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## THE CARIDEAN CRUSTACEA OF THE CANARY ISLANDS

by

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(32nd contribution to the knowledge of the fauna of the Canary Islands, edited by Dr. D. L. Uyttenboogaart, and continued by Dr. C. O. van Regteren Altena<sup>1)</sup>)

The present paper is based mainly on material collected at the Canary Islands during the spring of 1947 by Dr. G. Thorson of Universitetets Zoologiske Museum at Copenhagen and Dr. C. O. van Regteren Altena of the Rijksmuseum van Natuurlijke Historie at Leiden. Most of the specimens were collected by Dr. Thorson, who devoted almost all of his time to the study of the litoral fauna, while Dr. Van Regteren Altena studied the inland fauna and only made occasional visits to the sea shore.

The shrimp fauna of the Canary Islands is very poorly known. In 1839 Brullé, in the large work of Webb and Berthelot on the Natural History of the Canary Islands, listed 5 species of Caridea and since that time just two more species have been added to the list. The material collected by Dr. Thorson and Dr. Van Regteren Altena consists of 12 species, 9 of which have not been recorded previously from the Canary Islands, bringing the total number of Caridean species known from that archipelago up to 16. As the very few data about the carcinological fauna of the region are scattered over several publications, I thought it useful to give here a compilation of all the information about the Canary Islands Caridea known to me. The deep-sea forms, which are collected some distance off the islands are not included.

1) Contribution number 31 has been published in Proc. Kon. Nederl. Akad. Wetensch., vol. 52, 1949, p. 208.

INVERTEBRATE  
ZOOLOGY

One of the main reasons that the shrimps of the Canary Islands are so little known probably is the inaccessibility of the larger part of the shores, which makes collecting possible only at certain places and at certain times. In most places the rocky shore rises steep and high from the sea and is heavily pounded by the surf. Only at a few localities there are small protected beaches, where some collecting may be done.

The present material originates from four localities at two of the islands:

Lanzarote:

Arrecife, a town on the S. E. coast of the island. Collections were made in the tidal zone (*Palaemon elegans*), May 10, 1947.

North east coast of the island. Here too material was collected in the tidal zone (*Palaemon elegans*), May 12, 1947.

Tenerife:

Puerto Orotava (= Puerto de la Cruz), a town situated on a rather broad bay at the N.W. shore of the island. Collecting was done in the tidal zone near the harbour and at a reef E. of the town (*Athanas nitescens*, *Trachycaris restrictus*, *Lysmata seticaudata*, *Palaemon elegans*, *Gnathophyllum americanum*), March 7 and 10, April 5 to 12, 1947.

Los Cristianos (= Puerto Cristianos), a small village just west of the southpoint of the island, situated on a bay, which has a reef south of the village. Collections were made in the tidal zone (*Athanas nitescens*, *Latreutes fucorum*, *Lysmata seticaudata*, *Periclimenes scriptus*, *Gnathophyllum elegans*, *Gnathophyllum americanum*, *Pontophilus trispinosus*, *Pontocaris cataphracta*) and at a depth of 210 m (*Parapandalus narval*), March 12, 14, 16, 20-26, April 15-30, 1947.

Also inserted in the present paper is a specimen of *Palaemon elegans* collected by Dr. H. J. Lam and Dr. A. D. J. Meëuse during a short visit to the Canary Islands in 1938. The specimen, like the material collected by Dr. Van Regteren Altena, is preserved in the Rijksmuseum van Natuurlijke Historie at Leiden; the specimens collected by Dr. Thorson are inserted in the collections of Universitetets Zoologiske Museum at Copenhagen.

My thanks are due to Dr. Thorson and Dr. Van Regteren Altena for their kindness to allow me to study this material.

The following enumeration lists all the species known at present from the Canary Islands. Full references are given only when they deal with material from these islands.

**Oplophorus spinosus** (Brullé)

*Palaemon spinosus* Brullé, 1839, Webb & Berthelot's Hist. nat. Iles Canaries, vol. 2 pt. 2 Entomologie, p. 18, fig. on p. 3.

Brullé (1839) describes his new species *Palaemon spinosus* as follows: "Espèce fort remarquable par le prolongement recourbé et en forme d'épine de la partie dorsale des segmens de l'abdomen". He has seen no actual specimens, but based his description on a figure, which was made at the Canary Islands. This figure is published by Brullé on p. 3 of the Entomologie in Webb & Berthelot's work, as a vignette under the general title of the papers of Brullé, Lucas and Macquart. The figure, under which the name "Palémon épineux" is printed, makes it at once clear that the species is an *Oplophorus*. The third, fourth, and fifth abdominal segments all end in a strong posterior spine. This feature shows that Brullé's species is either *Oplophorus typus* H. Milne Edw., *O. gracilirostris* A. Milne Edw., or *O. grimaldii* Coutière. *Oplophorus spinicauda* A. Milne Edw., the only other Atlantic species of the genus, namely, has also the second segment of the abdomen ending in a strong spine. In Brullé's figure the posterolateral angle of the carapace is rounded like in *Oplophorus grimaldii*. In *O. typus* and *O. gracilirostris* this angle is provided with a forwards curved spine. This thus makes the identity of *Palaemon spinosus* and *Oplophorus grimaldii* certain. Though Brullé's figure is rather crude (the legs are only superficially indicated, while moreover the sixth abdominal segment and the telson are shown as one joint), it shows the most important characters sufficiently distinct that identification of the species is possible. As the name *Palaemon spinosus* Brullé (1839, p. 18) is older than the name *Hoplophorus Grimaldii* Coutière (1905a, p. 1, fig. 1), it has priority. The trivial name *spinosus* is valid and thus has to be used for the present species, the name of which thereby becomes *Oplophorus spinosus* (Brullé).

On Brullé's figure of *Palaemon spinosus* the rostral formula is shown as being  $\frac{18}{10}$ , while Lenz & Strunck (1914, p. 328) give this formula for *O. grimaldii* as being  $\frac{12-15}{8-10}$ . The high number of dorsal teeth of the rostrum in Brullé's figure, however, may be due to inaccuracy.

Distribution. The specimen mentioned by Brullé was obtained from Gran Canaria, Canary Islands. The species is not represented in the collection studied by me. It is known from the Atlantic, Indian and Pacific Oceans and is recorded from West of Madeira (type locality of *Oplophorus grimaldii* Coutière), from near Bermuda, from off the eastcoast of the U.S.A., from the Bahamas, from N. of Tristan da Cunha, from the eastern

Indian Ocean, from S. of Japan, and from N.E. of Easter Island. Chace (1940, p. 189) gives as the vertical range of the species 550 to 1800 m, with most material from 550 to 900 m, while the Tristan da Cunha specimens have been taken at night at a depth of only 10 m. The specimen from the Canary Islands obviously too has been collected from a small depth as at the time Brullé's paper was published no deep sea investigations had been done. Interesting in this respect is Chun's (1889, p. 550) remark that at certain times near the coast of the Canary Islands strong currents drive many deep sea forms to the surface, so that forms, which otherwise only may be obtained by deep sea apparatuses now are found in superficial layers.

### ***Processa canaliculata* Leach**

*Processa canaliculata* Balss, 1916, Michaelsen's Beitr. Kenntn. Meeresf. Westaf., p. 30.

No material of this species is present in the collection at hand. Balss (1916) reports it from the Canary Islands. As, however, at the time of publication of Balss's paper no distinction was made between *Processa canaliculata* Leach and *Processa edulis* (Risso), it is not certain to which of these two species Balss's material belongs.

Distribution. Balss reports the species from Las Palmas, Gran Canaria. Both *Processa canaliculata* and *P. edulis* are known with certainty from the British and Dutch coasts to the Western Mediterranean. Most other records of these forms need confirmation.

### ***Parapandalus narval* (Fabricius) (fig. 1)**

*Parapandalus pristis escatilis* Balss, 1925, Wiss. Ergebn. Valdivia Exped., vol. 20, p. 283, figs. 60-65.

*Parapandalus narval* Holthuis, 1949, Proc. Kon. Nederl. Akad. Wetensch., vol. 52, p. 208, pl. I fig. a.

Tenerife, Los Cristianos. Rocky bottom, depth 210 m, March 20, 1947, G. Thorson leg. — 10 specimens (3 ovigerous females) 96-118 mm.

The present species in recent literature generally is named *Parapandalus pristis* (Risso), but as shown by Holthuis (1947a, p. 316) the correct name is *Parapandalus narval* (Fabr.).

Balss (1925) reported two ovigerous females of a form named by him *Parapandalus pristis* var. *escatilis* (Stimpson) from the Canary Islands. He states that his specimens differ from the typical *Parapandalus pristis* of the Mediterranean by having the surface of the carapace covered with hairs; moreover *P. pristis escatilis* has the hairs on the last two joints of the third maxillipede in distinct transverse rows, while in the typical *P. pristis*

these hairs are more irregularly arranged. The hairs on the carapace to which Balss refers are small elongate scales, which are implanted on the carapace and the abdomen and easily are rubbed off. Figures of these scales of *Parapandalus narval* are given here (figs. 1a, 1b). The figure of the scale in lateral view distinctly shows that the midrib of the scale on the dorsal side possesses two curious humps. These humps are present in all scales seen by me. When the scales are rubbed off, their implantations remain visible as small pits in the texture of the carapace and the abdomen. Comparing my Canary Islands specimens with specimens from Naples, I found both forms to possess scales. Also Coutière (1905, p. 675) already noticed the presence of scales on the carapace of *Parapandalus narval* (= *P. pristis*). In all probability these scales were rubbed off in Balss's Mediterranean specimens. In the arrangement of the hairs on the last two joints of the third maxillipede in the two forms I could not find any difference either; in my Canary Islands specimens, however, these hairs generally are a little shorter than those of the Mediterranean forms. As a result of these facts I cannot agree with Balss in considering the Canary Islands form to be different from the Mediterranean *Parapandalus narval*.

A quite different question is that of the identity of *Pandalus escatilis* Stimpson with the present form. Balss (1925) identifies his material of *Parapandalus narval* with Stimpson's species. Stimpson (1860, p. 37), however, states the main difference between his *Pandalus escatilis* and *P. pristis* to be found in the shape of the third maxillipede. He describes the endopod of the third maxillipede in his new species as "ei *P. annulicornis* simili".

As already pointed out by De Man (1920, pp. 140, 151) the difference between the third maxillipede in *Pandalus montagui* (= *P. annulicornis*) and *Parapandalus narval* (= *P. pristis*) is that in the former species the antepenultimate joint is shorter than the ultimate, whereas it is longer than the ultimate joint in *Parapandalus narval*. Balss's Canary Islands specimens as well as my material from that archipelago show the third maxillipede perfectly identical with that of *Parapandalus narval* and thus different from

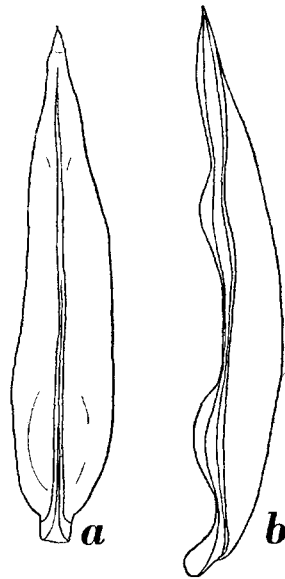


Fig. 1. *Parapandalus narval* (Fabr.). a, scale of the carapace in dorsal view; b, same in lateral view. a, b,  $\times 240$ .

that of *Pandalus montagui*. If Stimpson's description is correct, then *Pandalus escatilis* really is different from *Parapandalus narval* and Balss's material is incorrectly identified. It even is not certain whether *Pandalus escatilis* is a *Parapandalus* or a *Plesionika* as Stimpson does not mention anything about the presence or absence of epipods at the bases of the pereopods.

Six of the specimens collected by Dr. Thorson were infested with an Isopod parasite belonging to the family Dajidae. In only one specimen, however, the parasite was still attached, being placed in the mid-dorsal region of the posterior part of the carapace. The species shows much resemblance to *Zonophryxus grimaldii* Kochler, but differs from that form and from the other species of *Zonophryxus* by having 6 instead of 5 pereopods well developed. The species recently has been described by me (Holthuis, 1949, p. 208) as new under the name *Zonophryxus dodecapus*. *Zonophryxus grimaldii* is a parasite of *Heterocarpus grimaldii* A. Milne Edw. & Bouvier.

Distribution. The specimens recorded by Balss were collected with fish traps at Tenerife, Canary Islands; the present material also comes from that island. The species is known from the Red Sea, the Adriatic and the Western Mediterranean. It inhabits depths of 0 to 800 m.

### **Athanas nitescens** (Leach)

Tenerife, Puerto Orotava. Tidal zone, outer reef, April 5, 1947, G. Thorson leg. — 1 ovigerous female 14 mm.

Tenerife, Los Cristianos. Tidal zone, April 15-30, 1947, G. Thorson leg. — 1 ovigerous female 12 mm.

The specimen from Puerto Orotava is imperfect, several of its legs are missing, its identity, however, could be made fully certain.

Distribution. As far as I can ascertain this is the first record of *Athanas nitescens* from the Canary Islands. The species is known to inhabit the eastern Atlantic from S. Norway to the Cape Verde Islands, and the whole of the Mediterranean and the Black Sea. *Athanas grimaldii* Coutière is a closely related species, which has a more southern range of distribution and reaches its northern limit in the Cape Verde Islands.

### **Hippolyte inermis** Leach

*Hippolyte virescens* Brullé, 1839, Webb & Berthelot's Hist. nat. Iles Canaries, vol. 2 pt. 2 Entomologie, p. 18.

This species is not represented in the material at hand. Brullé reports

it under the name *Hippolithe virescens*, which name is a synonym of *Hippolyte inermis*. In most recent carcinological literature the name *Hippolyte prideauxiana* Leach is used for the present form. As, however, pointed out by Holthuis (1947, p. 54) *Hippolyte inermis* is the correct name.

Distribution. *Hippolyte inermis* is known from the south and west coasts of Great Britain and Ireland to the Mediterranean, the Black Sea, and the Canary Islands. Brullé does not give the exact locality from where his material was obtained.

**Trachycaris restrictus** (A. Milne Edwards) (figs. 2, 3)

Tenerife, Puerto Orotava. Shore, March 10, 1947, C. O. van Regteren Altena leg. — 1 ovigerous female 21 mm.

Description. The rostrum is strongly compressed, it is about as long as high and reaches to the end of the scaphocerite. The top is truncated and

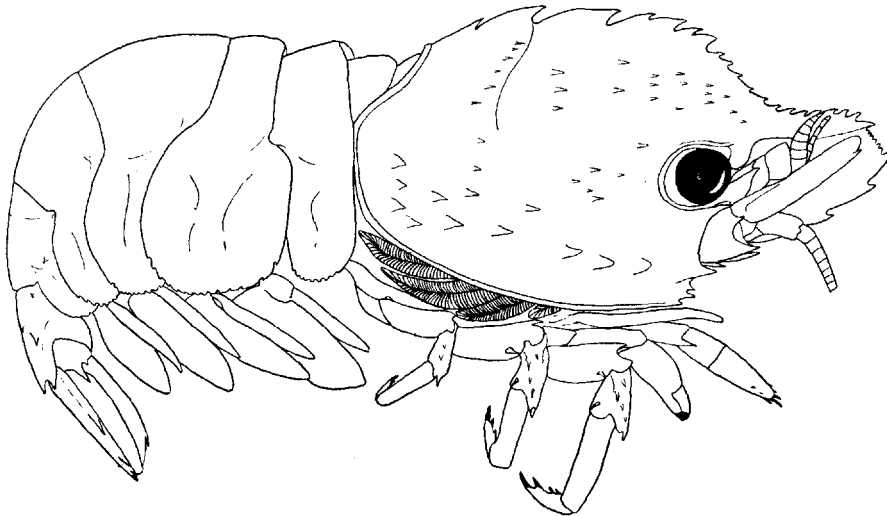


Fig. 2. *Trachycaris restrictus* (A. Milne Edw.)  $\times 7$ .

bears there about 6 very small teeth. The lower margin bears 3 rather large teeth, while the upper margin is provided with about 13 teeth, which are smaller than the ventral and larger than the apical teeth. In the median dorsal line of the carapace several teeth (7 in my specimen) are present; they form a direct continuation of the row of dorsal teeth of the rostrum. These teeth of the carapace are distinctly larger than those of the rostrum, but they are not equal in size; the posterior of these teeth is placed very

close near the posterior margin of the carapace. The midrib of the rostrum is distinctly convex and forms a conspicuous, rounded, dorsoventrally depressed lobe just in front of the eye; this lobe forms the anterior limit of the orbit. The upper margin of the orbit forms a distinct anteriorly directed spine over the eye. The lower angle of the orbit ends in a sharp and strong spine. Some distance below this spine the anterior margin of the carapace bears a strong antennal spine, while three smaller teeth are placed on the anterolateral angle of the carapace. The carapace bears several tubercles, which end in an anteriorly directed spine. These tubercles are placed in a row behind the antennal spine. In the posterolateral part of the carapace more similar tubercles are present. A cervical groove is rather distinct and runs from the second median tooth of the carapace about to the middle of each of the lateral surfaces. Behind this cervical groove a transverse row of slender spinules is present, anteriorly of the groove and especially above the eye many more spinules may be observed. The surface of the carapace is entirely covered with short rather stiff hairs, which are placed close together and form a dense coat which partly conceals the various tubercles and spines. Several longer hairs are visible too.

The abdomen has a similar cover of hairs like the carapace. The surface of the segments is provided with rather long transverse and short longitudinal grooves. The fifth segment bears at each side a small spine near the base of the pleura. The sixth segment is about as long as the fifth. Its dorsal surface possesses a small spine in each anterolateral corner, a transverse row of three spines is present in the middle of the segment, the median of these spines is placed somewhat anteriorly of the two lateral ones. The posterior margin of the sixth segment bears four strong spines: 2 posterolaterals and 2 submedians. The apices of the pleurae of the first five abdominal segments are broadly rounded and are minutely denticulate, the pleura of the sixth segment is narrow and ends in a strong posteriorly directed spine. The telson is broadly oval in shape, it has a blunt apex. Each lateral margin bears five spines, the anterior of which is largest and placed slightly before the middle of the telson, the second spine is placed about midway between the first spine and the top of the telson, the other spines are crowded near the apex.

The eyes lie rather deep in the orbits, only the cornea sticking out of the socket. The cornea is rounded and well pigmented. No ocellus is present.

The antennular peduncle (fig. 3a) has the basal segment provided with a very large stylocerite, which ends in two processes; the proximal of these regularly tapers into a sharp anteriorly directed tip, the other is rounded, but bears a distinct spine at the top. The second segment of the peduncle is longer than the third. There are two short and simple flagella, each of which consists of about 7 joints.



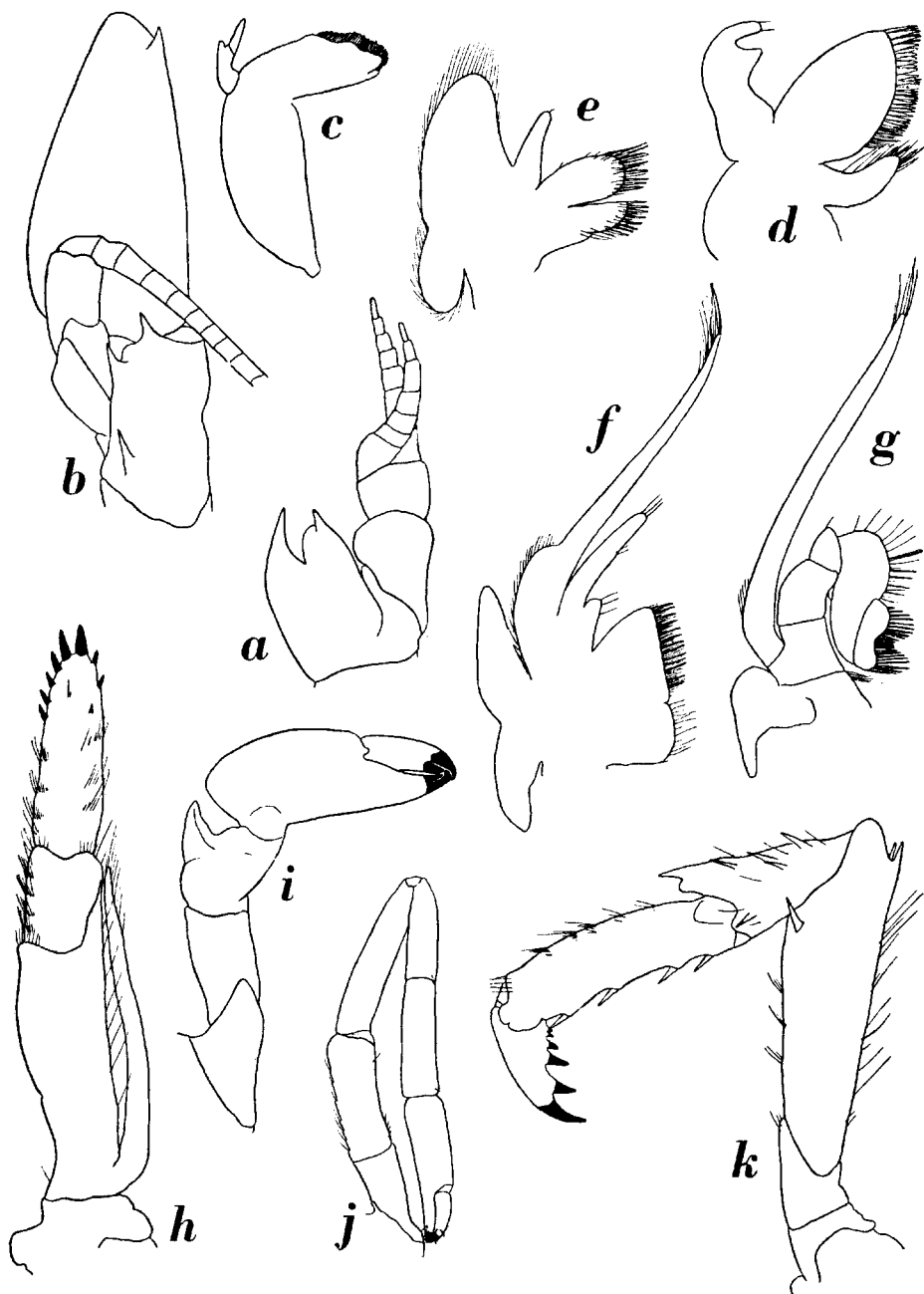


Fig. 3. *Trachycaris restrictus* (A. Milne Edw.). a, antennula; b, antenna (ventral view); c, mandible; d, maxillula; e, maxilla; f, first maxillipede; g, second maxillipede; h, third maxillipede; i, first pereopod; j, second pereopod; k, third pereopod. a, b, e-k,  $\times 17$ ; c, d,  $\times 24$ .

The scaphocerite (fig. 3b) is twice as long as broad, its largest breadth lies somewhat behind the middle and it gradually narrows towards the rounded apex. The outer margin is somewhat convex and ends in a distinct final tooth, which is overreached by the lamella. The antennal peduncle fails to reach the middle of the scaphocerite. The peduncular segment which bears the scaphocerite, moreover is provided with several spines: one small outer spine near the base of the scaphocerite and three larger spines on the ventral surface; two of the latter are placed in the inner anterior part of the segment, the third is situated closer near the posterior margin.

The mandible (fig. 3c) misses the incisor process. A two-jointed palp is present; near the base of the ultimate joint the basal joint bears a short lobe. The molar process has the distal end provided with numerous spinules. The maxillula (fig. 3d) has the inner lacinia slender and ending in some hairs and spinules, the upper lacinia is broad, the palp is distinctly bilobed. The maxilla (fig. 3e) has the upper endite distinctly cleft, of the lower endite only a trace of one lobe is visible; the palp and the scaphognathite are well developed. All maxillipedes are provided with well developed exopods. The first maxillipede (fig. 3f) has the two endites separated by a distinct notch, the palp is slender and is provided near the base with an accessory lobe; the caridean lobe of the exopod is narrow but distinct; the epipod is slender and distinctly bilobed. The second maxillipede (fig. 3g) has the distal margin of the ultimate joint concave in the middle, convex at the sides; a well developed epipod is present. The third maxillipede (fig. 3h) is robust and reaches about to the end of the antennal peduncle. The last joint is about twice as long as the penultimate. It bears several strong and dark coloured spines near the apex. The antepenultimate joint is distinctly longer than the ultimate and has the outer anterolateral angle provided with a spine, which reaches beyond the middle of the penultimate segment, the exopod somewhat overreaches this spine.

Pleurobranchs are present at the bases of the pereiopods, no other gills, epipods or exopods are found. The branchial formula runs as follows:

	maxillipedes			pereiopods				
	I	II	III	I	II	III	IV	V
pleurobranchs	—	—	—	I	I	I	I	I
arthrobranchs	—	—	—	—	—	—	—	—
podobranchs	—	—	—	—	—	—	—	—
epipods	I	I	I	—	—	—	—	—
exopods	I	I	I	—	—	—	—	—

The first pereiopods (fig. 3i) are short and rather heavy. The fingers are  $\frac{2}{5}$  as long as the palm. The dactylus ends in three, the fixed finger in two

black unguis. The palm is somewhat swollen and produced posterior of the articulation with the carpus. This posteriorly produced part fits in an excavation in the anterodorsal part of the carpus. The carpus is short, being about  $\frac{1}{3}$  of the length of the chela. The merus and ischium are slightly longer than the carpus. The second legs (fig. 3j) are equal, they are slender and overreach the first pair by far. The fingers are slightly more than half as long as the palm; the tips of the fingers are black. The carpus is 1.5 times as long as the chela and consists of two joints, which are of about equal length. The merus is slightly longer than the chela and distinctly longer than the ischium. The last three legs are robust. The third (fig. 3k) reaches beyond the second when extended forwards. The dactylus has the posterior margin provided with 5 or 6 teeth, the distals of which are largest; these teeth are of a dark colour. The propodus is 1.5 times as long as the dactylus, its posterior margin bears several spinules. The carpus is somewhat shorter than the propodus and has the outer surface provided with several (about 5) spines, while furthermore a strong spine is present at the anterior point of the distal margin. The merus is somewhat less than 1.5 times as long as the propodus, it bears two spines in the anterior part of the distal margin, these spines overreach the articulation with the carpus. Furthermore a movable spine is present in the posterior distal part of the outer surface. The ischium is short. The fourth leg strongly resembles the third. The fifth is slightly more slender and bears less spines.

In my ovigerous female the pleopods have the exopods rather narrowly ovate, while the endopods are very broad as is already figured by Bate (1888, pl. 104 fig. 2q). The appendix interna of the second to fifth pleopods is rather short.

The uropods have the endopod narrowly ovate, the exopod is distinctly broader. The outer margin of the exopod ends in a tooth, which at its inner side bears a movable spine.

Size. My ovigerous female is 21 mm long. The ovigerous female of Bate (1888, p. 579) is 19 mm long, that of Rathbun (1902, p. 113) measures 21 mm, while Gurney (1940, p. 121) states of an egg-bearing female from St. Helena: "On of these eggs measured .65 mm, in diameter, which is nearly one-twentieth of the length of the parent". The latter thus should be somewhat more than 13 mm long. The specimen from Curaçao mentioned by Schmitt (1924a, p. 68) is preserved in the collection of the Zoological Museum at Amsterdam; on examination it proved to be an ovigerous female and it measures 17 mm. The type specimen of the present species (no sex is mentioned) is stated by A. Milne Edwards (1878, p. 232) to be 14 mm long. The eggs in my material are 0.65 mm in diameter, just like in Gurney's (1940) material.

Colour. Dr. C. O. van Regteren Altena noted the specimen as being bright red in life. This colour disappears entirely by preservation in spirit. No description of the colour has been given in literature.

Biology. The specimen from the Canary Islands was very lively and made rapid and convulsive movements when taken with a pair of pincers.

Horizontal distribution. *Trachycaris restrictus* is known from both coasts of the Atlantic, from the Canary Islands to St. Helena, and from Bermuda to the West Indies. The records in literature are: Cape Verde Islands (A. Milne Edwards, 1878, p. 231), Gulf of Guinea (Gurney, 1940, p. 121), St. Helena (Gurney, 1940, p. 121), Bermuda (Gurney, 1940, p. 121, pls. 1-3), off Dry Tortugas, Florida (Rathbun, 1902, p. 113), various localities in the Gulf of Mexico (Rathbun, 1902, p. 113), Yucatan, Mexico (Rathbun, 1902, p. 113), Cuba (Bouvier, 1918, p. 6), Porto Rico (Rathbun, 1902, p. 113; Schmitt, 1935, p. 156, fig. 23), off Vieques and off St. Thomas, Virgin Islands (Rathbun, 1902, p. 113); off Culebra, Virgin Islands (Bate, 1888, p. 579, pl. 104 fig. 2; Rathbun, 1902, p. 113), Antigua (Schmitt, 1924, p. 82), Curaçao (Schmitt, 1924a, p. 68), off the mouth of the Pará River, Brazil (Ortmann, 1893, p. 47).

Vertical distribution. The present specimen was found on a reef at low tide in shallow water. The records in literature vary from 0 to 47 m depth, Ortmann gives for his specimen a depth of 50 to 100 m, while Bate reports his specimen from 700 m. Bate's record, however, is doubtful and as Ortmann (1893) pointed out, it is possible that the Challenger specimen was not found off Culebra at a depth of 700 m, but at St. Thomas in shallow water.

Type. The type specimen of this species originates from the Cape Verde Islands, and if still extant is preserved in the Muséum d'Histoire naturelle at Paris, France.

Remarks. Up till now the description of *Hippolyte restrictus* by A. Milne Edwards (1878, p. 231) has been overlooked, or the species has been considered a species incerta (e.g., Holthuis, 1947, p. 22, where erroneously the locality of *Hippolyte restrictus* is given as Canary Islands instead of Cape Verde Islands), probably because the species, which generally was known as *Trachycaris* (or *Platybema*) *rugosus* (Bate) up till 1940 only was known from the American side of the Atlantic. Comparison of my material with Milne Edwards's description, however, removed all doubt concerning the identity of *Hippolyte restrictus*. Bate (1888, p. 579, pl. 104 fig. 2) was the second to report on the species. He described it as new and named it *Platybema rugosum*. Calman (1906, p. 33) showed that the generic name *Platybema* could not be maintained for the present species and erected a new genus *Trachycaris* for it, changing the name thereby to *Trachycaris*

*rugosus* (Bate). Gurney (1940, p. 121, pls. 1-3) gives details about the larval development of the species. Bate's figures, the only figures ever published of an adult specimen of this species, are inaccurate in many points and made me wonder whether the East and West Atlantic forms should be one species or not. The main points in which Bate's figures differ from my specimen are:

1. No spinules are shown in the dorsal half of the carapace,
2. The lateral process of the midrib of the rostrum just in front of the eye is not shown,
3. On the anterolateral angle of the carapace the teeth are not drawn,
4. The pleurae of the abdominal segments have the margins entire,
5. No spines are shown on the fifth abdominal segment and in the anterolateral corners of the sixth segment,
6. The antennula and the third pereopod are shown more slender than they are in my material,
7. The mandible is stated to have no palp.

That these differences are due to inaccuracies in Bate's drawing at once became clear, when I compared my Canary Islands specimen with a specimen from Curaçao, which was identified by Schmitt (1924a) as *Trachycaris rugosus*. This latter specimen is preserved in the Zoological Museum at Amsterdam. The American specimen agrees in all respects with the specimen from the Canary Islands and differs from Bate's figures in the same points.

Gurney (1940, p. 124) already pointed to the fact that a two-jointed palp is present on the mandible in the present genus. When preparing my key to the genera of Hippolytidae (Holthuis, 1947, p. 4) I overlooked Gurney's paper and consequently placed *Trachycaris* among the genera without a mandibular palp. I wish to thank Dr. Gurney for directing my attention to this error, and I am glad to be able to confirm here his observation.

### ***Latreutes fucorum* (Fabricius)**

Tenerife, Los Cristianos. Collected from shallow water, bottom red coral and sand, March 16, 1947, G. Thorson leg. — 2 specimens (1 ovigerous female) 15 and 19 mm.

Though these specimens have the rostrum somewhat damaged, their identity could be made fully certain.

Distribution. This is the first record of the species from the Canary Islands. *Latreutes fucorum* generally is found among floating *Sargassum* weed on high sea and is recorded from the Atlantic Ocean from the Azores to the Cape Verde Islands and from Massachusetts (U.S.A.) to Porto Rico

Dr. Van Regteren Altena informed me that often great masses of *Sargassum* are washed ashore on various coasts of the Canary Islands. This may account for the presence of this characteristic *Sargassum* prawn on the shore of Tenerife.

### ***Lysmata seticaudata* (Risso)**

Tenerife, Puerto Orotava. Tidal zone, March 7, 1947, G. Thorson leg. — 2 specimens (1 ovigerous female) 42 and 44 mm.

Tenerife, Los Cristianos. Tidal zone, March 12-25, 1947, G. Thorson leg. — 1 specimen 27 mm.

Only faint traces of the original colour pattern may be seen in my specimens, which agree well with the descriptions given of the species.

Distribution. The species now is reported for the first time from the Canary Islands. It is a littoral form, which is known from the eastern Atlantic from the Channel Islands to Portugal and the Azores, and from the Mediterranean and the Black Sea.

### ***Palaemon elegans* Rathke**

*Palaemon squilla* Brullé, 1839, Webb & Berthelot's Hist. nat. Iles Canaries, vol. 2 pt. 2 Entomologie, p. 18.

*Palaemon squilla* Koelbel, 1892, Ann. naturh. Hofmus. Wien, vol. 7, p. 109.

*Palaemon squilla* Kraepelin, 1895, Verh. naturf. Ver. Hamb., ser. 3 vol. 2, p. 7.

*Leander squilla* Balss, 1916, Michaelsen's Beitr. Kenntn. Meeresf. Westaf., p. 24.

Lanzarote, Arrecife. Tidal zone, May 10, 1947, G. Thorson leg. — 1 specimen 20 mm. Shallow water with *Hydrobia* spec., May 10, 1947, G. Thorson leg. — 91 specimens (3 ovigerous females) 18-37 mm.

Lanzarote, N. E. coast. Tidal zone, May 12, 1947, G. Thorson leg. — 2 specimens (1 ovigerous female) 33 and 36 mm.

Tenerife, Puerto Orotava. Tidal zone, March 7, 1947, G. Thorson leg. — 1 ovigerous female 47 mm. Tidal zone, April 3-12, 1947, G. Thorson leg. — 1 specimen 30 mm. Tidal zone, outer reef, April 5, 1947, G. Thorson leg. — 1 specimen 40 mm.

Gran Canaria, Puerto de la Luz, near Las Palmas. Rocky shore with algae, August 13, 1938, H. J. Lam & A. D. J. Meeuse leg. — 1 ovigerous female 38 mm.

This species is the most common prawn of the Canary Islands as is shown by the large number of specimens collected and by the relatively numerous records in literature. After Koelbel (1892) it is very numerous in shallow water of all of the islands and often may be found in large numbers in tidepools. The animals are named by the native population of Gran Canaria "Gamarros", by those of Fuerteventura "Gamaleones"; the latter name is given because of the rapid change of colour after the death (vid. Koelbel, 1892, p. 109).

The trivial name *elegans* is used here instead of that of *squilla*. The

specimens belong to the form named by De Man (1915, p. 120) and many other authors *Leander* (or *Palaemon*) *squilla*. The species named by Linnaeus (1758, p. 632) *Cancer Squilla*, however, is not the present form, but it is the species named by De Man (1915, p. 140) *Leander adspersus*. A paper in which this question is worked out more extensively is now in press and therefore this problem may only be touched here. Linnaeus states his *Cancer squilla* to occur in the Baltic, where the *Leander squilla* of authors does not live, furthermore all the references to literature given by Linnaeus refer to *Palaemon adspersus*, but one, which is a species incerta. The species *Leander squilla* auct. must therefore be named *Palaemon elegans* Rathke and *Leander adspersus* (Rathke) becomes *Palaemon squilla* (L.)

Distribution. The species is recorded from the following localities in the Canary Islands: Canary Islands (Brullé, 1839), Tenerife (Koelbel, 1892), Orotava, Tenerife (Kraepelin, 1895; Balss, 1916), Gran Canaria (Koelbel, 1892), Gomera (Koelbel, 1892), La Palma (Koelbel, 1892), Hierro (Koelbel, 1892), Puerto Cabras, Fuerteventura (Koelbel, 1892), Lanzarote (Koelbel, 1892), Graciosa (Koelbel, 1892), Montaña Clara (Koelbel 1892), Roque del Inferno (Koelbel, 1892), Alegranza (Koelbel, 1892), Roque del Este (Koelbel, 1892), Lobos (Koelbel, 1892). The species has a wide distribution in the Eastern Atlantic, it ranges from S. W. Norway and Denmark to the Cape Verde Islands, Angola and S. W. Africa and is known also from the Mediterranean and the Black Sea. There are records of it from Madeira and the Azores.

### ***Palaemon xiphias* Risso**

Tenerife, Los Cristianos. Tidal zone, April 15-30, 1947, G. Thorson leg. — 1 specimen 57 mm.

The only specimen examined agrees closely with the descriptions of this form and with Mediterranean material.

Distribution. The species now for the first time is recorded from the Canary Islands. It is a litoral form and up till now was known only from the Mediterranean, from Spain and Morocco to the Adriatic and Palestine.

### ***Palaemon serratus* (Pennant)**

*Palaemon Latreillei* Brullé, 1839, Webb & Berthelot's Hist. nat. Iles Canaries, vol. 2 pt. 2 Entomologie, p. 18.

No specimens of *Palaemon serratus* are present among the Canary Islands material seen by me. It is possible that Brullé's specimens belong

to *Palaemon xiphias*, as at that time the two species were not yet distinctly separated.

After examining a large material of *Palaemon serratus* and *Palaemon treillianus* (= *Palaemon Latreillei*) from the whole range of distribution of the two forms, I cannot agree with De Man (1915, p. 172) in considering *P. treillianus* a variety of *P. serratus*. The differences mentioned by De Man are so small and inconstant, that in my opinion *Palaemon treillianus* is nothing but a synonym of *Palaemon serratus*.

Distribution. *Palaemon serratus* inhabits shallow coastal waters and is known from the Atlantic coast of Europe from Great Britain, Denmark and Holland to Portugal, and from the entire Mediterranean and the Black Sea.

Furthermore I have examined material of this species, present in the Zoological Museum at Amsterdam, originating from Bahia del Oeste, Rio de Oro (West Africa).

#### **Periclimenes scriptus** (Risso) (fig. 4)

Tenerife, Los Cristianos. Sand with red algae, March 14, 1947, G. Thorson leg. — 1 ovigerous female 22 mm.

From the E. Atlantic region two littoral species of *Periclimenes* are known: *Periclimenes scriptus* (Risso) and *P. amethysteus* (Risso). Both species are insufficiently known, and it even is not certain whether they are specifically distinct or not. Therefore it was thought best to give here a description of the specimen found at the Canary Islands.

The rostrum (fig. 4a) is straight, it reaches about to the end of the scaphocerite. The upper margin bears ten teeth, three of which are placed behind the orbit. The teeth are regularly divided over the upper margin of the rostrum. The lower margin bears three teeth. The lower orbital angle is anteriorly produced to a narrow lobe. The antennal and hepatic spines are well developed. The antennal spine is placed on the anterior margin of the carapace some distance below the lower orbital angle. The anterolateral angle of the carapace is about rectangular with a broadly rounded tip.

The third abdominal segment is distinctly produced in the median posterior part, forming a small hump, which, however, is not compressed as it is in the indo-westpacific species *Periclimenes aesopius* (Bate). The pleurae of the fifth abdominal segment are rounded. The sixth segment is about 1.5 times as long as the fifth. The telson is somewhat longer than the sixth segment. Of the two dorsal pairs of spines, the posterior is placed slightly closer to the posterior margin of the telson than to the anterior pair of spines. The posterior margin bears the usual three pairs of spines.



The eyes are well developed. The cornea is rounded and provided with an ocellus.

The antennular peduncle (fig. 4b) has the stylocerite long and slender, reaching beyond the middle of the basal segment. The anterior margin of the basal segment is forwards produced and slightly overreaches the anterolateral spine. The upper antennular flagellum has the two rami fused for

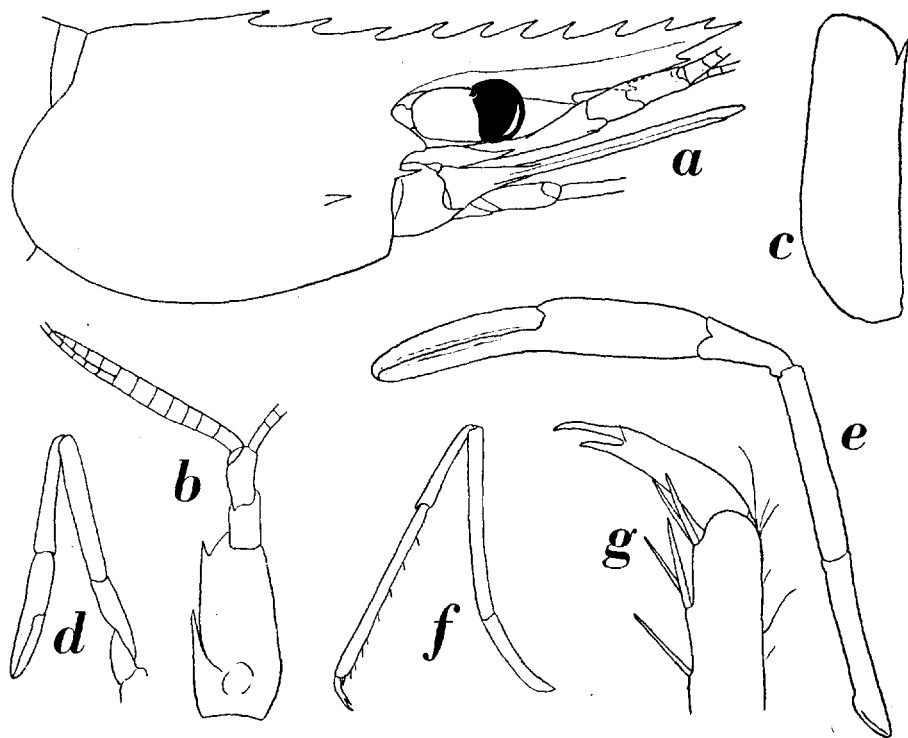


Fig. 4. *Perichlimes scriptus* (Risso). a, anterior part of body in lateral view; b, antennula; c, scaphocerite; d, first pereopod; e, second pereopod; f, third pereopod; g, dactylus of third pereopod. a-f,  $\times 11$ ; g,  $\times 57$ .

seven joints, the free part of the shorter ramus consists of 5 joints and is slightly more than half as long as the fused part. The fused part is half as long as the antennular peduncle.

The scaphocerite (fig. 4c) is thrice as long as broad. The outer margin is slightly concave. The lamella is broad and overreaches the final tooth. A spine is present near the base of the scaphocerite.

The mouthparts are typical. The mandible misses the palp, and has the incisor process ending in three teeth. The maxilla has the inner lacinia

distinctly cleft. Exopods are present on all maxillipedes. The third maxillipede is slender and reaches slightly beyond the end of the antennal peduncle.

The first pereopod (fig. 4d) attains the end of the scaphocerite. The fingers are slightly longer than the palm and are unarmed. The carpus is somewhat shorter than the chela and  $\frac{4}{5}$  of the length of the merus. The second leg (fig. 4e) reaches with the fingers beyond the scaphocerite. The fingers are very slender and placed somewhat obliquely on the palm. Their cutting edge is thin and lamelliform, it bears no teeth. The palm is slightly swollen, it is higher in the middle than at the anterior end, and also is higher than the combined heights of the fingers in their middle. The palm is somewhat shorter than the fingers. The carpus is half as long as the palm, it is twice as long as its greatest height. The merus and ischium are subequal and slightly longer than the fingers. The last three legs are slender. Of the third (fig. 4f) the dactylus (fig. 4g) is deeply bifid and slender, it is about four times as long as its basal height. The propodus is almost five times as long as the dactylus; its posterior margin bears several spines. The merus is twice as long as the carpus and as long as the propodus. The fourth and fifth legs do not differ essentially from the third.

The uropods are elongate. The exopod has the outer margin slightly convex and ending in an immovable tooth, which at its inner side bears a movable spine.

Distribution. *Periclimenes scriptus* has not been reported before from the Canary Islands. It lives in the litoral zone and is recorded from the Channel Islands, Portugal, the Mediterranean and from the French Congo. It is possible, however, that part of these records are based on material of *Periclimenes amethysteus* (Risso).

### **Gnathophyllum americanum** Guérin (figs. 5, 6)

Tenerife, Puerto Orotava. Tidal zone, April 3-12, 1947, G. Thorson leg. — 1 specimen 13 mm.

Tenerife, Los Cristianos. Tidal zone, March 13-25, 1947, G. Thorson leg. — 1 specimen 15 mm. Tidal zone, March 20-26, 1947, G. Thorson leg. — 2 specimens 14 and 16 mm.

Description. The rostrum (fig. 5b) is short and directed slightly downwards. It reaches to or somewhat beyond the end of the basal segment of the antennular peduncle. The dorsal margin bears 4 or 5 teeth, which all are placed in front of the posterior limit of the orbit. The lower margin bears one tooth close near the apex, sometimes this tooth is absent. The rostrum gradually broadens posteriorly; dorsally it bears a distinct carina, which carries the dorsal teeth. This carina is highest at the level of the

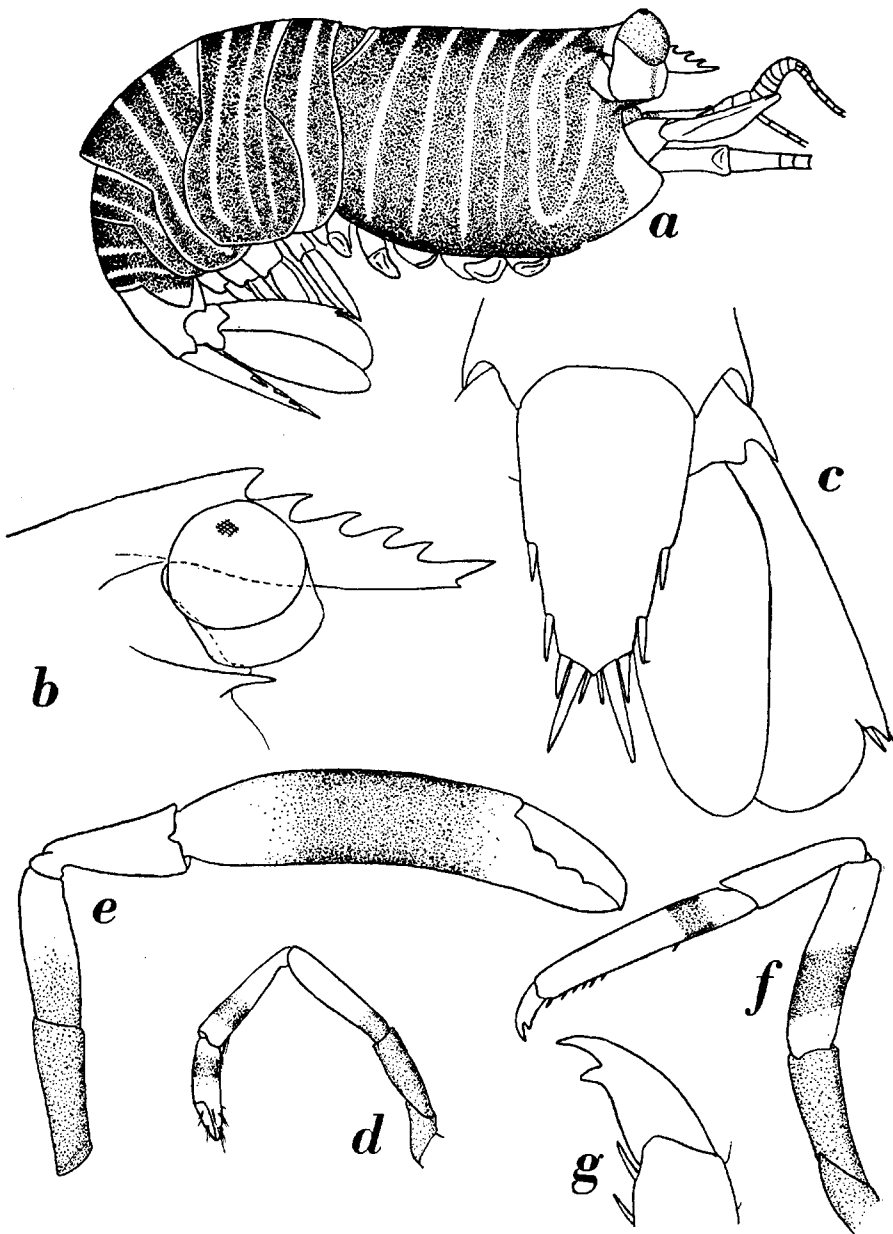


Fig. 5. *Gnathophyllum americanum* Guérin. a, animal in lateral view; b, rostrum in lateral view; c, telson and uropod in dorsal view; d, first pereopod; e, second pereopod; f, third pereopod; g, dactylus of third pereopod. a, d-f,  $\times 10$ ; b, c,  $\times 25$ ; g,  $\times 41$ .

posterior dorsal tooth. The carapace is smooth and bears antennal spines only. The lower orbital angle is broadly rounded. The antennal spine stands somewhat lateral of the lower orbital angle, slightly behind the anterior margin of the carapace. The anterolateral angle of the carapace is rounded and strongly anteriorly produced. An indistinct carina runs from the lateral margin of the rostrum somewhat downwards, while another carina runs obliquely upwards from the antennal spine.

The abdomen is smooth and has the pleurae of the first four segments broadly rounded. The pleurae of the fifth segment are somewhat triangular, and have the tip rounded. The sixth segment is somewhat longer than the fifth, the pleurae and the posterolateral angles are short and acute. The telson (fig. 5c) is 1.5 times as long as the sixth abdominal segment. There are two pairs of distinct spines placed on the lateral margins. The anterior of these two pairs is situated slightly behind the middle of the telson, the other pair lies about midway between the anterior pair and the tip of the telson. The posterior margin of the telson ends in a median point and bears three pairs of spines: the outer of these are short but robust, the intermediate are longest and very strong, being about  $\frac{1}{3}$  of the length of the telson.

The eyes have the cornea rounded, but at one point it bears an indistinct tubercular elevation. The stalk is about as long as the cornea.

The antennular peduncle (fig. 6a) has the first segment very broad. The stylocerite is large and reaches to the anterior margin of the segment. The anterolateral angle of the segment bears a slender spine, which reaches about to the middle of the third segment. A small spinule is present on the lower surface of the basal segment, in the middle of the inner margin. The second and third segments are very short. The upper antennular flagellum consists of two rami, which are fused for six to eight joints. The shorter ramus has the free part consisting of about two joints.

The scaphocerite (fig. 6b) reaches beyond the antennular peduncle. It is twice as long as broad. The outer margin is somewhat concave and ends in a slender final tooth, which fails to reach the end of the lamella. The lamella is broadest in the middle. No external spine is present at the base of the scaphocerite.

The mandible (fig. 6c) lacks the incisor process, only the molar process is present, it has the distal surface provided with spinules. No palp is present. The maxillula (fig. 6d) has the lower lacinia small and rather slender, the upper lacinia is very broad and has the distal margin provided with two rows of spines; a small single palp is present. The maxilla (fig. 6e) lacks the endites, a palp is present, the scaphognathite is rather slender.

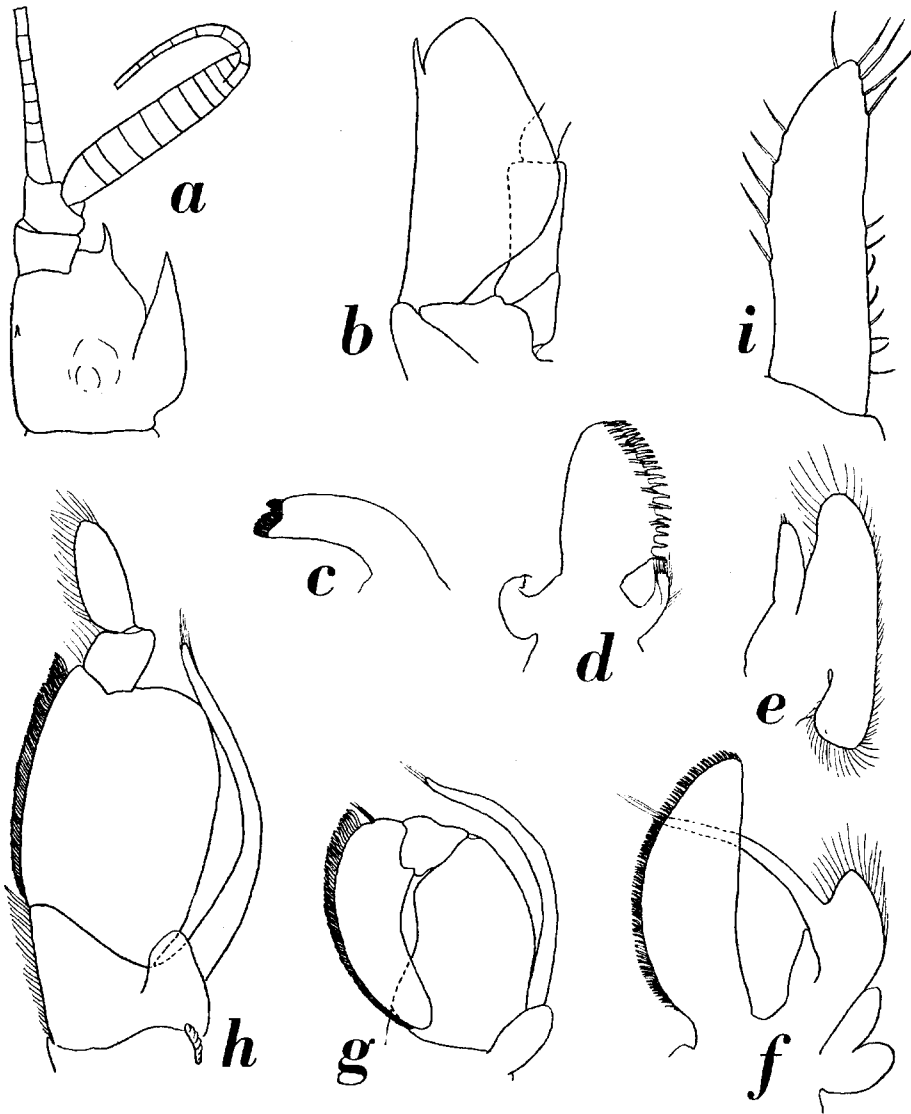


Fig. 6. *Gnathophyllum americanum* Guérin. a, antennula (in ventral view); b, antenna; c, mandible; d, maxillula; e, maxilla; f, first maxillipede; g, second maxillipede; h, third maxillipede; i, endopod of first pleopod of male. a, b, d-h,  $\times 22$ ; c,  $\times 37$ ; i,  $\times 55$ .

The maxillipedes all are provided with exopods. The first maxillipede (fig. 6f) has the endite of the coxa and basis large and strongly prolonged distally, there is a wide gap between this endite and the palp; the exopod is slender and bears a distinct caridean lobe; the epipod is deeply bilobed. The second maxillipede (fig. 6g) has the basal articles broad, the last segment is elongate and curved, it fits in a shallow excavation of the lower surface of the basal joints; an epipod is present. The third maxillipede (fig. 6h) reaches almost to the end of the scaphocerite. The last joint is longer than, but about as broad as the penultimate. The antepenultimate segment, however, is more than twice as broad as the ultimate joint. The exopod reaches beyond this antepenultimate segment. An epipod and a small arthrobranch are present.

The branchial formula runs as follows:

	maxillipedes			pereiopods				
	I	II	III	I	II	III	IV	V
pleurobranchs	—	—	—	I	I	I	I	I
arthrobranchs	—	—	I	—	—	—	—	—
podobranchs	—	—	—	—	—	—	—	—
epipods	I	I	I	—	—	—	—	—
exopods	I	I	I	—	—	—	—	—

The first leg (fig. 5d) is slender. The fingers are  $\frac{2}{3}$  of the length of the palm. The carpus is somewhat longer than the chela and almost as long as the merus. The second legs (fig. 5e) are strong and equal. They reach with part of the merus beyond the scaphocerite. The fingers are less than half as long as the palm, sometimes being only slightly more than  $\frac{1}{3}$  of the length of the palm. The cutting edges of both fingers are provided with 2 teeth. The teeth of the dactylus are placed somewhat before those of the fixed finger. The posterior tooth of the fixed finger is slightly serrate at the top. Both fingers are glabrous, having only a few inconspicuous hairs near the tips. The palm is smooth and slightly compressed. The carpus narrows posteriorly, it is about half as long as the palm. The carpus, merus and ischium are of about the same length. The last three legs are slender. The third pereiopod (fig. 5f) reaches with part of the propodus beyond the scaphocerite. The dactylus (fig. 5g) is distinctly bifid. The propodus is more than thrice as long as the dactylus, some spinules are present on its posterior margin. The carpus is about 0.6 times the length of the propodus. The merus is slightly shorter than the propodus. The fourth and fifth legs are similar to the third.

The endopod of the first pleopod of the male (fig. 6i) is short and ovate.

The second pleopod of the male has the appendix interna longer than the appendix masculina.

The uropods have the endo- and exopod oval in shape. The exopod is the broader of the two, it has the outer margin slightly convex, ending in an immovable tooth, which at its inner side bears a movable spine.

Colour. The body of my preserved specimens is of a dark reddish brown in which often darker specks are visible. Narrow transverse white bands are to be seen all over the carapace and the abdomen. From near the end of the lateral margin of the rostrum such a narrow white band crosses the carapace and ends somewhat beyond the middle of the lateral surface. Behind this band there are five similar white bands, which are divided regularly over the carapace. The posterior four of these bands reach almost to the lateral margin of the carapace, the anterior, however, is U-shaped, as it turns anteriorly and then upwards, before reaching the lateral margin of the carapace. It finally ends in a white spot visible in the orbit. The rostrum is entirely white, and a white band runs along the anterior margin of the carapace. This latter band broadens behind the eye to the already mentioned white spot in the orbit and it also broadens in the extreme lateral part, so that a large white spot is situated at the anterolateral angle of the carapace. The abdominal segments all have the margins bordered with a very narrow white band. The first segment has a narrow transverse white band over the middle, this band broadens more or less conspicuously on the pleurae. The second segment has three transverse bands running from the middorsal region almost to the top of the pleurae. The anterior of these bands is confluent with the white band along the anterior margin of the segment in the dorsal part, on the pleurae it is distinctly separated from that anterior band. The third, fourth and fifth abdominal segments each have two transverse bands, which run over a large part of the pleurae. The sixth segment has three transverse bands, but the last of these often is not very distinct because of the lighter colour of the posterior part of the segment, in some specimens (e.g., in the one figured) the sixth segment is entirely colourless. The caudal fan is white all over. The eyes have the stalk with three longitudinal brown lines, one over the lower surface, one on the inner side of the upper surface and one in between. Sometimes the latter line is somewhat shorter than the other two, which extend over the whole length of the peduncle. The cornea has the tubercular elevation coloured darker than the rest. The basal segment of the antennular peduncle has brown spots on the inner and outer side of the proximal half. The rest of the antennulae and antennae is white. The third maxillipede bears two rather broad brown bands over the larger part of the length of the

antepenultimate segment, the last two segments are white. The pereopods have the basis, ischium and lower part of the merus brown. The first leg bears a distinct band in the distal half of the carpus and one over the middle of the palm. The second legs have a broad, but not very dark band over the middle of the palm. The last three legs have a dark band in the proximal part of the merus and in the proximal part of the propodus. The pleopods of some specimens are coloured dark, in others they all are white.

Distribution. This litoral species now for the first time is recorded from the eastern Atlantic. It is known from Bermuda, the West Indies, and from the indo-westpacific region from the Red Sea to Japan, Australia and Oceania.

Remarks. The specimens from the Canary Islands seem in all respects to agree with those from E. America and the indo-westpacific region. They also have the same type of colour pattern, though the specimens from America and the indo-westpacific region seem to have the white bands broader.

### ***Gnathophyllum elegans* (Risso) (figs. 7, 8)**

*Gnathophyllum elegans* Brullé, 1839, Webb & Berthelot's Hist. nat. Iles Canaries, vol. 2 pt. 2 Entomologie, p. 18.

Tenerife, Los Cristianos. Tidal zone, March 13-25, 1947, G. Thorson leg. — 2 specimens 25 and 37 mm. Tidal zone, March 20-26, 1947, G. Thorson leg. — 1 specimen 28 mm. Tidal zone, April 15-30, 1947, G. Thorson leg. — 1 specimen 27 mm.

Description. The rostrum (fig. 7a) resembles that of *Gnathophyllum americanum* very much, but it is heavier. It is directed slightly downwards and reaches to the middle or to the end of the second segment of the antennular peduncle. The dorsal margin bears 4 or 5 teeth, the first of which is placed slightly behind the posterior limit of the orbit. The lower margin bears one tooth near the apex. The carapace and abdomen are similar to those of *Gnathophyllum americanum*. The telson (fig. 7b) has the two dorsal pairs of spines relatively shorter than in that species. The anterior pair is placed slightly behind the middle of the telson, the posterior pair lies closer to the posterior margin of the telson than to the anterior pair. Both pairs of spines lie on the lateral margin of the telson. The posterior margin of the telson and its spines closely resemble those of *G. americanum*.

The eyes and the antennular peduncle (fig. 8a) are as in *G. americanum*. Only the stylocerite is shorter and the anterolateral spine is less slender.



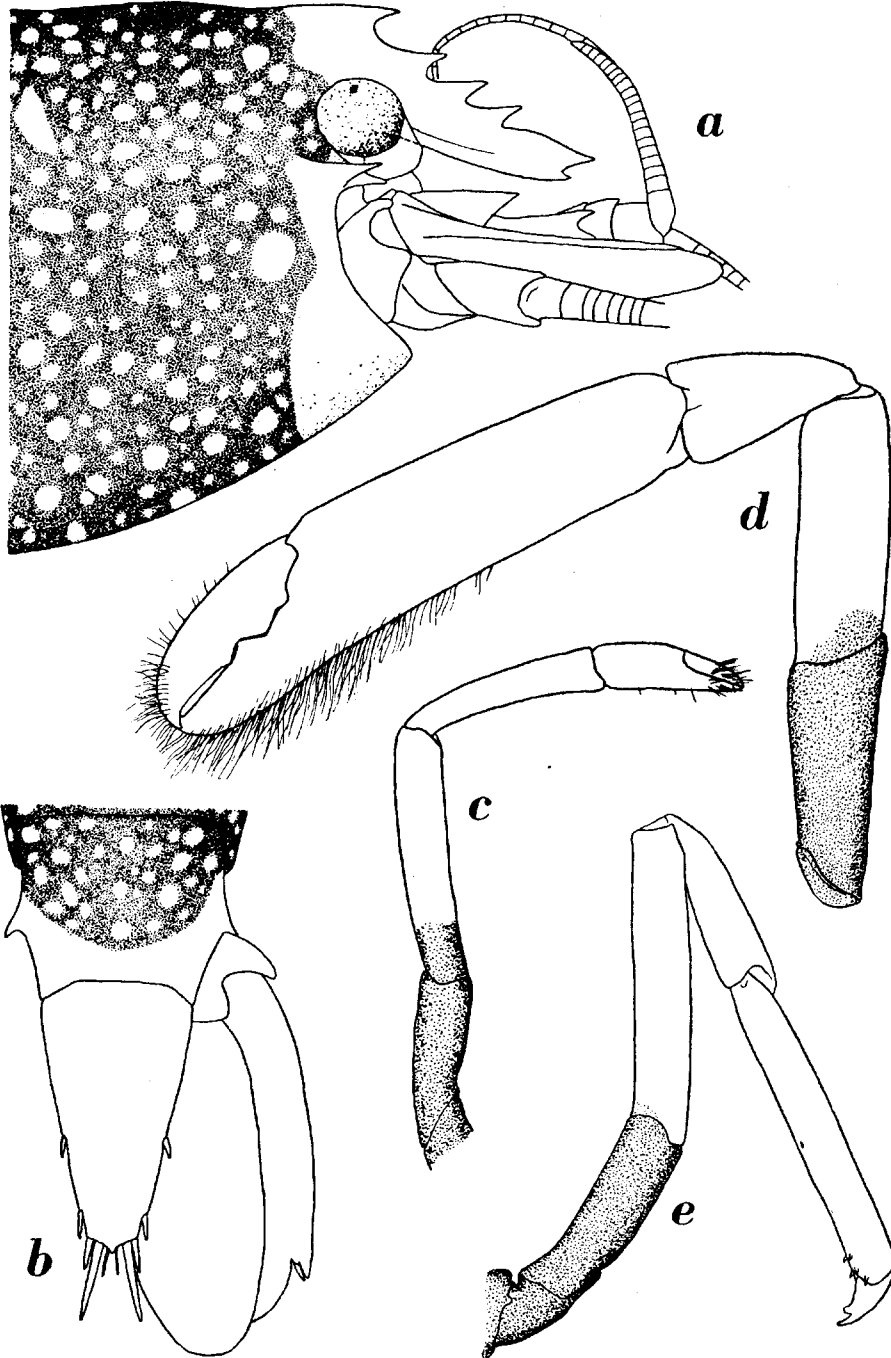


Fig. 7. *Gnathophyllum elegans* (Risso). a, anterior part of the body in lateral view; b, telson and uropod in dorsal view; c, first pereopod; d, second pereopod; e, third pereopod. a-e,  $\times 10$ .

The upper antennular flagellum has the two rami fused for 12 to 17 joints, the free part of the shorter ramus possesses 2 to 4 joints.

The scaphocerite (fig. 8b) is more oval and less triangular than in the previous species. It is twice as long as broad. The outer margin is convex. The final tooth is distinctly outreached by the lamella.

The oral parts are similar to those of *G. americanum*, only the mandible (fig. 8c) in my specimens of *G. elegans* show an indication of an incisor process, by having a small but distinct tooth at the place in which other species have this incisor process. Balss's (1914, p. 85, fig. 2) figure of the mandible of *Gnathophyllum elegans*, however, does not show this tooth at all.

The branchial formula is as in the previous species.

The first leg (fig. 7c) reaches with the chela beyond the scaphocerite. The

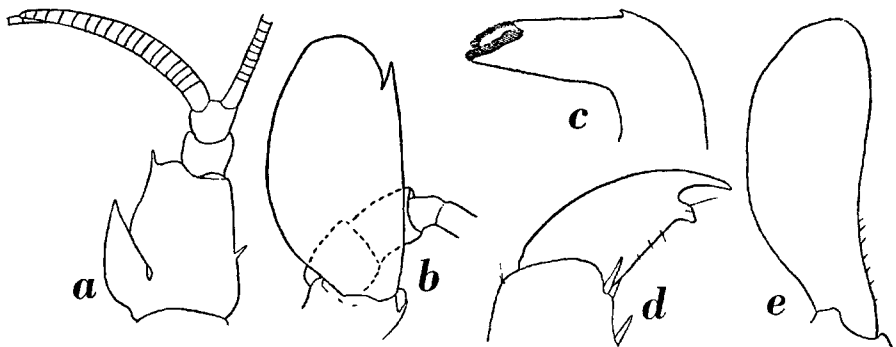


Fig. 8. *Gnathophyllum elegans* (Risso). a, antennula; b, antenna; c, mandible; d, dactylus of third pereopod; e, endopod of first pleopod of male. a, b,  $\times 8$ ; c, d,  $\times 33$ ; e,  $\times 20$ .

fingers are about  $\frac{2}{3}$  of the length of the palm. They have some tufts of hairs on the tips. The carpus is distinctly longer than the chela, but shorter than the merus. The second legs (fig. 7d) are heavy and equal. They reach with part of the palm beyond the scaphocerite. The fingers are slightly more than half as long as the palm. Both fingers have the cutting edge provided with two broad teeth, the teeth of the dactylus lie before those of the fixed finger. The palm is smooth and slightly compressed, it becomes somewhat higher anteriorly. The anterior part of the lower margin of the propodus bears many closely placed long hairs, similar hairs are present in the distal part of the upper margin of the dactylus. The carpus is somewhat less than half as long as the palm. The merus is  $\frac{2}{3}$  as long as the palm and slightly longer than the ischium. The last three legs are slender. The third (fig. 7e) reaches with part of the propodus

beyond the scaphocerite. The dactylus (fig. 8d) is distinctly bifid. The accessory tooth is rather broad. The propodus is almost four times as long as the dactylus, it bears some spinules in the distal part of the posterior margin. The carpus is somewhat more than half as long as the propodus. The merus is shorter than the propodus. The fourth and fifth legs are similar in shape to the third.

The endopod of the first pleopod of the male (fig. 8e) differs from that of the previous species by having the inner margin sinuous, the top broadly rounded and the inner margin strongly convex in the distal half; moreover no hairs, except some small spine-like hairs in the proximal part of the outer margin, are present. The second pleopod of the male has the appendix masculina slightly shorter than the appendix interna.

The uropods are as in *G. americanum*.

Colour. The body of the specimens seen by me (all of which are preserved in spirit) is reddish brown and covered with numerous yellowish spots of different size. The entire rostrum is white, while also a white band extends along the anterior margin of the carapace, broadening near the anterolateral angle. The entire caudal fan, the posterior third of the sixth segment and the posterolateral angles of the fifth (and sometimes also of the fourth) abdominal segment are white too. The eyepeduncles are white, the cornea is grey, with a dark ocellus and a dark spot at the place where it is produced into a point. The antennulae and antennae are white, but the flagella are covered with a violet hue. The lower part of the third maxilliped is brown and spotted, the ultimate half is white. All the pereiopods have the merus, carpus, propodus and dactylus white, the lower joints, up to the ischium (sometimes also the lower part of the merus) have the same brown colour as the body, though no spots are visible. There is a little variation in the extension of the brown colour. In some specimens the meri of the pereiopods are entirely white, in other the lower part of that joint is of a brown colour, while seldom the distal part of the ischium may become white. Also the white band along the anterior margin of the carapace is variable in width, sometimes it is distinct throughout its length, sometimes it is hardly distinguishable in the dorsal part, and even the basal part of the rostrum may be tinged brown in some cases. The pleopods have the exo- and endopods white, the stem generally is darker.

My specimens from the Canary Islands entirely agree with specimens from the Mediterranean, even in the shape of the mandible.

Distribution. Since Brullé's (1839) record the species has not been reported from the Canary Islands. It is a form of shallow water and seems to prefer a rocky bottom. It is known from the Adriatic, from the Western Mediterranean, from the Azores and from the Canary Islands.

**Pontophilus trispinosus** Hailstone

Tenerife, Los Cristianos. Tidal zone, April 15-30, 1947, G. Thorson leg. — 1 ovigerous female 25 mm.

The specimen is a typical representative of this species.

Distribution. The species now for the first time is recorded from the Canary Islands. It is known from the North Sea and the Shetland Islands to the Western Mediterranean, the Adriatic and the Azores.

**Pontocaris cataphracta** (Olivi)

Tenerife, Los Cristianos. 20-35 m depth, sand with red algae, March 14, 1947, G. Thorson leg. — 1 specimen 23 mm. 20 m depth, algae and corals, March 16, 1947, G. Thorson leg. — 1 ovigerous female 28 mm.

The species is best known under the name *Aegeon cataphractus* (Olivi), but, as pointed out by Holthuis (1947a, p. 320) the name *Aegeon* for this genus is preoccupied and has to be substituted by the name *Pontocaris* Bate.

Distribution. The species has not been recorded before from the Canary Islands. It is known from the entire Mediterranean, from Senegambia, from the Cape of Good Hope, from the southcoast of Arabia and from several localities in India.

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