STUDIES ON THE FAUNA OF CURAÇAO AND OTHER CARIBBEAN ISLANDS: No. 140.

COPEPODA OF THE FAMILY LAMIPPIDAE FROM THE WESTERN ATLANTIC AND THE CARIBBEAN

by

JAN H. STOCK
(Institute of Taxonomic Zoology, University of Amsterdam)

The Lamippidae form a rather homogeneous family of copepods endoparasitic on octocorals. The great majority of the species (17 out of 24) is described from the Mediterranean Sea. These species are relatively well-known, thanks to the efforts of DE ZULUETA (1908, 1910, 1911) and BOULIGAND (various papers, summarized in BOULIGAND, 1966). Outside the Mediterranean, Lamippidae have only incidentally been recorded, from the eastern Atlantic (European coasts, Sierre Leone), Indonesia, the Red Sea, and the Antarctic (references in HUMES, 1957, BOULIGAND, 1960, and STOCK, 1972). Not a single species was recorded hitherto from the western Atlantic or Caribbean region.

Entire specimens were studied and measured in lactophenol; the appendages were dissected and mounted in Reyne's modification of Faure's medium. These slides were studied under oil immersion magnification, with a Reichert interference microscope. Like LAUBIER (1972), I was unable to distinguish with certainty in my preserved material the various sclerites described by BOULIGAND (1960); so, for the purpose of this study, I had to rely entirely on classical alpha-taxonomy.

The material covered in this paper comprises:
Lamippina aequalis n. sp., from Curaçao (Figs. 38–39),
Enalcyonium scorpio n. sp., from North Carolina (Fig. 40),
Enalcyonium ramosum n. sp., from Puerto Rico (Fig. 41),
Enalcyonium nudum n. sp., from Puerto Rico (Fig. 42),
Enalcyonium euniceae n. sp., from Puerto Rico (Fig. 43),
Enalcyonium variicauda n. sp., from Puerto Rico (Fig. 44).

The material used for this study has been collected during stays at the Caribbean Marine Biological Institute, Curaçao, in 1957–'58 (director at that time Dr. J. S.

ZANEVELD), and the Marine Field Station at La Parguera of the University of Puerto Rico in 1963 (director at that time Dr. JOHN E. RANDALL).

The octocoral hosts from Curaçao have been identified by Dr. F. M. BAYER (at that time at the U.S. National Museum, Washington); those from Puerto Rico by Dr. J. VERSEVELDT (Zwolle, The Netherlands).

I wish to thank the authorities of the abovementioned institutions, as well as Drs. BAYER and VERSEVELDT, for their kind cooperation.

A grant of the WOSUNA-foundation (Amsterdam) made my stay in Curaçao possible.

DE ZULUETA recognized only two genera within the Lamippidae: *Lamippe* and *Linaresia*. BOULIGAND lists 5 genera (1960: 263) and mentions a sixth (1960: 260). In 1966, BOULIGAND divides the Lamippidae into two genera again, *Lamippe* and *Linaresia*; the former with 6 subgenera.

Although I share BOULIGAND's opinion, that the 6 subgenera of *Lamippe* are more closely related mutually than to *Linaresia*, I can hardly follow him in lumping species with and without maxillipeds into one genus. Moreover, I have evaluated the salient features of the various units in a way slightly different from BOULIGAND's, involving structural details of the appendages in the diagnosis.

Taken all together, I prefer to consider all groups recognized so far within the Lamippidae as full genera, distinguished as follows:

I. Body (♀) with star-like expansions. Mouth (♀, ♂) reduced to a simple opening. Cephalosome (♀, ♂) with lateral papilliferous humps.

Linaresia De Zulueta, 1908
(type-species, by original monotypy, *L. mamillifera* De Zulueta, 1908).

II. Body (♀) fusiform. Mouth (♀, ♂) located on a prominent, complex buccal cone. Cephalosome (♀, ♂) without lateral humps.

1. Maxillipeds (♀, ♂) well-developed. A1 (♀, ♂) short and hardly or not at all segmented. Segment 2 of A2 (♀, ♂) short, or A2 seemingly unsegmented. Endopods of P1

and P2 (♀, ♂) reduced (absent or knob-like and unarmed).

a. Furcal acicules (♀, ♂) present. A2 (♀, ♂) with traces of segmentation

Lamippe Bruzelius, 1858
(type-species, by original monotypy, *L. rubra* Bruzelius, 1858).

b. Furcal acicules absent (♀, ♂). A2 (♀, ♂) seemingly unsegmented

Isidicola Gravier, 1914
(type-species, by monotypy, *I. antarctica* Gravier, 1914).

2. Maxillipeds (♀, ♂) vestigial, but present. A1 (♀, ♂) long and clearly segmented. Segment 2 of A2 (♀, ♂) elongated, longer than segment 3, well-articulated. Endopods of P1 and P2 (♀, ♂) present and armed with several elements. Furcal acicules (♀, ♂) present.

Lamippina Bouligand, 1960
(type-species, by original designation, *Lamippe aciculifera* De Zulueta, 1908).

3. Maxillipeds absent (♀, ♂).

a. Furcal acicules present (♀, ♂). A1 (♀, ♂) usually long and clearly segmented. Segment 2 of A2 (♀, ♂) elongated, about as long as segment 3, and clearly articulated with segment 1. Endopods in P1 and P2 usually present, often setiferous. Body (♀, ♂) smooth.

Lamippula Bouligand, 1966
(no type-species indicated; by present designation *Lamippe chattoni* De Zulueta, 1908).

b. Furcal acicules absent (♀, ♂). A1, A2 and legs as in *Lamippula*. Body (♀, ♂) smooth.

Enalcyonium Olsson, 1869
(type-species, by original monotypy, *E. rubicundum* Olsson, 1869).

c. Furcal acicules absent (♀, ♂). A1 (♀, ♂) poorly segmented. Segment 2 of A2 (♀, ♂) more or less fused with segment 1, short. Endopods of P1 and P2 (♀, ♂) reduced, unarmed. Body bearing rows of minute papillae in segmental arrangement.

Lamippella Bouligand & Delamare Deboutteville, 1959
(type-species, by subsequent designation – BOULIGAND, 1960 – *L. faurei* Bouligand & Delamare Deboutteville, 1959).

The structure of the caudal rami is the most valuable character in the Lamippidae for the recognition of the various species, as was already stressed by DE ZULUETA (1908, 1910). The number of elements on the exopod, and to a lesser degree those on the endopod (if present), are a useful secondary tool.

Much less used, but in my opinion likewise important, is the structure of the anterior antennae. Within one genus, *Enalcyonium*, this appendage usually assumes its characteristic 5-segmented shape (see e.g. Figs 40c or 41c). There is a distinct trend, however, in the genus towards loss of segments and/or loss of armature in the antennules. In *E. euniceae*, the A1 is still elongated, but became 4-segmented (Fig. 43c), while in other species it becomes shorter, 3-segmented (e.g. Fig. 44d) or even 2-segmented (Fig. 42c).

Not correlated with this trend, is the tendency towards shortening of the second antennae, well expressed in the series *E. nudum* (Fig. 42d), *E. eunicea* (Fig. 43d), *E. variicauda* (Fig. 44e). The antennae

of these three species have been drawn to the same scale; that of *E. variicauda* is 2½ times shorter than that of *E. nudum*!

No use at all has been made of these characters, but they may prove to be useful to distinguish evolutionary tendencies in the genus.

Lamippina aequalis n. sp.

(Figs. 38–39)

Material. – CURAÇAO: 1 ♀ (holotype) from *Pseudopterogorgia* sp., probably *americana* (Gm.). Santa Martha Bay, on the outer reef; depth about 3 m; 25 Jan. 1959. ZMA Co. 102350. – 1 ♂ (allotype) from *Pseudopterogorgia acerosa* (Pall.). Santa Martha Bay, outer reef; depth 3 to 4 m; 12 Dec. 1958. ZMA Co. 102351.

Female. – The body (Figs. 38a and 38c) is rather swollen, 551 μ in length; greatest diameter 204 μ; greatest height (in lateral view) 272 μ. The rostrum (Fig. 39b) is large, shaped like a human tongue. The anterior antenna (Fig. 39b) is composed of 5, rather imperfectly articulated, segments; segments I and II are unarmed, segment III has 3 spines; segment IV bears 2 spines, and segment V bears 2 smaller and 2 larger spines directed forward and 2 seta-like spines directed backward.

The posterior antenna (Fig. 39c) has an angular basal segment, an elongated 2nd segment (which somehow gives the impression of being composed of 2 fused segments), a short, rectangular 3rd segment, and a long, curved claw, which has a seta implanted near its base.

Oral cone prominent. Just behind the oral cone, the vestigial maxillipeds arise (Fig. 39d); they consist of a small basal segment (13 μ long) and a distal spine or claw (7 μ long).

The first leg (Fig. 39e) consists of a unimerous exopod and a unimerous endopod. The exopod bears 5 pairs of lateral spines, one spine of each pair being larger than the other. Of the distal two pairs, one spine is very much larger; the proximalmost of these two spines is moreover bifid. The endopod bears two terminal setalike elements.

The second leg (Fig. 39f) resembles the first leg, but has only 4 pairs of exopodal spines; the largest distal spine is bifid.

The vulvae are well-sclerotized (Fig. 39g).

The caudal rami (Fig. 39h) are slightly longer than wide, more or less squarish; they bear 2 ventral and 3 distal finger-shaped, obtuse projections, which no doubt form the base for the acicules, which were not observed (retracted) in the present material.

Male. – The body (Figs. 38b, 38d) is fusiform, 694 μ long and 143 μ wide. The two large spermathecae (208 × 70 μ) are very clearly visible. No sexual differences observed in the A2, mxp., P1, P2 and furca. The anterior antenna, however, bears the same number of elements as in female, but one spine on segment 4 and one on segment 5 have been transformed into a short, broad, aesthete-like structure (Fig. 39a).

Colour. – Live specimens are opaque, white, with a slightly reddish intestine.

Remarks. – The type and only other species in the genus *Lamippina* is *L. aciculifera* De Zulueta, 1908, a species in which the caudal rami are rather similar to those of the present form. Although no acicules were observed in the material from Curaçao, the obtuse, fingerlike projections on the caudal rami leave little or no doubt as to their presence in non-retracted state. Like *L. aciculifera* (syn.: *L. brementi*, *L. papillifera*, see BOULIGAND, 1961: 45), the present species is sexually dimorph, but unlike *L. aciculifera*, the sexual dimorphism is not expressed in body size and armature of P2, but in body shape and transformation of 2 spines into aesthetes on the A1 in the male.

The specific name proposed, *aequalis* (Latin, meaning of equal size), refers to the similar body lengths of male and female (694 and 551 μ, respectively, against very unequal sizes, viz. 400–500 μ for the male and 1100 μ for the female of *L. aciculifera*).

Since the West Indian species shares with *aciculifera* the great elongation of the second segment of A2, I have included this feature into the generic asset of characters.

Enalcyonium scorpio n. sp.

(Fig. 40)

Material. – NORTH CAROLINA: 3 ♀, 1 ♂ (1♀ is made the holotype, 1 ♂ allotype, the remaining 2 ♀ paratypes) from *Leptogorgia virgulata* (Lam.). Newport River, near Beaufort; dredged in about 5 m; 1 Sep. 1963. ZMA Co. 102352a–b.

Length of two females (Fig. 40b) 676 and 821 μ; greatest diameter of the body 172 and 193 μ, respectively; the third female was damaged, not allowing exact measurements. Length of the male 676 μ.

The male (Fig. 40a) and the damaged female show traces of segmentation; such traces are, according to BOULIGAND, 1960: 261, an artefact due to fixation in formalin. On the other hand, the number of "segments" appearing after the use of formalin, is constant, indicating that the body constrictions alluding to segmentation appear at fixed places in the musculature. Usually, a cephalic segment, four metasome segments (the anterior two of which with legs), a genital segment, and 4 (♂) or 3 (♀) postgenital segments are vaguely indicated.

The male is chiefly distinguished from the female by the presence of 2 oval spermathecae (82 × 34 μ), whereas the female genital segment ventrally bears chitinous thickenings forming the vulvae (Figs. 40b and 40g).

The cephalic segment bears only two appendages, the anterior and posterior antennae.

A small semi-circular rostrum (Fig. 40a) is present between the insertions of the anterior antennae. The anterior antenna (Fig. 40c) consists of 4 segments, although it is possible that the strong basal segment is composed of several, partially fused, segments. Segment I bears 3 strong setae, segment II has 4, segment III has 3 finer setae, and segment IV has 1 stronger and 2 finer setae.

The posterior antenna (Fig. 40d) is slender; it has unarmed first and second segments; the slightly curved third segment bears a subbasal spinule; the terminal claw is curved and bears a seta in its proximal third.

The oral cone is of the "r" type of BOULIGAND, 1966: 286. Legs 1

and 2 (Figs. 40e and 40f) are basically similar, having an unarmed, lobe-like endopod (bearing a minute spinule in P2) and a prehensile exopod, armed with 2 terminal claws and a more proximal, lateral seta.

The caudal rami are tapering, flabby processes (Fig. 40h), armed with a proximo-dorsal and a proximo-lateral seta, and with 2 long distal setae. A very strong, medio-ventral blade arising from the anal segment has one smaller ventral and one larger distal point (Fig. 40h).

Remarks. – The proposed specific name, *scorpio*, alludes to the ventral process on the anal segment. The presence of such a process is not unique in the family, and has been reported also from *E. setigerum* (De Zulueta, 1908), *Lamippula chattoni* (De Zulueta, 1908), and *Lamippe rubra* Bruzelius, 1858. The new species is distinguished from *setigerum* in the greater length of the caudal rami, and in the presence of an internal seta on the claw of A2. From *chattoni*, it is distinguished by the absence of acicules on the caudal rami and in a different number of claws on the exopods of legs 1 and 2. From *rubra* it differs in the absence of maxillipeds and acicules, as well as in the lower number of exopod claws on the legs.

Enalcyonium ramosum n. sp.

(Fig. 41)

Material. – PUERTO RICO: 2 ♀ (one of which is the holotype) and 2 ♂ from *Plexaura homomalla* (Esper) forma *homomalla*. Punta Guaniquilla (Cabo Rojo); depth about 3 m; 16 Feb. 1963. ZMA Co. 102358 a–c.

The length of the two females is 869 and 950 μ, of the two males 869 and 966 μ. The body (Fig. 41a) is slender, almost worm-like, with distinct contractions, which assume especially in the posterior part of the body, the form of segmentation.

A tripartite rostrum (Fig. 41a) separates the bases of the anterior antennae. The latter are slender, composed of 5 segments, bearing 0, 4, 5, 3 and 3 setae, respectively. Several of these setae have a

swelling near the tip, on which a thin terminal flagellum inserts (Fig. 41c).

The posterior antenna is likewise very slender (fig. 41d).

The oral area is a swollen mass of the *rubicunda*-type (Fig. 41b).

The first and second legs (Figs. 41e, 41f) have an exopod armed with 1 seta and 2 claws, and an elongated, unarmed endopod.

The genital area of the female is bell-shaped (Fig. 41g). The male spermatophores are oval, 129 × 41 μ.

The caudal ramus (Fig. 41h) is elongated, the proximal part being wider than the distal part. This proximal part bears 1 ventro-lateral and 1 dorsal seta; the distal part bears 2 heavy setae. In all specimens, the tips of the dorsal seta and of one of the terminal setae seem to be broken off. Near the tip of the two remaining setae, a droplet-like swelling is visible, from where the seta bifurcates into two branches. Between the two caudal rami, a medio-ventral organ is found; it has the usual bicuspidate shape.

Colour. – In life, the animals were opaque yellowish-white.

Remarks. – In the presence of a medio-ventral furcal organ, the present species of *Enalcyonium* can be compared only with *E. scorpio* n. sp. and *E. setigerum* (De Zulueta). From these two species, *E. ramosum* differs at the first glance by the ramified nature of the furcal setae.

Enalcyonium nudum n. sp.

(Fig. 42)

Material. – Puerto Rico: 2 ♀, 2 ♂, from *Plexaura homomalla* (Esper) forma *homomalla*. Punta Guaniquilla (Cabo Rojo); depth about 3 m; 16 Feb. 1963. ZMA Co. 102356 a–b.

Female. – Sausage-shaped (Fig. 42a); length of the two available females 1079 and 1208 μ; width (of course, dependent on the degree of contraction) 400 and 314 μ, respectively.

The anterior antenna (Fig. 42c) is 2-segmented. The very large and wide first segment is armed with a basal group of 3 spines and

a distal group of 1 + 4 + 1 spines. The anterior margin of the first segment is distally produced into a rounded, unarmed lobe. The second segment is more or less rectangular; it bears a subterminal, posterior group of 3 spine-like setae, and a distal group of 2 longer and 1 smaller spines.

The posterior antenna is very long and powerful (Fig. 42d). The large basal segment is unarmed; the second segment is less wide than the first, also much shorter, and likewise unarmed; the third segment is much less wide again, slender, slightly curved, and armed with a subbasal spinule. The terminal claw is slender, curved; it bears an internal, subbasal element.

Legs 1 and 2 (Figs. 42e and 42f) have 2-segmented exopods and rounded, unarmed, endopods. The basal exopod segment bears a short claw, the latter with auxiliary seta. The distal exopod segment bears 2 long, curved claws, the proximal one of which is provided with an auxiliary seta.

The furcal rami (Fig. 42h) are divergent; each ramus consists of a rounded lobe bearing a ventro-distal, internal projection; the lobe bears two spines (1 distal, 1 ventrobasal): the projection bears likewise 2 spines, both distal.

Male. – Shaped like the female (Fig. 42b). Length of the two available specimens: 821 and 902 μ. Spermatophores 129 × 54 μ. Appendages similar to those of the female.

Colour. – Live specimens are pale yellowish, opaque.

Remarks. – The only *Enalcyonium* that combines a simple (= non-ramified) caudal ramus with the presence of 3 claws on the exopodal segments, is *E. heegaardi* BOULIGAND, 1960: 260. This is an imperfectly known species, based on HEEGAARD's figures (1949) of what was considered *Lamippe rubra*.

The caudal rami of *E. heegaardi* are more slender and have a reduced armature (0–2 setae) only.

The absence of armature on the endopods of legs 1 and 2 gives the present species a rather isolated position in the genus *Enalcy-*

onium. The proposed specific name, *nudum* = bald, refers to this character.

The wide basal segment of the 2-segmented A1 is another peculiar feature of the present species.

Enalcyonium euniceae n. sp.

(Fig. 43)

Material. – PUERTO RICO: 1 ♂ (holotype), from *Eunicea* (*Eunicea*) *mammosa* Lamouroux. Punta Guaniquilla (Cabo Rojo); depth about 3 m; 16 Feb. 1963. ZMA Co. 102357.

Male. – Body rather heavy (Fig. 43a), greatest length 853 μ, greatest width 258 μ. The cephalosome is rather clearly demarcated, somewhat angular. The truncately rounded posterior end of the body is produced into the two caudal rami, which are rather flabby, tapering lobes, curving inwards, and armed with 1 dorsal and 3 terminal setae (Fig. 43g).

The anterior antenna (Fig. 43c) is probably 4-segmented, but the segmentation lines are rather vague. The four segments bear 0, 3, 3, and 9 setae, the terminalmost of which is the longest.

The posterior antenna (Fig. 43d) has a relatively short second segment and a very long terminal claw.

Oral area not very produced, but presumably of the *rubicunda*-type (Fig. 43b).

Leg 1 (Fig. 43e) has a tapering, finger-shaped, unarmed endopod and a 2-segmented exopod. The first exopod segment is unarmed, the second bears a setule, a claw and a seta-like claw.

Leg 2 (Fig. 43f) differs from leg 1 in having 2 clearly caw-like elements on the second exopod segment.

The spermatophores are oval, 150 × 61 μ.

Remarks. – None of the species within *Enalcyonium* combines a "simple" (= non-ramified) caudal ramus with the occurrence of only 2 elements on the exopod of legs 1 and 2.

Enalcyonium variicauda n. sp.

(Fig. 44)

Material. – PUERTO RICO, in *Briareum asbestinum* (Pall.), near La Parguera (in the south-west of the island). – 1 ♀ (holotype), 1 ♂ (allotype). Margarita Reef; depth 6–8 m; 2 Feb. 1963. ZMA Co. 102353. – 6 ♀, 2 ♂ (paratypes), Cayo Enrique; on reef, about 1 m deep; 29 Jan. 1963. ZMA Co. 102354 a–b. – 5 ♂ (paratypes), San Christobal Reef; depth about 4 m; 15 Feb. 1963. ZMA Co. 102355 a–b.

Female. – Length of 3 specimens 998, 1143 and 1175 μ. The body very elongated, nearly wormlike (Fig. 44a); in lateral view, it is slightly curved (Fig. 44b).

The anterior antenna (Fig. 44d) is short, and the segmentation is obscure; it is armed with 7 very long setae.

The posterior antenna (Fig. 44e) is as typical for the genus; the terminal claw is provided with an inner seta near its base.

The oral cone is very prominent (Fig. 44b).

The first leg (Fig. 44f) has a well-developed endopod, armed with 1 to 3 setules (the number of setules varies, even on the contralateral sides of one individual). The exopod bears 1 long seta and 2 claws; a vestigial second seta is implanted near the most proximal claw.

The second leg (Fig. 44g) has an unarmed, but large, endopod. The exopodal armature consists of 1 seta and 2 claws.

The vulvae are weakly sclerotized (Fig. 44h).

The furcal rami are tapering with a rounded tip. The number of setae on each ramus varies from 5 to 0. Some specimens (like the one illustrated in Fig. 44i) have different numbers of setae on the left and right ramus. In specimens having the maximum number of 5 setae, there are two long proximoventral ones, and 2 longer and 1 shorter terminal ones (Fig. 44j).

Male (Fig. 44c). – Length of 3 males 886, 934 and 966 μ. Spermatophores rather small (41 × 82 μ). Appendages as in female.

Colour. – Live specimens are yellowish to almost white.

Remarks. – Twelve species have been attributed to *Enalcyonium*, not counting those described in the present paper. Of these, six do not resemble the present species, since they have digatations on the caudal rami (*rubicundum, affine, pusillum, proteus, alcyonii, concinnum* Of the remaining six (*albidum, setigerum, sympodii, olssoni, forbesi, heegaardi*), only one has the same exopodal armature (2 claws + 1 seta) of P1 and P2, viz., *E. setigerum* De Zulueta, 1908. The present West Indian material differs very clearly from the Mediterranean *setigerum* in the presence of a furcal ventral organ in the latter.

The variation in the number of furcal setae is most peculiar and is not explicitly reported from any other lamippid, although HEEGAARD (1949, figs. 3, 4) may have observed and illustrated such variations.

REFERENCES

BOULIGAND, Y., 1960. Notes sur la famille des Lamippidae, 1. *Crustaceana 1* (3): 258–278.

BOULIGAND, Y., 1961. Notes sur la famille des Lamippidae, 2. *Crustaceana* 2 (1): 40–52.

BOULIGAND, Y., 1966. Recherches récentes sur les Copépodes associés aux Anthozoaires. In: *The Cnidaria and their evolution.* Symp. Zool. Soc. London *16*: 267–306.

HEEGAARD, P., 1949. Notes on parasitic copepods. *Vidensk. Medd. Dansk Naturh. Foren. 111*: 235–245.

HUMES, A. G., 1957. Lamippe concinna sp. n., a copepod parasitic in a West African pennatulid coelenterate. *Parasitology 47* (3–4): 447–451.

LAUBIER, L., 1972. Lamippe (Lamippe) bouligandi sp. nov., Copépode parasite d'Octocoralliaire de la Mer du Labrador. *Crustaceana 22* (3): 285–293.

STOCK, J. H., 1972. A new species of Lamippidae (Crustacea, Copepoda) from the Red Sea. *Beaufortia 19* (256): 193–196.

ZULUETA, A. DE, 1908. Note préliminaire sur la famille des Lamippidae, Copépodes parasites des Alcyonaires. *Arch. Zool. exp. gén (4) 9* (1): 1–30.

ZULUETA, A. DE, 1910. Deuxième note sur la famille des Lamippidae, Copépodes parasites des Alcyonaires. *Arch. Zool. exp. gén. (5) 6* (3): 137–148.

ZULUETA, A. DE, 1911. Los copépodos parásitos de los celentéreos. *Mem. Soc. esp. Hist. nat. 7*: 5–58.

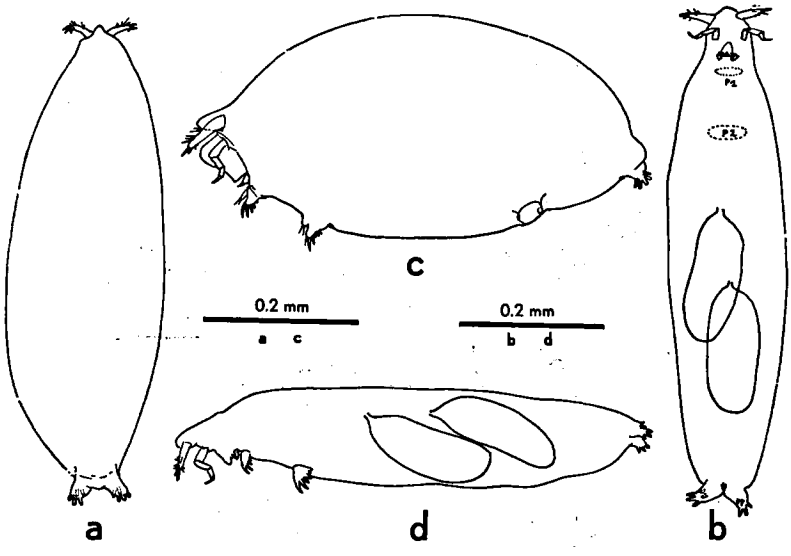

Fig. 38. *Lamippina aequalis* n. sp. — a, female in dorsal view; b, male in dorsal view; c, female from the left; d, male from the left.

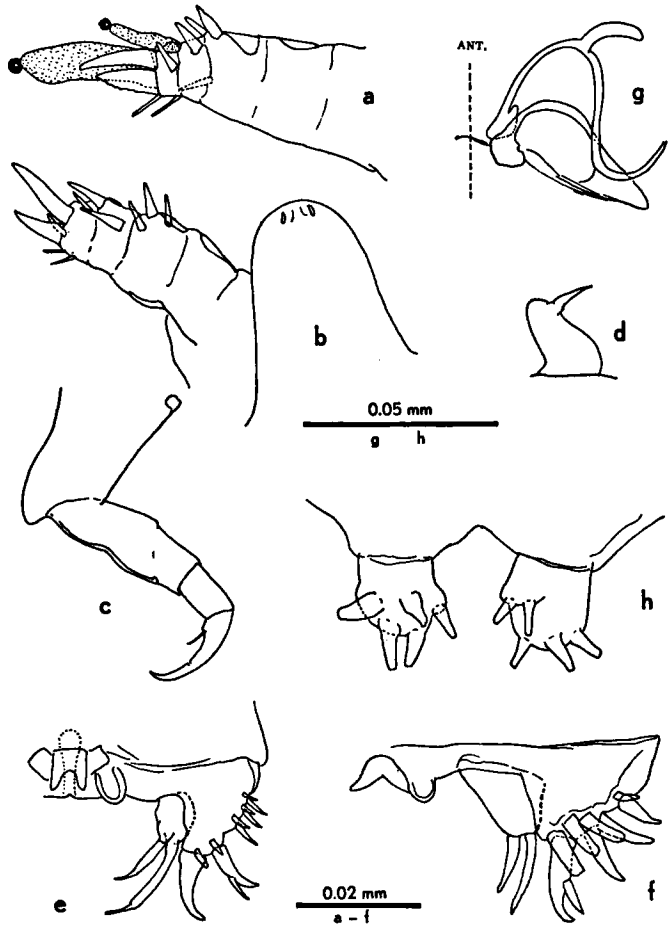

Fig. 39. *Lamippina aequalis* n. sp. — a, anterior antenna, ♂; b, anterior antenna and rostrum, ♀; c, posterior antenna, ♀; d, maxilliped, ♀; e, first leg, ♀; f, second leg, ♀; g, left half of vulval area, ♀, in ventral view (ANT. = anterior side; medio-ventral line dashed); h, caudal rami in dorsal view, ♀.

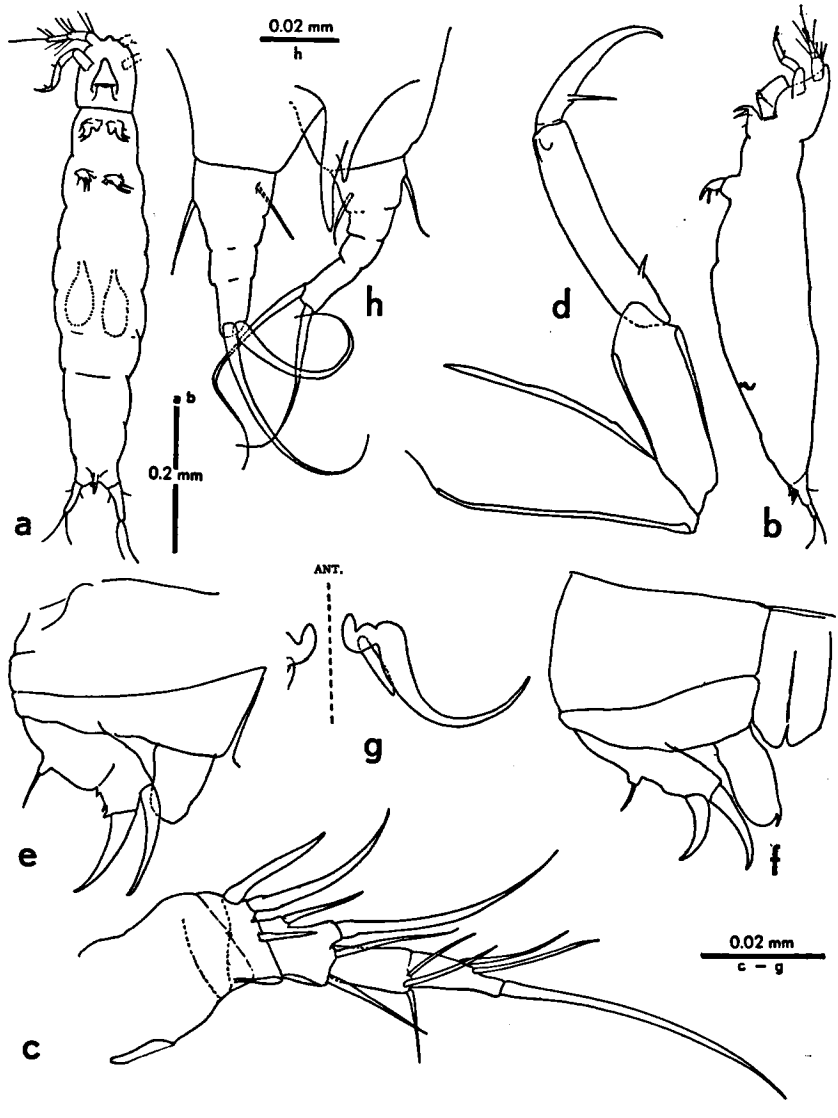

Fig. 40. *Enalcyonium scorpio* n. sp. — a, male in ventral view; b, female from the left; c, anterior antenna, ♀; d, posterior antenna, ♀; e, first leg, ♀; f, second leg, ♀; g, left half of vulval area, ♀, in ventral view (ANT. = anterior side; medio-ventral line dashed); h, posterior end of body, ♀, in ventral view.

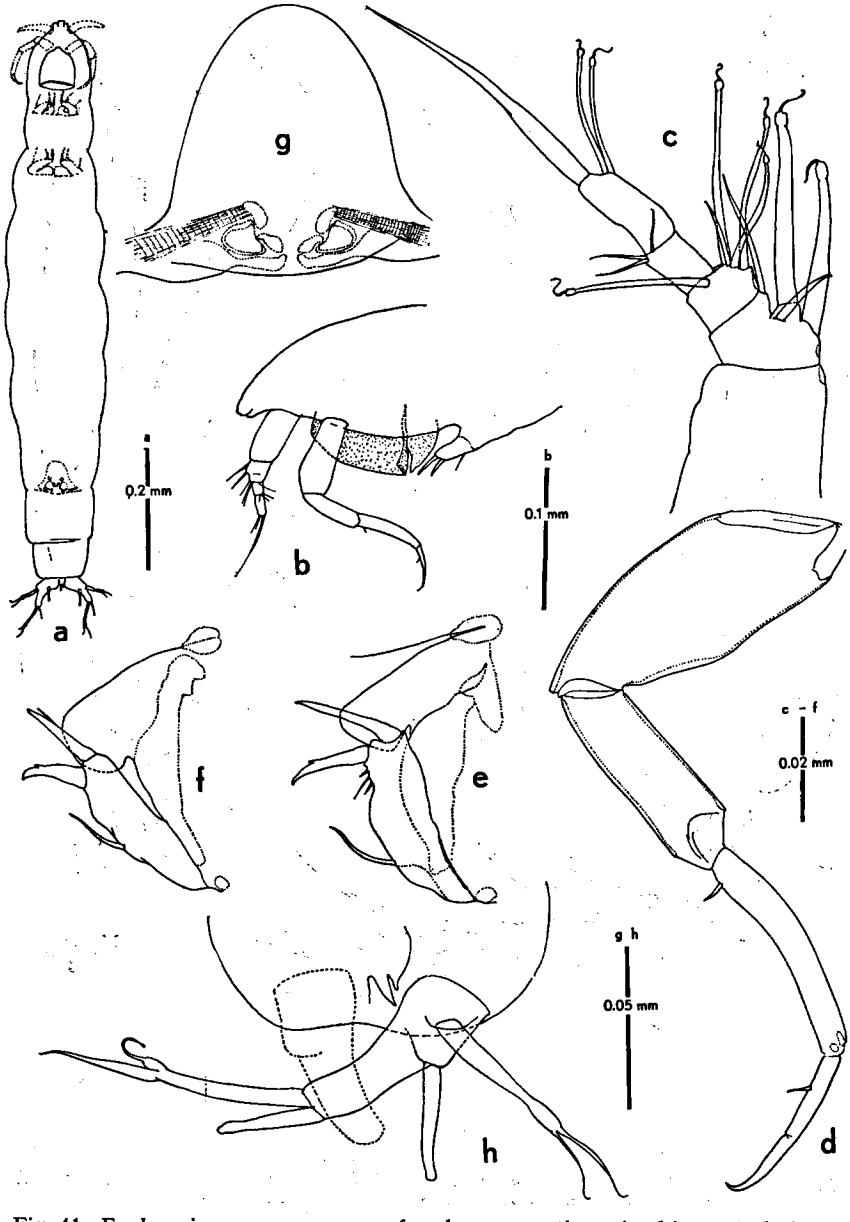

Fig. 41. *Enalcyonium ramosum* n. sp., female. — a, entire animal in ventral view; b, frontal portion of the body from the left; c, anterior antenna; d, posterior antenna; e, first leg; f, second leg; g, genital area, in ventral view; h, posterior portion of body, in ventral view.

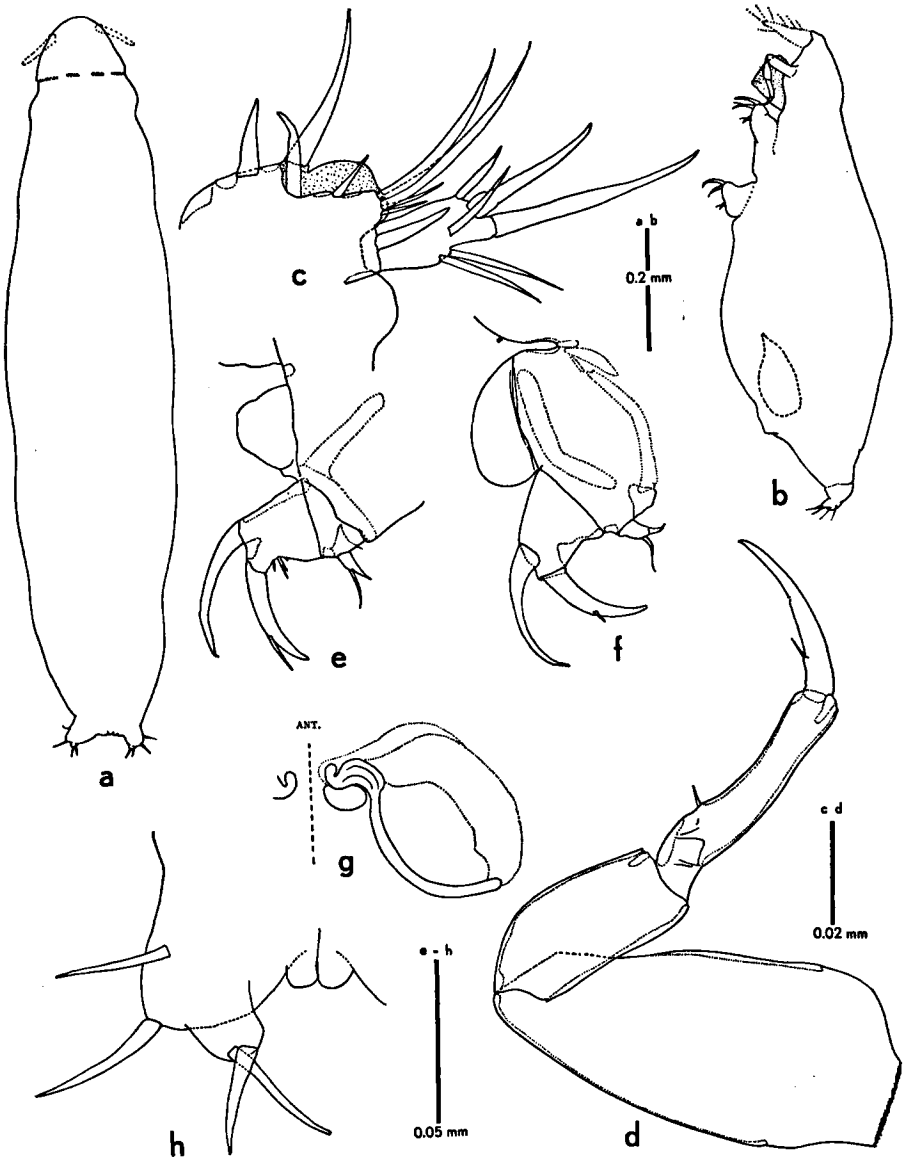

Fig. 42. *Enalcyonium nudum* n. sp. — a, female in dorsal view; b, male from the left; c, anterior antenna, ♀; d, posterior antenna, ♀; e, first leg, ♀; f, second leg, ♀; g, left half of vulval area, ♀; in ventral view (ANT. = anterior side; medio-ventral line dashed); h, caudal ramus in ventral view, ♀.

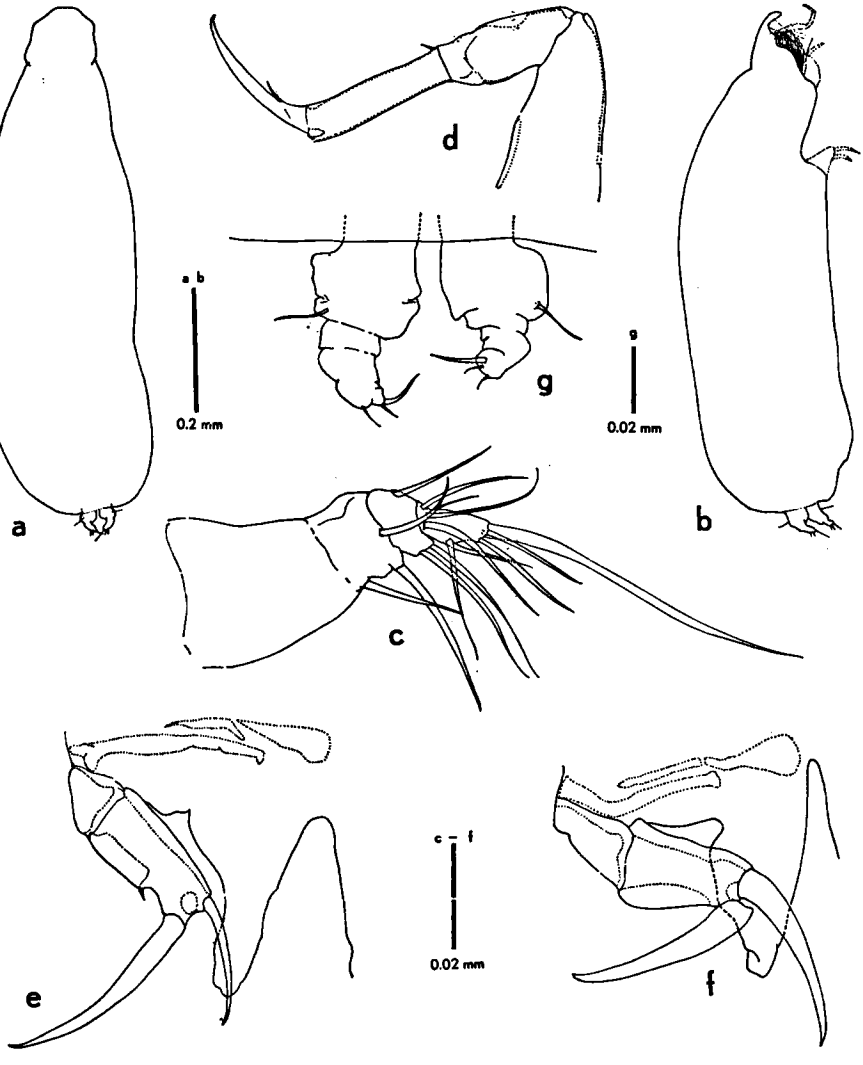

Fig. 43. *Enalcyonium euniceae* n. sp., male. — a, entire animal in dorsal view; b, same from the right; c, anterior antenna; d, posterior antenna; e, first leg; f, second leg; g, caudal rami in dorsal view.

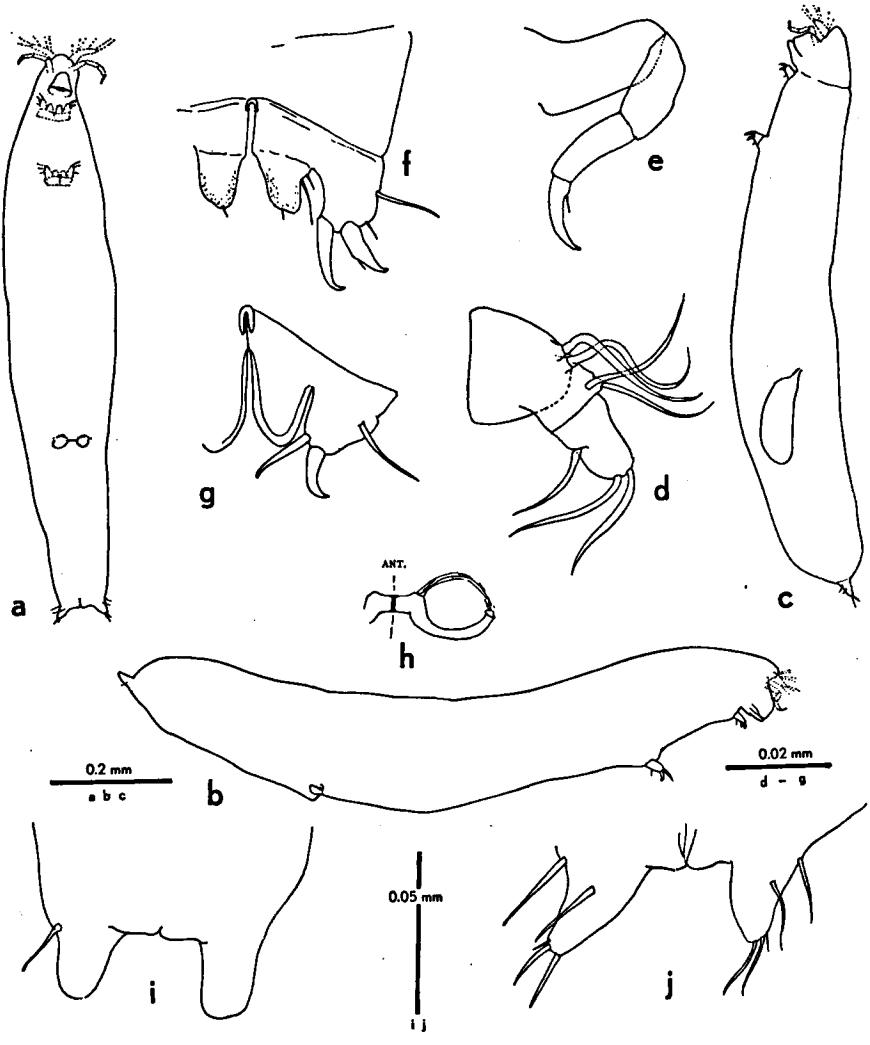

Fig. 44. *Enalcyonium variicauda* n. sp. — a, female in ventral view; b, female from the right; c, male from the left; d, anterior antenna, ♀; e, posterior antenna, ♀; f, first leg, ♀; g, second leg, ♀; h, left half of vulval area, ♀, in ventral view (ANT. = anterior side; medio-ventral line dashed); i, caudal rami in ventral view, ♀; j, caudal rami of another ♀, in ventral view.