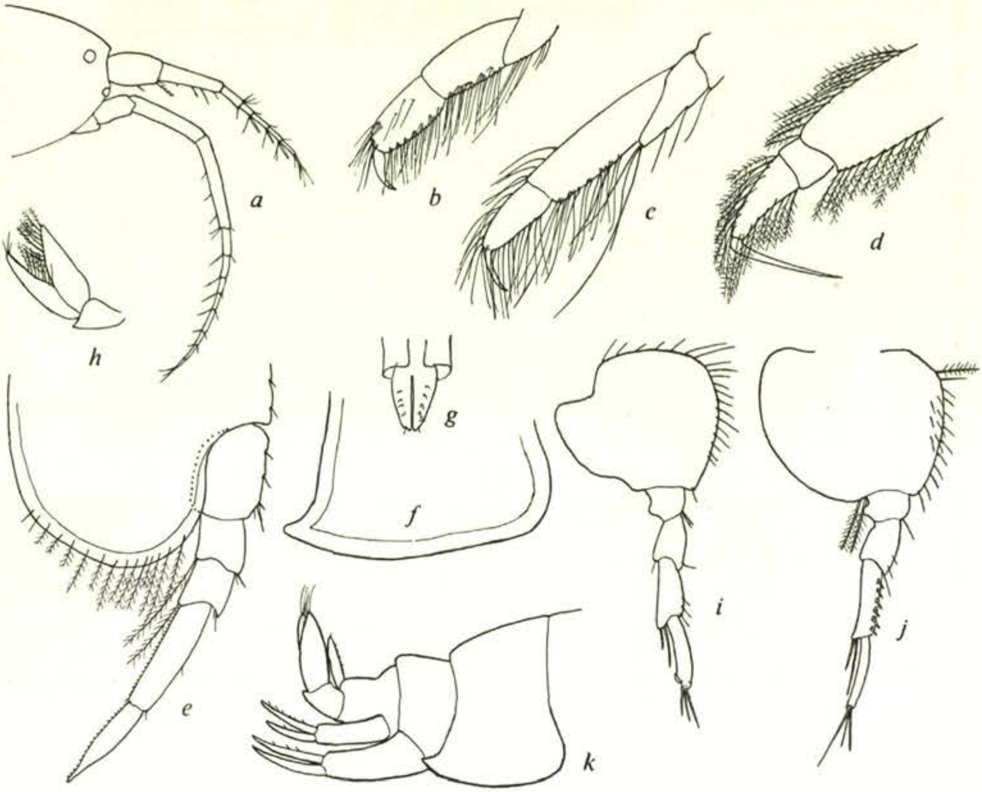


Fig. 5. *Ampelisca ctenopus* (female). a, head; b, gnathopod I; c, gnathopod II; d, leg IV; e, leg VII; f, epimeral plate III; g, telson; h, uropod III; i, leg V; j, leg VII; k, urosome.

bristles, though they may have been broken. The telson has a few terminal bristles and about 4 on the dorsal surface of each half.

### **Ampelisca ctenopus** Schellenberg 1925.

(Fig. 5).

1925. *A. ctenopus*, SCHELLENBERG 1925, p. 123.

Station 110. 1 ♂.
— 160. 1 ♂, 1 ♀.
— 161. More than 100 ♂, ♀ and juv. max. size 5 mm.

**Remarks:** I have made diagrams of this species since SCHELLENBERG gives but one.

**Distribution:** Not known outside the area.

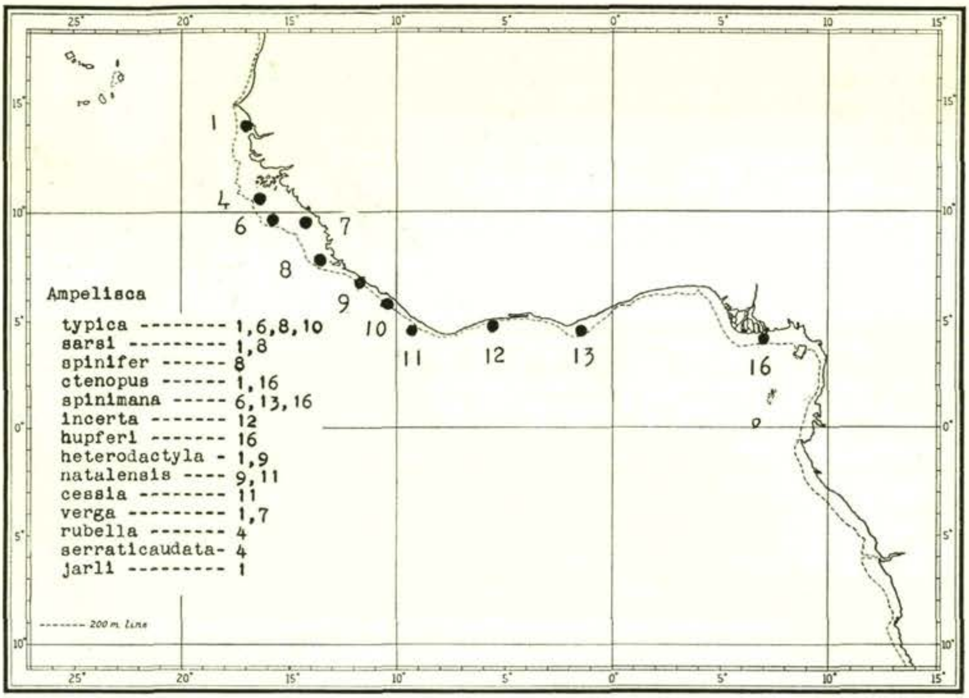


Fig. 6. Distribution of *Ampelisca* (I).

## **Ampelisca spinimana** Chevreux 1887.

*A. spinimana*, Chevreux 1887 (2), p. 574.
*A. spinimana*, Chevreux Ed. & L. Fage 1925, p. 81.

Station 45. 1♂ 5 mm., 2♀ 6 mm. The male is of the intersex type. It possesses 3 copulatory hooks.

— 72. 2♂ 4.5 mm., 1♀ 6 mm.

— 73. 1♀ ovig. 6 mm.

— 77. 4♂ 5 mm., 14♀ 6 mm. The males are normal and have 2 copulatory hooks. The inner branch of uropod I is minutely serrated along the distal half of the dorsal border. The large spines shown by Sars and Chevreux & Fage on the rami of the uropod are absent, but since they always illustrate the outer ramus of uropod I as having such spines when it never has, too much stress cannot be placed on such illustrations.

— 110. 2 juv. ♂ with hooks.

— 113. 1♀ ovig. 6.5 mm. This specimen is slightly different. Segment 2 of the peduncle of antenna I is unusually thin and epimeral plate II is very slightly produced.

**Further distribution:** W. European coast.

### **Ampelisca incerta** n. sp.

(Fig. 7).

Station 68. 1♀ (sex uncertain) 5 mm.

**Description:** This specimen resembles *A. ctenopus* but can be distinguished from it by its very short antenna I. The head is short and squarely truncated. Epimeral plate III has the posterior border sloping backwards to meet the lower border in a blunt corner. There is a small but distinct carina on urosome segment I. The eyes are small; the lower ones are on or just behind the lower angle of the head.

Antenna I is about the same length as the head; segment 2 of the peduncle is thicker proximally and a little longer than segment 1; the flagellum has about four segments and reaches about half-way along the last segment of the peduncle of antenna II. The last two segments of antenna II are subequal: the flagellum has about nine segments.

Side-plate I reaches to about the end of segment 1 of antenna I and its anterior border is set with a few long spines lower down only.

The claw of legs III and IV is longer than the two last limb segments. Leg IV is decidedly longer and stouter than leg III. Segment 2 of leg V is

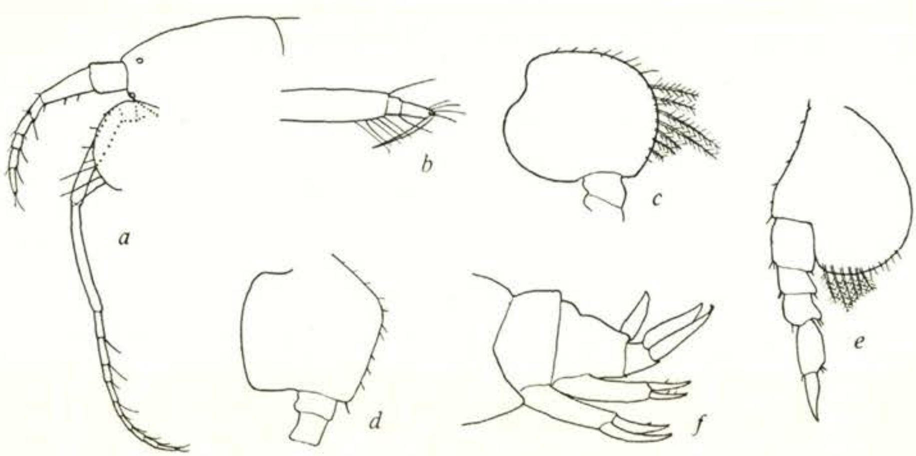


Fig. 7. *Ampelisca incerta* (female). a, head; b, leg III; c, leg V; d, leg VI; e, leg VII; f, urosome.

almost round but has the horizontal diameter greater than the vertical: its anterior edge is set with many long feathered bristles. Segment 2 of leg VI is squarish and without feathered bristles. Segment 2 of leg VII is somewhat concave anteriorly and widely rounded posteriorly. The rami of uropods I and II are rather short and have but few spines; those of uropod III are normal in shape, the outer has two small bristles on the end, otherwise they are without them. The telson is without bristles.

## **Ampelisca hupferi** Schellenberg 1925.

(Fig. 8).

*A. hupferi*, SCHELLENBERG 1925, p. 128.

Station 110. 3♀ 4 mm., 4 juv.

**Remarks:** I have made a few diagrams to amplify those in SCHELLENBERG's work.

**Distribution:** Not found out of this area.

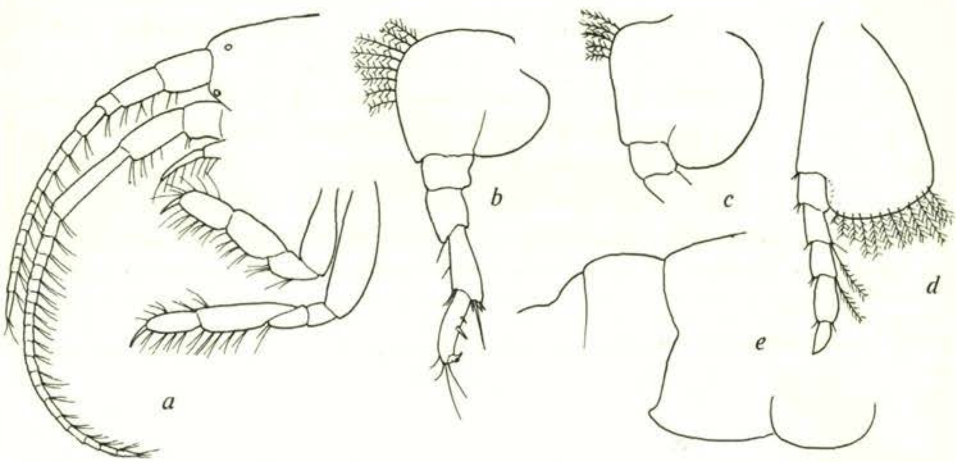


Fig. 8. *Ampelisca hupferi* (female). a, head and gnathopods; b, leg V; c, leg VI; d, leg VII; e, urosome & epimeral plates II and III.

### Brevicornis-group.

This group of species, sub-species and varieties is clearly separated from all the others by the shape of segment 4 of leg VII. This segment is extended posteriorly as a deep lobe fringed with feathered bristles. It is as clearly different from other members of the genus as is the genus *Byblis* Boeck 1870 and it might, with advantage, be given separate generic rank.

The group contains a number of distinct forms which have been named by SCHELLENBERG (1925) forma *dentifera, rectangula, intermedia, platypus.* To these I have added others.

SCHELLENBERG says that he has purposely not made new species of these forms, which differ in small points from the northern type, since in view of the enormous variety of forms in this species it seems essential to stress the persistence of the type. He notes (as specimens in my own collection show) that even the northern forms of *A. brevicornis* show important differences.

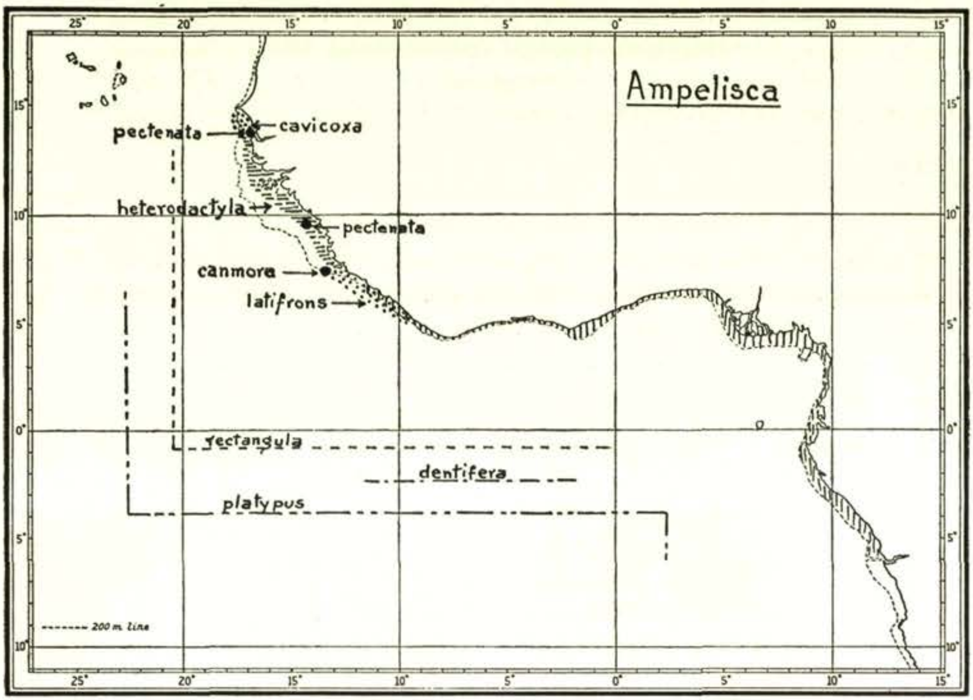


Fig. 9. Distribution of *Ampelisca* (II).

Pirlot (1930) also finds specimens of *A. brevicornis* varying in little ways from the normal and he suggests that a series of specimens from intermediate stations should be studied in order to decide the identification. Personally, I believe that even this would not necessarily give the true answer which can only be got by breeding experiments.

It is interesting to note that Dahl (1944) finds the same difficulties with specimens collected in Japanese waters. They are like *A. brevicornis* yet different from it in several points and are suggestive of, yet different from, the American form, *A. californica* Holmes 1908.

Thus it is hard to believe that we have here a group of distinct species which are almost indistinguishable rather than one species which is very variable.

With Schellenberg's view of regarding all these forms as mere varieties, I agree. But since convenience as well as inter-relationship is involved in the grouping of organisms, and since other species of *Ampelisca* appear to vary in a similar way, and since the genus is now rather cumbersome, it might be advisable to split it into several genera.

### **Ampelisca brevicornis** Costa var. **dentifera** Schellenberg 1925.

*Ampelisca laevigata*, SARS 1891, p. 169.
*Ampelisca brevicornis*, STEBBING 1906, p. 100.
*Ampelisca brevicornis*, CHEVREUX & FAGE 1925, p. 77.
*Ampelisca brevicornis* v. *dentifera* SCHELLENBERG 1925, p. 192.

Station 55. 1 ♀ 10 mm.
— 73. 1 ♀ 9 mm.

**Remarks:** These specimens agree perhaps more closely with SARS' description of *laevigata* than with *brevicornis* of CHEVREUX & FAGE, for antenna I reaches the end of segment 4 of antenna II.

The carina on segment 1 of the urosome is rather higher than that indicated by the previous authors.

**Distribution:** Not known outside the area.

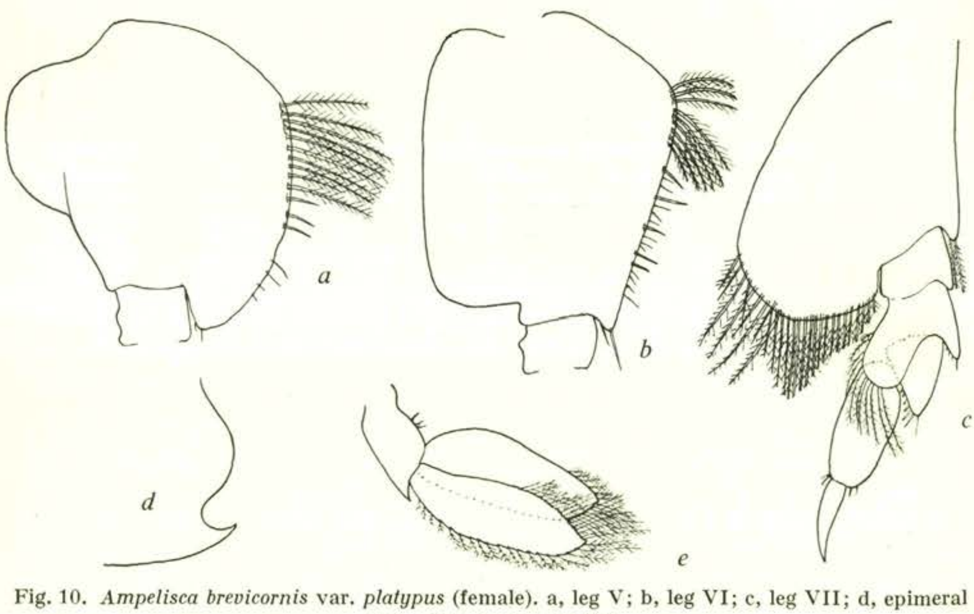


Fig. 10. *Ampelisca brevicornis* var. *platypus* (female). a, leg V; b, leg VI; c, leg VII; d, epimeral plate III; e, uropod III.

### **Ampelisca brevicornis** var. **platypus** Schellenberg 1925.

(Figs 10 & 12).

*A. brevicornis* var. *platypus* SCHELLENBERG 1925, p. 193.
*A. brevicornis* BARNARD 1932, p. 84.

Station 53. 1 ♀ ovig. 12 mm.
— 54. 1 ♀ 6 mm.
— 112. 1 ♂ intersex 6 mm.
— 129. 1 ♀ ovig. 9 mm.

**Remarks:** The intersex male is similar to the female except that its antenna I has a clump of bristles on the ventral surface of peduncle-segment I (as fig. 14).

**Distribution:** Not known outside the area (? Lüderitzbucht).

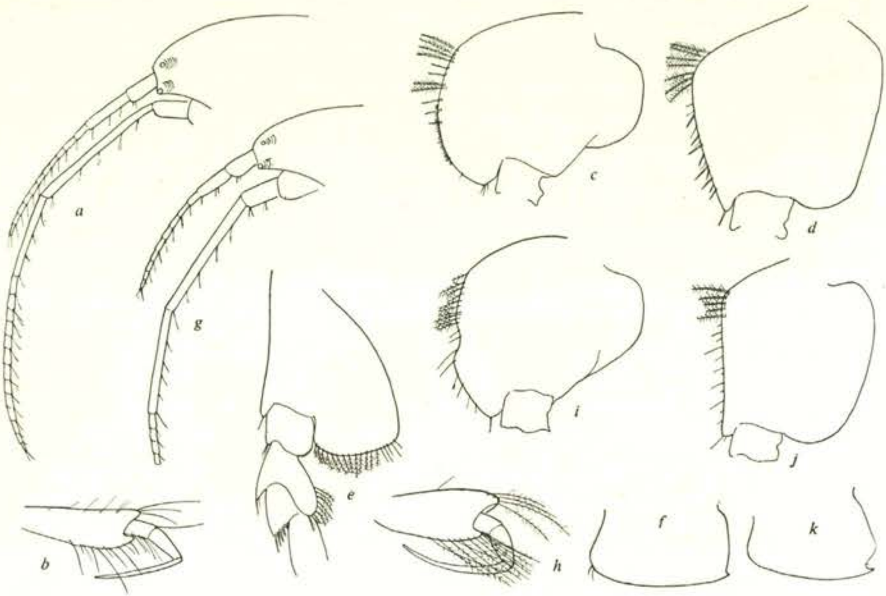


Fig. 11. *Ampelisca brevicornis.* a—f, var. *rectangula* (female); g—k, var. *cavicoxa.* a) head; b, leg III; c, leg V; d, leg VI, e, leg VII; f, epimeral plate III; g, head; h, leg IV; i, leg V; j, leg VI; k, epimeral plate III.

## Ampelisca brevicornis var. ? rectangula Schellenberg 1925.

(Figs. 11, 12, 13).

*A. brevicornis* var. *rectangula,* SCHELLENBERG 1925, p. 193.

Station 52. 1♀ ovig. 10 mm., 4 juv.
— 53. 3♀ max. 8 mm.
— 86. 4♂, max. 7 mm., 31♀ max. 10 mm.
— 161. 1♂ max. 9 mm., 4♀, some ovig., max. 14 mm., 2 juv.

**Remarks:** These forms resemble *rectangula* in most respects except that epimeral plate III is produced to a tiny point in some specimens and to a quite conspicuous tooth in others. The posterior border of the plate varies also:— when the projection is very small the border is slightly curved, when it is large the border is straight. The carina on the urosome is always large but may be pointed posteriorly or round-ended and overhanging (fig. 15).

This may not, however, be SCHELLENBERG's *rectangula* because he makes no mention of the comb of fine bristles on the anterior border of segment 2 of leg V.

**Distribution:** Not found outside the area.

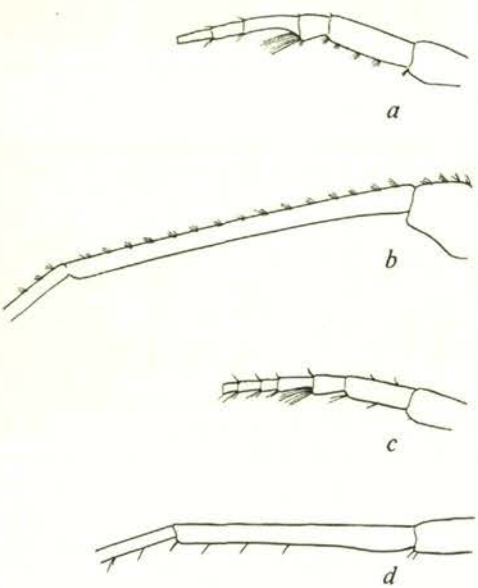


Fig. 12 a—b, normal male antennae of var. *rectangula*; a, ant I; b, ant. II. c—d, antennae of var. *platypus* intersex; c, ant. I; d, ant. II.

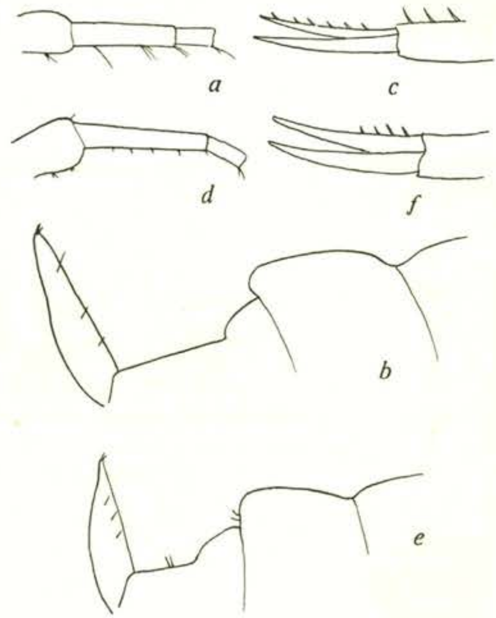


Fig. 13 a—c, var. *rectangula*; d—f, var. *cavicoxa*. a, peduncle of antenna I of female; b) urosome and telson; c, uropod III; d, peduncle of antenna I of female; e, urosome and telson; f, uropod III.

## **Ampelisca brevicornis** var. **cavicoxa** n. var.

(Figs. 11 & 13).

Station 43. 1♀ juv.
— 160. 1♀ juv.
— 161. 5♂ max. 8 mm., 5♀ (some ovig.) max. 14 mm.

**Description:** Female. The head is narrow anteriorly and is squarely truncated. The carina on urosome segment I is fairly high and blunt-ended (fig. 13). Epimeral plate II is produced to a small tooth at its free posterior corner; above this is a small but deep notch; above the notch the border slopes forward evenly. In antenna I the peduncle does not reach half-way along segment 4 of the peduncle of antenna II; segment 2 of the peduncle is only a little longer than segment 1: the flagellum has about 8 segments. In antenna II the last segment of the peduncle is only a little shorter than the preceding segment: the flagellum reaches $^3/_4$ way along the body.

The even anterior curve of segment 2 of leg V is broken by a distinct indentation about the middle. The anterior border of leg VI is almost parallel to the axis of the limb. Leg VII, uropod III and the telson are as in *rectangula*.

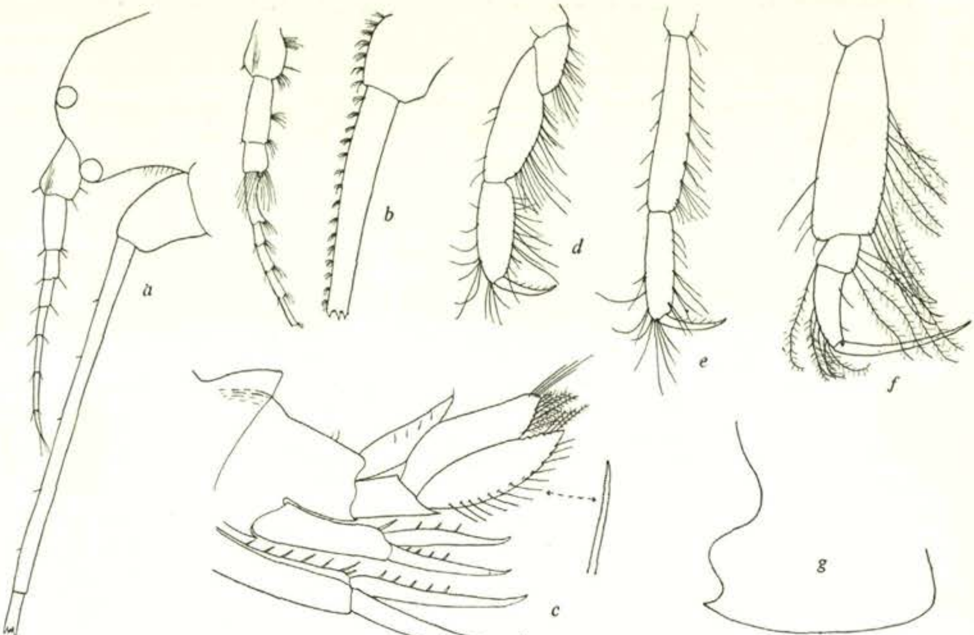


Fig. 14. *Ampelisca brevicornis* var. *canmora*. a, head of female; b, antennae of male; c, urosome and appendages; d, gnathopod I; e, gnathopod II; f, leg III; g, epimeral plate III.

## **Ampelisca brevicornis** var. **canmora** n. var.

(Fig. 14).

Station 49. 1♂ 14 mm., 6♀ 13 mm.

**Description:** Female. The head is extremely high and rounded in front. The upper eyes are large and situated against the front of the head; the lower eyes are on the angle of the head. Epimeral plate III is strongly sigmoid and pointed at its free posterior corner. Urosome segment I is raised to a high carina.

Antenna I is short, reaching little more than half way along the peduncle of antenna II. The first two segments of the peduncle of antenna I are about equal; the dorsum of segment 1 is carinated. Antenna II is as long as the animal. Both gnathopods are slender and segment 6 is without a palm. The claw of legs III and IV is a little longer than segments 5 and 6 together. The anterior lobe of segment IV is not strongly marked. Leg VII is similar to that of *brevicornis* but the bristles on the posterior border of segment 2 do not appear to be feathered.

The outer border of the outer ramus of uropod III is armed with long bristles which appear to be finely toothed.

Male. Antenna I is similar to that of the female except that peduncle segment 2 is rather longer. All the segment of the peduncle and the flagellum are armed with sensory bristles. Segment 1 of the flagellum is concave below and is surrounded by long bristles which arise from the last segment of the peduncle. The peduncle of antenna II bears the normal tufts of small bristles dorsally.

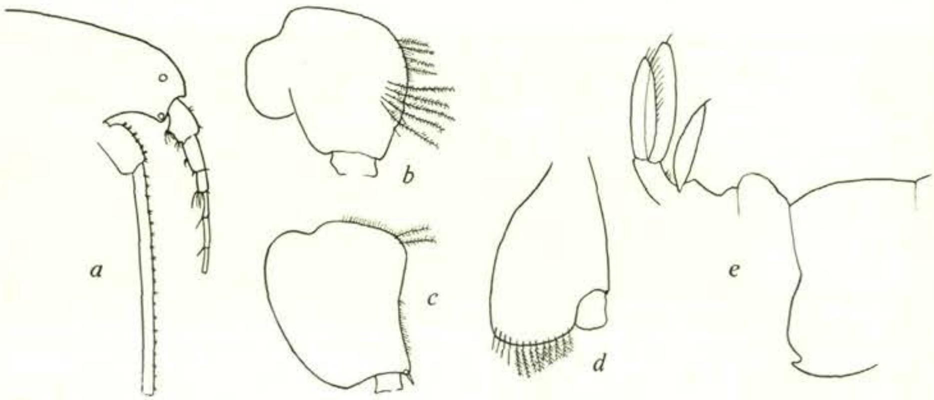


Fig. 15. *Ampelisca brevicornis* var. *pectenata*. a, head of male; b, leg V; c, leg VI; d, leg VII; e, urosome.

### **Ampelisca brevicornis** var. **pectenata** n. var.

(Fig. 15).

Station 145. 1 ♂ 7 mm.
— 161. 1 ♀ 7 mm.

**Description:** These specimens are distinguished by segment 2 of leg V which has part of the anterior border set with a dense brush of small bristles. Segment 2 of leg VI has similar brushes on the anterior and upper borders. The inner branch of uropod III is completely bare along its edges but is tipped with a few bristles. This, as will be seen, suggests *A. gibba* Sars 1882, yet the lowness of the carina of the urosome (if that be a feature of any specific value) makes it difficult to equate that species with this variety.

### **Ampelisca heterodactyla** Schellenberg 1925.

(Fig. 16).

*A. heterodactyla* SCHELLENBERG 1925, p. 193.
*A. rubra* CHEVREUX 1925, p. 292.

Station 52. 1 ♀ ovig. 4.5 mm.
— 160. 1 ♀ ovig. 4.5 mm.
— 161. 1 ♂ intersex 3 mm., 1 ♀ ovig. 5 mm.

**Remarks:** SCHELLENBERG gives no diagrams of this species but draws a clear distinction between it and *A. brachyceras* Walker 1904, which it resembles in many ways.

*A. rubra* Chevreux is apparently the same animal and since SCHELLENBERG's description appeared first *heterodactyla* must stand.

The possession of a rostrum in this species and in *A. brachyceras* as clearly divide them from the "typical" ampeliscids as does the posterior

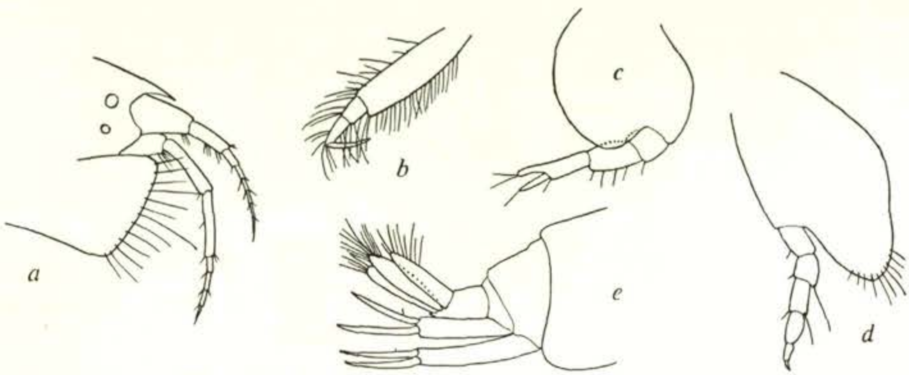


Fig. 16. *Ampelisca heterodactyla.* a, head of female; b, leg IV; c, leg V; d, leg VII; e, urosome.

lobe on segment 4 of leg VII in the *brevicornis*-group, so each might well be in a separate genus.

**Distribution:** Not recorded outside this area.

### Diadema—spinipes—tenuicornis group.

Besides the foregoing there is a large number of individuals which do not agree with each other nor with the descriptions of known species. In a general way they resemble *A. diadema* (Costa) 1853, *A. spinipes* Boeck 1861 and *A. tenuicornis* Lillj. 1855 but in no case can any of them be assigned clearly to any of these species.

Indeed, it is often quite difficult to distinguish among these three species themselves, for such characteristics as relative length of antennae, etc., are not very reliable.

Most of the individuals to be discussed are really males, but they are males possessing female characteristics, viz.: the antennae are not noticeably longer than is usual in the females and their peduncles do not carry the characteristic bunches of small bristles so obvious in the normal males. In some cases the antennae are indistinguishable from those of the females. In most cases, however, there is a small bunch of bristles on the ventral surface of segment 1 of the flagellum of antenna 1 (fig. 14, p. 209).

That these individuals are males and not females can be decided at once by the absence of brood plates and the presence of "copulatory hooks" on the ventral surface of the body just in front of legs VII (fig. 3, p. 199). Usually there are two such hooks situated in the median plane, but there may be four or even six. These are situated on a prominence with the largest at the apex and the others in the order of decreasing size.

In some individuals there are paired hooks on the following segment. These may be single and point backwards, or there may be two together, one pointing forward and one back.

I can find but two references to such hooks. One occurs in the description of *A. diadema* by CHEVREUX & FAGE (1925) the other is by BARNARD (1916) who appears to have the same views about them as CHEVREUX & FAGE.

CHEVREUX & FAGE describe them as occurring in the female, which seems to indicate that these workers did not realise that they were dealing with an intersex. It also suggests that part of the difficulties presented by this genus may be due to the fact that descriptions given of females may really be of intersex males. Of course, the copulatory hooks occur in the normal males of many species though not in all.

The abundance of male intersex forms makes it extremely difficult to decide what to do with the indefinite forms. As has been said, none of the individuals fits any of the described species (as far as I can see); since few of them are really identical and since it is not a matter of life and death that a new species be made immediately for every different form found, I prefer to set out in the accompanying table enough comparative data concerning each type to make it possible for workers or future revisers to realise the possibilities when enough material has been collected to make identification certain. Thus the seams will not be strained by forcing strange forms into old species.

BARNARD (1937) has met with the same difficulty in sorting out specimens in this group for he says ". . . . I am not at all satisfied that the present identifications with previously known species are correct." DAHL (1944) comments on the difficulty in dealing with *A. brevicornis*, while other workers report their identifications as "Ampelisca of species? . .," indicating that they too have been uncertain.

It is very obvious that this genus is overdue for revision.

Variation within the *tenuicornis—diadema—spinipes* group.

| | Stn. no. | Nos & sex | Max. size | Ant. 2 length | Epim. plate 3 | Urosome | Ant. 1 ped. seg. 1 relative to seg. 2 | Ant. 1 relative to ped. ant. 2 |
|---|---|---|---|---|---|---|---|---|
| A | 45–1 | 1 ♀ | 10 mm. | = head | square blunt | round hump | seg. 1 greater than seg. 2 | equal (seg. 2 very short) |
| B | 45–2 | 1 ♀ ov.<br>2 ♂, ix | 10 mm. | 8 mm. | square blunt | round hump | $^2/_3$ | ant. 1 much longer |
| C | 45–3 | 2 ♀<br>1 ♂, ix | 8 mm. | 5 mm. | square sharp | round-ended carina | equal | equal |
| D | 45–4 | 1 ♂, ix | 8 mm. | 4 mm. | slightly produced blunt | round-ended carina | equal | equal |
| E | 49–1 | 1 ♀<br>1 ♂, ix | 10 mm. | 5 mm. | slightly produced blunt | round hump | $^2/_3$ | ant. 1 much longer |
| F | 49–2 | 1 ♂, ix | 7 mm. | 7 mm. | square blunt | rounded carina | $^2/_3$ | ant. 1 a little longer |
| G | 49–3 | 1 ♂, ix | 9 mm. | 7 mm. | square blunt | round hump | $^2/_3$ | ant. 1 much longer |
| H | 54 | 1 ♂ | 8 mm. | .. | square blunt | v. small carina | .. | .. |
| I | 58 | 1 ♂, ix | 7 mm. | 6 mm. | slightly produced | v. small carina | equal | equal |
| J | 59 | 1 ♂, ix | 6 mm. | 4 mm. | square blunt | v. small carina | $^1/_2$ | ant. 1 much longer |
| K | 62 | 1 ♂, ix | 5 mm. | $4^1/_2$ mm. | square blunt | rounded carina | $^2/_3$ | 2 flag. segs. longer |
| L | 68–1 | 1 ♀, ov. | 9 mm. | .. | square sharp | small carina | equal | equal |
| M | 68–2 | 1 ♂, ix | 7 mm. | 4 mm. | square sharp | rounded carina | equal | equal |
| N | 68–3 | 1 ♂, ix | 7 mm. | 3 mm. | slightly pointed | rounded hump | $^1/_2$ | equal |
| O | 72 | 1 ♂, ix | 5 mm. | $2^1/_2$ mm. | rounded corner | v. small carina on hump | $^2/_3$ | longer |
| P | 75 | 1 ♀ | 10 mm. | .. | square blunt | v. small carina | equal | .. |
| Q | 86 | 1 ♂, ix | 8 mm. | $3^1/_4$ mm. | slightly produced blunt | rounded hump | equal | longer |
| R | 101 | 1 ♂ | juvenile — with 4 copulatory hooks | | | | | |
| S | 113 | 1 ♀ | 8 mm. | 4 mm. | slightly produced blunt | v. small carina | equal | equal |
| T | 114 | 1 ♂, ix | 8 mm. | 5 mm. | square blunt | v. small carina | equal | ant. 1 a little longer |
| U | 130 | 1 ♀, ov. | 10 mm. | 4 mm. | bluntly produced | carina v. small | equal | ant. 1 little . longer |
| V | 147 | 1 ♂, ix | 10 mm. | $7^1/_2$ mm. | square blunt | rounded carina | equal | longer |
| W | 161 | 1 ♂<br>3 ♀ | 10 mm.<br>10 mm. | 10 mm.<br>$4^1/_2$ mm. | slightly produced pointed | small rounded carina | $^2/_3$ | slightly longer |

A word must be said about the shape of the "wing" on the posterior part of segment 2 of leg V of this group. By "wing" I mean that ear-like lobe which is produced backwards from the segment. In the female the wing leaves the limb abruptly so that its upper border is at right-angles to the axis of the limb. Distally it re-enters the limb at such an angle that it really fades gently into it (fig. 10, p. 18). In the normal male, however, the wing has not this appearance but stands clearly out, both borders being at right-angles to the axis and parallel to each other. The intersex form agrees with the female in this respect though the lower re-entering angle is in some cases a little nearer a right-angle.

The normal males appear to be just as variable as the females. In fact, as will be shown in table below, specimens from no two localities are identical.

Variations in normal males.

| Stn. no. | Size | Epim. plate 3 | Urosome | Ant. 1, ped. seg. 1 in relation to seg. 2 | Ant. 1 in relation to ped. of ant. 2 | Shape of seg. 2, leg 7 |
|---|---|---|---|---|---|---|
| 52 | 4 mm. | post border straight, corner blunt | deep notch, high carina | 1 slightly less than 2 | about 4 flag. segs longer | lower border flattish |
| 54 | 8 mm. | post corner rounded | similar to 52 | about equal | about 4 flag. segs longer | lower border slightly sloping up |
| 101 | 4 mm. | as 52 | notch shallow, carina low | 1 about $^2/_3$ of 2 | about 8 flag. segs longer | lower border evenly rounded |
| 161 | 10 mm. | as 52 | notch deep, carina an even arch | 1 very slightly less than 2 | about twice as long | similar to 52 |

## Aequicornis Group.

The species *Ampelisca aequicornis* Bruz. has, in this area, a great number of related forms or varieties like the other groups.

The form from Station 60 (var. *cessia*) resembles fairly closely that described and figured as *aequicornis* by Sars (1891). Because of the fineness of the legs and the fact that the posterior free corner of epimeral plate III is rather more pointed it seems to be a variety of the species.

Besides this there is another form from the same Station segment 2 of whose legs V, VI and VII are vastly different. They are much broader than long in legs V and VI, while that of VII is curved inwards on its upward posterior slope. This would seem to suggest *A. natalensis* Barnard.

There are still other forms from Stations 147 and 161 which differ from the foregoing in having a great number of short flagellar segments in antenna II. Legs V and VI are stouter than those of *aequicornis* but not so stout as those of *natalensis*, segment 5 being about equal to 3 plus 4. In leg VII segment 2 is of a totally different shape. Its lower border slopes backwards in both directions to a point in the middle. This variety I propose to call *verga*.

After much consideration I have decided that the new forms to be described here should have varietal rank. This is done to keep clear their relationship with *aequicornis*. *A. natalensis* is probably worth no higher status.

### **Ampelisca ? natalensis** Barnard 1916.

(Fig. 17).

*A. natalensis*, BARNARD 1916, p. 137.

Station 60. 1♀ ovig. 8 mm.
— 147. 1 juv.

**Remarks:** As in the case of other species of this genus it is somewhat difficult to decide the status of this animal. It agrees with *A. natalensis* as far as the description of leg VII is concerned. It also agrees in a general way with the description given by BARNARD. By implication, *natalensis* is close to *serraticaudata* Chevreux, and the present animal has the very broad segment 2 of leg VI and the shortness of the other segments illustrated by CHEVREUX (the absence in his diagrams of feathered bristles may mean little).

Again we meet the confusion which seems to exist in this genus in that *serraticaudata* is equated with *rubella* by DELLA VALLE (1893) and later by CHEVREUX (1900). BARNARD points out that the shape of segment 2 of leg VII differs markedly in the two species and that *rubella* is without corneal lenses. SCHELLENBERG (1925), has found *rubella* in which corneal lenses appear to be present. Add to this the fact that CHEVREUX & FAGE (1925), who have reinstated *serraticaudata* in their "Faune de France", figure its uropod III without serrations and the confusion is complete. The present animal is, in my estimation, at least much closer to *natalensis* than to *serraticaudata*, the flagellar segments of whose antennae are almost shorter than broad whereas those of this form are much longer than broad.

It is also close to *aequicornis* Bruz. (as described by SARS 1891) but differs from it in the shape of segment 2 of leg VII.

**Further distribution:** Natal.

## **Ampelisca aequicornis** var. **cessia** n. var.

(Fig. 17).

Station 60. 1♀ 6 mm.

**Description:** The head is squarely truncated and is rather shorter than the next three segments. The posterior border of epimeral plate III is straight but is carried out to a small point at its posterior free corner. The carina on urosome segment I is low and flat-topped.

Segment 1 of antenna I is rather more than half segment 2, which reaches the end of segment 4 of antenna II. The flagellum is longer than half the

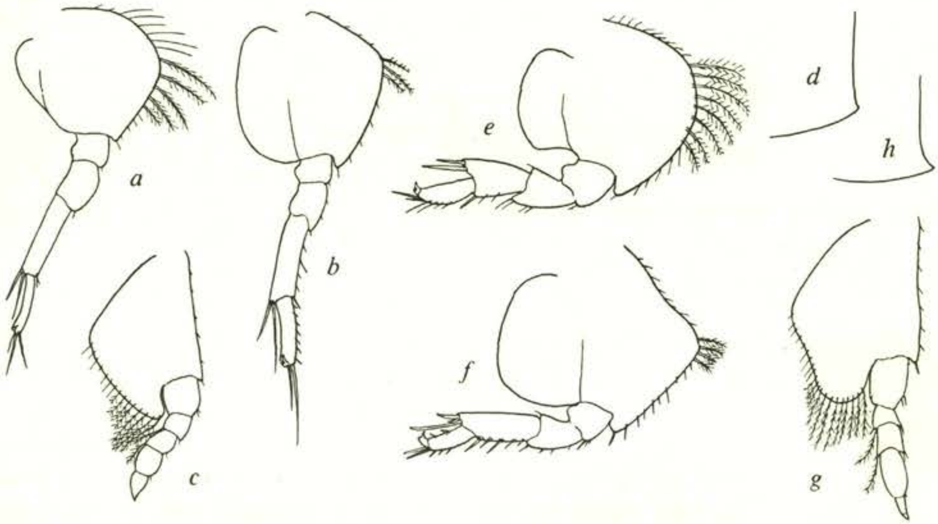


Fig. 17. *A. aequicornis* var. *cessia*;a, leg V of female; b, leg VI; c, leg VII; d, epimeral plate III. *Ampelisca? natalensis*. e, leg V of male; f, leg VI; g, leg VII; h, epimeral plate III.

body length and has 21 long segments. The last two segments of the peduncle of antenna II are about equal (both flagella of antennae II are broken off at about segment 15). The bristles on the flagella of both antennae are very long.

Gnathopods I and II and legs I and II are similar to those of *aequicornis*. Leg V is much slimmer than that of *aequicornis*; segment 2 is little more than half the length of the rest of the limb. Leg VI is also slightly built in the same proportions as the preceding one. The posterior border of segment 2 of leg VII slopes out evenly above and below to reach its furthest point at about the middle of the segment. Segments 4 to 7 are of about equal length.

The uropods and telson are as in *aequicornis* except that there are a few long bristles on the inner edge of uropod III. Male unknown.

## **Ampelisca aequicornis** var. **verga** n. var.

(Fig. 18).

Station 147. 2♀ 9 mm.
— 161. 1♀ 6 mm.

**Description:** This variety is close to *aequicornis* but can easily be distinguished from it by the shape of its epimeral plate III, whose posterior border is slightly convex and whose free posterior corner is produced into a sharp tooth.

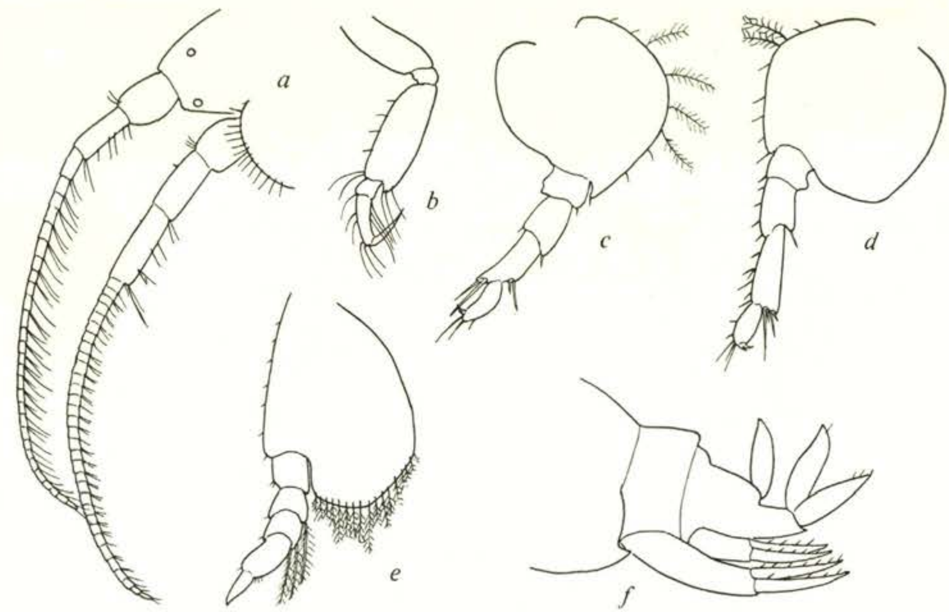


Fig. 18. *Ampelisca aequicornis* var. *verga* (female). a, head; b, leg IV; c, leg V; d, leg VI; e, leg VII; f, urosome.

The head is short and squarely truncated. Segment I of the urosome has a small but distinct carina. The eyes are small, the lower ones set back from the angle of the head. Both are surrounded by red pigment. Antenna I is slightly shorter than antenna II. The peduncle of antenna I is also shorter than that of II: segments 1 and 2 are of about equal length but 1 is thicker than 2. The flagellum is composed of many short segments which carry long ventral bristles. The flagellum of antenna II resembles the other but the bristles are much shorter. The last two segments of the peduncle are sub-equal.

The claw of legs III and IV is shorter than that of the last two limb segments. Legs V to VII are short and strong. Segment 2 of leg VI is short and squarish. Segment 2 of leg VII is broad and extends beyond segment 3. The outer ramus of uropod I is spined like those of II. Uropod III has lanceolate rami almost devoid of bristles, such few as there are being very small. The telson is likewise plain. Male unknown.

### **Ampelisca rubella** Costa 1864.

*A. rubella*, COSTA 1864, p. 153.
*A. rubella*, STEBBING 1906, p. 104.
*A. rubella*, SCHELLENBERG 1925, p. 122.

Station 145. 1 ♀.
— 151. 1 juv.

**Remarks:** I am not entirely satisfied with the identification of these animals. Though they agree pretty well with the description given by CHEVREUX & FAGE (1925) they differ in one or two minor respects.

The specimen from Station 145 has well-developed eye-lenses; in the specimen from Station 151 the lenses are quite distinct in the lower eyes but are very indistinct in the upper ones.

The lower angle of the head is strongly produced forward.

**Further distribution:** Mediterranean, Azores, Indian Ocean.

### **Ampelisca serraticaudata** Chevreux 1888.

(Fig. 19).

*A. serraticaudata*, CHEVREUX 1888, p. 349.
*A. serraticaudata*, CHEVREUX & FAGE 1925, p. 80.

Station 153. 3 ♂ 10 mm., 1 ♀ 10 mm.

**Remarks:** In CHEVREUX's description of this species he says "Urop. III avec les branches largement lancéolées, branche ext. de beaucoup la plus large, épaisse, courbée a l'extrem, bord. ext. denticulé." There appears to be some confusion here, for in this animal the internal branch is the broader and its median border is strongly toothed.

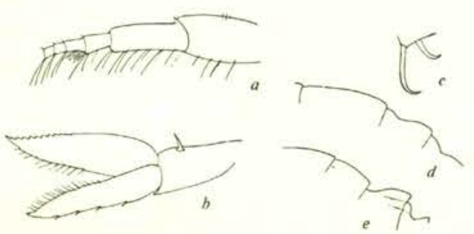

Fig. 19. *Ampelisca serricaudata* (male). a, antenna I; b, uropod III; c, ventral hooks of male; d, profile of dorsum of male; e, profile of dorsum of female.

He does not describe or figure the male though he may have seen it. It differs from the female in that there is a brush of bristles on the ventral surface of segment 1 of the flagellum of antenna I. This brush is not particularly noticeable. Besides this there is a pair of copulatory hooks between and slightly in front of legs VII. The characteristic male bunches of bristles on the dorsal surface of the peduncle of antenna II are absent and the antennae do not differ in size from those of the female. It is therefore concluded that this animal is a male intersex.

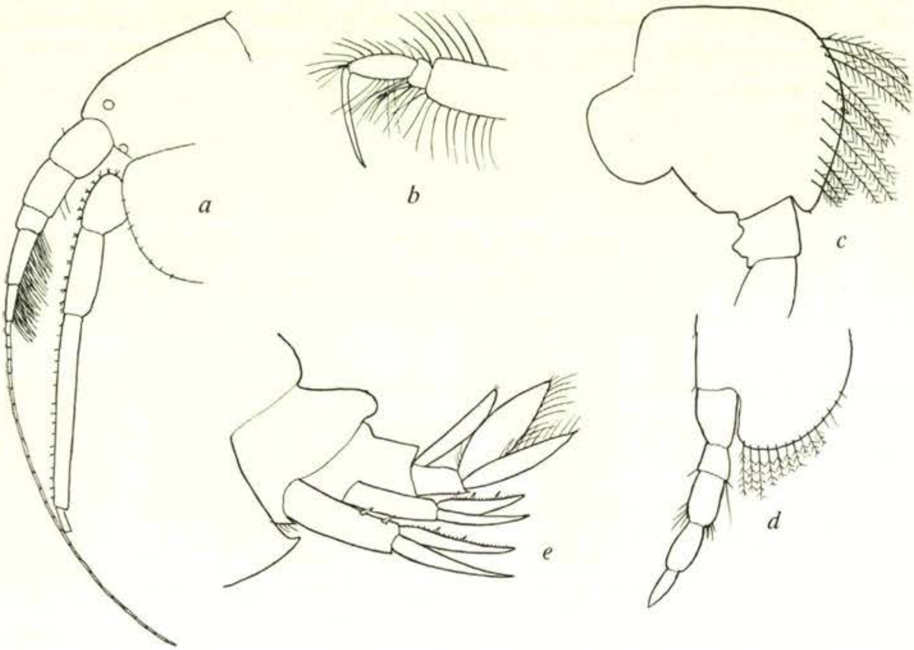


Fig. 20. *Ampelisca jarli* (male). a, head; b, leg IV; c, leg V; d, leg VII; e, urosome.

## **Ampelisca jarli** n. sp.

(Fig. 20).

Station 161. 1 ♂ 6 mm.

**Description:** The head is not cut away below. The lower eye is just below the lower angle of the head. Side-plate I is produced well forward and has very small marginal bristles: the other side-plates have distinct marginal bristles. Metasome segments I and II (as well as the preceding segment perhaps) are slightly humped posteriorly in the middle line. Urosome segment I has a deep dorsal notch followed by a high rounded carina. Epimeral plate II is rounded posteriorly; the free corner of III is produced to a small blunt tooth.

Segments 1 & 2 of antenna I are short and sub-equal; segment 3 is very short, being less than $^1/_2$ of segment 2. The first few flagellar segments (equalling the peduncle in length) appear to be fused and bear a heavy brush of bristles on the under-side. The total length of antenna I is unknown since the end of the flagellum is broken off, but it is much longer than the peduncle of antenna II. The last segment of the peduncle of antenna II is about twice the length of the preceding one and is longer than the head. The flagellum is missing.

The claw of legs III and IV is a little longer than the two last limb segments combined. The anterior border of segment 2 of leg V bears long feathered bristles. The posterior lobe of segment 2 of leg VI is broad and flattened below; that of leg VII is evenly curved upwards and bears short feathered bristles.

The outer border of the outer ramus of uropod III bears feathered bristles, as does the median border of the inner ramus. The telson is tipped with a few tiny bristles.

## ARGISSIDAE

### **Argissa stebbingi** Bonnier 1896.

*A. stebbingi*, CHEVREUX & FAGE 1925, p. 90.

Station 113. 1♂ 2 mm., 3♀ 2 mm.
— 114. 1♂ 3 mm.

**Further distribution:** S.W. France to Dakar; Azores.

## HAUSTORIIDAE

### **Urothoe marina** (Bate) 1857.

*Sulcator marinus*, BATE 1857, p. 140.
*Urothoe marina*, BATE 1862, p. 115.
*Urothoe marina*, CHEVREUX & FAGE 1925, p. 97.

Station 73. 1♀ 3.5 mm.

**Further distribution:** North Sea coasts, West Europe, ?Dutch East Indies (?Gen. dist.).

### **Urothoe grimaldi** Chevreux 1895.

*Urothoe grimaldi*, CHEVREUX 1895, p. 428.
*Urothoe grimaldi*, CHEVREUX & FAGE 1925, p. 99.

Station 52. 1♀, damaged and identification not certain.
— 69. 7♀ max. 4.0 mm.
— 150. 7♂ max. 6 mm., 1 juv.

**Further distribution:** Western European coasts.

## **Urothoe leone** n. sp.

(Fig. 21).

Station 52, 1♀ 3 mm.

**Description:** Eyes small but distinct. Epimeral plate II with a very slight posterior tooth; III with the posterior corner blunt. The three segments of the peduncle of antenna I are equal; the flagellum has five segments; the accessory flagellum has three segments. The last segment of the peduncle of antenna II is about $^2/_3$ of the preceding segment.

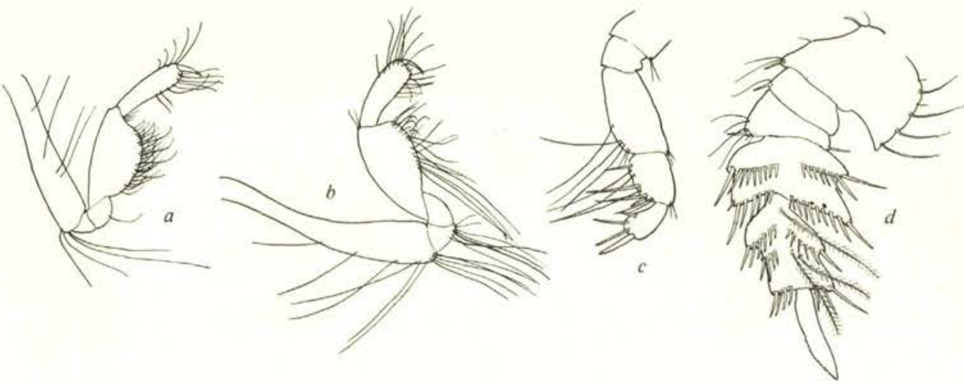


Fig. 21. *Urothoe leone*. a, gnathopod I; b, gnathopod II; c, leg III; d, leg V.

Segment 5 of gnathopod I is evenly rounded posteriorly and that edge is beset with bristles; segment 6 is only a little shorter than segment 5 and is narrow: there is little sign of a palmar surface. Gnathopod II is similar to I but segment 2 is longer and narrower; segment 6 has a short but well-defined palm which is almost transverse. Segment 5 of leg IV carries on its posterior border two very long spines, two short ones and several long bristles, segment 6 has three spines. Leg V is similar to that of *U. pulchella* (Costa) 1853; the infero-posterior corner of segment 2 is hooked downwards and has four or so long bristles on its posterior border. The breadth of segment 5 is twice, or a little more, the length: the claw is serrated. There appear to be very few feathered bristles on the leg (three in the part figured).

Uropod I has the rami a little longer than the peduncle which is armed with two spines: the outer ramus is the longer: Uropod II is very slightly shorter than uropod I: Uropod III has the inner ramus equal to the outer less its second segment; both are tipped with long feathered bristles. Each half of the telson is armed with one long bristle.

## PHOXOCEPHALIDAE

### **Pontharpinia stimpsoni** Stebbing 1908.

(Fig. 22).

*P. stimpsoni*, STEBBING 1908, p. 75.

Station 52. 2♀ 6 mm.
— 54. 1♀ 6 mm.
— 145. 1 juv. (♀).

**Description:** Rostrum narrow, pointed and long, reaching to within about three segments of the end of antenna I. It is extended into a short spike which may be bent up or down.

The eyes are small and are composed of about seven brown (in spirit) ocelli. Antenna I has segment 1 equal to about twice 2 plus 3; segment 3 is very short; the flagellum is sub-equal to the peduncle and is composed of about twelve segments. The accessory flagellum is of about the same length. In antenna II the ultimate segment is shorter than the penultimate.

The mandible has a group of 2 to 3 spines and a row of upturned spinules. Maxilla I has the inner plate well developed and carrying three apical spines: the outer plate has ten or more spines: the palp has two segments and bears a widely spaced row of bristles on its inner border. The inner and outer plates of maxilla II are equal.

Segment 6 of gnathopod I is smaller than that of gnathopod II. The last two segments of gnathopod I are about equal, but the last segment of gnathopod II is much longer than the preceding one: segment 4 of gnathopod II is extended into a free distal lobe.

Segments 4 and 5 of leg V are expanded and heavily spined. Segment 2 of leg VI is heavily spined anteriorly; segment 3 is much expanded and spined. The lobe of segment 2 of leg VII is notched posteriorly and has a tuft of bristles anteriorly.

The posterior border of epimeral plate III is almost straight and meets the inferior border in a rounded angle; there are some bristles along the inferior border and about half way up the plate there is a row of surface bristles which point backwards and upwards.

Segment 1 of the outer ramus of uropod III is about twice the length of the peduncle; it has two clumps of bristles about half way along its length; segment 2 is very long and equals about half the preceding. The inner ramus is almost as long as segment 1 of the outer ramus; it has a terminal tuft of bristles.

The telson has a terminal spine set in a depression and a median bristle on each half.

**Further distribution:** South-east Africa.

### **Pontharpinia intermedia** Schellenberg 1925.

*P. intermedia*, Schellenberg 1925, p. 138.

Station 69. 2♂ 4 mm., 1♀ 3.5 mm.

**Distribution:** Not known outside the area.

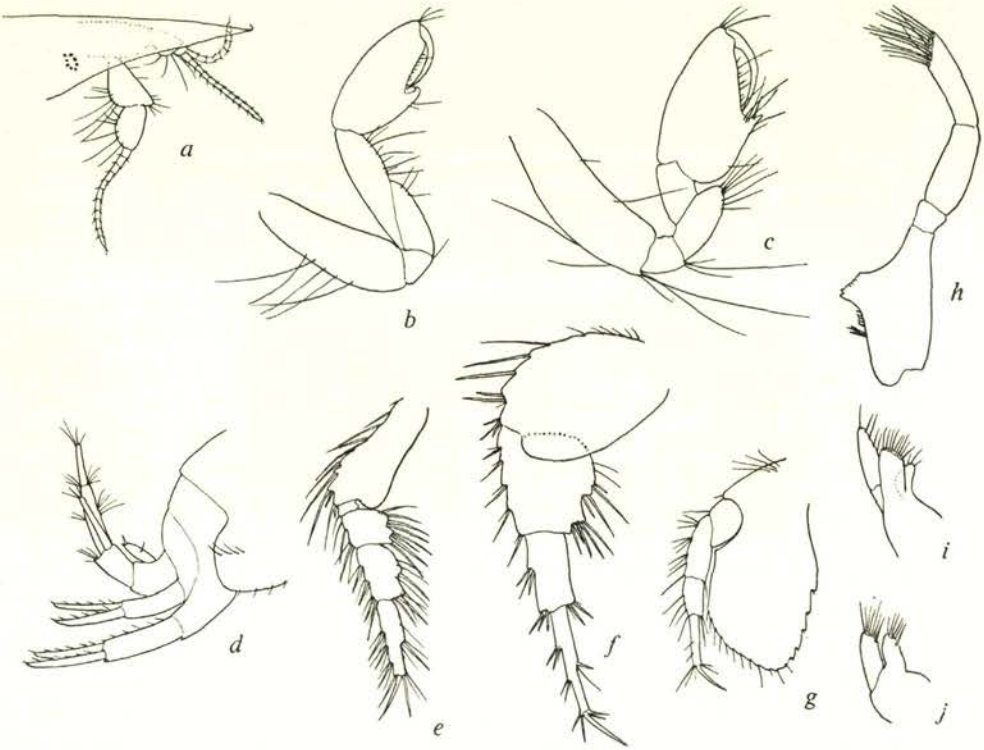


Fig. 22. *Pontharpinia stimpsoni* (female). a, head; b, gnathopod I; c, gnathopod II; d, urosome; e, leg V; f, leg VI; g, leg VI; h, maxilla I; i, maxilla II; j, mandible.

## AMPHILOCIDAE

### **Amphilocus spence-batei** (Stebbing) 1876.

*Probolium spence-batei*, Stebbing 1876, p. 161.
*Amphilocus spence-batei*, Stebbing 1906, p. 723.
*Amphilocus spence-batei*, Chevreux & Fage 1925, p. 115.

Station 146. 1♂ 3 mm. This specimen is lacking antennae II and other parts but such as are left agree with this species.

— 148. 1♀ ovig. 3 mm. A much damaged specimen but possibly this species.

Station 153. 1 ♂ 2.5 mm., 1 ♀ ovig. 2.5 mm., 1 juv. The specimens are much broken.

**Further distribution:** South England, West Europe.

## **Gitanopsis magdai** n. sp.

(Fig. 23).

Station 155. 8 ♂ max. 2.5 mm., 5 ♀ max. 2.5 mm. ovig., 9 juv.

**Description:** This species is very close to *G. pusilla* Barnard 1916 but varies from it in too many ways to be considered a mere variety of it. The head is strongly curved and the lateral lobes rounded. Side plate I is small and ovoid; II is slightly expanded with the inferior border smooth. Epimeral plate III is produced to a rounded lobe; II is a little produced but is more pointed.

The eyes are black and somewhat irregularily rounded. The antennae are short and sub-equal. Antenna I has peduncle segments 1 and 3 sub-equal, 2 is almost twice as long as 3: the flagellum has five segments. Antenna II has the last peduncle segment the longest: the flagellum has five segments.

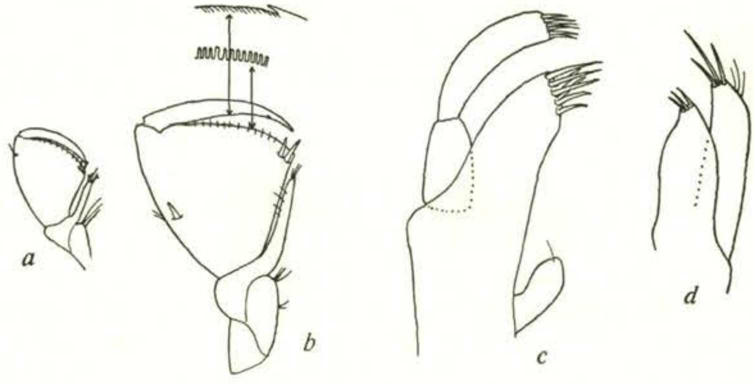


Fig. 23. *Gitanopsis magdai* (female). a, gnathopod I; b, gnathopod II; c, maxilla I; d, maxilla II.

The inner plate of maxilla II is a little wider than the outer. Gnathopod I is similar to but much smaller than II. The palm of both gnathopods is villose and the opposing surface of the claw bears short, fine bristles. In this characteristic it closely resembles *pusilla*. Near the anterior edge of segment 6 of gnathopod II is a strong spine. Uropod III is the longest. The telson is very short, being rather less than half the peduncle of uropod III.

The legs of all the specimens are missing or broken. The general colour of these animals is black with one or two dark brown bands.

## CRESSIDAE

### **Cressa dubia** (Bate) 1857.

*Danaia dubia*, Bate 1857, p. 137.
*Cressa dubia*, Stebbing 1888, p. 293.
*Cressa dubia*, Sars 1892, p. 278.
*Cressa dubia*, Chevreux & Fage 1925, p. 141.

Station 145. 2♂ 2 mm., 4♀ ovig. 2 mm., 3 juv.

**Remarks:** These specimens appear to be the same as the northern forms.

**Further distribution:** North Sea southwards.

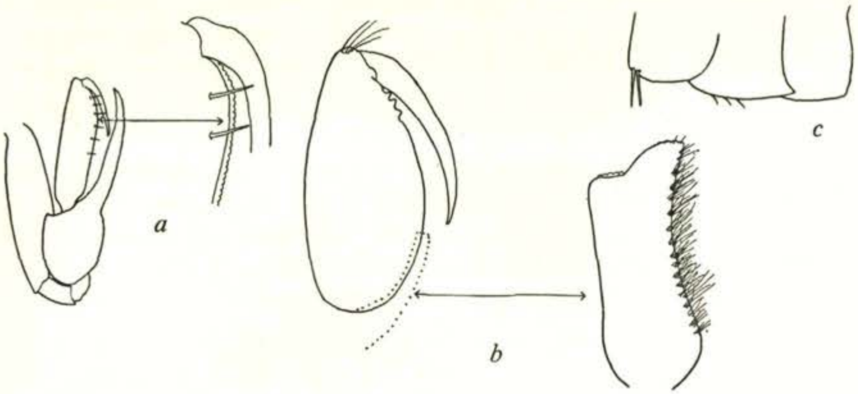


Fig. 24. *Leucothoe spinicarpa* var. *occidentalis* (male). a, gnathopod I; b, gnathopod II; c, epimeral plates.

## LEUCOTHOIDAE

### **Leucothoe spinicarpa** (Abildg.) 1789.

*Gammarus spinicarpus*, Abildgaard 1789, p. 60.
*Leucothoe articulosa*, Boeck 1861, s. 654.
*Leucothoe articulosa*, Sars 1892, p. 283.
*Leucothoe spinicarpa*, Chevreux & Fage 1925, p. 112.
*Leucothoe spinicarpa*, Monod 1926, p. 53.

Station 141. 2♀ ovig. max. 5 mm., 1 juv.
— 161. 1♀ ovig. 10 mm.

**Remarks:** These specimens have epimeral plate III projecting rather more strongly than is usual in this species.

**Distribution:** This appears to be a cosmopolitan species.

### **Leucothoe spinicarpa** var. **occidentalis** n. var.

(Fig. 24).

Station 145. 4♂ max. 5 mm., 7♀ max. ovig. 4 mm. 1 juv.
— 147. 2♀ 4 mm.

**Description:** This variety is distinguished by its small size: by the fewness of its flagellar segments (ten on antenna I, five on antenna II); by the shape of the distal end of the lobe on segment 5 of gnathopod II (this lobe has an almost incised appearance); and the notching at the hinge-end of the palm of segment 6 may be almost absent; by the slight to marked concavity of the inferior border of epimeral plate II with the 2 bristles at its anterior end; by the absence of any projection of the free posterior corner of epimeral plate III.

The males are banded with red and have almost black eyes: the females show no trace of banding and have pink eyes.

### **Leucothoe richiardi** Lessona 1865.

*L. richiardi*, LESSONA 1865, p. 426.
*L. richiardi*, DELLA VALLE 1893, p. 654.

Station 145. 2♂ 6 mm., 3♀ 6 mm.
— 151. 1♂ 7.5 mm.

**Remarks:** The last male is quite characteristic despite its size. Traces of banding are still visible on the body.

**Distribution:** Mediterranean; Gulf of Gascony; French Guinea.

### **Leucothoe ? incisa** Robertson 1892.

*L. incisa*, ROBERTSON 1892, p. 217.
*L. incisa*, CHEVREUX & FAGE 1925, p. 123.

Station 145. 2 juv.
— 151. 1 juv.
— 153. 1 juv.

**Remarks:** These young individuals are not easy to identify with certainty but are probably this species.

**Further distribution:** From the British Isles southward.

### **Leucothoe ? minima** Schellenberg 1925.

*L. minima*, SCHELLENBERG 1925, p. 141.

Station 141. 1♂ about 3 mm., 1 juv.

**Remarks:** These specimens are very close to *minima*. They differ in the following points—the antero-distal expansion of segment 2 of gnathopod II is more pointed than rounded; the posterior free corner of epimeral plate III is of the same form as *minima* but is not rounded; the palm of segment 6 of gnathopod II is notched on the distal $^1/_3$ only.

The foregoing is hardly sufficient grounds for making this a distinct variety.

**Distribution:** Not known out of the area.

### **Leucothoe dentitelson** Chevreux 1925.

(Fig. 25).

*B. dentitelson*, CHEVREUX 1925, p. 297.

Station 151. 1 ♂ 3 mm., 1 ♀ ovig. 3 mm., 1 juv.
— 153. 3 ♂ 3 mm., 2 ♀ 3 mm.

**Description:** Male. Epimeral plate II produced to a long posterior point; III has a small tooth surmounted by a small notch. There appears to be another but very shallow notch higher up on the posterior border in one of the males, but it seems to be an abnormality for it does not occur in the female nor in the other males. There is a tiny bristle in this notch. The

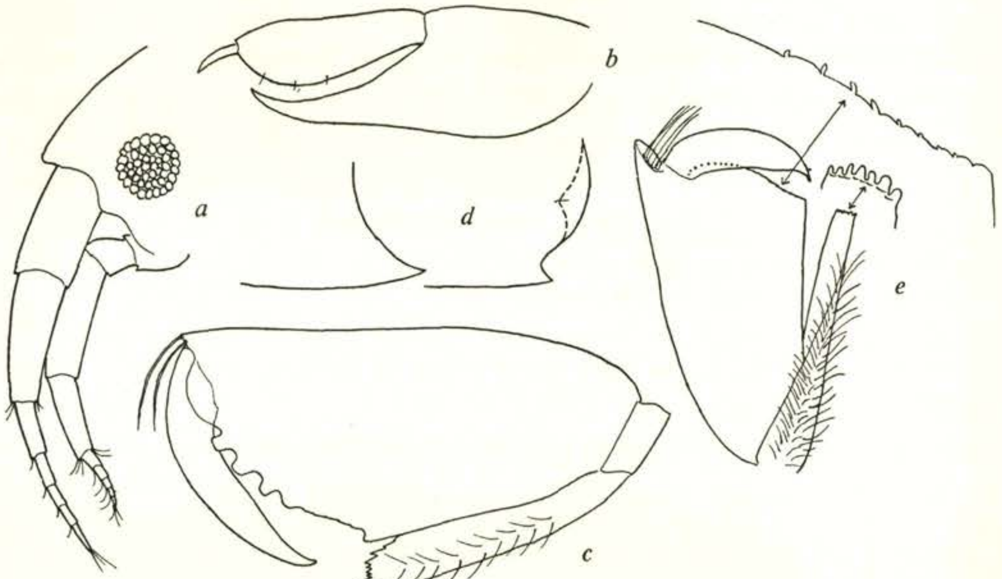


Fig. 25. *Leucothoe dentitelson* (male). a, head; b, gnathopod I; c, gnathopod II; d, epimeral plates II and III; e, gnathopod II of female.

eyes are rounded and dark: the antennae are short. Segment 2 of the peduncle of antenna I is slightly longer than segment 1; segment 3 is $^2/_3$ the length of segment 2: the flagellum has 4—5 segments. Antenna II is slightly shorter than I; peduncle segment 5 is $^2/_3$ of 4; the flagellum has five segments.

Gnathopod I has a very short claw; the opposing edges of segments 5 and 6 are smooth. Gnathopod II has the palm defined by a blunt tooth:

the half of the palm nearer the claw has three strong, broad-topped processes; the other half is almost smooth; segment 5 is serrated at its distal end. Segment 2 of leg VII is ovoid and vaguely indented. Uropod III is missing. Telson pointed, sides straight.

Female. She is similar to the male except for gnathopod II which is astonishingly different. The anterior border of segment 6 is prolonged distally and carries a group of long bristles; the palm is less sloping and appears under low power magnification to be slightly indented. High power, however, shows indentations with a small papilla arising from each. The posterior border meets the palm at almost a right-angle. The claw is very stout and powerful and appears to be set so as to give a scissor-like action. The distal end of the prolongation of segment 5, which is almost as long as the posterior border, is carried out into about seven or eight small blunt lobes.

**Remarks:** This is undoubtedly the species described by CHEVREUX. However, he does not seem to have found a male, which is here described.

**Distribution:** Senegal.

## STENOTHOIDAE

### **Stenothoe marina** (Bate) 1857.

*Montagui marinus*, BATE 1857, p. 57.
*Stenothoe marina*, BOECK 1871, p. 139.
*Stenothoe marina*, SARS 1892, p. 236.
*Stenothoe marina*, CHEVREUX & FAGE 1925, p. 136.

Station 153. 1 ♀, 2 juv.

**Remarks:** These specimens agree with the description of the northern forms.

**Distribution:** North Sea, Tropical Atlantic, Indian Ocean.

### **Stenothoe spinimana** Chevreux 1911.

*S. spinimana*, CHEVREUX 1911 (2), p. 197.
*S. spinimana*, CHEVREUX & FAGE 1925, p. 134.

Station 155. Many specimens, male, female and juvenile. Max. size 3 mm.

**Distribution:** Western Mediterranean to Gambia.

### **Stenothoe gallensis** Walker 1904.

(Fig. 27).

*S. gallensis*, WALKER 1904, p. 261.
*S. gallensis*, BARNARD 1916, p. 154.

Station 155. Many ♂ max. 6 mm., many ♀, some ovig., at 2 mm. and others at 5 mm., many juvs.

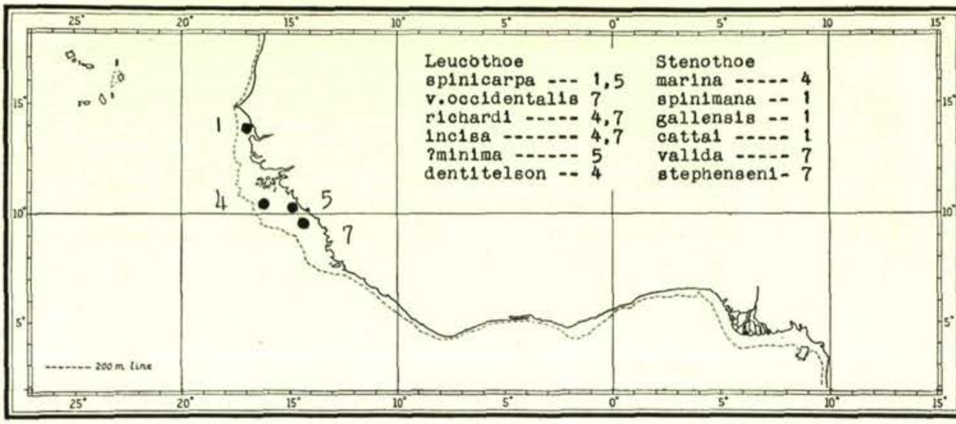


Fig. 26. Distribution of *Leucothoe* and *Stenothoe*.

**Remarks:** It is not possible to be sure that this is not *S. cattai* Stebbing, but since it more closely fits WALKER's description of *S. gallensis* I must consider it to belong to this species. To save further trouble I am adding a description.

Female. Side-plate I is deep; III is much broader than deep and is almost semi-circular posteriorly. Epimeral plate II has a small notch in its posterior free corner; III is somewhat produced and pointed. The eyes are small, circular, pink. Antenna I is slightly longer than II. Antenna I has peduncle segment 1 longer than 2; 2 is longer than 3. The flagellum has twelve segments and is little longer than the peduncle. Antenna II has its peduncle segment 5 a little shorter than 4. The flagellum has fourteen segments. Gnathopod I has lobe of segment 4 not much produced; the palm of segment 6 is sloping and carries a few long and short bristles: the anterior and posterior borders are almost parallel. The palm of gnathopod II is ill-defined, is almost naked but is divided from the posterior border by a group of four strong spines. The segment is almost oval.

Segment 2 of leg VII is slightly crenated posteriorly; segment 4 is not much expanded; its backward projection reaching only half-way along segment 5. The terminal segment of uropod III is serrated dorsally and has a proximal swelling ventrally; the ramus is only a little, if at all, longer than the peduncle.

The telson has three pairs of strong lateral spines. It is noteworthy that females of quite different sizes are ovigerous.

Male. It is altogether much bigger than the female. The anterior and posterior borders of gnathopod I are almost parallel; the palm is shorter than the claw; the lobe of segment 4 is truncated. Gnathopod II is large, the palm is almost straight and minutely irregularly indented. It is armed with a continuous brush of bristles; the distal end near the hinge is produced into two strong teeth. The claw is as long as the segment and is minutely

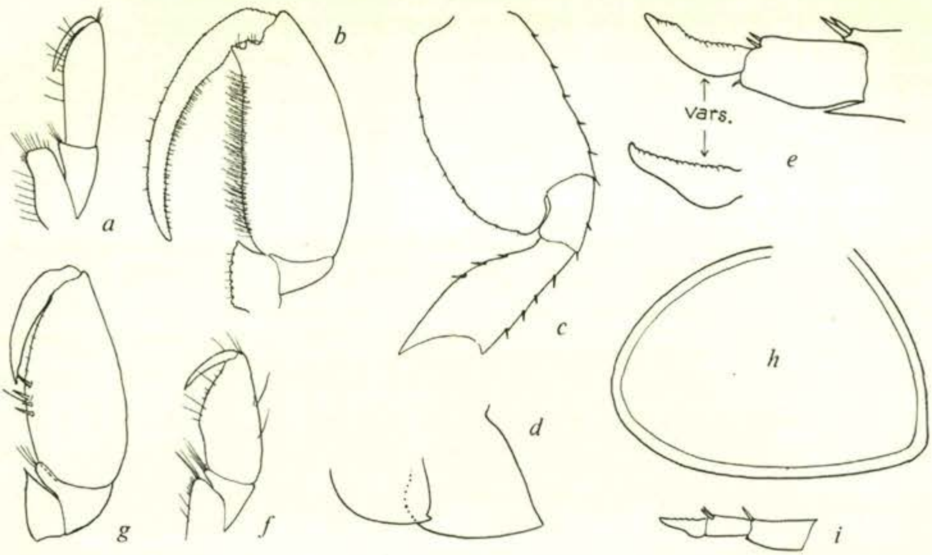


Fig. 27. *Stenothoe gallensis* (male). a, gnathopod I; b, gnathopod II; c, leg VII; d, epimeral plates II and III; e, uropod III. (female); f, gnathopod I; g, gnathopod II; h, side plate IV; i, uropod III.

crenelated on the edges, its inner border bearing a brush of bristles; there are sometimes a few widely separated bristles on its outer border: segment 4 is axe-like, its edge irregularly indented and with a bristle in each indentation.

The ramus of uropod III is curved and has the upper border serrated more strongly than in the female. The lower curve is sometimes regular and sometimes geniculate.

**Further distribution:** Indian Ocean.

### **Stenothoe valida** Dana 1852.

*S. valida*, Dana 1852, p. 311.
*S. valida*, Chevreux & Fage 1925, p. 137.

Station 145. 3♂ 3 mm., 3♀ 3 mm., 2 juv.

**Further distribution:** Mediterranean, sub-tropical Atlantic, Pacific Oceans.

### **Stenothoe cattai** Stebbing 1906.
(Fig. 28).

*Stenothoe cattai*, Stebbing 1906, p. 195.
*Stenothoe cattai*, Chevreux & Fage 1925, p. 132.

Station 155. 2♂ 3 mm., 7♀ max. 3 mm., 1 juv.

**Remarks:** These specimens do not all show the geniculation of the rami of uropod III mentioned by STEBBING. Indeed, most of them are quite straight as figured by CHEVREUX & FAGE. Their figures of other parts of this animal do not appear to be particularly good. Segment 1 of the peduncle of antenna I is the longest and though this is implied in the text it is not so shown in the diagram.

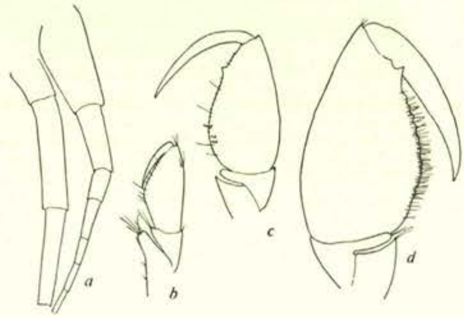

Fig. 28. *Stenothoe cattai.* a, antennae; b, gnathopod I; c, gnathopod II of female; d, gnathopod II of male.

Gnathopod II of the male has the pointed palmar tooth but there is no "profonde échancrure" such as is mentioned.

It is possible, of course, that the specimens are not of this species but if not, then they are very close to it.

**Further distribution:** West Europe; Mediterranean.

## Stenothoe stephenseni n. sp.

(Fig. 29).

Station 146. 4♀ ovig. 2 mm., 3 juv.

**Description:** Female. Side-plate III somewhat shield-shaped. Epimeral plate I with free posterior corner notched; II with the free posterior corner

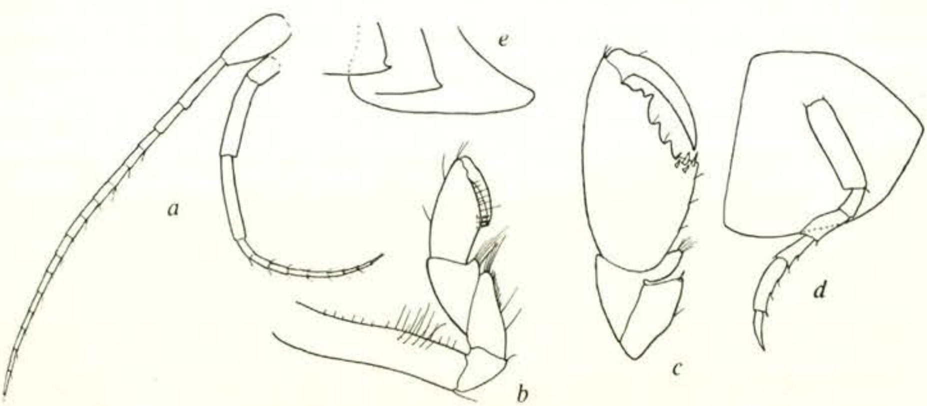

Fig. 29. *Stenothoe stephenseni* (female). a, antennae; b, gnathopod I; c, gnathopod II; d, leg IV; e, epimeral plates.

produced to a small sharp tooth and III much prolonged and blunt. Eyes small and whitish. Antenna I is longer than half the body and longer than antenna II. Both antennae are slender. Segment 1 of antenna I is pear-shaped and as long as segment 2: segment 3 is greater than half of 2. The flagellum has 13 segments. The ultimate segment of antenna II is slightly shorter than the penultimate: the flagellum has 19 segments.

Gnathopod I is small; segment 2 is long and narrow: segment 6 widens to a palm which is delimited by three spines. Gnathopod II is very much stronger; the palm of segment 6 has two teeth towards the hinge, and two median teeth each with a bristle beside it. There are four or five spines, amongst which the claw closes, at the end of the palm.

All the legs are slender. Segment 2 of legs VI and VII is almost square posteriorly: segment 4 is expanded and produced to the middle of segment 5.

Uropod III has a straight ramus sub-equal to the peduncle. The telson has two pairs of spines.

The male has not been found.

## ACANTHONOTOZOMATIDAE

### **Panoploea minuta** (O. Sars) 1893.

*Iphimedia minuta*, Sars 1893, p. 379.
*Panoploea minuta*, Stebbing 1906, p. 213.
*Panoploea minuta*, Chevreux & Fage 1925, p. 148.

Station 145. 7 adult max. 5 mm., 23 juv.
— 147. 2♀ 5 mm.

**Remarks:** The antennae of all the specimens have been damaged.

**Distribution:** North Sea, West Europe, Mediterranean, W. Africa.

## LILJEBORGIIDAE

### **Liljeborgia brevicornis** (Bruz.) 1859.

*Liljeborgia pallida*, Sars 1894, p. 530.
*Liljeborgia brevicornis*, Chevreux & Fage 1925, p. 155.

Station 151. 1♂ 4 mm., 1♀ ovig. 4 mm.
— 153. 3♂ max. 6 mm., 3♀ ovig. 5 mm., 4 juv.

**Distribution:** Generally distributed from the Arctic Ocean to S. Australia.

### **Idunella picta** Norman 1889.

*Idunella picta*, Norman 1889, p. 116.
*Idunella picta*, Chevreux & Fage 1925, p. 158.

Station 146. 1♂ 4 mm.
— 148. 1♂ 5 mm.

**Further distribution:** English Channel, W. Europe.

## OECIDEROTIDAE

### **Perioculodes longimanus** (Bate & Westwood) 1868.

*Monoculodes longimanus*, BATE & WESTWOOD 1868, p. 507.
*Perioculodes longimanus*, SARS 1892, p. 313.
*Perioculodes longimanus*, CHEVREUX & FAGE 1925, p. 162.
*Perioculodes longimanus*, SCHELLENBERG 1928, p. 642.

Station 161. 2♂ max. 5 mm.

**Further distribution:** North Sea; West Europe; Mediterranean; Suez Canal; Sub-tropical Atlantic.

## CALLIOPIIDAE

### **Stenopleura atlantica** Stebbing 1888.

*S. atlantica*, STEBBING 1888, p. 950.
*Acanthozone atlantica*, DELLA VALLE 1893, p. 601.
*S. atlantica*, STEPHENSEN 1915, p. 45.

Station 24. 3♂ max. 6 mm., 2♀ 6 mm.

**Remarks:** These specimens agree closely with the description and figures given by STEPHENSEN. Epimeral plate III seems to be more strongly produced than he indicates.

**Distribution:** Eastern Atlantic from ?2° N to the coasts of Tristan da Cunha; Canary Isl.

## SYNOPIIDAE

### **Synopia scheeleana** Bovallius 1886.

*S. scheeleana*, BOVALLIUS 1886, p. 16.
*S. scheeleana*, STEBBING 1906, p. 272.

Station 113. 1♂ 4 mm.

**Distribution:** Tropical Atlantic and Pacific Oceans.

## TIRONIDAE

### **Tiron intermedia** n. sp.

(Fig. 30).

Station 147. 2♂ 5 mm., 1♀ 8 mm., 3 juv.

**Description:** In general appearance this species agrees closely with *T. australis* Stebbing 1908, and also with *T. acanthurus* Lilj. 1865.

Female. The head has the rostrum deflexed. The last segment of the mesosome and the three metasome segments are dorsally multi-denticulate. Segment I of the urosome is produced into a short median-dorsal tooth; segment II is similarly produced but the tooth is almost as long as segment III. This tooth bears bristles dorsally; segment III has no tooth but has a pair of spines, one on each side of the median line. The inferior borders of side-plates I and II are slightly indented, each indentation carrying a bristle. Epimeral plate III is rounded anteriorly and posteriorly, but towards the

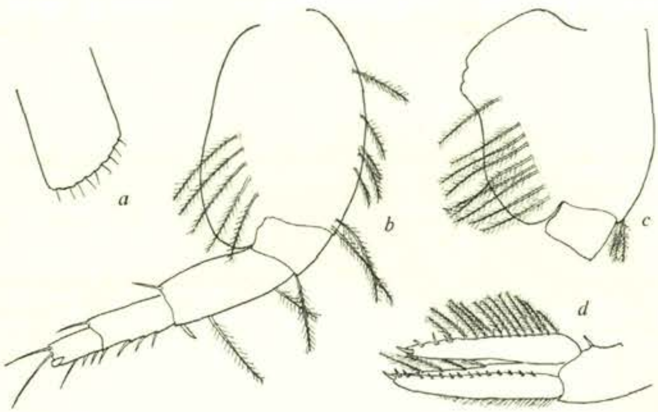


Fig. 30. *Tiron intermedia* (female). a, side plate II; b, leg VI; c, leg VII; d, uropod III.

corner of the latter there are two indentations each carrying a bristle. The upper eyes are almost contiguous dorsally; the lower ones are much smaller.

Segment 1 of the peduncle of antenna I is longer than segment 2 and that longer than 3: the flagellum has 9 segments and the accessory flagellum has 5 segments. The mouth-parts are similar to those of *T. australis*.

The gnathopods are simple and are like those of the other species except that there is no sign of tapering in the long segment 5 of gnathopod II. Segment 2 of legs I and III are narrow; segment 6 is the shortest and the claw is folded sharply back so that it is not very obvious; segment 2 of legs V and VI is widest distally, posteriorly it has a row of long feathered bristles arising from the surface of the lobe; segments 2 and 4 each bear a number of such bristles on the anterior border. The top of segment 2 of leg VII runs obliquely backwards and ends at two indentations set almost vertically. This is the widest part of the limb. Below this the border of the lobe is a flat sigmoid ending in a free lobe. Nine or ten long feathered bristles arise from the surface of this lobe also. The anterior edge of segments 2 to 4 is more heavily set with such bristles than those of leg VI.

Uropod III has the dorsal side of the outer ramus set with short spines, but the ramus appears to be boat-like and the inner dorsal edge is set with some long feathered bristles; the lower border is set with short, fine bristles. The dorsal border of the inner ramus has some four spines distally while the rest of the border has a hedge of feathered bristles.

The telson appears to be cleft to the base; each half is tapering and is set dorsally with five or six strong spines and some bristles.

The male is similar to (but smaller than) the female. The chief difference lies in antenna I. This in the male has the dorsal surface of the flagellum set with long bristles.

### **Tiron altifrons** n. sp.

(Fig. 31).

Station 147. 1 ♂ 4 mm.

**Description:** This species is at once distinguishable by the high front to its head, which is slightly overhanging; the side-lobes are bluntly rounded. The rostrum passes vertically downwards as do the antennae. One pair of eyes is clearly visible but I cannot be sure that I have seen another pair. (I have indicated in fig. 31 what appears in some lights to be a lower eye.) Despite this and judging by other features I am placing the specimen in the genus *Tiron* Lilj. 1865 where it can comfortably rest till other specimens are available.

The side-plates have the characteristic *Tiron* shape. Epimeral plate III has the posterior free corner minutely produced. Dorsally, segment I of the urosome overhangs segment II which has an overhang about half the length of segment III.

Segment 1 of antenna I is slightly longer than 2 plus 3; the flagellum has 7 segments; the accessory flagellum has 3 segments. The peduncle of antenna II is as long as antenna I; the flagellum has 4 segments and is shorter than the last two segments of the peduncle.

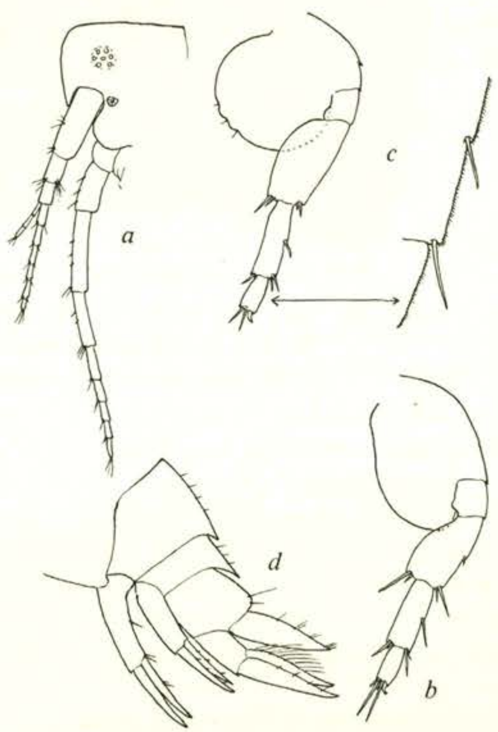

Fig. 31. *Tiron altifrons* (male). a, head; b, leg VI; c, leg VII; d, urosome.

Gnathopods I and II are similar to those of the other species.

The posterior lobe of segment 2 of leg VI is ovoid, widening below the mid-line. The posterior lobe of segment 2 of leg VII is almost circular. The posterior edge has three shallow indentations, each bearing a minute bristle. The anterior edge of segments 5 and 6 of both those limbs bears a line of extremely short and fine bristles which can be seen only with a high magnification.

Uropods I and II hardly pass the end of the peduncle of uropod III: the inner ramus of the latter bears long bristles dorsally. The telson is almost as long as uropod III: each of its halves has three groups of dorsal bristles and one terminal group.

## GAMMARIDAE

### **Megaluropus agilis** Boeck 1889.

*M. agilis*, STEBBING, 1906 p. 420.
*M. agilis*, CHEVREUX & FAGE 1925, p. 226.

Station 147. 1 juv. 2.5 mm.

**Remarks:** This individual appears to belong to this species. It lacks a number of parts (e. g. antennae II and several legs). Uropod III differs from the northern form in no marked respect.

**Further distribution:** Southern North Sea, West Europe, Mediterranean, Indian Ocean.

### **Elasmopus rapax** Costa 1853.

*E. latipes*, CHEVREUX 1887 (2), p. 229.
*E. rapax*, CHEVREUX & FAGE 1925, p. 244.

Station 148. 4♂ 7 mm., 2♀ 4 mm., 3 juv.
— 155. 3♀ small.

**Distribution:** Generally distributed in temperate and warm seas.

### **Elasmopus pocillimanus** (Bate) 1862.

*E. pocillimanus*, DELLA VALLE 1893, p. 733.
*E. pocillimanus*, SCHELLENBERG 1938, p. 56.

Station 43. 2♀ one ovig. max. 5 mm., 3 juv.

**Distribution:** Mediterranean, warm Atlantic, Pacific (Gilbert Isl.).

### **Elasmopus pectinicrus** (Bate) 1862.

(Fig. 32).

*E. pectinicrus* Barnard 1916, p. 197.

Station 145. 1♀.
— 155. Several hundred of both sexes. ♂ max. 7 mm., ♀ max. 6 mm.

**Remarks:** This is undoubtedly BATE's species. Whether it is also *E. braziliensis* (Dana) 1853, it is difficult to decide. DANA's description is very vague. The fact that he did not record the presence of the palmar tooth on gnathopod II or the peculiar fringe-like process on segment 2 of leg VI of the male may merely mean that he did not notice them, and not that they were not there. Because of this I find that I cannot agree with BARNARD (1916) that these two species are distinct, nor with STEBBING (1906) that they are the same. I would rather take the line that the present specimens agree with BATE's description so they must be BATE's species.

The figures illustrate the characteristic points of the species.

**Further distribution:** Mediterranean and warmer parts of the Atlantic, Indian and Pacific Oceans.

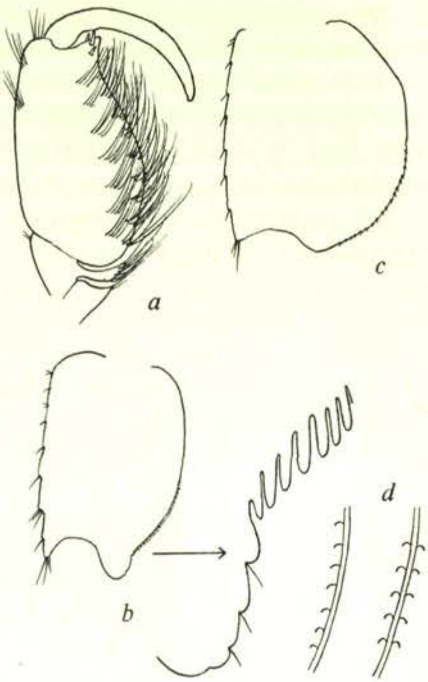

Fig. 32. *Elasmopus pectinicrus* (male). a, gnathopod II; b, leg VI; c, leg VII; d, bristles much enlarged.

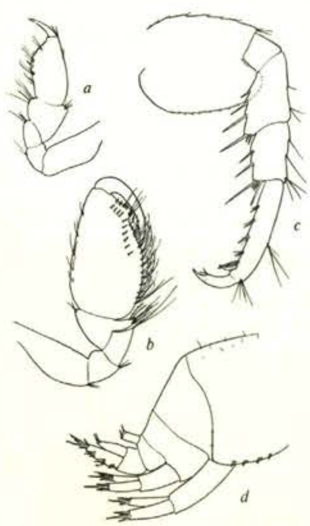

Fig. 33. *Elasmopus perditus* (male). a, gnathopod I; b, gnathopod II; c, leg VII; d, urosome.

**Elasmopus perditus** n. sp.
(Fig. 33).

Station 166. 1 ♂ 4 mm.

This specimen was amongst the Talitridae in the tube labelled "Surf-Coast".

The dorsal surface of the animal is sparsely pubescent. The eyes are broadly oval and the head-lobes broadly truncated. Epimeral plate III has four short, strong spines on the ventral border; the posterior border is straight and the corner rounded. Segment 1 of the peduncle of antenna I is slightly longer than segment 2, which is almost twice as long as segment 3: the flagellum has 18 segments: the accessory flagellum has one segment. Antenna II is a little longer than the peduncle of antenna I; its last segment is shorter than the preceding one: the flagellum has 8 segments.

Segment 5 of gnathopod I is about as long as broad; segment 6 is almost parallel-sided; the palm is sloping and is delimited by a small spine. Segment 5 of gnathopod II is produced posteriorly into a long lobe which is heavily bristled. Amongst the bristles are two with feathering along one side. Segment 6 is ovoid; the palm is undefined; for about half the length of the claw from the hinge the palmar surface is at almost a right angle to the anterior border (this part bears a row of short spines); the palm now drops suddenly and passes into the posterior border at a greater angle. From the beginning of the drop right to the end of the posterior border there is a dense fringe of long bristles.

The legs are peculiar in that they each possess at the distal end of segment 6 a strong spine a little longer than half the claw.

Segment 2 of leg VI is longer than broad; its posterior edge is serrated minutely and has minute bristles plus two or three very long ones. The same segment of leg VII is broader and has a deep free lobe inferiorly. The posterior border of segments 4 and 5 of both legs is armed with long spines.

The outer ramus of uropod III is armed with three groups of spines on its outer edge; it is longer than the inner ramus. The telson carries two terminal spines.

### **Maera grossimana** (Montagu) 1808.

*M. grossimana*, Chevreux & Fage 1925, p. 239.

Station 153. 1 ♂ 5 mm

**Further distribution:** North and sub-tropical Atlantic and Mediterranean.

### **Maera ascensionis** Barnard 1932.

*M. ascensionis*, Barnard 1932, p. 214.

Station 145. 4 ♂, 2 ♀.
— 147. 1 ♂ damaged.
— 151. 1 ♂.
— 153. 1 ♂, 1 ♀ ovig.
Size—max. ♂ & ♀ 4.5 mm.

**Further distribution:** Ascension Island.

### **Maera inaequipes** (Costa) 1847.

*M. truncatipes*, Della Valle 1893, pl. 22.
*M. inaequipes*, Chevreux & Fage 1925, p. 240.

Station 39. 1 ♂ 6 mm.
— 40. 1 ♂ 6 mm.

**Remarks:** Although these specimens are not characteristic of the adult they are undoubtedly this species. They are males, but the palmar contour of gnathopod II is almost that of the female. DELLA VALLE figures this stage (fig. 35) in the development of the male gnathopod.

**Further distribution:** Mediterranean, Adriatic, Atlantic Islands, S. Atlantic, S. Pacific.

### **Maera hirondellei** Chevreux 1900.

(Fig. 34).

*M. hirondellei*, CHEVREUX 1900, p. 84.
*M. edwardsi*, CHEVREUX 1927, p. 101.

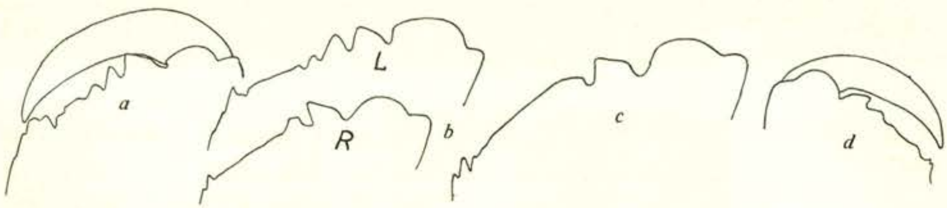


Fig. 34. *Maera hirondellei* (male). a, much excavated palm of individual from Station 153; b, differences between right and left palms of the same individual; c, simple palm, Station 148; d, palm of female.

Station 39. 1 ♂.
— 40. 1 ♂.
— 44. 1 ♂.
— 77. 1 ♂.
— 141. 1 juv.
— 145. Hundreds of both sexes.
— 146. 4 ♂, 6 ♀.
— 147. 2 ♂.
— 148. 6 ♂, 6 ♀.
— 151. 4 ♂, 6 ♀.
— 153. 5 ♂, 7 ♀.
— 155. 1 ♂.
— 163. 2 ♂.
Size: ♂ max. 7 mm., ♀ max. 7 mm.

**Remarks:** These specimens agree generally with CHEVREUX's description. There is, however, a great deal of variation in the contour of the palm of gnathopod II of the male. There may even be considerable differences between the palms of the two gnathopods of the same individual as shown in fig. 34.

The fact that there is no much variation in the palm of gnathopod II of the male would suggest that *Maera edwardsi* Chevreux is but another form of *hirondellei*. The absence of eyes in only some of CHEVREUX's specimens, the presence of imperfect eyes as well as normal eyes in others indicate abnormality. Therefore I see no reason for retaining *M. edwardsi* as a distinct species.

**Further distribution:** Mediterranean, S.W. Africa.

**Maera knudseni** n. sp.
(Fig. 35).

Station 146. 1♀, 6 mm., 3 juv.
— 147. 2♂ max. 8 mm.

This species is close to *M. othonis* (M. Edw.) 1830 but differs clearly from it in the following points:—

Male. The accessory flagellum has but 3 to 4 segments. Gnathopod I has its palm not well, but better defined than that of *othonis*. Gnathopod II is characteristic in that its last segment is very long and the claw is even longer. It reaches back to segment 4 of the limb. Epimeral plate III is produced like that of *othonis* but is without serrations. The rami of uropod III are very long and have but few lateral bristles; the ends are slightly indented and in each indentation there is a tiny bristle.

In the young male the claw of gnathopod II is much shorter.

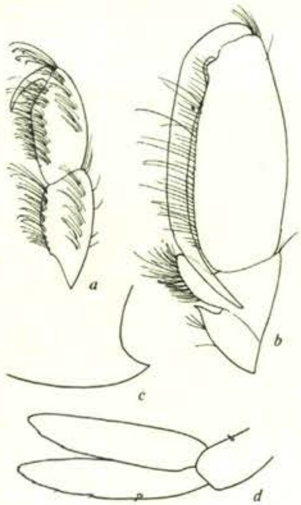



Fig. 35. *Maera knudseni* (male). a, gnathopod I; b, gnathopod II; c, epimeral plate III; d, uropod III.

The female is generally similar to the male but segment 6 of gnathopod II is very much smaller and more delicate: the claw is only about $^1/_4$ the length of the segment.

**Maera simplex** n. sp.
(Fig. 36).

Station 146. 4♂ max. 5 mm., 1♀ 4 mm.
— 147. 1♀ ovig. 6 mm.

Male. Side plates not deep, each having a few bristles on the inferior edge. Epimeral plate III has its free corner forming a small sharp tooth; the inferior border bears six spines. Peduncle segment 3 of antenna I is the shortest, the other two are about equal; the flagellum has about 23 segments; the accessory flagellum has 2 or 3 segments. The last two segments of the peduncle of antenna II are equal; the flagellum of 7 segments is about equal to the last segment of the peduncle. Segments 5 and 6 of gnathopod I are of about equal length; the anterior border of segment 6 bears clumps of long bristles; the bristles on the posterior border are shorter: the palm is sloping and bears short bristles. The posterior lobe of segment 5 of gnathopod II bears a great clump of bristles; the hinge-end of the palm has a blunt protuberance carrying a few spines and long bristles (owing to the density of the bristles it is difficult to see the spines); the palm is very steeply sloping and is not defined except for an almost invisible spine: the whole palm and posterior border bear long bristles. The claw hardly reaches the palmar spine.

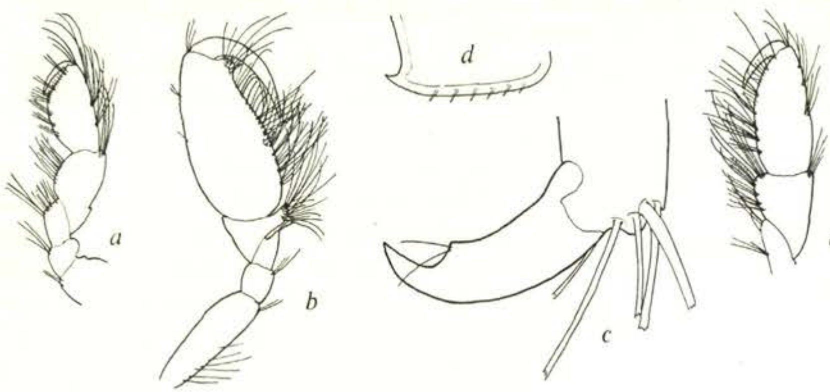


Fig. 36. *Maera simplex* (male). a, gnathopod I; b, gnathopod II; c, claw of leg VII; d, epimeral plate III; (female) e, gnathopod II.

Legs III and IV are very thin and delicate; V to VII are stouter and their last segment tends to widen towards the distal end. The claw is strong and ends in a hook.

Uropod III extends well beyond the others; the rami are fairly broad and well spined and distinctly longer than the peduncle. The telson has each half notched terminally and carries two spines.

Female. Generally similar to the male. Segment 5 of gnathopod II is about $^2/_3$ of segment 6. This segment is narrowly ovoid with the claw about $^1/_3$ of its length.

### **Melita aculeata** Chevreux 1911.

*M. aculeata*, Chevreux 1911 (1), p. 213.
*M. aculeata*, Chevreux & Fage 1925, p. 231.

Station 146. 8♂ max. 5 mm., 6♀ max. 4.5 mm.
— 148. 8♂ max. 6 mm., 9♀ max. 6 mm. (ovig.).

**Remarks:** These specimens fall into two distinct lots. Those from Station 146 are small and almost black, while those from Station 148 are larger and almost white (in spirit). The smaller specimens show a considerable amount of variation. All of the metasome segments may bear a dorsal tooth, or the tooth may be confined to one segment only. The contour of the palm of gnathopod II of the male is always of the same general form but within it there are considerable variations.

The larger specimens from Station 148 are of the same proportions as the others but I cannot find a specimen with teeth on any of the metasome segments. Gnathopod II of the male is much stouter than that of the foreamentioned specimens but there is little real difference in the palmar contours.

This latter form may be a variety of *M. aculeata,* but considering the amount of variation already noted it seems reasonable to conclude that both forms are of the same species.

**Further distribution:** Mediterranean.

### **Melita fresnelli** (Audouin) 1826.

(Fig. 37).

*M. fresnelli,* Schellenberg 1925, p. 153.
*M. fresnelli,* Barnard 1932, p. 212.

Station 45. 2♂.
— 141. Hundreds of ♂, ♀, juvs.
— 145. 55♂, 108♀.
— 146. 1♀.
— 147. 1♀.
— 148. 2♀.
Max. sizes: ♂ 7 mm., ♀ 8 mm.

There is abundant material for the study of this species. With Barnard I agree that this species is very different from Schellenberg's variety *subchelata,* to which Barnard rightly gives specific rank. Besides the different shape of segment 2 of leg VI and VII there are differences in the antennae. The flagellum of antenna I may have 28 segments and the accessory flagellum 3—5 segments. In antenna II I find that segment 4 is distinctly longer than segment 5 and the flagellum is much longer than $^1/_2$ the peduncle and has 13—14 segments. Barnard says that segment 2 of leg VII of this species is wider proximally than distally. This I do not find: the first point is that these parts differ in the male and female. In the female the posterior border is strongly convex and minutely toothed, while in the male the posterior border is almost

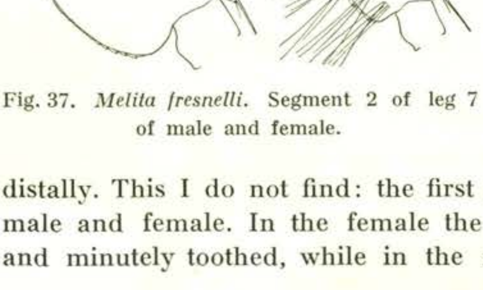


Fig. 37. *Melita fresnelli.* Segment 2 of leg 7 of male and female.

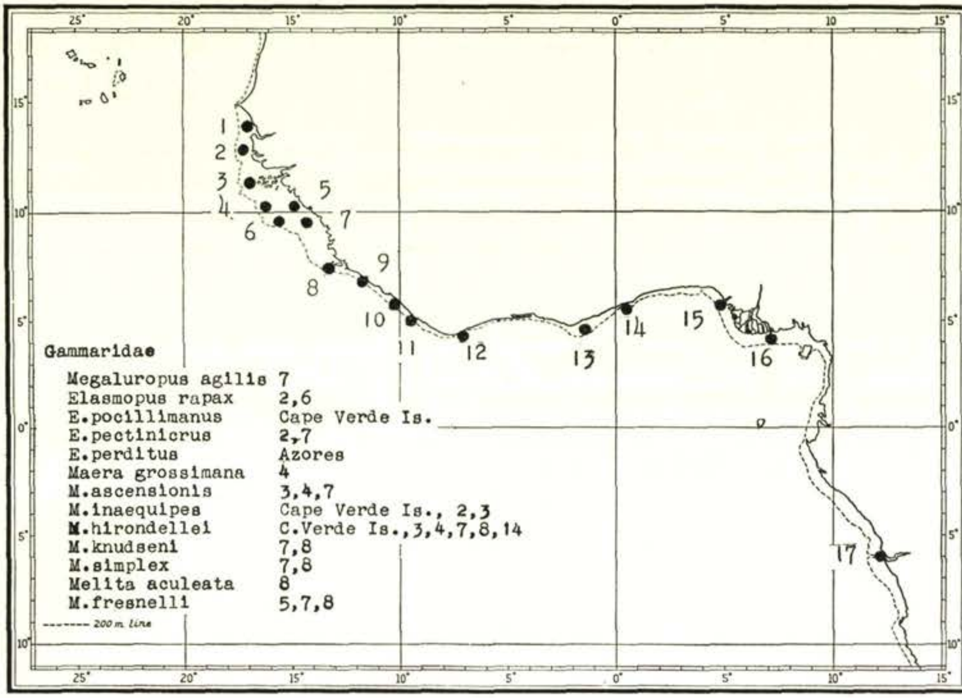


Fig. 38. Distribution of the Gammaridae.

straight, so that the segment is narrow as compared with that of the female. The teeth are more pronounced distally. From the lower half of the surface of the segment very long bristles protrude backwards. These are absent in the female (see fig. 37).

**Further distribution:** Generally distributed throughout the warmer seas.

## DEXAMINIDAE

### Tritaeta gibbosa (Bate) 1861.

*T. gibbosa*, Sars 1895, p. 479.
*T. gibbosa*, Chevreux & Fage 1925, p. 266.

Station 141. 6♂ max. 3 mm., 4♀ ovig. max. 3 mm., 8 juv.
— 147. 1♀ 4 mm.

**Further distribution:** North Sea, temperate and sub-tropical Atlantic, Mediterranean.

## TALITRIDAE

### Hyale pontica Rathke 1837.

*H. lubbockiana*, Sars 1890, p. 27.
*H. pontica*, Chevreux & Fage 1925, p. 283.

Station 166. 6♀ max. 4 mm., 1♂ 6 mm.

**Remarks:** The specimens are quite typical. None of the females is ovigerous.

**Further distribution:** The coasts of the North Sea, sub-tropical Atlantic about low-water mark.

**Hyale perieri** (Lucas) 1846.

*Orchestia perieri*, LUCAS 1846, p. 52.
*Hyale perieri*, STEBBING 1906, p. 570.
*Hyale perieri*, REID 1947, p. 24.

Station 166. 1 ♂ 12 mm., 8 juvs.

**Remarks:** This species raises some important points, viz.:—

1) There is the matter of what difference, if any, exists between *Hyale* and *Allorchestes*. The latter is defined by STEBBING as *Hyale* with segment 5 of gnathopod II drawn out as a lobe between segments 4 and 6. This characteristic is supposed to be absent in *Hyale*. However, careful examination of specimens of the latter genus often reveals such a lobe of greater or smaller size. I have found it in many specimens of several species of *Hyale* but it is very variable. In the present specimens it is quite large though it may still be masked by segment 4 as it lies in the cup-like depression of that segment. This fact I have already discussed elsewhere (REID 1947).

2) The present specimens have been put into this species according to the description and figures given by CHEVREUX & FAGE (1925). LUCAS's original description was hardly adequate for clear identification. His drawing of the hand of gnathopod II is not at all like that given by CHEVREUX & FAGE, but his description might fit the latter.

Mr. C. R. SHOEMAKER has previously raised the question of the identity of this species with me, but a) since no specimen with a hand exactly resembling that figured by LUCAS has yet been found at or near his type locality; b) since his description is vague; c) since he did not make the drawing of gnathopod II himself and d) since the figure and description are not quite in agreement I propose for the present to consider CHEVREUX & FAGE's description to represent *H. perieri* Lucas.

The present specimens differ in small degree from CHEVREUX & FAGE's description. Epimeral plate III is slightly more produced at its posterior corner; the clumps of small bristles on the flagellar segments of antenna II are rather more dense; there is a minute, upright bristle on the tip of each half of the telson.

These small differences are shared by specimens from the coast of South-west England in my own collection.

**Distribution:** Coast of South-west England, W. Europe, Mediterranean, Tropical Africa and West Coast U. S. A.

## **Hyale spinidactyla** Chevreux 1925.
(Fig. 39).

*H. spinidactyla* CHEVREUX 1925, p. 366.

Station 166. 2♂ max. 5.5 mm.

Head-lobes squarely truncated. Side-plate I produced forward: II to IV progressively slightly deepening. Epimeral plates II and III a little produced posteriorly; the latter with the posterior border sigmoid. Eyes irregularly oval. Antenna I with the peduncle short; all three segments subequal; flagellum with 10 segments. Peduncle segment 5 longer than 4 in antenna II; flagellum with 16 segments.

Segment 2 of gnathopod I is broad; segment 5 is produced to a rounded posterior lobe having a row of short, graded bristles; segment 6 widens distally; the palm is well-defined and is set with small bristles. Gnathopod II has very few (2) bristles on the posterior border of segment 2; segment 6 is long and narrows distally: the palm is long and is separated from the short posterior border by two short, stout spines. From there, for more than half its length it has a shallow hollow set with tiny spines widely spaced, and a median long bristle. Just at the end of this hollow there is a strong spine. The rest of the palm is straight and bears a row of closely-set spines. Parallel to the palm and close to it for most of its length there is a row of tiny spines. The claw reaches the end of the palm.

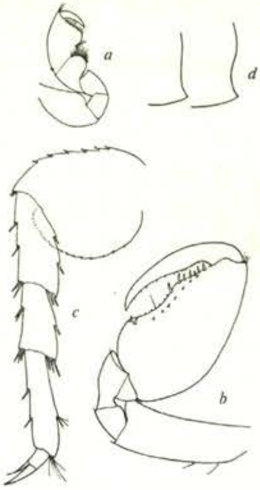


Fig. 39. *Hyale spinidactyla* (male). a, gnathopod I; b, gnathopod II; c, leg VII; d, epimeral plates II and III.

The anterior border of segment 2 of leg VII bears 6 to 7 short spines; the rounded posterior border is serrated, each serration has a minute bristle in it. Segment 6 has two anterior spines and a bunch of bristles a little below the middle of the posterior border. The claw is unevenly forked, the smaller one ending in a bristle.

The ramus and peduncle of uropod III are sub-equal. The telson reaches the extremity of the peduncle of that uropod.

**Distribution:** Canary Isl., ?Dakar.

## **Hyale wolffi** n. sp.
(Fig. 40).

Station 166. 11♂ max. 5 mm., 6♀ max. 4,5 mm.

Male. Headlobes bluntly rounded. Side-plate I is widened distally and produced forward. The posterior border of epimeral plate III is straight but the posterior corner is suddenly produced to a squarish lobe surmounted by a minute bristle.

Antenna I is longer by 4 or 5 flagellar segments than the peduncle of antenna II; peduncle segments 1 to 3 are progressively shorter; the 10 flagellar segments are well bristled. The last segment of the peduncle of antenna II is longer than the preceding one; the inner border of the last segment is fairly heavily bristled; there may be up to 15 flagellar segments, each heavily bristled so that both antennae have an unusually "hairy" appearance.

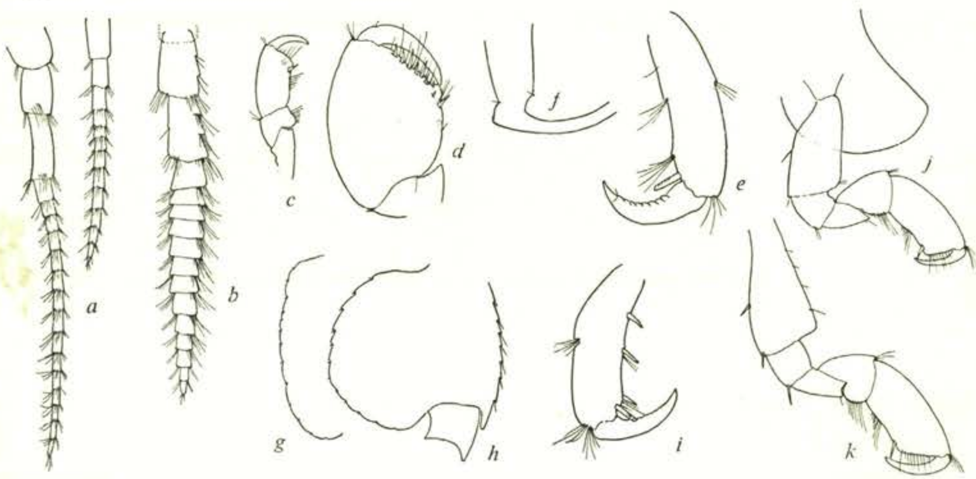


Fig. 40. *Hyale wolffi* (male). a, antennae I and II; b, antenna II viewed from below; c, gnathopod I; d, gnathopod II; e, leg I; f, epimeral plates II and III; g, segment 2 of leg VI; h, segment II of leg VII; i, last segment and claw of leg VII. (female); j, gnathopod I; k, gnathopod II.

Gnathopod I has the lobe of segment 5 not much produced; segment 6 is long and parallel-sided, its posterior edge has a row of graded bristles and a strong spine near the palm, which is slightly sloping: the claw is longer than the palm. Gnathopod II has segment 6 broadly ovoid; the palm is not greatly sloping and is armed with spines and bristles and ends in a rounded hump followed by a spine on the posterior border.

Legs I and II have their segment 6 bristled and there is a strong blunt spine close to the base of the claw, which is serrated.

The posterior lobe of segment 2 of leg VI is oval and indented. The posterior lobe of segment 2 of leg VII is almost circular, indented and serrated. There are three spines above the distal large, blunt one on segment 6.

Uropod III has the ramus much shorter than the peduncle. The telson is short.

F e m a l e. The antennae have neither so many nor such long bristles as in the male. Gnathopods I and II are similar to gnathopod I of the male.

## **Allorchestes furcata** n. sp.

(Fig. 41).

Station 166. 7 ♂ max. 10 mm., 2 intersex max. 10 mm., 15 juv.

I find myself in some difficulty in regard to these animals. It is usual in this genus and closely related ones to find the male differing from the female in the size and shape of gnathopod II. In the present forms, however, there appears to be no difference—they all have the typical male gnathopod II. This raises the question of whether the "females" (despite brood-plates and young) are really females or are female-acting males. If

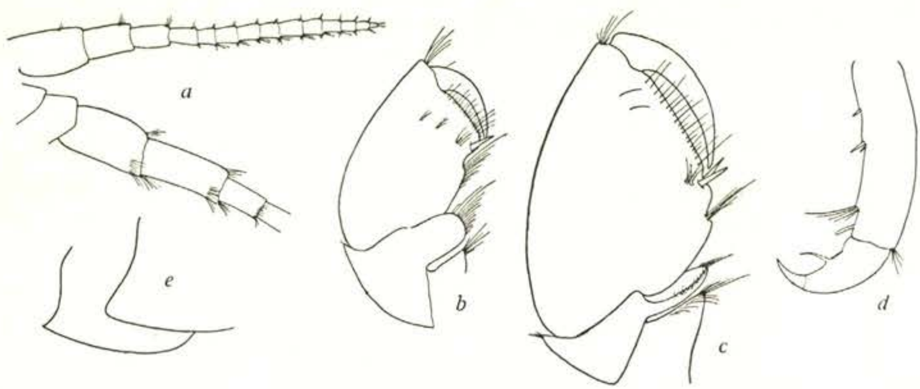


Fig. 41. *Allorchestes furcata* (male). a, antennae I and II; b, gnathopod I; c, gnathopod II; d, claw and last segment of leg VII; e, epimeral plates II and III.

so, here again is a case of the intersex but in a form opposite from that in *Ampelisca* (p. 192), where some essentially male characteristics occur in animals otherwise female.

**Description:** Male. Head-lobe squarely truncated. Epimeral plate II produced backwards to a longish blunt point; the posterior border of plate III is sigmoid and the posterior corner is produced and pointed.

The antennae are short and fairly stout. Antenna I is about as long as the head and first body-segment; the peduncle segments are progressively shorter; the flagellum has 12 segments and is a little longer than the peduncle. Antenna II is not twice as long as antenna I; the last two peduncle segments are equal; the flagellum has 14 segments.

Gnathopod I has segment 5 produced as a blunt, rounded lobe armed with graded bristles; segment 6 is almost rectangular; its posterior border is bristled and is notched, and there is a strong spine at its distal end; the palm is almost at right-angles to the borders; the claw is as long as the palm. Segment 5 of gnathopod II is produced posteriorly and is boatshaped. The palm of segment 6 is sloping, bristled and ends in a sudden depression to receive the point of the claw. The palm is delimited by two strong spines and sometimes a small one also; the posterior border has a deep notch which is bristled.

Leg I has segment 6 carrying two lots of spines on the posterior edge, while distally and close to the claw there is a weak blunt spine. There are neither spines nor bristles on the anterior border. The claw has a median up-standing spine. All the legs are the same in these respects. Leg VI has segment 4 somewhat expanded but this segment is less expanded in leg VII. Segment 2 of leg VII has the posterior lobe widely but not deeply serrated. The ramus of uropod III is equal to the peduncle.

The telson is cleft to the base and each half has a minute upright bristle near the end.

The "female" is similar to the male except for the presence of brood plates.

The juveniles all have segment 6 of gnathopod II large, suggesting that they are young males; none has a typically female form. In half-grown specimens segment 6 of gnathopod II is much narrower and consequently appears longer than that of the adult.

## A Note on Brood Plates.

(Fig. 42 a & b).

These plates in most female amphipods are armed along their edges with long bristles which interweave with those of the adjacent plates and so form the floor and sides of a case to hold the developing eggs and young.

In the foregoing species those spines have been modified into short, loop-headed hooks which lock together. These hooks are normal bristles for a short distance from the base. They then narrow suddenly and the internal cavity disappears. This narrow neck is short and is followd by a swelling greater than the diameter of the original bristle. This swollen part (which shows faint traces of the original internal cavity in the form of chambers) is coiled backwards and inwards towards the narrow part of the stem. As it coils so it appears to change its plane, somewhat in the form of a ram's horn. Interlocked hooks of this type would make for great firmness.

It has been noticed that a locking device of this type occurs in certain species of *Hyale*, e. g. *nilssoni* Rathke 1843 and seems to be associated with the jumping habit in that group. It does not occur, however, in those of jumping habit in other talitrids e. g. *Talitrus saltator* (Mont.) 1776 or *Talorchestia deshayesii* (Aud.) 1826. Nor does it occur in *H. pontica*. The latter, of course, does not jump since its range carries it only a short distance and for only a short time into the intertidal zone.

It is possible to suggest that such a device for locking the brood-plates together would make them into a more rigid, and consequently, safer, container under conditions of the sudden shocks of jumping.

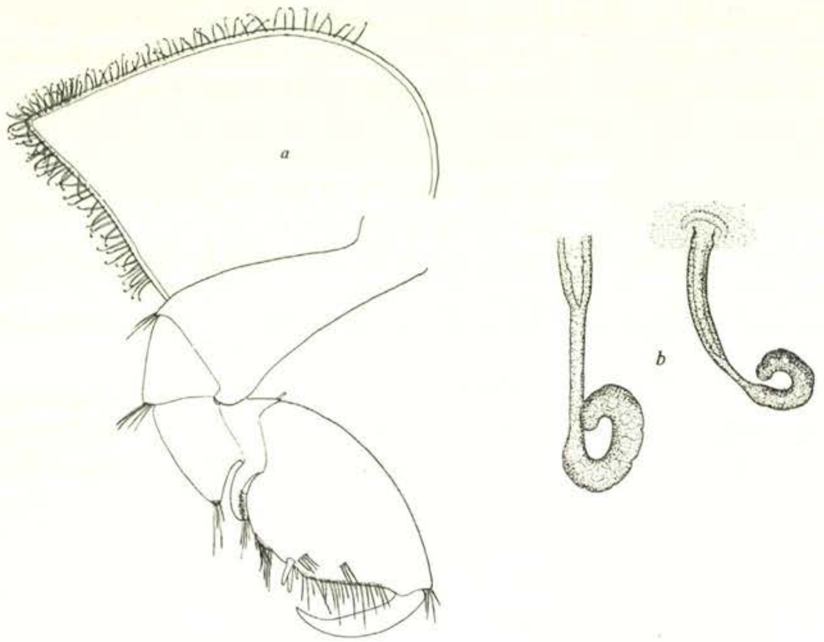


Fig. 42 a. *Allorchestes furcata* (intersex). Male-like gnathopod II with brood-plate provided with hooked bristles.

Fig. 42 b. *Allorchestes furcata* (intersex). Hooks of brood-plate much enlarged.

## **Allorchestes ornata** n. sp.

(Fig. 43).

Station 166. 1 ♂ 4 mm., 4 ♀ max. 4.5 mm. ovig., 3 juv.

**Description:** Male. Side-plate I produced forward, its inferior border has a chain of cell-like cavities. This condition is found in all the other side-plates. Epimeral plate II hardly produced; III is slightly but definitely so. Antenna I has a maximum of 5 flagellar segments longer than the peduncle of antenna II; peduncle segment 1 is the longest, being equal to 2 + 3, which are sub-equal; the flagellum has 7 to 9 segments. Antenna II is slightly less than half the body; the last two peduncle segments are sub-equal; the flagellum has about 12 segments.

Gnathopod I. Segments II and VI are about equally long and they each equal in length the other segments combined. Segment VI is about three times as long as broad, the palm is short and slightly sloping; the claw is longer than the palm.

Gnathopod II segment 2 is almost without bristles and is very little expanded distally; segment 6 is almost oval; the palm meets the posterior border in an almost continuous curve, the division being marked by two strong spines to which the claw extends.

Legs V to VII are stout and short, giving a general appearance of heaviness. Segment 2 of leg VII is as broad as long; the posterior border is indented.

In Uropod III the peduncle is thick and has a strong spine at the distal

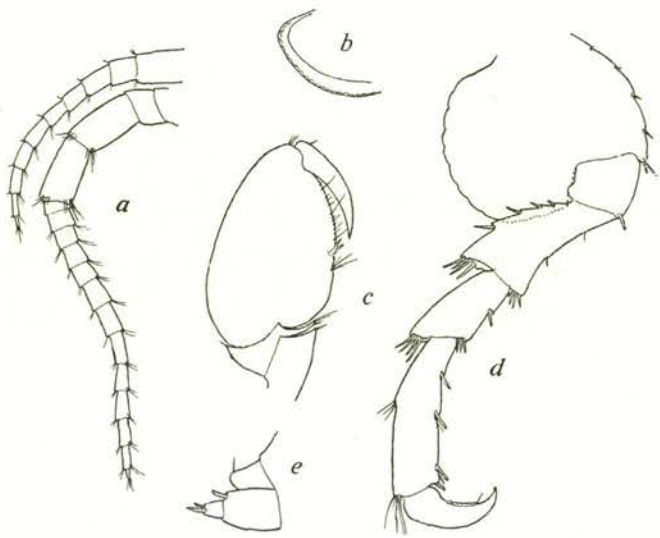


Fig. 43. *Allorchestes ornata* (male). a, antennae I and II; b, side plate I; c, gnathopod II; d, leg VII; e, uropod III and telson.

end above the insertion of the ramus. The ramus is less than half the length of the peduncle and has a few terminal spines.

The telson is armed with two clearly visible, strong, upright bristles.

Female. Similar to the male in general characteristics; segment 6 of gnathopods I and II are like gnathopod I of the male.

The brood-plates of the females of this species are beset with the usual long, straight bristles and not with hooks as in the foregoing species. Since there is no habitat data accompanying these specimens it can only be suggested that this species does not range so high up the shore as does the former.

## AORIDAE

### **Microdeutopus kraemmeri** n. sp.

(Fig. 44).

Station 141. 2 ♂ 4 mm., 3 ♀ ovig. 4.5 mm.
— 145. 2 ♂ 4 mm., 4 ♀ ovig. 4.5 mm.

This species is reminiscent of *M. tridens* Schellenberg 1938 from the Pacific Ocean and seems to form a link between *Lembos* Bate 1857 and those species of *Microdeutopus* Costa 1853 in which the posterior prolongation of segment 5 of gnathopod II is opposed to the claw.

Unfortunately, like so many species of this genus whose limbs break off with the greatest of ease, these specimens are mostly without appendages other than gnathopods or uropods. Even the antennae are usually missing.

The mouth-parts show that these forms cannot be placed in the genus *Neomicrodeutopus* Schellenberg 1925.

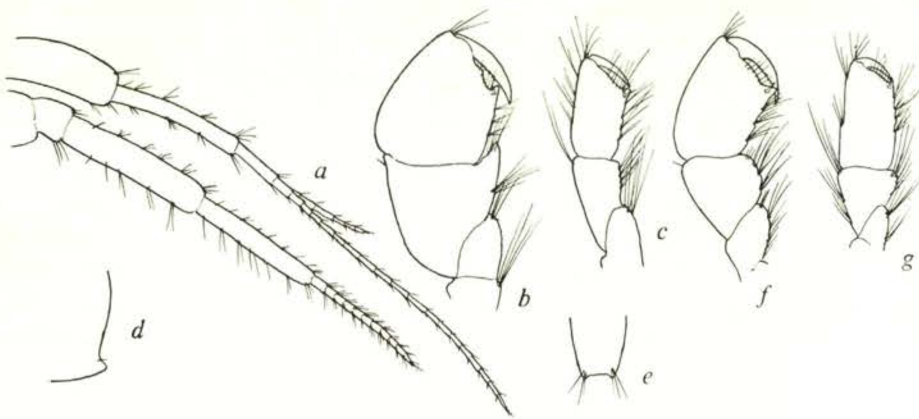


Fig. 44. *Microdeutopus kraemmeri* (male). a, antennae; b, gnathopod I; c, gnathopod II; d, epimeral plate III; e, telson. (female); f, gnathopod I; g, gnathopod II.

**Description:** Male. The head-lobes are little produced. Eyes are reniform. Epimeral plate III has the posterior border sigmoid and the free corner ending in a small tooth with a minute bristle above it.

Antenna I is about half the body length; segment 1 of the peduncle is thick and slightly shorter than segment 2 which is thin; segment 3 is $^1/_2$ the length of 2. The flagellum has about 20 segments. The accessory flagellum has about 7 segments. The last two segments of antenna II are sub-equal and are each sub-equal to the flagellum which has 10 segments.

Gnathopod I has its segments 2, 5 and 6 subequal in length, but 2 is narrower than the others. Segment 5 is produced posteriorly to a blunt tooth extending between $^1/_4$ and $^1/_3$ way along the posterior border of segment 6. These gnathopods are bent in such a way that they lie under the body with their internal surfaces parallel to the under surface of the animal. Segment 6 is almost square, though narrowing towards the slightly sloping palm; the latter is bristled and delimited by a high tooth on which there is a small spine. The claw is longer than the palm and is serrated on its lower border.

Gnathopod II is delicate: segment 2 equals in length 5 and 6 together; the last two segments are equal; segment 5 is almost triangular and its posterior border is well bristled; the anterior border has a clump of bristles at its distal extremity only: segment 6 widens slightly towards the palm and is heavily bristled on the posterior border, but is less heavily bristled on the anterior border. The palm is evenly and slightly oblique and bears long bristles; it is delimited by a tooth at whose base there is a small spine. The claw is longer than the palm.

The posterior borders of segment 2 of legs 5 to 7 are almost straight, otherwise the legs are normal for the genus.

The rami of uropod III are sub-equal and considerably longer than the peduncle; they are tipped with bristles about their own length; they have strong upright bristles on the dorsal surface also.

The telson narrows apically and has two lateral terminal projections each armed with a few long bristles.

Female. Segment 5 of gnathopod I is shorter than 6; its posterior border is rounded and has about three clumps of bristles; segment 6 is almost parallel-sided; the palm is straight or slightly convex; the delimiting tooth is wide; the claw is longer than the palm.

Gnathopod II has segment 6 much longer than 5: it tapers slightly to the palm.

## **Aora atlantidea** n. sp.

(Fig. 45).

Station 148. 1 ♂ 4.5 mm., 1 ♀ ovig. 4.5 mm.
— 151. 2 ♂ 4.5 mm., 1 ♀ small.
— 153. 17 ♂ max. 4.5 mm., 29 ♀ ovig. at 3.5 mm. max. 5.5 mm.

In general this species closely resembles *A. typica* Krøyer 1845. The chief differences are in the gnathopods. Because of the shape and "hairiness" of the gnathopods I have decided that this cannot be other than a separate species. It seems to me that *A. typica* var. *gibbula* Barnard (1932) also merits specific rank.

**Description:** Male. Head-lobes rounded. Eyes ovoid and dark. Side-plates are small. Epimeral plate III has the posterior border sigmoid and the free corner is produced to a tiny tooth. The dorsal surface of segment I of the urosome bears two upright bristles.

Antenna I is longer than antenna II: segment 2 of the peduncle of antenna I is longer than the others; segment 1 is twice the length of segment 3: the flagellum has 13 segments; the accessory flagellum has 3 segments. In antenna II the last two segments of the peduncle are equal; the first four segments of the flagellum are fused and there are 4—5 segments free.

Segment 4 of gnathopod I is thick at the base and extends into a long, narrow, free point which does not reach the end of segment 5; segment 6 is about the same length as segment 5 and is broadly oval. The posterior border of all three segments carry long bristles, as do the anterior borders and the sides of segment 6. This gives the end of the limb a very "hairy" appearance. Gnathopod II is much smaller; its posterior border from the end of segment 3 bears long straight bristles (in contrast to those of gnathopod I which are curved). On the anterior border, the distal half of segment 6 has four or five bunches of bristles and there is a mass of very long bristles on the distal end of segment 5. There are no lateral bristles on segment 6.

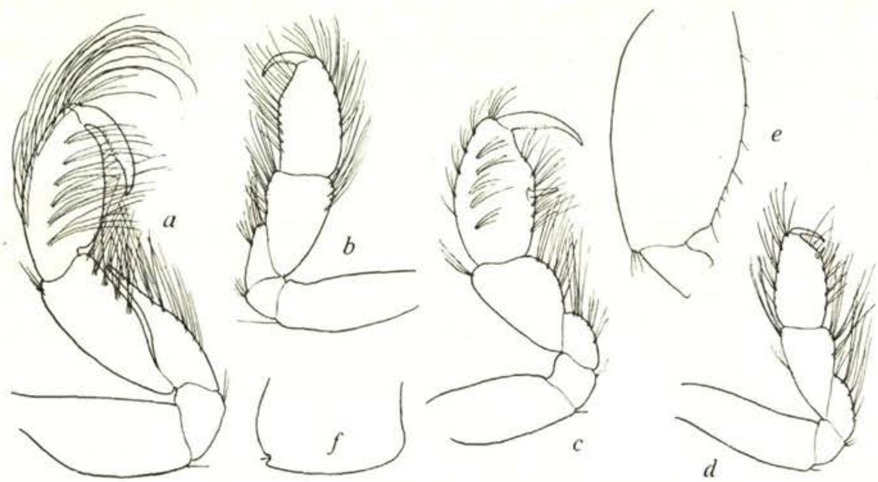


Fig. 45. *Aora atlantidea* (male). a, gnathopod I; b, gnathopod II; (female) c, gnathopod I; d, gnathopod II; e, leg VII; f, epimeral plate III.

The legs are very like those of *A. typica* but the "heel" on segment 2 of VII is not so pronounced.

The telson is armed with two, but often more, long upright terminal bristles.

Female. Segment 6 of gnathopod I is almost pear-shaped, its length being about $1^1/_2$ times its breadth. The palm is ill-defined, but at its junction with the posterior border there is a single strong spine. Segment 5 is almost as broad and as long as segment 6. The anterior border of segment 5 bears three bunches of small bristles, while the same border of segment 6 has about six bunches of bristles. The posterior border of segments 3—6 carry bunches of much longer bristles. The claw is minutely serrated. Gnathopod II is smaller than gnathopod I and much narrower. The palm of segment 6 is more clearly defined and its junction with the posterior border is marked by three spines.

### **Lembos websteri** Bate 1856.

*Autonoe websteri*, O. G. SARS 1894, p. 547.
*Lembos websteri* CHEVREUX & FAGE 1925, p. 303.

Station 145. 2 ♂ max. 4 mm., 2 ♀ ovig. 4 mm.
— 151. 5 ♂ max. 4 mm.
— 153. 2 ♂ max. 4 mm., 1 ♀ 4 mm.

**Remarks:** These specimens differ in small ways from the northern type. Gnathopod I of the male has but few bristles instead of the great clump on the antero-distal end of segment 6, except in the largest specimens. Gnathopod II is not so heavily bristled on the anterior border of segment 6, but more heavily on segment 5. Epimeral plate III, though its posterior corner is rounded, has the posterior border passing back in a long straight slope.

Unfortunately many of the limbs are missing so complete comparison is not possible.

**Distribution:** Southern North Sea to French Guinea; Algeria.

### **Lembos francanni** n. sp.

(Fig. 46).

Station 43. 1 ♂ 6 mm.
— 45. 1 ♀ urosome missing.

The male specimen is unfortunately much broken; the antennae and all the legs are missing (a not unusual condition in the Aoridae). However, enough remains to distinguish this animal from any other already described.

**Description:** The head-lobes are rounded and carry the circular eyes. There is a pair of bristles, one on each side of the mid-dorsal line, on the metasome and 1st urosome segments. Epimeral plate III is semicircular posteriorly. Segment 1 of antenna I is sub-equal in length to the head. The lower borders of the maxillipeds are heavily bristled and give a sort of bearded appearance to the animal. Segment 2 of gnathopod I is short and broad and equal in length to segments 3 to 5; segment 5 is broader than long; segment 6 is longer and broader than 5, and is almost circular; it is heavily bristled on both borders; the palm is ill-defined and is slightly humped in the middle and delimited by a short spine; the claw is delicate and extends to the palmar spine.

Segment 2 of gnathopod II is narrow and raised to a sharp spike antero-distally; segment 5 is narrow proximally and wide distally; segment 6 is narrower than 5; it is almost rectangular with the length almost twice the breadth; the anterior border is heavily bristled; the palm is only slightly inclined; the claw is longer than the palm.

Like the male, this female is mutilated. However, it is not mutilated in exactly the same way so the description can be extended.

The eyes are slightly oval rather than circular. The antennae are missing. Gnathopod I differs from that of the male in that segment 5 is about as long as broad; segment 6 is similar in shape to that of the male but is less heavily bristled especially on the anterior border; the palmar border near the spine is minutely combed.

Gnathopod II is like that of the male but segment 2 is not markedly

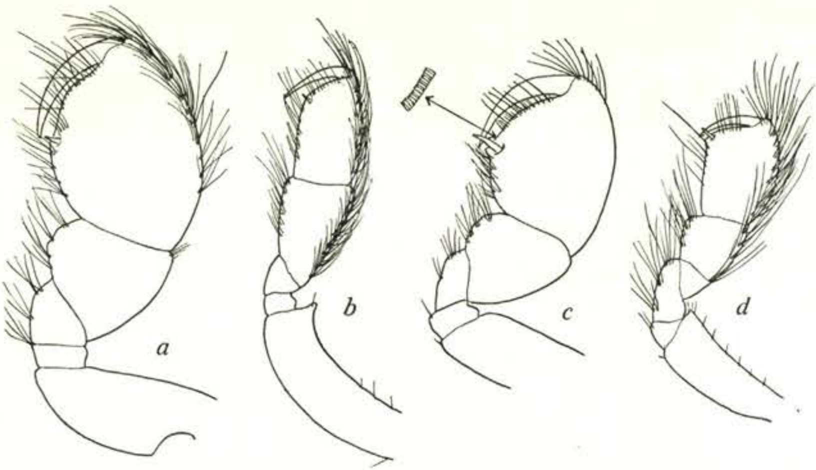


Fig. 46. *Lembos francanni* (male). a, gnathopod I; b, gnathopod II; (female) c, gnathopod I; d, gnathopod II.

spiked antero-distally; the anterior border of segment 6 is evenly curved. The palm shows the same fine comb-like structure as in gnathopod I.

In leg III segment 2 is the longest and is narrowly oval and truncated distally; both its borders are bristled; segments 4, 5 and 6 are of equal length. Legs IV (V is missing), VI and VII are similar in type to those of *L. websteri*, but they are armed with very long bristles.

### **Lembos gambiense** n. sp.

(Fig. 47).

Station 161. 1 ♂, 4.5 mm.

The shape of the palm of gnathopod I of this animal bears some resemblance to *L. philacanthus* Stebbing 1888 as figured by Chilton (1921), but not as by Stebbing (Challenger Report), and to *L. kerguleni* Stebbing 1888. However, there the similarity ends.

Unfortunately, this animal has many parts missing.

**Description:** The head-lobes are small and pointed. Side-plate I is only slightly produced forward. All the side-plates are small. The body is delicate. Epimeral plate III is rounded posteriorly. The eyes are small, situated at the base of the head-lobes.

Segment 1 of antenna I is short with the breadth about $^1/_4$ the length (other parts are missing). The penultimate segment of antenna II is very thick and long; the last segment is thin and little more than $^1/_2$ the length of the preceding one: the flagellum is shorter than the last peduncle segment and is composed of 8 segments.

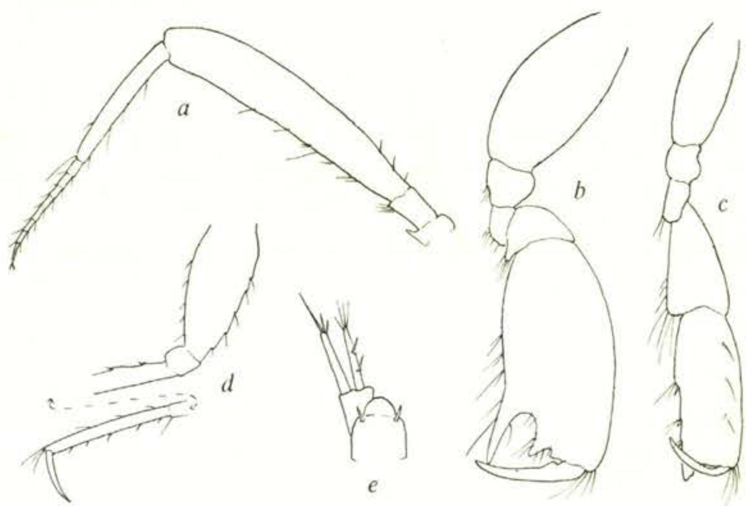


Fig. 47. *Lembos gambiense* (male). a, antenna II; b, gnathopod I; c, gnathopod II; d, leg VII; e, uropod III and telson.

The mouth-parts are normal as far as can be seen. Gnathopod I is larger than II; segment 2 is eliptical; segment 5 is short and cup-shaped with a very small rounded projecting posterior lobe; segment 6 is about twice as long as broad; the palm is defined by a long tooth followed by a deep depression, a shorter tooth, then a slight, narrow depression in front of the hinge. The claw is almost straight with an inner knob near the hinge. This fits a depression in the palm. The palm and posterior border bear bristles but there is none on the anterior border. Segment 2 of gnathopod II is narrower than that of gnathopod I; it has an antero-distal projection; segment 5 is $^2/_3$ as long as 6; the latter is parallel-sided; its posterior edge has three or four spines and bristles; the palm is small and delimited by a large, unevenly serrated tooth alongside which the finger lies.

Leg V is short; leg VII is long and thin, its segment 2 is narrow, serrated and spined on the anterior border, sparsely bristled on the

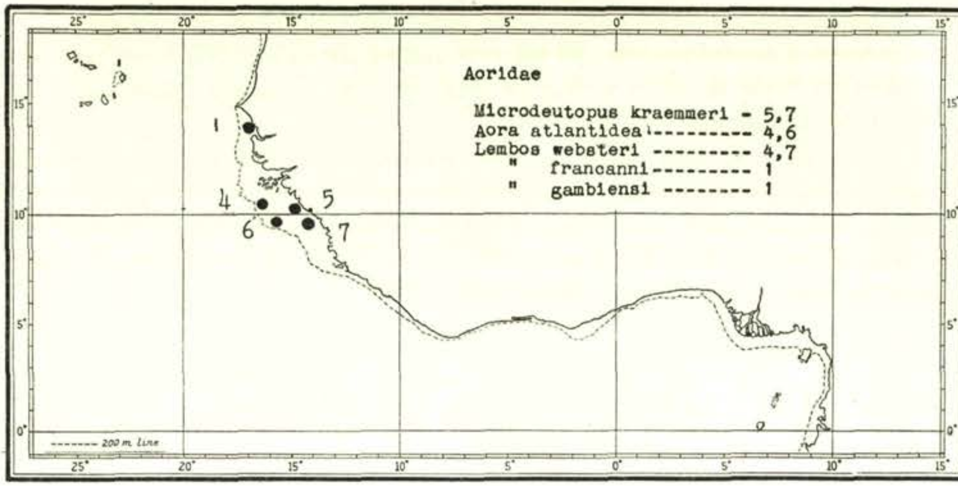


Fig. 48. Distribution of the Aoridae.

posterior border. The claw is long, about $^1/_2$ the length of the long last segment of the limb.

The uropods are somewhat delicate; the peduncle of uropod III extends little, if at all, beyond the end of the telson. The telson is rounded at the end and bears two termino-lateral spines.

Despite the absence of antenna I, I think there can be no doubt that this animal belongs to the genus *Lembos*.

## PHOTIDAE

### Eurystheus maculatus (Johnst.) 1827.

*E. maculatus*, Chilton 1921, p. 80.
*E. maculatus*, Chevreux & Fage 1925, p. 314.

Station 43. 2♀ 5 mm.
— 44. 2♂ 5 mm. 1♀ 5.5 mm.
— 141. 2♂ 4 mm., 6♀ max. 5.5 mm. ovig., several juvs.
— 145. 6♂ max. 5 mm., 14♀ max. 7 mm. ovig., 5 juvs.
— 146. 7♂ max. 5 mm., 4♀ max. 5 mm. ovig., 1 juv.
— 151. 2♂ max. 6 mm., 7♀ max. 6 mm. ovig.
— 153. 2♂ max. 5 mm., 2♀ max. 6 mm.

**Remarks:** In this species it is extremely easy to break off appendages, consequently it is not usual to get specimens in a complete state. Nevertheless, I am fairly certain of the identification.

**Distribution:** Generally distributed.

### **Eurystheus atlanticus** Stebb. 1888.

*E. atlanticus*, TATTERSALL 1922, p. 10.
*E. atlanticus*, SCHELLENBERG 1938, p. 80.

Station 39. 1♂ 6 mm., 5♀ max. 6 mm.
— 43. 18♂ max. 7 mm., 30♀ max. 7 mm.

**Further distribution:** It appears to be distributed throughout the warmer oceans.

### **Eurystheus anomalus** Chevreux 1925.
(Fig. 49).

*E. anomalus*, CHEVREUX 1925, p. 381.

Station 148. 1♂ 4.5 mm.

**Description:** Like so many representatives of this genus the present specimen has lost many of its appendages.

Eyes dark, oval. Headlobes pointed, the lower border straight. The sideplates are shallow, increasing in depth to IV; V much deeper. Epimeral plate III has the posterior border sigmoid and the free corner produced to a small tooth.

The antennae are missing. Segment 5 of gnathopod I is as long, or a little longer, than segment 6; it is heavily bristled posteriorly, and is ovoid with the palm not defined. Gnathopods II are unequal in size (whether or not this is abnormal I do not know); segment 6 of the right gnathopod is about $1^1/_2$ times as long as that of the left; its segment 5 is very short; segment 6 is ovoid, its length being twice the breadth; the palm, from the hinge posteriorly has 6 peg-like teeth, then 2 small elevations the last of which delimits the palm. The left gnathopod is very different; segment 5 is almost as long as broad and there is a distinct posterior border instead of a posterior lobe merely, as in the right gnathopod. Segment 6 has a sloping palm which carries four or five shallow indentations; it meets the posterior border in a very obtuse angle about half-way along the segment. The claw appears to be somewhat shorter than the palm. Leg V has its segment 2 rounded posteriorly and spined in front; segment 4 is widened for more than half its length; segment 5 is also expanded, but is not quite so broad as long. The free postero-inferior corners of segments 4 and 5, as well as the middle of the anterior border of segment 5, carry a strong spine.

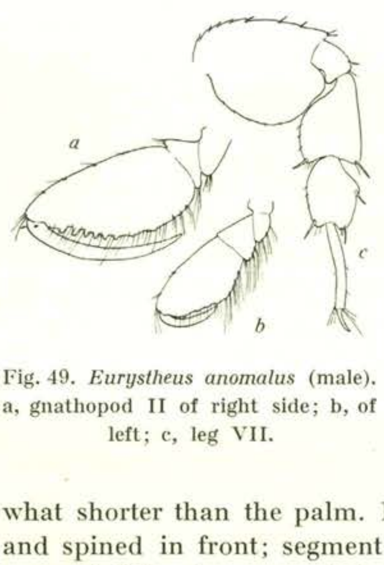

Fig. 49. *Eurystheus anomalus* (male). a, gnathopod II of right side; b, of left; c, leg VII.

Uropod III extends beyond the others; its peduncle is long with the rami the same length.

The telson is deeply notched and each lobe is armed with a few terminal bristles.

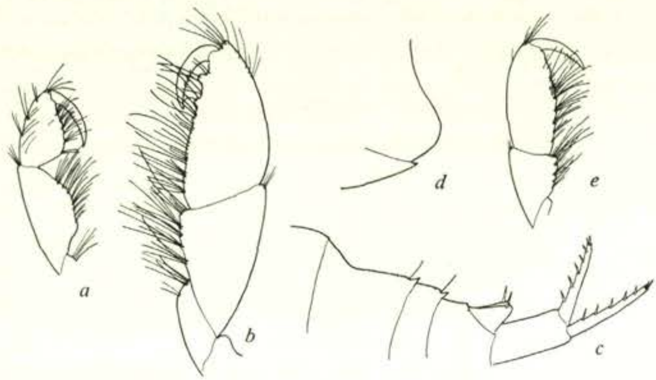


Fig. 50. *Eurystheus longicarpus* (male). a, gnathopod I; b, gnathopod II; c, urosome; d, epimeral plate III; (female) e, gnathopod II.

## **Eurystheus longicarpus** n. sp.

(Fig. 50).

Station 141. 3♂ max. 4.5 mm., 5♀ ovig. max. 5 mm.
— 145. 1♂ 5.5 mm.
— 147. 1♂ 4.5 mm.
— 153. 1♂ 5.5 mm.

**Description:** Male. The head-lobes are pointed. The eyes are squarish, oval and dark. Side-plate IV is the deepest. Epimeral plate III has the posterior border bulging in a regular curve; the posterior free corner is a little sharp tooth much anterior to the extreme edge of the bulge. Urosome segments I and II are drawn out into a tooth on each side of the mid-dorsal line; medial to each tooth there is a long bristle. Antenna I is about half the length of the body; segment 2 of the peduncle is as long as the head; the other segments are shorter and sub-equal to each other; the flagellum has 13 segments. The accessory flagellum has 6. Antenna II is missing.

Segment 5 of gnathopod I is much longer than segment 6, which is widest at a point about $^1/_3$ of its length, so that the palm is much longer than the posterior border; the palm and the posterior border of segment 5 are heavily bristled; there are three or so clumps of bristles on the anterior border of segment 6. Segment 5 of gnathopod II is equal in length to segment 6; together they form a long oval: segment 6 has the palm set with three small blunt prominences, about equally spaced and decreasing in size posteriorly, but the palm is completely undefined: the posterior borders of segments 5 and 6 are heavily bristled and there are some long bristles on the antero-distal end of segment 6. The claw is short and reaches to about the third palmar prominence.

Segment 2 of leg VI is about $^2/_3$ as broad as long; the anterior and posterior borders are almost parallel, with the posterior border serrated and its lower corner free. Segment 2 of leg VII is like that of leg VI but is contracted distally.

Uropod III only just passes the others; the peduncle and rami are about equal in length. The telson is less than $^1/_2$ the length of the peduncle of uropod III: each half has a strong upright spine near the tip.

Female. The teeth on urosome segment II are much smaller than those of the male and might easily be overlooked. Gnathopod I is similar to that of the male but the curve of the posterior border of segment 6 is more even so the palm is less well defined.

In gnathopod II segment 5 is shorter than 6. The palm of segment 6 appears to be vaguely sinuous in the smaller individuals, but in the largest there is a prominence which might correspond to the most distal of those in the male: the palm is delimited by two spines. The claw has a few bristles on its lower surface which are more obvious than those of the male.

This species seems to be a link between the genera *Eurystheus* and *Megamphopus*.

### **Eurystheus hirsutimanus** n. sp.

(Fig. 51).

Station 151. 1 ♂ 5 mm.
— 153. 5 ♂ max. 5 mm., 1 ♀ ovig. 5 mm.
— 161. 1 ♂, 5 mm.

These animals were very badly broken and the description is largely taken from a specimen from Station 153.

**Description:** The head-lobes are pointed and the eyes are somewhat reniform. Side-plate II is deeper than I and III. Epimeral plate III bulges posteriorly and has a small tooth on the posterior free corner. Urosome segments I and II each have lateral teeth (which may be so far down as to be invisible unless the animal is rotated).

Segments 1 and 3 of antenna I are sub-equal and longer than segment 2: the flagellum has 12 segments, equal in length to the last two segments of the peduncle: the accessory flagellum has 5 segments. Antenna II is missing.

Gnathopod I has segment 5 much longer than 6; the posterior border of segment 6 and the palm are in one continuous curve: the palm is not defined: the claw is very thin and is longer than the palm. The posterior border of both segments bears long bristles.

Gnathopod II is distinctive: segment 2 has a fringe of very long upright bristles; segment 5 is about half as long as segment 6; both anterior and posterior borders of both segments are heavily beset with long bristles. The palm of segment 6 is steeply sloping and is not well defined except for an inconspicuous rounded prominence; towards the hinge there are two larger prominences; the claw is very thin and is longer than the palm.

Segment 2 of legs V—VII is narrow; in the case of the last two there is a posterior swelling proximally. The legs are thin and delicate.

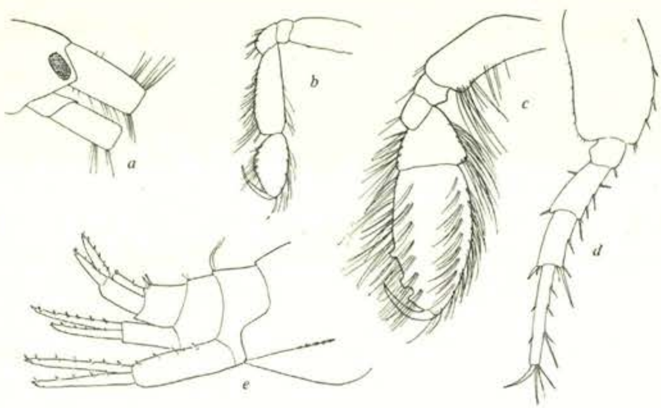


Fig. 51. *Eurystheus hirsutimanus* (male). a, head; b, gnathopod I; c, gnathopod II; d, leg V; e, urosome.

The peduncle of uropod III is long in relation to the telson; the rami do not extend beyond those of I and II. The telson has a straight upright spine on the tip of each half.

It will be seen that this species is very close to *E. longicarpus* n. sp.

## **Eurystheus averus** n. sp.

(Fig. 52).

Station 151. 2♂ 4 mm.

These specimens are very badly damaged; the antennae and all the legs are missing. Nevertheless, I know of no other species whose gnathopods are of the same form. Because of this I think it is safe to describe the specimens as of valid specific rank.

**Description:** Headlobes bluntly pointed. The eye is roughly rectangular. The posterior border of epimeral plates II and III are strongly convex posteriorly; the free corner is produced to a small but distinct tooth. The dorsal surface of segments I and II each bear a long upright bristle; segment I has a transverse hollow; segments II and III each have a pair of dorsolateral teeth.

Segment 2 of gnathopod I is narrow and naked except for a clump of bristles on the antero-distal corner; segment 5 is about the same length as 2 but is broader and is strongly bristled posteriorly; segment 6 is almost an isosceles triangle and is heavily bristled; the claw is longer than the palm. This gnathopod is little longer than segments 2 to 4 of gnathopod II. Segment 2 of gnathopod II has a fringe of long bristles anteriorly; segment 5 is about as long as wide and is about $^2/_3$ as long as segments 2 or 6. Segment 6 is oval, and as wide as segment 5; the palm is ill-defined except for a rounded protuberance, of which there are two larger ones nearer the hinge. Both borders of both these segments bear masses of long bristles. The claw is shorter than the palm; it is thick and strong.

Fig. 52. *Eurystheus averus* (male). a, gnathopod I; b, gnathopod II; c, epimeral plates II and III.

The rami of all the uropods have dorsal spines. Each half of the telson has a short but strong spine distally.

**Photis longicaudata** (Bate & Westwood) 1862.

*P. longicaudata*, Sars 1894, p. 571.
*P. longicaudata*, Chevreux & Fage 1925, p. 310.
*P. longicaudata*, Shoemaker 1945, p. 11.

Station 44. 1 ♂ 6 mm.
— 45. 5 ♂ max. 5 mm., 3 ♀ max. 6 mm.
Station 68. 14 ♂ max. 6 mm., 8 ♀ ovig. max. 5 mm., 9 juv.
— 110. 1 ♂ 3.5 mm., 2 ♀ ovig. 5 mm.
— 141. 3 ♀ max. 5 mm., 1 juv.
— 145. Several hundred, ♂ max. 8 mm., ♀ max. 7 mm.
— 146. 6 ♂ max. 5 mm., 7 ♀ max. 6.5 mm., 9 juv.
— 147. 5 ♂ max. 7 mm., 2 ♀ max. 7 mm., 10 juv.
— 160. 1 ♀ ovig. 6 mm.
— 161. 3 ♂ max. 7 mm., 1 ♀ 6 mm.

**Remarks:** As pointed out by Shoemaker, there is considerable variation in the form of gnathopod II of this species. However, it is possible in the present case to see with a high power the square tooth which he mentions in the concavity of the palm. These specimens (or most of them) show a low rounded prominence just posterior to the tooth.

**Distribution:** From N. Europe to S. Africa, Mediterranean, Indian Ocean, East Coast of North America.

### **Leptocheirus guttatus** (Grube) 1864.

*L. guttatus*, SEXTON 1911, p. 572.
*L. guttatus*, CHEVREUX & FAGE 1925, p. 327.

Station 39. 1 ♀ 5 mm.
— 43. 1 ♂ 5 mm.

**Remarks:** These specimens agree with the description given by SEXTON.

**Further distribution:** English Channel, W. Europe, Mediterranean, Cape Verde Islands.

### **Leptocheirus pectinatus** Norman.

*L. pectinatus*, SEXTON 1911, p. 576.
*L. pectinatus*, CHEVREUX & FAGE 1925, p. 324.

Station 44. 1 ♀, 7 mm.
— 147. 1 ♀ ovig. 7 mm.
— 161. 1 ♀ ovig. 7 mm.
— 163. 2 juv. (possibly this species).

**Distribution:** Shetland Isles, Coasts of Britain and West Europe, Mediterranean, tropical W. Africa, tropical E. Africa.

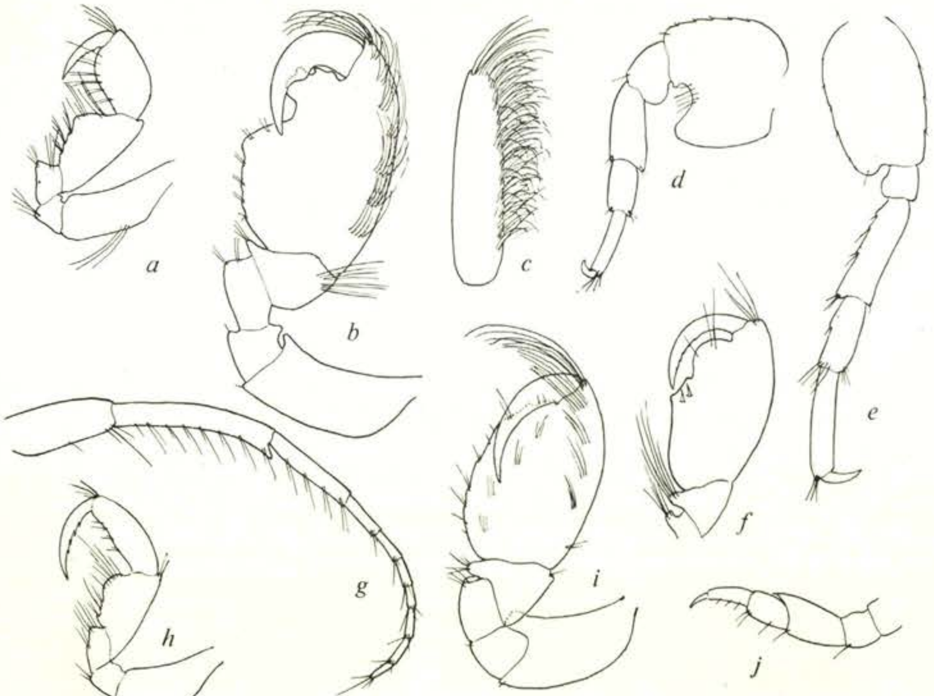


Fig. 53. *Podoceropsis sophiae* (male). a, gnathopod I; b, side view of gnathopod II; c, back view of gnathopod II; d, leg V; e, leg VII; f, gnathopod II of juvenile female; g, antenna I; h, gnathopod I of juvenile male; i, gnathopod II of juvenile male; j, leg III.

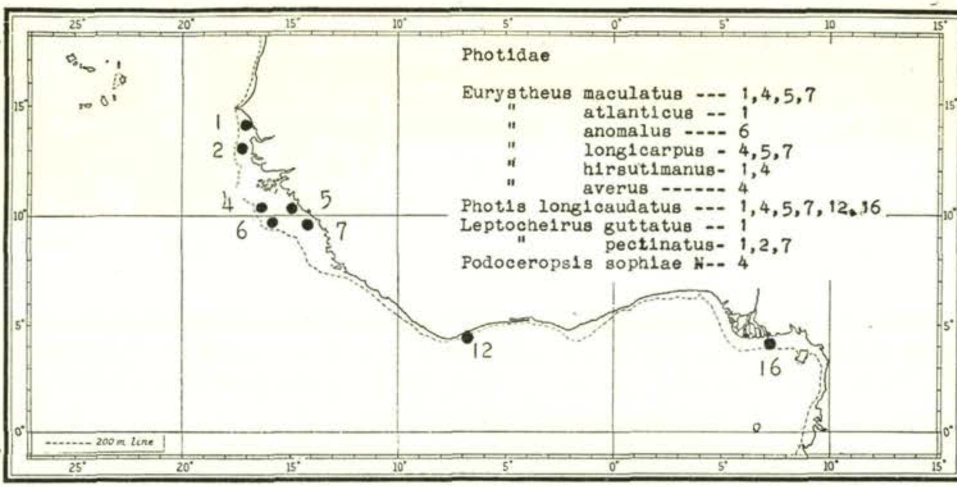


Fig. 54. Distribution of the Photidae.

### **Podoceropsis sophiae** Boeck 1861.

(Fig. 53).

*P. sophiae*, SARS 1894, p. 574.
*P. sophiae*, CHEVREUX & FAGE 1925, p. 316.

Station 153. 12♂ max. 6 mm., 8♀ ovig. max. 5 mm.

**Remarks:** These animals differ somewhat from the northern form. The toothed lobe on the palm of gnathopod II near the hinge is somewhat more upright. The claw has a strong prominence on the lower edge about opposite the teeth already mentioned, and is reminiscent of the claw of *P. nitida* (Stimpson) 1853. The telson is somewhat pointed and is unarmed. The shape of epimeral plate III agrees much more closely with the description given by CHEVREUX & FAGE than with that of SARS.

Despite these differences I see no reason for raising this form to subspecific rank.

**Further distribution:** North Sea, W. Europe, Mediterranean, West Indies.

## AMPHITHOIDAE

### **Amphithoe vaillanti** (Lucas) 1864.

*A. vaillanti*, CHEVREUX & FAGE 1925, p. 332.

Station 45. 1♀ 6 mm.
— 145. 2♀ ovig. max. 10 mm., 1♂ 8 mm.
— 155. 3♂ max. 8 mm., 1♀ 10 mm., 6 juv.

**Distribution:** From the English Channel to South Africa, Mediterranean, Red Sea, Indian Ocean.

### *Amphithoe grubiformis* n. sp.

(Fig. 55).

*Amphithoe kergueleni*, CHEVREUX 1927, p. 117.

Station 39. 3♂ max. 6 mm.

**Description:** The headlobes are rounded. The eyes are colourless (in spirit). Side-plate I is produced forward and is bluntly pointed; all the side-plates have long bristles on the ventral edge. The posterior corner of epimeral plate III is a rounded-off right angle.

Antenna I is about equal to the body length; the flagellum has 32 segments and is longer than the peduncle. Segment 1 of the peduncle is thick and ovoid and has a strong antero-ventral spine; segment 2 is about $^1/_3$ longer than 1 and is thin; segment 3 is $^1/_2$ segment 2.

Antenna II has the last segment of the peduncle shorter than the preceding one, which is equal to the head in length; the flagellum has 20 segments and is a little longer than the peduncle. The unusual thinness and length of this antenna is reminiscent of *Grubia* Czern. 1868 rather than *Amphithoe*.

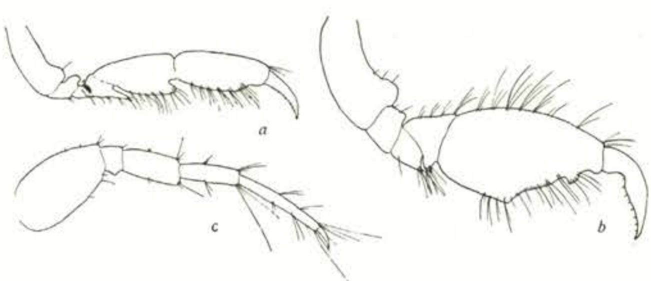


Fig. 55. *Amphithoe grubiformis* (male). a, gnathopod I; b, gnathopod II; c, leg VII.

Segment 4 of gnathopod I has a long, narrow, forwardly projecting lobe on the posterior border; the whole posterior border of segment 5 is produced as a thin flange which forms a free lobe distally; segment 6 is a little longer than 5; the palm is very indefinite but it has a narrow "shagreened" surface. The claw is finely serrated on its inner border. The posterior borders of segments 4, 5 and 6 carry long bristles.

Segments 4 and 5 of gnathopod II have the postero-distal projections small; segment 5 is short, 6 is ovoid but the posterior border is only $^1/_2$ the length of the anterior border; the palm is very oblique, sinuous and with a square, peg-like projection towards the hinge; the palm meets the posterior border almost at a right angle. There are bristles on the palm, the distal end of the anterior border and the whole of the posterior borders of segments 5 and 6. The projection and part of the palm are shagreened. The claw is sigmoid on the inner edge, which also bears a few very short spines.

Legs III and IV are shorter than gnathopod II. Segment 2 of leg V is pear-shaped; segment 6 has six strong spines on the posterior edge. Legs IV and VII are delicate; in both segment 2 is ovoid; segment 6 is longer than any of the others (except 2) and is beset with some very long bristles.

The rami of uropod III are $^1/_2$ as long as the peduncle. The telson is almost square at the end, but has a very shallow median concavity; it has two termino-lateral bristles.

This animal is very close to *Amphithoe kergueleni* Stebbing described by CHEVREUX (1927). He says he finds it difficult to believe, owing to the great distance between the type locality and Cape Verde, that this can be STEBBING's species. I find it equally difficult to believe that they are the same species since STEBBING based the species on a female only (which, CHEVREUX admits, is somewhat different from the Cape Verde specimens).

Since I do not see any adequate evidence for equating the two species I am giving this one separate specific rank.

## JASSIDAE

### **Jassa falcata** (Montagu) 1808.

(Fig. 56).

*J. falcata*, Sexton & Reid 1951 (full synonymy).

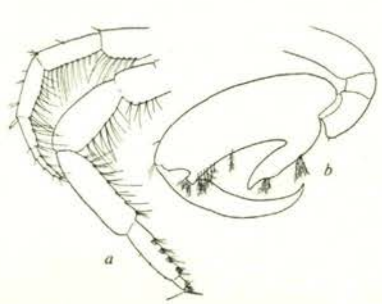


Fig. 56. *Jassa falcata* (male). a, antennae I and II; b, gnathopod II.

Station 141. 1 juv., ♂ (damaged), 1 ♀ 4 mm.
— 155. 15 ♂ max. 4 mm., 85 ♀ ovig. 3 mm., many juv.

**Remarks:** These specimens represent another form of this most variable species. Their small size is unusual but the colour patten, though not strong in some, is quite normal.

They are exceedingly close to (if not identical with) specimens from a sea buoy in Charleston Harbour, Florida (U. S. Nat. Museum, No. 132—978) which are in my collection.

**Distribution:** Cosmopolitan.

## PODOCERIDAE

### **Podocerus braziliensis** (Dana) 1853.

*P. braziliensis*, STEBBING 1888, p. 265.

Station 155. > 100 ♂, max. 5 mm., > 100 ♀, max. 5 mm. (ovig.), many juv.

**Remarks:** The specimens are quite typical.

**Further distribution:** South Atlantic, Aden (specimens in my collection). This species is probably fairly widely distributed in the warmer seas.

### **Laematophilus purus** Stebbing 1888.

*L. purus*, STEBBING 1888, p. 1198.
*L. purus*, BARNARD 1916, p. 274.

Station 141. 1 ♀ 3 mm.
— 145. 2 ♀ about 3 mm.
— 151. 2 ♀ about 3 mm.
— 153. 14 ♀ max. 4.5 mm., 20 ♀ max. 3.5 mm.
— 154. 27 ♂ max. 4.5 mm., 64 ♀ max. 3.5 mm.
— 155. 2 ♀ max. 3.5 mm., 1 juv.
— 161. 2 ♂ max. 4.5 mm., 3 ♀, 1 juv.

**Further distribution:** South Africa.

## COROPHIIDAE

### **Cerapus** ? sp.

Station 145. 1 ♀ 3 mm.

**Remarks:** This specimen is so badly broken and so many parts are missing that it cannot be identified with any certainty.

### **Ericthonius braziliensis** (Dana) 1853.

*E. braziliensis*, SARS 1894, p. 602.
*E. braziliensis*, CHEVREUX & FAGE 1925, p. 353.

Station 39. 1 ♀ damaged.
— 44. 1 ♂ small.
— 141. 13 ♂ max. 3.5 mm., 22 ♀ max. 4 mm.
— 145. 22 ♂ max. 4 mm., 7 ♀ max. 6 mm.
— 146. 1 ♂ 2.5 mm.
— 147. 1 ♂ 3 mm., 2 ♀ ovig. 5 mm.
— 148. 30 ♂ max. 5 mm., 18 ♀ max. 6 mm., several juvs.

Station 151. 2 ♂ max. 5 mm., 1 ♀ 4.5 mm.
— 153. 24 ♂ max. 5 mm., 24 ♀ max. 6 mm.
— 155. 4 ♂ small, 4 ♀ ovig. 4 mm.

**Remarks:** The females seem to be ovigerous at various sizes; some as small as 3 mm. are carrying eggs.

**Distribution:** Generally distributed in warm and temperate seas.

### **Siphonecetes colletti** Boeck 1862.

*S. colletti*, SARS 1894, p. 610.
*S. colletti*, CHEVREUX & FAGE 1925, p. 359.

Station 44. 1 ♂ 6 mm.
— 145. 1 ♀ ovig. 6 mm. The specimen was broken but seems to be this species.
— 146. 1 ♂ 4 mm.

**Further distribution:** North Sea, W. Europe.

### **Siphonocetes ? sabatieri** de Rouville 1894.

*S. sabatieri*, CHEVREUX & FAGE 1925, p. 362.

Station 148. 6 ♀ ovig. max. 6 mm.
— 161. 1 ♂ 3.5 mm.

**Remarks:** The specimens were so badly damaged as to make identification somewhat uncertain.

**Further distribution:** West coast of France.

### **Grandidierella elongata** Chevreux 1925.

*G. elongata*, CHEVREUX 1925, p. 392.

Station 72. 1 ♂ 4 mm., 1 ♀ 4 mm.

**Remarks:** This specimen agrees very well with the description given by CHEVREUX. Unfortunately the antennae of the male have been broken off so comparison of them is not possible.

The gnathopods of the male of this specimen are more heavily bristled than those figured by CHEVREUX.

**Further distribution:** Coast of the Sahara.

**Corophium acherusicum** Costa 1851.

*C. acherusicum*, CRAWFORD 1937, p. 617.
*C. acherusicum*, SHOEMAKER 1947, p. 53.

Station 155. Several hundred specimens of both sexes. ♂ max. 3 mm., ♀ max. 2.5 mm.

**Remarks:** Most of the specimens were green in colour, blotched with brown; a few were yellow but similarly blotched.

**Distribution:** Generally distributed through the tropical and warmer temperate seas.

## List of species found at each station.

**Station 24** (> 2,000 m.).

*Stenopleura atlantica* Stebbing

**Station 39** (41—50 m.).

*Maera hirondellei* Chevreux
*Maera inaequipes* (Costa)
*Ericthonius braziliensis* (Dana)
*Eurystheus atlanticus* Stebbing
*Leptocheirus guttatus* Grube
*Amphithoe grubiformis* n. sp.

**Station 40** (100 m.).

*Maera hirondellei* Chevreux
*Maera inaequipes* (Costa)

**Station 43** (22 m.).

*Ampelisca brevicornis* var. *cavicoxa* n. var.
*Elasmopus pocillimanus* (Bate)
*Eurystheus maculatus* (Johnston)
*Eurystheus atlanticus* Stebbing
*Photis* ? spp.
*Leptocheirus guttatus* Grube
*Lembos francanni* n. sp.

**Station 44** (41—55 m.).

*Lysianassa ceratina* (Walker)
*Socarnes erythrothalmus* Robertson
*Maera hirondellei* Chevreux
*Ericthonius braziliensis* (Dana)
*Siphonocetes colletti* Boeck
*Eurystheus maculatus* (Johnston)
*Photis longicaudata* (Bate & Westwood)
*Photis* ? spp.
*Leptocheirus pectinatus* Norman

**Station 45** (30—36 m.)

*Ampelisca typica* Bate
*Ampelisca spinimana* Chevreux
*Ampelisca* (t-d-s. group)
*Melita fresnelli* Audouin
*Photis longicaudata* (Bate & Westwood)
*Amphithoe vaillanti* (Lucas)

**Station 49** (74—79 m.).

*Ampelisca typica* Bate
*Ampelisca sarsi* Chevreux
*Ampelisca latifrons* Schellenberg
*Ampelisca spinifer* n. sp.
*Ampelisca brevicornis* var. *canmora* n. var.
*Ampelisca* (t-d-s. group)
*Podoceropsis* ? sp.

**Station 51** (108 m.).

*Ampelisca sarsi* Chevreux
*Ampelisca latifrons* Schellenberg

**Station 52** (11 m.).

*Ampelisca brevicornis* var. *rectangula* Schellenberg
*Ampelisca heterodactyla* Schellenberg
*Pontharpinia stimpsoni* Stebbing
*Urothoe grimaldi* Chevreux
*Urothoe leone* n. sp.

**Station 53** (0—12 m.).

*Ampelisca brevicornis* var. *rectangula* Schellenberg
*Ampelisca brevicornis* var. *platypus* Schellenberg

**Station 54** (25 m.).

*Ampelisca brevicornis* var. *platypus* Schellenberg
*Ampelisca* (t-d-s. group)
*Pontharpinia stimpsoni* Stebbing

**Station 55** (44 m.).

*Ampelisca brevicornis* var. *dentifera* Schellenberg

**Station 57** (62 m.).

*Ampelisca typica* Bate

**Station 58** (95 m.).

*Ampelisca latifrons* Schellenberg
*Ampelisca* (t-d-s. group)

**Station 59** (280 m.).

*Ampelisca* (t-d-s. group)

**Station 60** (78 m.).

*Ampelisca latifrons* Schellenberg
*Ampelisca* (t-d-s group)
*Ampelisca? natalensis* Barnard
*Ampelisca aequicornis* var. *cessia* n. var.

**Station 65** (78 m.).

*Ampelisca* (t-d-s group)

**Station 68** (80—90 m.).

*Ampelisca incerta* n. sp.
*Ampelisca* (t-d-s group)
*Photis longicaudata* (Bate and Westwood)

**Station 69** (16 m.).

*Pontharpinia intermedia* Schellenberg
*Urothoe grimaldi* Chevreux

**Station 72** (24 m.).

*Ampelisca spinimana* Chevreux
*Ampelisca* (t-d-s group)
*Grandidierella elongata* Chevreux

**Station 73** (33 m.).

*Ampelisca spinimana* Chevreux
*Ampelisca brevicornis* var. *dentifera* Schellenberg
*Ampelisca* (t-d-s group)
*Urothoe marina* (Bate)
*Podoceropsis* ? sp.

**Station 75** (46 m.).

*Ampelisca* (t-d-s group)

**Station 76.**

*Ampelisca latifrons* Schellenberg

**Station 77** (10 m.).

*Ampelisca spinimana* Chevreux
*Maera hirondellei* Chevreux

**Station 85** (28—40 m.).

*Ampelisca* (t-d-s group)

**Station 86** (17 m.).

*Ampelisca brevicornis* var. *rectangula* Schellenberg
*Ampelisca* (t-d-s group)

**Station 101** (17 m.).

*Ampelisca* (t-d-s group)

**Station 110** (16 m.).

*Ampelisca ctenopus* Schellenberg
*Ampelisca spinimana* Chevreux
*Ampelisca hupferi* Schellenberg
*Photis longicaudata* (Bate & Westwood)

**Station 112** (19 m.).

*Ampelisca brevicornis* var. *platypus* Schellenberg

**Station 113** (32 m.).

*Ampelisca spinimana* Chevreux
*Ampelisca* (t-d-s group)
*Argissa stebbingi* Bonnier
*Synopia scheeleana* Bovallius

**Station 114** (52 m.).

*Ampelisca* (t-d-s group)
*Argissa stebbingi* Bonnier

**Station 129** (12 m.).

*Ampelisca brevicornis* var. *platypus* Schellenberg

**Station 130** (25 m.).

*Ampelisca* (t-d-s group)

**Station 141** (15 m.).

*Acidostomum obesum* (Bate)
*Leucothoe spinicarpa* (Abildgaard)
*Leucothoe* ? *minima* Schellenberg
*Maera hirondellei* Chevreux
*Tritaeta gibbosa* (Bate)
*Melita fresnelli* Audouin
*Jassa falcata* (Montagu)
*Laematophilus purus* Stebbing
*Ericthonius braziliensis* (Dana)
*Eurystheus maculatus* (Johnston)
*Eurystheus longicarpus* n. sp.
*Photis longicaudata* (Bate & Westwood)
*Microdeutopus kraemmeri* n. sp.
*Microdeutopus* ? sp.

**Station 145** (32 m.).

*Lysianassa ceratina* (Walker)
*Orchomenella nana* (Krøyer)
*Ampelisca rubella* Costa
*Ampelisca brevicornis* var. *pectenata* n. var.
*Pontharpinia stimpsoni* Stebbing
*Cressa dubia* Bate
*Leucothoe spinicarpa* var. *occidentalis* n. var.
*Leucothoe richiardi* Lessona

*Stenothoe valida* Dana
*Panoploea minuta* (O. Sars)
*Elasmopus pectinicrus* Bate
*Maera ascensionis* Barnard
*Maera hirondellei* Chevreux
*Melita fresnelli* Audouin
*Laematophilus purus* Stebbing
*Cerapus* sp.
*Ericthonius braziliensis* Dana
*Siphonocetes colletti* Boeck
*Eurystheus maculatus* (Johnston)
*Photis longicaudata* (Bate & Westwood)
*Photis* ? sp.
*Amphithoe vaillanti* (Lucas)

**Station 146** (50—51 m.).

*Lysianassa ceratina* (Walker)
*Orchomenella nana* (Krøyer)
*Stenothoe stephenseni* n. sp.
*Idunella picta* Norman
*Maera hirondellei* Chevreux
*Maera knudseni* n. sp.
*Maera simplex* n. sp.
*Melita aculeata* Chevreux
*Melita fresnelli* Audouin
*Ericthonius braziliensis* (Dana)
*Siphonocetes colletti* Boeck
*Eurystheus maculatus* (Johnston)
*Photis longicaudata* (Bate & Westwood)
*Amphilocus spence-batei* (Stebbing)

**Station 147** (45 m.).

*Lysianassa ceratina* (Walker)
*Tmetonyx bruuni* n. sp.
*Orchomenella crenata* Chevreux & Fage
*Ampelisca* (t-d-s group)
*Ampelisca? natalensis* Barnard
*Ampelisca aequicornis* var. *verga* n. var.
*Leucothoe spinicarpa* var. *occidentalis* n. var.
*Panoploea minuta* (O. Sars)
*Tiron intermedia* n. sp.
*Tiron altifrons* n. sp.
*Megaluropus agilis* Hoek
*Maera hirondellei* Chevreux
*Maera ascensionis* Barnard
*Maera simplex* n. sp.
*Maera knudseni* n. sp.
*Melita fresnelli* Audouin
*Ericthonius braziliensis* (Dana)
*Eurystheus longicarpus* n. sp.
*Leptocheirus pectinatus* Norman
*Tritaeta gibbosa* (Bate)

**Station 148** (25 m.).

*Lysianassa ceratina* (Walker)
*Idunella picta* Norman
*Elasmopus rapax* Costa
*Maera hirondellei* Chevreux
*Melita aculeata* Chevreux
*Melita fresnelli* Audouin
*Ericthonius braziliensis* (Dana)
*Siphonocetes ? sabatieri* de Rouville
*Eurystheus platypus* n. sp.
*Aora atlantidea* n. sp.
*Amphilocus ? spence-batei* (Stebbing)
*Leptocheirus* juv.

**Station 150.**

*Urethoe grimaldi* Chevreux

**Station 151** (65 m.).

*Ampelisca rubella* Costa
*Leucothoe richiardi* Lessona
*Leucothoe ? incisa* Robertson
*Leucothoe dentitelson* Chevreux
*Liljeborgia brevicornis* Liljeborg
*Maera ascensionis* Barnard
*Maera hirondellei* Chevreux
*Laematophilus purus* Stebbing
*Ericthonius braziliensis* (Dana)
*Eurystheus maculatus* (Johnston)
*Eurystheus hirsutimanus* n. sp.
*Eurystheus averus* n. sp.
*Aora atlantidea* n. sp.
*Lembos websteri* Bate

**Station 153** (42 m.).

*Ampelisca serraticaudata* Chevreux
*Amphilocus* juv.
*Leucothoe incisa* Robertson
*Stenothoe marina* Bate
*Liljeborgia brevicornis* Liljeborg
*Maera grossimana* (Montagu)
*Maera ascensionis* Barnard
*Maera hirondellei* Chevreux
*Laematophilus purus* Stebbing
*Ericthonius braziliensis* (Dana)
*Eurystheus maculatus* (Johnston)
*Podoceropsis sophiae* Boeck
*Aora atlantidea* n. sp.
*Lembos websteri* Bate

**Station 155** (on floating objects).

*Ampelisca sarsi* Chevreux
*Gitanopsis magdai* n. sp.

*Stenothoe gallensis* Walker
*Stenothoe cattai* Chevreux
*Elasmopus rapax* Costa
*Elasmopus pectinicrus* (Bate)
*Maera hirondellei* Chevreux
*Jassa falcata* (Montagu)
*Podocerus braziliensis* (Dana)
*Laematophilus purus* Stebbing
*Ericthonius braziliensis* (Dana)
*Corophium acherusicum* Costa
*Amphithoe vaillanti* (Lucas)

**Station 160** (14 m.).

*Tmetonyx bruuni* n. sp.
*Ampelisca ctenopus* Schellenberg
*Ampelisca heterodactyla* Schellenberg
*Ampelisca brevicornis* var. *cavicoxa* n. var.
*Photis longicaudata* (Bate & Westwood)

**Station 161** (18 m.).

*Tmetonyx bruuni* n. sp.
*Ampelisca typica* Bate
*Ampelisca ctenopus* Schellenberg
*Ampelisca heterodactyla* Schellenberg
*Ampelisca brevicornis* var. *rectangula* Schellenberg
*Ampelisca* (t-d-s group)
*Ampelisca brevicornis* var. *cavicoxa* n. var.
*Ampelisca brevicornis* var. *pectenata* n. var.
*Ampelisca aequicornis* var. *verga* n. var.
*Ampelisca jarli* n. sp.
*Leucothoe spinicarpa* (Abildgaard)
*Perioculodes longimanus* (Bate & Westwood)
*Laematophilus purus* Stebbing
*Siphonocetes? sabatieri* de Rouville
*Photis longicaudata* (Bate & Westwood)
*Leptocheirus pectinatus* Norman
*Lembos gambiense* n. sp.

**Station 163** (65—89 m.).

*Maera hirondellei* Chevreux
*Photis* spp.
*Leptocheirus pectinatus* Norman

**Station 166** (intertidal).

*Hyale pontica* (Rathke)
*Hyale perieri* Lucas
*Hyale spinidactyla* Chevreux
*Hyale wolffi* n. sp.
*Allorchestes furcata* n. sp.
*Allorchestes ornata* n. sp.
*Elasmopus perditus* n. sp.

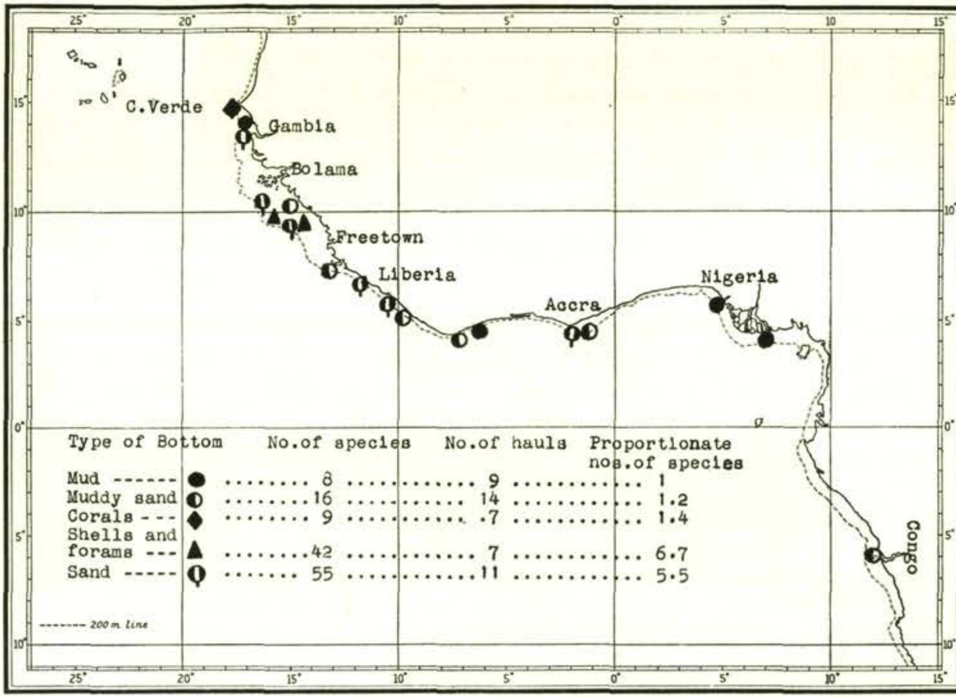


Fig. 57. Proportionate members of the species in relation to the type of bottom.

## List of the Species Found in Different Habitats.

The types of habitat are: mud; muddy-sand; sand; shells and *Foraminifera*; coral; floating objects, i. e. ships and buoys; intertidal zone.

By far the fewest species are found on mud or clayey mud. With one exception (*Photis longicaudata*) all on this habitat are species of *Ampelisca*. It is worthy of note that no species of *Corophium* was taken from this type of ground.

An admixture of sand with mud immediately increases the number of species of *Ampelisca* and adds a few from other genera.

With little or no mud a much greater abundance of species from many genera occur, though it is hardly safe to infer that the few species which have apparently dropped out are really absent from the habitat. This habitat contains by far the greatest number of ampeliscids and the only haustoriids (as might be expected). Here also not only the species but the actual numbers of photids are at their maximum, and with them the leucothoids.

On ground composed of shells and *Foraminifera* the number of species of ampeliscids falls markedly, the photids to a less extent, but the number of gammarids rises markedly.

On coral ground the number of genera and species is surprisingly low, and no one genus stands out as characteristic of this habitat.

The fouling of ships and buoys provides a home for only those species one would expect to find in such places in almost any part of the world.

The intertidal species are characteristic but *Talitrus*, *Orchestia* and *Talorchestia* are missing.

**Habitat I — Mud.**

Ampeliscidae:

*Ampelisca spinimana* Chevreux
— ?*ctenopus* Schellenberg
— *hupferi* Schellenberg
— *incerta* n. sp.
— (t-d-s group)
— *brevicornis* var. *rectangula* Schellenberg
— *brevicornis* var. *platypus* Schellenberg

Argissidae:

*Argissa stebbingi* Bonnier

Synopiidae:

*Synopia scheeleana* Bovallius

Photidae:

*Photis longicaudata* (Bate & Westwood)

**Habitat II — Muddy-Sand.**

Ampeliscidae:

*Ampelisca typica* Bate
— ? *natalensis* Barnard
— *sarsi* Chevreux
— *spinimana* Chevreux
— *latifrons* Schellenberg
— *aequicornis* var. *cessia* n. var.
— *spinifera* n. sp.
— *heterodactyla* Schellenberg
— *brevicornis* var. *platypus* Schellenberg
— *brevicornis* var. *rectangula* Schellenberg
— *brevicornis* var. *dentifera* Schellenberg
— *brevicornis* var. *canmora* n. var.
— (t-d-s group)

Gammaridae:

*Maera hirondellei* Chevreux

Photidae:

*Podoceropsis* sp.

**Habitat III — Sand.**

Lysianassidae:

*Lysianassa ceratina* (Walker)
*Tmetonyx bruuni* n. sp.

*Socarnes erythrothalmus* Robertson
*Acidostomum obesum* (Bate)

Ampeliscidae:

*Ampelisca typica* Bate
— *rubella* Costa
— *spinimana* Chevreux
— *serraticaudata* Chevreux
— *ctenopus* Schellenberg
— *heterodactyla* Schellenberg
— *brevicornis* var. *rectangula* Schellenberg
— *brevicornis* var. *platypus* Schellenberg
— *brevicornis* var. *dentifera* Schellenberg
— *brevicornis* var. *cavicoxa* n. var.
— *brevicornis* var. *pectenata* n. var.
— *aequicornis* var. *verga* n. var.
— (t-d-s group)
— *jarli* n. sp.

Haustoriidae:

*Urothoe grimaldi* Chevreux
— *marina* Bate
— *leone* n. sp.

Phoxocephalidae:

*Pontharpinia stimpsoni* Stebbing
— *intermedia* Schellenberg

Amphilocidae:

*Amphilocus* juv.

Leucothoidae:

*Leucothoe spinicarpa* (Abildgaard)
— *richiardi* Lessona
— ? *minima* Schellenberg
— ? *incisa* Robertson
— *dentitelson* Chevreux

Stenothoidae:

*Stenothoe marina* Bate

Liljeborgiidae:

*Liljeborgia brevicornis* Liljeborg

Oedicerotidae:

*Perioculodes longimanus* (Bate & Westwood)

Gammaridae:

*Maera hirondellei* Chevreux
— *grossimana* (Montagu)
— *ascensionis* Barnard
*Melita fresnelli* Audouin

Dexaminidae:

*Tritaeta gibbosa* (Bate)

Podoceridae:

*Laematophilus purus* Stebbing

Aoridae:

*Lembos websteri* Bate
— *gambiense* n. sp.
*Aora atlantidea* n. sp.
*Microdeutopus kraemmeri* n. sp.
— sp.

Photidae:

*Eurystheus maculatus* (Johnston)
— *longicarpus* n. sp.
— *hirsutimanus* n. sp.
— *averus* n. sp.
*Photis longicaudata* (Bate & Westwood)
— sp.
*Podoceropsis sophiae* Boeck
— sp.
*Leptocheirus pectinatus* Norman

Amphithoidae:

*Amphithoe vaillanti* (Lucas)

Jassidae:

*Jassa falcata* (Montagu)

Corophiidae:

*Ericthonius braziliensis* (Dana)
*Siphonocetes colletti* Boeck
— ?*sabatieri* de Rouville
*Grandidierella elongata* Chevreux

## Habitat IV — Shells & Foraminifera.

Lysianassidae:

*Lysianassa ceratina* (Walker)
*Orchomenella nana* (Krøyer)
*Orchomenella crenata* Chevreux & Fage
*Tmetonyx bruuni* n. sp.

Ampeliscidae:

*Ampelisca rubella*
— ?*natalensis* Barnard
— *brevicornis* var. *pectenata* n. var.
— *aequicornis* var. *verga* n. var.
— (t-d-s- group)

Phoxocephalidae:

*Pontharpinia stimpsoni* Stebbing

Amphilocidae:

*Amphilocus spence-batei* (Stebbing)

Stenothoidae:

*Stenothoe valida* Dana
— *stephenseni* n. sp.

Acanthonotozomatidae:

*Panoploea minuta* (O. Sars).

Tironidae:

*Tiron intermedia* n. sp.
— *altifrons* n. sp.

Liljeborgiidae:

*Idunella picta* Norman

Gammaridae:

*Megaluropus agilis* Hoek
*Elasmopus pectinicrus* (Bate)
— *rapax* Costa
*Maera ascensionis* Barnard
— *inaequipes* (Costa)
— *hirondellei* Chevreux
— *knudseni* n. sp.
— *simplex* n. sp.
*Melita fresnelli* Audouin
— *aculeata* Chevreux

Dexaminidae:

*Tritaeta gibbosa* (Bate)

Aoridae:

*Aora atlantidea* n. sp.

Photidae:

*Eurystheus maculatus* (Johnston)
— *platypus* n. sp.
— *longicarpus* n. sp.
*Photis longicaudata* (Bate & Westwood)
— sp.
*Leptocheirus pectinatus* Norman

Podoceridae:

*Laematophilus purus* Stebbing

Amphithoidae:

*Amphithoe vaillanti* (Lucas)

Corophiidae:

*Ericthonius braziliensis* (Dana)
*Siphonocetes colletti* Boeck
— ?*sabatieri* de Rouville
*Cerapus* sp.

**Habitat V — Coral.**

Ampeliscidae:

*Ampelisca brevicornis* var. *cavicoxa* n. var.

Amphithoidae:

*Amphithoe grubiformis* n. sp.

Gammaridae:

*Elasmopus pocillimanus* (Bate)
*Maera hirondellei* Chevreux

Aoridae:

*Lembos francanni* n. sp.

Photidae:

*Eurystheus maculatus* (Johnston)
— *atlanticus* Stebbing
*Leptocheirus guttatus* Grube

Corophiidae:
*Ericthonius braziliensis* (Dana)

**Habitat VI — Fouling of Ships & Buoys.**

Ampeliscidae:
*Ampelisca sarsi* Chevreux

Amphilocidae:
*Gitanopsis magdai* n. sp.

Stenothoidae:
*Stenothoe gallensis* Walker
— *cattai* Stebbing

Gammaridae:
*Elasmopus rapax* Costa
— *pectinicrus* (Bate)

Podoceridae:
*Podocerus braziliensis* (Dana)
*Laematophilus purus* Stebbing

Amphithoidae:
*Amphithoe vaillanti* (Lucas)

Jassidae:
*Jassa falcata* (Montagu)

Corophiidae:
*Ericthonius braziliensis* (Dana)
*Corophium acherusicum* Costa

**Habitat VII — Intertidal Zone.**

Gammaridae:
*Elasmopus perditus* n. sp.

Talitridae:
*Hyale pontica* Rathke
— *perieri* Lucas
— *spinidactyla* Chevreux
— *wolffi* n. sp.
*Allorchestes furcata* n. sp.
— *ornata* n. sp.

## CAPRELLIDEA

### **Phtisica marina** Slabber.

*P. marina*, G. O. Sars 1890, p. 646.
*P. marina*, Chevreux & Fage 1925, p. 434.

Station 39. 5♂ max. 11 mm., 3♀ max. (ovig.) 7 mm.
— 44. 1♀ 8 mm.
— 145. 3♂ 5 mm., 5♀ 5.5 mm. ovig.
— 146. 1 juv. 3 mm.

Station 151. 1 juv. ♂, 3♀ ovig.
— 153. 1♀ ovig., 4 very small juvs.
— 161. 6♂ max. 6 mm., 1♀ ovig. 5 mm., many juvs.

**Remarks:** These specimens are quite typical though they are very far from reaching the maximum size (♂ 24 mm., ♀ 16 mm.).

The variation passed through by the palm of gnathopod II of the male during development is very great. In the young forms it closely resembles that of the female; when the animal is about 5 mm. the evenness of the palm has given place to a ruggedness in no way suggesting the adult form; at 6 mm. a notch to receive the point of the claw appears and with it the first indication of the membranous sac which is characteristic of the adult male.

**Distribution:** North Sea to French Guinea; Mediterranean and Black Sea; Rio de Janiero.

### **Pseudoprotella phasma** (Montagu) var. **bispinosa** Mayer.

*P. p.* var. *bispinosa*, Mayer 1882, p. 29.
*Protella phasma*, Sars 1895, p. 649.
*P. p.* & var. *bispinosa*, Chevreux & Fage 1925, p. 437.

Station 145. 1♂ 10 mm. All the legs of this specimen are missing. The flagellum of antenna II is longer than usual, being composed of 5 segments.
— 151. 1♂ 10 mm.
— 161. 1♂ 9 mm.

**Distribution:** From the North Sea to French Guinea; Mediterranean and Black Sea; the Azores.

### **Caprella acutifrons** Latreille var. **simulatrix** Mayer.

*C. a.* var. *simulatrix*, Mayer 1882, p. 48.
*C. a.* var. *simulatrix*, Chevreux & Fage 1925, p. 450.
Station 153. 1 juv., perhaps of this species, much broken.
— 161. 8♂ max. 6 mm., 2♀ ovig. 5 mm.

**Remarks:** Among the great number of varieties of this very variable species this one most nearly resembles *simulatrix*. The palm of gnathopod II of the male is without a tooth but has 2 spines at its proximal end. Towards the hinge of the claw the almost straight palm becomes slightly convex.

**Further distribution:** This species, in one form or another, appears to be generally distributed. The present variety occurs in the Channel and the western sea-board of Europe.

### Caprella aequilibra Say.

*C. aequilibra*, Mayer 1882, p. 45.
*C. aequilibra*, Chevreux & Fage 1925, p. 455.

Station 141. 1 ♂ 7.5 mm. All the legs of this specimen are missing.

**Distribution:** This species appears to be generally distributed through the warmer seas.

### Caprella nigra n. sp.

(Fig. 58).

Station 155. 16 ♂ 3 mm., 17 ♀ 2 mm.

**Description:** Male. The head is rounded and is without projections. The eyes are small, circular and dark. Body segments III to V are sub-equal in length; VI and VII are short.

Antenna I extends to about the end of body segment III; its segment 1 is rather stouter than the others; 2 is the longest; 1 and 3 are sub-equal; all are plentifully supplied with short bristles: the flagellum is composed of 9 to 10 segments.

Antenna II is rather shorter than the peduncle of antenna I; the last 2 segments of the peduncle are equal and there is a downwardly projecting lobe on the distal end of the antepenultimate segment.

Gnathopod I is small; the palm of segment 6 is almost the total length of the segment; its border is unrelieved but it is delimited by a small spine to which the claw extends. Gnathopod II is large; segment II has an elbow-like projection proximally; the posterior border of segment 6 (which is as long as the rest of the limb) is evenly curved; the palm is straight for $^{2}/_{3}$ of its length, then it curves to a right-angle and its free point is produced to a sharp tooth; the next part is straight and slopes slightly towards the middle-line and ends in a spine. The claw, which reaches this spine, is evenly curved dorsally; on its inner side there is a projection near the hinge; the claw is parallel-sided till near the region of the palmar tooth where is suddenly narrows. The thicker part of the claw and the palmar surface of the segment are densely bristled.

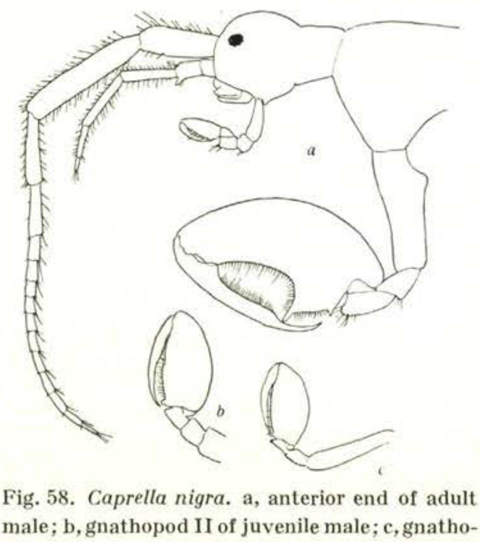

Fig. 58. *Caprella nigra.* a, anterior end of adult male; b, gnathopod II of juvenile male; c, gnathopod II of ovigerous female (All drawn to the same scale.)

The branchiae on segments III and IV are ovoid.

All the legs are missing.

In the juvenile male gnathopod II is like that of the female but the rudiment of the median tooth is visible.

Female. It is like the male but there is no downward projection on the antepenultimate segment of the peduncle of antenna II; there is no elbow-like projection on segment 2 of gnathopod II; the curvature of the palm of segment 6 of gnathopod II is almost equal to that of the anterior border but it too is delimited by a spine. The claw is evenly curved on both borders.

There are some few bristles on the second brood plate, but these are shorter than those on the first.

Colour. All the animals are sooty black.

## Appendix.

A list of the species of
Gammaridea from the West African Coasts
and their distribution.

### A list of the West African Gammaridea.

The following list of Gammaridea is made up from the records given by CHEVREUX (Melita, 1889—1900) 1925 and SCHELLENBERG 1925 in addition to those of the present expedition. CHEVREUX's travels took him only as far south as Rufisque in Senegal. However, his collections north of this and at the Canary Islands were extensive.

SCHELLENBERG's records cover a wider field and are more diffuse; he had to take what the captains of various ships brought back, so he could not concentrate on any particular area. Nevertheless, the amount of interesting material which came to his hand was surprising.

The Atlantide Expedition has carried the work of the Melita fairly extensively along another section of the African coast.

The following list contains the species recorded from West Africa. (Those of the present expedition are marked with an asterisk). For convenience I have divided the coast into regions which are quite arbitrary. These are:—

1. The Canary Islands.
2. Cape Verde Islands.
3. The coast of the Sahara (CHEVREUX 1925).
4. Cape Verde to Cape Palmas (Liberia).
5. Cape Palmas to the Cameroons.

6. Cameroons to Mossamedes (Angola).
7. Walfish Bay to Lüderitzbay.

This list does not include specimens from the Cape Province, since the Amphipoda of that region have already been adequately dealt with by STEBBING 1908 and more fully by BARNARD 1916 and 1940.

These lists show quite clearly that before any general conclusions can be drawn as to the distribution of the species along the West African coasts further collecting will have to be done at one or two points in the region of Portuguese West Africa.

**The numbers of species of West African Gammaridea.**

| | |
|---|---|
| Total number between Gibraltar and Lüderitzbay ............ | 206 spp. |
| Previous records between C. Verde and Loando .............. | 99 spp. |
| New records made by the Atlantide Expedition............... | 48 spp. |
| Total... | 147 spp. |

**List of West African Gammaridea.**

| | Regions | | | | | | |
|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| **Lysianassidae** | | | | | | | |
| **Lysianassa ceratina* (Wlkr.) | + | .. | + | + | .. | .. | + |
| *L. plumosa* Boeck | .. | .. | + | .. | .. | .. | .. |
| *Socarnopsis crenulata* Chev. | .. | .. | + | .. | .. | .. | .. |
| **S. erythrothalmus* Robertson | .. | .. | .. | + | .. | .. | .. |
| *Hippomedon robustus* O. Sars | .. | .. | + | .. | .. | .. | .. |
| *H. multidentatus* Sch. | .. | .. | .. | .. | + | .. | .. |
| *H. similis* Sch. | .. | .. | .. | .. | .. | + | .. |
| *Orchomene humilis* (Costa) | + | .. | .. | + | .. | .. | .. |
| **Orchomenella nana* (Krøyer) | .. | .. | .. | + | .. | .. | .. |
| **O. crenata* (Chev. & Fage) | .. | .. | .. | + | .. | .. | .. |
| *Orchomenopsis chilensis* Heller | .. | .. | .. | .. | .. | .. | + |
| *Tryphosites longipes* (Bate & Westw.) | + | .. | .. | .. | .. | .. | .. |
| **Acidostoma obesa* (Bate) | .. | .. | .. | + | .. | .. | .. |
| **Tmetonyx bruuni* n. sp. | .. | .. | .. | + | .. | .. | .. |
| **Ampeliscidae** | | | | | | | |
| **Ampelisca typica* (Bate) | .. | .. | + | + | .. | .. | .. |
| **A. sarsi* Chev. | .. | .. | .. | + | .. | .. | .. |
| *A. senegalensis* (Chev.) | .. | .. | .. | + | .. | .. | .. |
| *A. spinipes* Boeck | .. | .. | .. | + | .. | .. | .. |
| *A. rubra* Chev. | .. | .. | .. | + | .. | .. | .. |
| **A. latifrons* Sch. | .. | .. | .. | + | + | + | .. |
| **A. spinifer* n. sp. | .. | .. | .. | + | .. | .. | .. |
| **A. ctenopus* Sch. | .. | .. | .. | + | + | + | .. |
| **A. spinimana* Chev. | .. | .. | .. | + | + | + | .. |
| **A. incerta* n. sp. | .. | .. | .. | .. | + | .. | .. |
| *A. bidentata* Sch. | .. | .. | .. | .. | + | + | + |
| *A. palmata* Brnrd. | .. | .. | .. | + | .. | + | .. |
| *A. stenopus* Sch. | .. | .. | .. | .. | .. | + | .. |
| **A. hupferi* Sch. | .. | .. | .. | + | + | .. | .. |
| *A. brevicornis* (Costa) | .. | .. | .. | + | .. | .. | .. |

List of West African Gammaridea (continued)

| | Regions 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|---|
| **A. b.* var. *dentifera* Sch. | .. | .. | .. | + | + | .. | .. |
| **A. b.* var. *platypus* Sch. | .. | .. | .. | + | + | + | + |
| **A. b.* var. *intermedia* Sch. | .. | .. | .. | .. | + | .. | .. |
| **A. b.* var. ?*rectangula* Sch. | .. | .. | .. | + | + | .. | .. |
| **A. b.* var. *cavicoxa* n. var. | + | .. | .. | + | .. | .. | .. |
| **A. b.* var. *canmora* n. var. | .. | .. | .. | + | .. | .. | .. |
| **A. b.* var. *pectenata* n. var. | .. | .. | .. | + | .. | .. | .. |
| **A. heterodactyla* Sch. | .. | .. | .. | + | + | .. | .. |
| **A. t-d-s* group | .. | .. | .. | .. | .. | .. | .. |
| **A.* ?*natalensis* Brnrd. | .. | .. | .. | + | + | .. | .. |
| **A. aequicornis* var. *cessia* n. var. | .. | .. | .. | .. | + | .. | .. |
| **A. a.* var. *verga* n. var. | .. | .. | .. | + | .. | .. | .. |
| **A. rubella* Costa | .. | .. | .. | + | .. | + | .. |
| *A. r.* var. *serrata* Sch. | .. | .. | .. | .. | .. | + | .. |
| **A. serraticaudata* Chev. | .. | .. | .. | + | .. | .. | .. |
| **A. jarli* n. sp. | .. | .. | .. | + | .. | .. | .. |
| **Argissidae** | | | | | | | |
| **Argissa stebbingi* Bonnier | .. | .. | + | + | .. | .. | .. |
| **Haustoriidae** | | | | | | | |
| *Bathyporeia pelagica* Bate | + | .. | .. | .. | .. | .. | .. |
| **Urothoe marina* (Bate) | .. | .. | .. | .. | + | .. | .. |
| **U. grimaldi* Chev. | .. | .. | + | + | + | .. | .. |
| *U. elegans* Bate | .. | .. | .. | + | .. | .. | .. |
| *U. dentata* Sch. | .. | .. | .. | .. | + | .. | .. |
| **U. leone* n. sp. | .. | .. | .. | + | .. | .. | .. |
| *U. pulchella* (Costa) | + | .. | .. | .. | .. | .. | .. |
| **Phoxocephalidae** | | | | | | | |
| **Pontharpinia stimpsoni* Stebb. | .. | .. | .. | + | .. | .. | .. |
| **P. intermedia* Sch. | .. | .. | .. | .. | + | + | .. |
| *Harpinia pectinata* Sars | .. | .. | + | .. | .. | .. | .. |
| *H. ophthalmica* Sch. | .. | .. | .. | .. | + | .. | .. |
| **Amphilocidae** | | | | | | | |
| **Amphilocus spence-batei* Stebb. | .. | .. | + | + | .. | .. | .. |
| *A. neapolitanus* d. Valle | + | .. | + | .. | .. | .. | .. |
| *A. brunneus* d. Valle | + | .. | .. | .. | .. | .. | .. |
| *Peltacoxa marioni* Catta | .. | .. | + | .. | .. | .. | .. |
| *Gitanopsis pusilla* Brnrd. | .. | .. | .. | .. | .. | .. | + |
| **G. magdai* n. sp. | .. | .. | .. | + | .. | .. | .. |
| **Cressidae** | | | | | | | |
| **Cressa dubia* Bate | .. | .. | .. | + | .. | .. | .. |
| **Leucothoidae** | | | | | | | |
| **Leucothoe spinicarpa* (Abildg.) | .. | .. | .. | + | .. | .. | .. |
| **L. s.* var. *occidentalis* n. var. | .. | .. | .. | + | .. | .. | .. |
| **L. richiardi* Lessona | .. | .. | .. | + | .. | .. | .. |
| **L. incisa* Robertson | .. | .. | .. | + | .. | .. | .. |
| **L.* ?*minima* Sch. | .. | .. | .. | + | .. | + | .. |
| **L. dentitelson* Chev. | .. | .. | .. | + | .. | .. | .. |
| **Stenothoidae** | | | | | | | |
| *Stenothoe monoculoides* (Mont.) | + | .. | .. | + | .. | .. | .. |
| **S. marina* (Bate) | .. | .. | + | + | .. | .. | .. |
| **S. spinimana* Chev. | .. | .. | .. | + | .. | .. | .. |
| **S. gallensis* Wkr. | .. | .. | .. | + | .. | .. | .. |
| **S. valida* Dana | .. | .. | .. | + | .. | .. | .. |
| **S. cattai* Stebb. | .. | .. | .. | + | + | .. | .. |
| **S. stephenseni* n. sp. | .. | .. | .. | + | .. | .. | .. |

List of West African Gammaridea (continued)

| | Regions | | | | | | |
|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| **Phliasidae** | | | | | | | |
| *Pereionotus testudo* (Mont.) | + | .. | .. | .. | .. | .. | .. |
| **Acanthonotozomatidae** | | | | | | | |
| **Panoploea minuta* (Sars) | .. | .. | .. | + | .. | .. | .. |
| **Liljeborgiidae** | | | | | | | |
| *Liljeborgia mixta* Sch. | .. | .. | .. | + | .. | .. | .. |
| **L. brevicornis* (Bruz.) | .. | .. | .. | + | .. | .. | .. |
| **Idunella picta* (Norman) | .. | .. | .. | + | .. | .. | .. |
| **Oedicerotidae** | | | | | | | |
| **Perioculodes longimanus* (B. & W.) | .. | .. | .. | + | .. | .. | .. |
| *P. lophopus* Sch. | .. | .. | .. | .. | + | .. | .. |
| *Pontocrates altamarinus* (B. & W.) | .. | .. | .. | + | .. | .. | .. |
| *Westwoodilla rectirostris* (D. Valle) | .. | .. | + | + | .. | .. | .. |
| **Calliopiidae** | | | | | | | |
| *Calliopiella michaelseni* Sch. | .. | .. | .. | .. | .. | .. | + |
| *Apherusa bispinosa* (Bate) | + | .. | .. | + | .. | .. | .. |
| *A. ovalipes* N. & S. | .. | .. | .. | + | .. | .. | .. |
| *A. mediterranea* Chev. | + | .. | .. | .. | .. | .. | .. |
| **Stenopleura atlantica* Stebb. | .. | .. | + | .. | .. | .. | .. |
| **Atylidae** | | | | | | | |
| *Nototropis guttatus* (Costa) | + | .. | .. | + | .. | .. | .. |
| *N. swammerdammi* (M. Edw.) | .. | .. | .. | + | .. | .. | .. |
| *N. serratus* Sch. | .. | .. | .. | .. | | + | .. |
| **Synopiidae** | | | | | | | |
| **Synopia scheeleana* Boval | .. | .. | .. | .. | + | .. | .. |
| **Pontogeneiidae** | | | | | | | |
| *Paramoera capensis* Dana | .. | .. | .. | .. | .. | .. | + |
| **Melphidippidae** | | | | | | | |
| *Melphidippella macra* Norman | .. | .. | .. | + | .. | .. | .. |
| **Eusiridae** | | | | | | | |
| *Eusiroides sarsi* Chev. | + | .. | .. | .. | .. | .. | .. |
| **Tironidae** | | | | | | | |
| **Tiron intermedia* n. sp. | .. | .. | .. | + | .. | .. | .. |
| **T. altifrons* n. sp. | .. | .. | .. | + | .. | .. | .. |
| **Gammaridae** | | | | | | | |
| **Megaluropus agilis* Hoek | + | .. | .. | + | .. | .. | .. |
| *M. longimanus* Sch. | .. | .. | .. | .. | + | .. | .. |
| **Elasmopus rapax* Costa | + | .. | .. | + | .. | .. | .. |
| *E. r.* var. *barbata* Sch. | .. | .. | .. | .. | .. | + | .. |
| **E. pocillimanus* (Bate) | .. | + | .. | .. | .. | + | .. |
| **E. pectinicrus* (Bate) | .. | .. | .. | + | .. | .. | .. |
| **E. perditus* n. sp. Azores | .. | .. | .. | .. | .. | .. | .. |
| *Pherusa fucicola* Leach | + | .. | .. | + | .. | .. | .. |
| **Maera ascensionis* Brnrd. | .. | .. | .. | + | .. | .. | .. |
| **M. hirondellei* Chev. | .. | + | .. | + | + | .. | .. |
| *M. othonis* (M. Ed.) | .. | .. | + | + | .. | .. | .. |
| **M. grossimana* (Mont.) | + | .. | .. | + | .. | .. | + |
| **Maera inaequipes* (Costa) | + | + | .. | .. | .. | .. | .. |
| **M. knudseni* n. sp. | .. | .. | .. | + | .. | .. | .. |
| **M. simplex* n. sp. | .. | .. | .. | + | .. | .. | .. |
| **Melita aculeata* Chev. | .. | .. | .. | + | .. | .. | .. |
| **M. fresnelli* Aud. | .. | + | .. | + | .. | .. | .. |
| *M. palmata* (Mont.) | + | .. | .. | .. | .. | .. | .. |

## List of West African Gammaridea (continued)

| | Regions 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|---|
| *M. obtusata* (Mont.) | .. | .. | + | + | .. | .. | .. |
| *Ceradocus rubromaculatus* Stimps. | .. | .. | .. | .. | .. | .. | + |
| *Gammarus olivii* M. Edw. | + | .. | .. | .. | .. | .. | .. |
| *Metaceradocus perdentatus* Chev. | .. | .. | .. | + | .. | .. | .. |
| **Dexaminidae** | | | | | | | |
| **Tritaeta gibbosa* (Bate) | .. | .. | .. | + | .. | .. | .. |
| *T. chelata* Chev. | .. | .. | .. | + | .. | .. | .. |
| *Dexamine spinosa* (Mont.) | + | .. | .. | + | .. | .. | .. |
| *Polycheria atolli* Wkr. | .. | .. | .. | .. | .. | .. | .. |
| **Talitridae** | | | | | | | |
| *Orchestia chevreuxi* Guerne | + | .. | .. | .. | .. | .. | .. |
| *Talorchestia quadrispinosa* Brnrd. | .. | .. | .. | .. | .. | .. | + |
| *T. landani* Sch. | .. | .. | .. | .. | .. | + | .. |
| **Hyale pontica* (Rathke) Azores | .. | .. | .. | .. | .. | .. | .. |
| **H. perieri* (Lucas) — | + | .. | .. | + | .. | .. | .. |
| **H. spinidactyla* Chev. — | + | .. | .. | + | .. | .. | .. |
| *H. macrodactyla* Stebb. | .. | .. | .. | + | .. | .. | .. |
| *H. carinata* (Bate) | + | .. | .. | .. | .. | .. | .. |
| *H. barnardi* Chev. | .. | .. | .. | + | .. | .. | .. |
| *H. inyaca* Brnrd. | .. | .. | .. | + | .. | .. | .. |
| *H. schmidti* (Heller) | + | .. | .. | + | .. | .. | .. |
| *H. saldanha* Chilton | .. | .. | .. | .. | .. | .. | + |
| **H. wolffi* n. sp. Azores | .. | .. | .. | .. | .. | .. | .. |
| *Parahyale fasciger* Stebb. | .. | .. | .. | .. | .. | + | .. |
| *Allorchestes aquilinus* (Costa) | + | .. | .. | .. | .. | .. | .. |
| **A. furcata* n. sp. Azores | .. | .. | .. | .. | .. | .. | .. |
| *A. ornata* n. sp. — | .. | .. | .. | .. | .. | .. | .. |
| **Aoridae** | | | | | | | |
| *Microdeutopus anomalus* (Rathke) | + | .. | .. | .. | .. | .. | .. |
| **M. kraemmeri* n. sp. | .. | .. | .. | + | .. | .. | .. |
| *Neomicrodeutopus cabinidae* Sch. | .. | .. | .. | .. | .. | + | .. |
| *Aora typica* Krøyer | + | .. | .. | + | .. | .. | .. |
| **A. atlantidea* n. sp. | .. | .. | .. | + | .. | .. | .. |
| *Coremapus versiculatus* Norman | + | .. | .. | .. | .. | .. | .. |
| **Lembos websteri* Bate | .. | .. | .. | + | .. | .. | .. |
| *L. tetracanthus* Sch. | .. | .. | .. | .. | .. | + | .. |
| *L. hypocanthus* Brnrd. | .. | .. | .. | .. | .. | .. | + |
| *L. hirsutipes* Stebb. | .. | .. | .. | + | .. | .. | .. |
| **L. francanni* n. sp. | .. | + | .. | .. | .. | .. | .. |
| **L. gambiensi* n. sp. | .. | .. | .. | + | .. | .. | .. |
| **Photidae** | | | | | | | |
| **Eurystheus maculatus* (Johnst.) | .. | + | .. | + | .. | .. | .. |
| **E. atlanticus* Stebb. | .. | + | .. | .. | .. | .. | .. |
| **E. anomalus* Chev. | .. | .. | .. | + | .. | .. | .. |
| *E. ostroumovi* (Sowinsky) | + | .. | .. | .. | .. | .. | .. |
| *E. minutus* Chev. | .. | .. | .. | + | .. | .. | .. |
| *E. serratus* Sch. | .. | .. | .. | + | .. | .. | .. |
| *E. togoensis* Sch. | .. | .. | .. | .. | + | .. | .. |
| *E. angolensis* Sch. | .. | .. | .. | .. | .. | + | .. |
| **E. longicarpus* n. sp. | .. | .. | .. | + | .. | .. | .. |
| **E. hirsutimanus* n. sp. | .. | .. | .. | + | .. | .. | .. |
| **E. averus* n. sp. | .. | .. | .. | + | .. | .. | .. |
| **Photis longicaudata* (B. & W.) | .. | .. | + | + | + | .. | .. |
| *P. longicarpus* Chev. | .. | .. | .. | + | .. | .. | .. |
| *P. antennata* Chev. | .. | .. | + | .. | .. | .. | .. |
| *P. obesa* Chev. | .. | .. | .. | + | .. | .. | .. |

## List of West African Gammaridea (continued)

| | Regions | | | | | | |
|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| *P. longimanus* Wkr. | .. | .. | .. | .. | .. | .. | + |
| *P. aequimanus* Sch. | .. | .. | .. | + | .. | .. | .. |
| *P. goreensis* Sch. | .. | .. | .. | + | .. | .. | .. |
| *P. africanus* Sch. | .. | .. | .. | + | + | + | .. |
| **Leptocheirus guttatus* Grube | .. | + | .. | .. | .. | .. | .. |
| **L. pectinatus* (Norman) | .. | .. | .. | + | .. | .. | .. |
| *L. p.* var. *fasciatus* Chev. & Fage | .. | .. | .. | + | .. | .. | .. |
| **Podoceropsis sophiae* Boeck | + | .. | .. | + | .. | .. | .. |
| *P. pusilla* Chev. | .. | .. | + | + | .. | .. | .. |
| *P. similis* Sch. | .. | .. | .. | .. | + | + | .. |
| *Megamphopus cornutus* Chev. | + | .. | .. | + | .. | .. | .. |
| *M. longidactylus* Chev. | .. | .. | .. | + | .. | .. | .. |
| *M. pachypus* Sch. | .. | .. | .. | + | .. | .. | .. |
| **Amphithoidae** | | | | | | | |
| **Amphithoe vaillanti* Lucas | .. | .. | .. | + | .. | .. | .. |
| *A. senegalensis* Sch. | .. | .. | .. | + | .. | .. | .. |
| **A. grubiformis* n. sp. | .. | + | .. | .. | .. | .. | .. |
| *A. kergueleni* Stebb. | .. | .. | .. | + | .. | .. | .. |
| *Sunamphithoe pelagica* (M. Edw.) | .. | .. | + | .. | .. | .. | .. |
| *Grubia hirsuta* Chev. | + | .. | .. | + | + | .. | .. |
| *Pleonexes gammaroides* Bate | + | .. | .. | + | .. | .. | .. |
| *P. fero* Chev. | + | .. | .. | .. | .. | .. | .. |
| **Jassidae** | | | | | | | |
| **Jassa falcata* (Mont.) | + | .. | .. | + | .. | .. | + |
| *J. pusilla* (Sars) | .. | .. | .. | + | .. | .. | .. |
| **Podoceridae** | | | | | | | |
| **Podocerus braziliensis* (Dana) | .. | .. | .. | + | .. | .. | .. |
| *P. senegalensis* Chev. | .. | .. | .. | + | .. | .. | .. |
| *P. cristatus* Thomson | .. | .. | .. | .. | .. | .. | + |
| **Laematophilus purus* Stebb. | .. | .. | + | + | .. | .. | .. |
| **Corophiidae** | | | | | | | |
| **Cerapus* sp. | .. | .. | .. | + | .. | .. | .. |
| *Cerapopsis longipes* d. Valle | + | .. | .. | .. | .. | .. | .. |
| **Ericthonius braziliensis* (Dana) | + | + | .. | + | .. | .. | .. |
| *E. difformis* M. Edw. | + | .. | .. | .. | .. | .. | .. |
| *Siphonocetes colletti* Boeck | .. | .. | .. | + | .. | .. | .. |
| **S. sabatieri* Rouville | .. | .. | .. | + | .. | .. | .. |
| **S. dellavallei* Stebb. | .. | .. | .. | + | .. | .. | .. |
| *Grandidierella megnae* (Giles) | .. | .. | .. | .. | .. | + | .. |
| **G. elongata* Chev. | .. | .. | + | .. | + | .. | .. |
| **Corophium asherusicum* Costa | .. | .. | .. | + | .. | .. | .. |
| *C. runcicorne* d. Valle | .. | .. | + | .. | .. | .. | .. |
| **Caprellidea** | | | | | | | |
| **Phtisica marina* Slabber | .. | + | + | + | .. | .. | .. |
| **Pseudoprotella phasma* (Mont.) | .. | .. | + | + | .. | .. | .. |
| **P. p.* var. *bispinosa* Mayer | .. | .. | + | + | + | .. | + |
| *Caprella acutifrons* Latreille | .. | .. | + | + | .. | .. | .. |
| **C. a.* var. *simulatrix* Mayer | .. | .. | + | + | .. | .. | .. |
| **Caprella aequilibra* Say | .. | .. | + | + | .. | .. | .. |
| **Caprella nigra* n. sp. | .. | .. | + | + | .. | .. | . |

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