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CUMACEA (CRUSTACEA) FROM THE SEYCHELLES, MALDIVES, SRI LANKA (WESTERN INDIAN OCEAN), AND THE RED SEA, WITH THE DESCRIPTION OF SIX NEW SPECIES

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ABSTRACT

Twenty species of Cumacea (Crustacea: Peracarida) are in the collection from the Seychelles, Sri Lanka, Maldives and the Red Sea, six of them new to science: *Bodotria guseirensis* n.sp., *Bodotria corallina* n.sp., *Cyclaspoides flokkeri* n.sp., *Cumella praslinensis* n.sp., *Campylaspis totzkei* n.sp., and *Campylaspis nemoi* n.sp. The description of *Vaunthompsonia dawydoffi* Zimmer, 1952 is completed, and descriptions of *Schizotrema* cf. *macroductylus* Fage, 1945 and *Cumella* aff. *similis* Fage, 1945 are given.

INTRODUCTION

The cumacean Crustacea from the western Indian Ocean are well known only from South Africa (Day, 1978, 1980) and the Indian coastal waters (Kurian, 1954, Radhadevi and Kurian, 1989); the cumaceans from the shallow waters of the Red Sea have been described by Bacescu and Muradian (1973, 1975) and summarized by Radhadevi and Kurian (1986). From the shallow waters of Sri Lanka only data from Calman (1904) were available. Some new species were recently described by Mühlenhardt-Siegel (1996a, b). The present contribution is dealing with shallow water samples from the island of Praslin, Seychelles, Velidhu and Veligandu, Maldives, Sri Lanka, and the Egypt coast of the Red Sea. For a synonymy list see Bacescu (1988, 1992).

MATERIALS AND METHODS

The locations from where the material originate are:

SEYCHELLES, PRASLIN. - Collected with a handnet (meshsize 0.25 mm) by Dr V. Siegel and the author.

Anse Volbert: PR 1 (fine sand among corals, 1 m, 1 October 1996).

Petite Anse Volbert: PR 2 (fine sand among coral blocks and bryozoa, 1 m, 2 October 1996); PR 3 (near nature reserve, very soft fine sand with high amount of plant detritus, 0.5 m, 3 October 1996); PR 4 (same location, sediment slightly coarser, 0.5 m, 3 October 1996).

MALDIVES. - Collected with a handnet (meshsize 0.25 mm) by Dr V. Siegel and the author.

Velidhu: 4°11'N 72°49'E, fine sand in lagoon, 8 -

10 m, 16 March 1997.

Veligandu: fine sand with detritus, 0.5 m, 25 February 1998

SRI LANKA. - Collected by Dr H.G. Müller.

Ahangama: SL 21 (from green algae on moderately exposed reef-flat, intertidal to shallow subtidal, 1 March 1993; SL 23 (from dead corals on back reef and in narrow lagoon with moderately strong current, 0 - 1.5 m, 1 and 4 March 1993); SL 25 (seagrass rhizomes interspersed with coral rubble, narrow reef lagoon, about 1 m, 2 March 1993); SL 26 (from living red pocilloporid coral on moderately exposed reef flat, intertidal to shallow subtidal, 2, 10, and 17 March 1993); SL 28 (seagrass-mix in narrow lagoon and rockpools on inner reef flat, 3 March 1993); SL 29 (dense sabellid colonies on dead coral blocks, in narrow coral reef lagoon, moderate current, 0.5 - 1.5 m, 4 March 1993); SL 30 (Halimeda on dead corals at inner reef edge, sheltered, moderate current, 0.5 - 1.5 m, 5 March 1993).

Tangalle Bay: SL 35 (seagrass/*Halimeda*-mix, 1 - 2 m, 9 March 1993).

Unawutana: SL 36 (dead corals on moderately exposed coral reef, reef flat and channels, intertidal - 1 m, 11 March 1993); SL 38 (from fragile *Acropora* colonies on moderately exposed fringing reef, 0.5 m, 11 March 1993); SL 40: (dead corals with sabellid colonies on inner reef edge, 0.5 - 1 m, 12. March 1993).

Talpe: SL 49 (seagrass in lagoon of sandstone reef, sheltered, 1 - 3 m, 16 March 1993).

RED SEA. - Collected with a handnet (meshsize 0.25 mm) by Dr V. Siegel and the author.

20 km south of Al Quseir, Egypt, 'House reef North', soft sandy sediment, 6 m, 27 March 1999. Reef flat between coral blocks and seagrass, fine sand with foraminifers, 0.5 m, 28 March 1999.

The material is deposited in the Zoological Museum, University of Hamburg (ZMH) and the Zoölogisch Museum Amsterdam (ZMA), University of Amsterdam. Extremities of each species were dissected and stored in glycerine on a microscope slide.

SYSTEMATICS

Family Bodotriidae Scott, 1901

Genus *Iphinoe* Bate, 1856

***Iphinoe capensis* (Zimmer, 1921)**

Figs. 1A-C

MATERIAL. - SRI LANKA. - ZMH K39789, SL 23, 1 male, 1 female, 1 subadult female; SL 49, 2 females; ZMA Cu. 204908, SL 35, 1 female; ZMA Cu. 204909, SL 36, 1 juvenile.

REMARKS. - The male of the species is documented in Mühlenhardt-Siegel (1996a).

Day (1978) presented several details missing in the figures of Zimmer (1921). For comparison with the specimens from South Africa, figures of the Sri Lanka material are given herein (Fig. 1). Day (1978) stated this species easily to be distinguished from the other *Iphinoe* species by the serrations of the second segment of the uropodal endopod.

DISTRIBUTION. - The distribution of the species is now known for the eastern part of the Atlantic and the western part of the Indian Ocean: the East coast of southern Africa and Sri Lanka.

Genus *Cyclaspis* Sars, 1865

***Cyclaspis iphinoides* Bacescu & Muradian, 1975**

Figs. 2A-F

MATERIAL. - RED SEA. - ZMH K39807, 2 adult females, 7 subadult females, 12 juveniles, 2 subadult males, 27-III-1999; ZMA Cu. 204912, 1 adult female and 7 subadult females.

REMARKS. - This species from the Gulf of Akaba was described by Bacescu and Muradian (1975) to be a subspecies of *C. picta* Calman, 1904 from Manaar Bay, Sri Lanka. Bacescu (1988) raised the subspecies to species level. As the original description of *C. iphinoides* is comprehensive, only SEM photos are presented herein for additional detailed information (Fig. 2).

DISTRIBUTION. - Sri Lanka and the Red Sea.

Genus *Bodotria* Goodsir, 1843

***Bodotria corallina* n.sp.**

Figs. 3A-C, 4H-I

MATERIAL. - RED SEA. - Holotype: ZMH K39811, 1

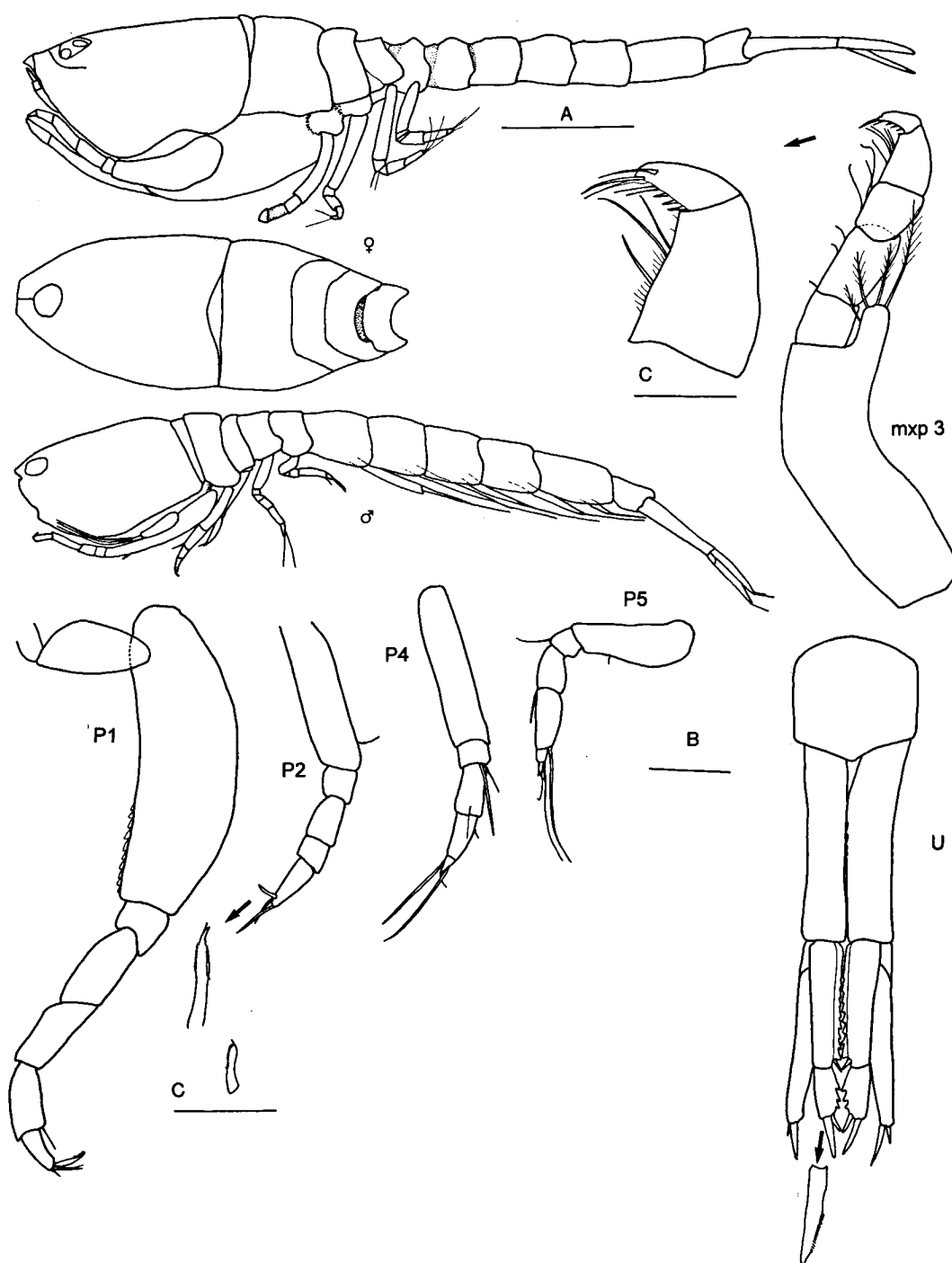


Fig. 1. *Iphinoe capensis*. A, female's and male's habitus. B, female's extremities. C, higher magnifications. Mxp 3 = maxilliped 3; p 1 to 5 = pereopods 1 to 5; U = pleonite 6 and uropods (scale bars: A = 0.5 mm; B = 0.1 mm; C = 0.05 mm).

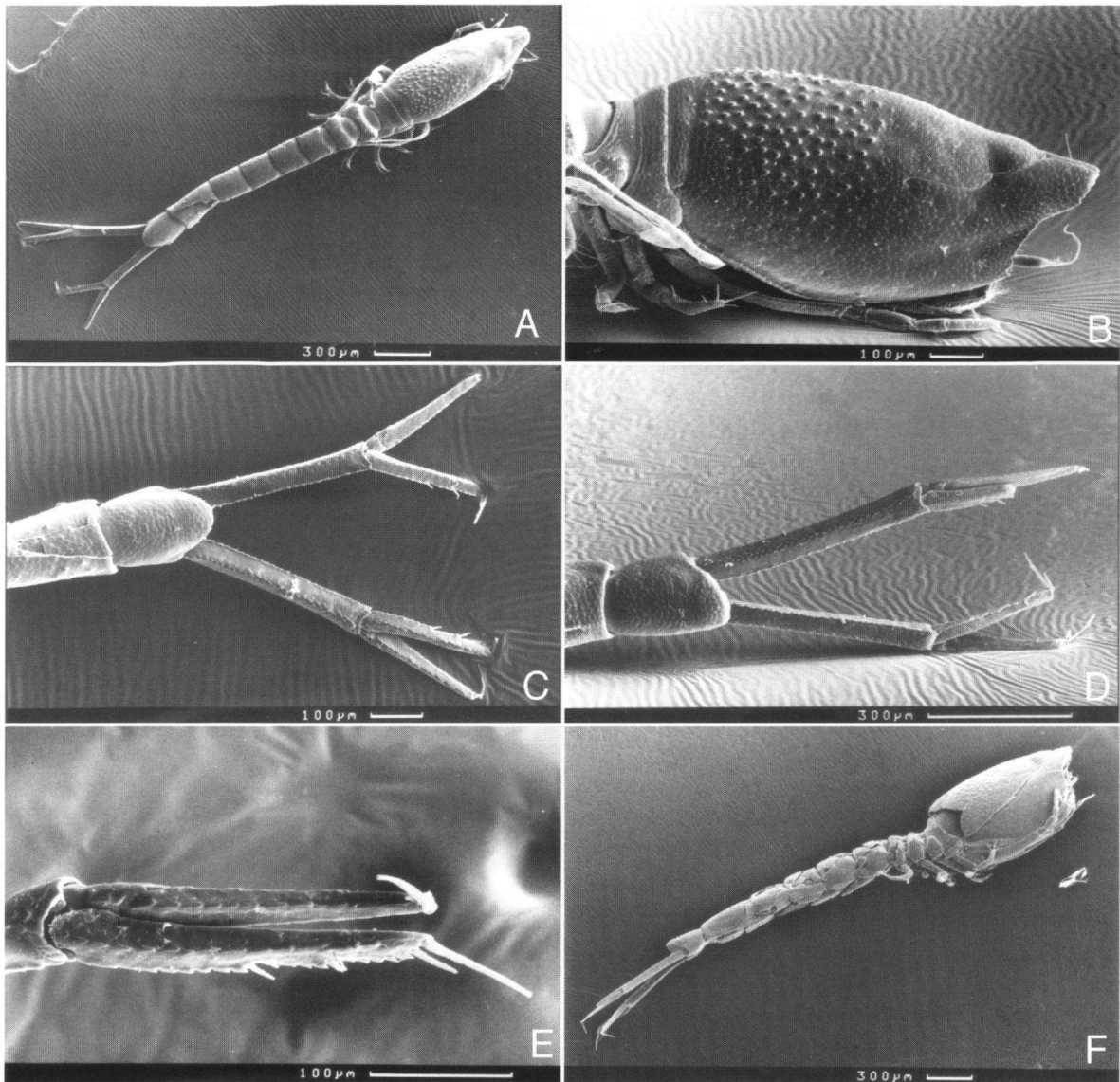


Fig. 2. *Cyclopsis iphinoides*. SEM photos. A, female, habitus from dorsal. B, female, carapace. C, female, last abdominal segment and uropods. D, subadult male, last abdominal segment and uropods. E, female, left uropod's rami. F, subadult male, habitus.

male, 28-III-1999. Paratypes: ZMH K39812, 2 females and 1 male. 28-III-1999. Additional material: ZMH K39810, 10 adult and subadult females, 1 adult male, 3 subadult males, 28-III-1999; ZMA Cu. 204918, 3 females and 2 subadult males, 28-III-1999.

TYPE LOCALITY. - Red Sea, 20 km south of Al Quseir, Egypt, 'House reef North', reef flat among coral blocks and seagrass, fine sand with foraminifers, 0.5 m.

DIAGNOSIS. - *Bodotria* with two-segmented

uropods' endopod, no lateral '*Bodotria*-carina' at carapace, eyes present, uropods' peduncle nearly twice as long as pleonite 6 and only slightly longer than uropods' endopod.

DESCRIPTION. - Holotype: an adult male, 2.59 mm in length: carapace 0.73 mm in length, smooth, no lateral carina or any other armature; pseudorostral lobes short, meeting in front of ocular lobe; siphonal tube short; dorsomedian line not pronounced; antennal notch shallow;

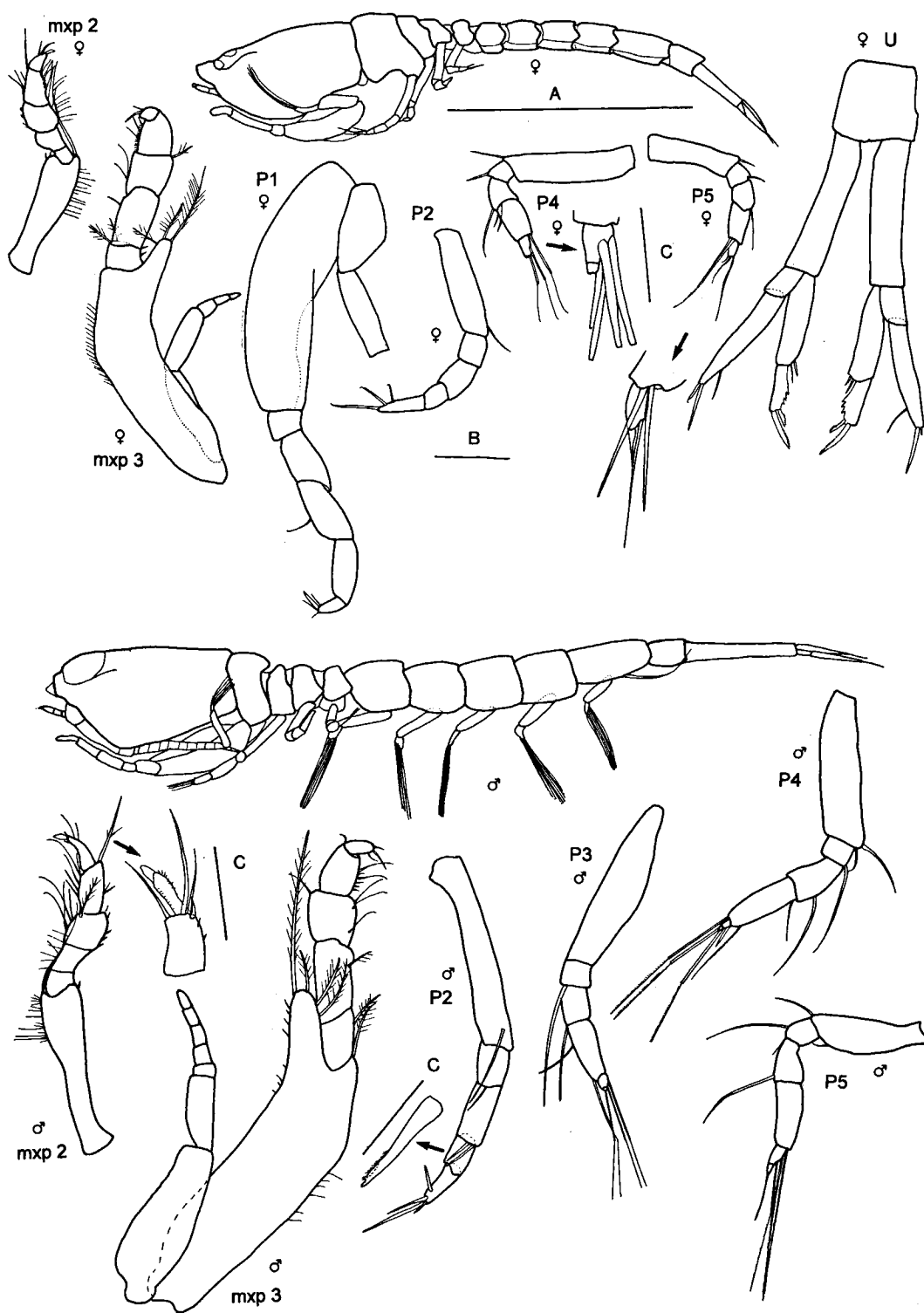


Fig. 3. *Bodotria corallina* n.sp. A, female's and male's habitus. B, female's and male's extremities. C, higher magnification. Mxp 2 (or 3) = maxilliped 2 (or 3); p 1 to 5 = pereopods 1 to 5; U = pleonite 6 and uropods (scale bars: A = 0.5 mm; B = 0.1 mm; C = 0.05 mm).

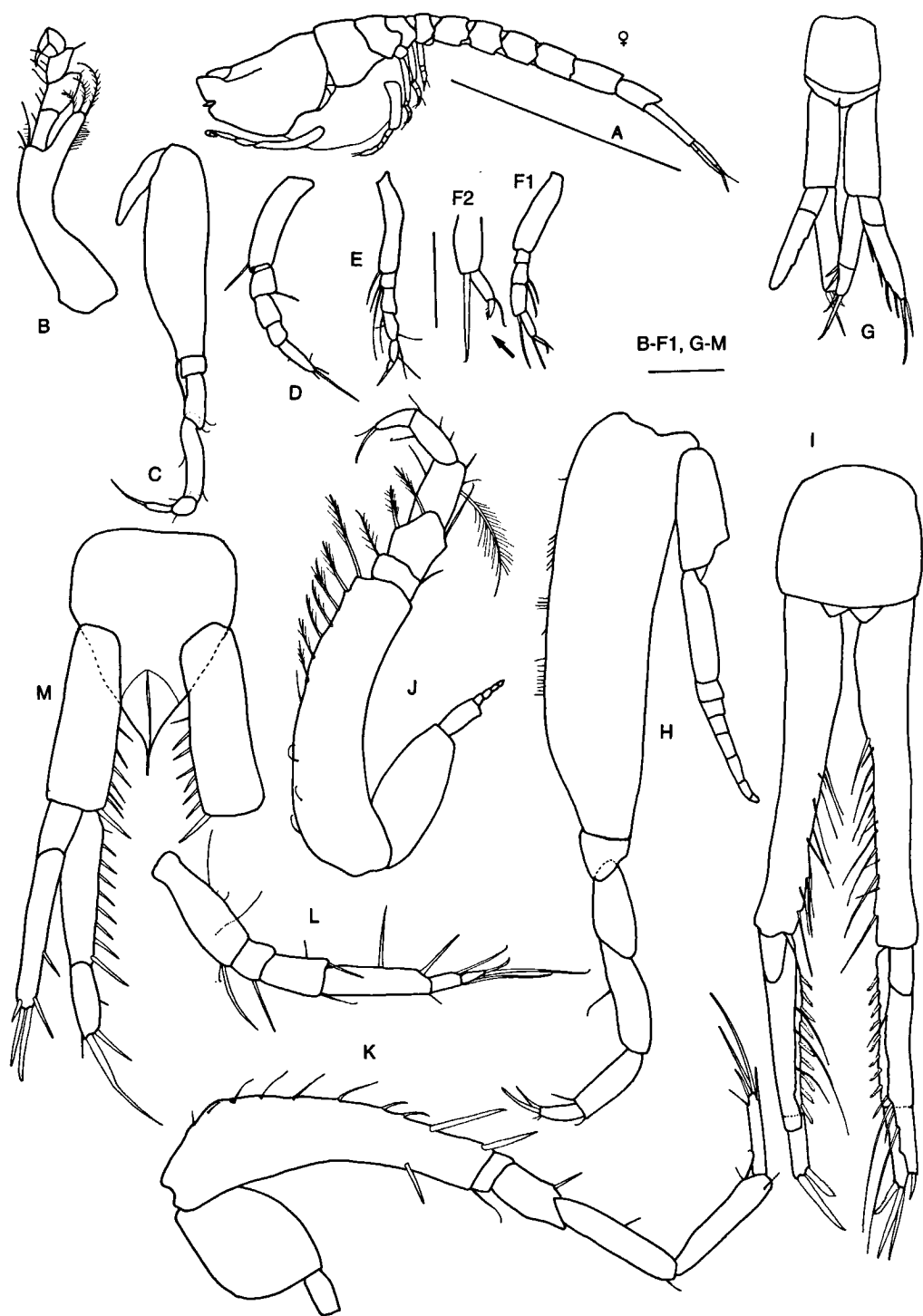


Fig. 4. A-G: *Bodotria guseirensis* n.sp., female. A, habitus. B, maxilliped 3. C, pereopod 1. D, pereopod 2. E, pereopod 4. F1 pereopod 5. F2, its dactylus in higher magnification. G, pleonite 6 and uropods. H-I: *Bodotria corallina* n.sp., male. H, pereopod 1. I, pleonite 6 and uropods. J-M: *Vaunthompsonia dawydoffi*, male. J, maxilliped 3. K, pereopod 1. L, pereopod 5. M pleonite 6 and uropods seen from ventral (scale bars: A = 1 mm; B-F1, G-M = 0.1 mm; F2 = 0.05 mm).

anterolateral margin and anteroventral margin of carapace smooth, anterolateral tooth rounded; integument calcified. Eye pigmented, with eight lenses. Free thoracic segments 0.45 mm in length, with pedigerous segments 2 to 5 visible, the second longest; abdomen 1.41 mm in length, longer than thorax and cephalon, abdominal side plates defined ventrally; telsonic segment about a third as long as pleonite 5 and less than half as long as the uropods' peduncle.

Paratypes: a male, extremities: second antenna reaching the end of the body. Maxilliped 2 as figured, basis as long as rest of limb; maxilliped 3 exopod present, basis longer than rest of limb, elongated distally, reaching first proximal quarter of merus which is slender and second longest article, carpus and propodus subequal in length, carpus with quadratic shape, dactylus stout; pereopod 1 basis very long, straight, merus, carpus and propodus subequal in length, exopod present; pereopod 2 basis longest article, little longer than rest of limb, ischium not visible, carpus second longest article; merus, propodus and dactylus subequal in length; pereopod 3 basis longer than rest of limb, propodus second longest article with two compound spines, dactylus short with two terminal compound spines, the compound spines with a smooth shaft and an annulated blade; pereopods 4 and 5 similar to pereopod 3; uropods' endopod two-segmented, little longer than exopod, with eight to nine strong serrated spines at inner margin of proximal article.

Female: with developed oostegites, very similar to male despite sexual dimorphisms, with pseudorostral lobes short, meeting in front of the ocular lobe; pigmented eye with eight lenses, a shaded pigment ring surrounding the fifth pleon segment, uropods' peduncle nearly twice as long as pleonite 6 and only slightly (factor 1.05) longer than the two-segmented endopod, terminal article of endopod serrated distally, rami subequal in length.

ETYMOLOGY. - The new species is named after the type locality on the reef top among coral blocks.

REMARKS. - As mentioned above there are only two *Bodotria* species with two-segmented endopods in females and with missing lateral carina on

the carapace: *B. magna* Zimmer, 1921 and *B. nitida* Day, 1978. Both species are described with well developed side plates at the free thoracic segments. The new species has well developed side plates in the males but they are located on the pleon segments. It is also differing from the known species in missing any armature on the carapace like they are in *B. magna* and the pronounced anterolateral tooth in the females carapace of *B. nitida*. *B. corallina* n.sp. resembles *B. quseirensis* n.sp. in having the ocular lobe not terminally - like they are in the two known species mentioned before - but the pseudorostral lobes are meeting for a short distance in front of the ocular lobe.

The two new species described herein differ from each other in the proportions of the body, the third maxillipeds, and the uropods, especially the distal article of the endopod being serrated in the female of *B. corallina* n.sp. and not in *B. quseirensis* n.sp.

***Bodotria quseirensis* n. sp.**

Figs. 4A-G

MATERIAL. - RED SEA. - Holotype: ZMH K39788, 1 adult female, 27-III-1999. Paratypes: ZMH K39787, 4 subadult females, 27-III-1999. Additional material: ZMA Cu. 204916, 1 subadult female, 27-III-1999.

TYPE LOCALITY. - 20 km south of Al Quseir, Egypt, 'House reef North', 6 m, soft sandy sediment.

DIAGNOSIS. - *Bodotria* with two-segmented uropods' endopod, no lateral '*Bodotria*-carina' at carapace, eyes present, uropods' peduncle very little longer than pleonite 6 and uropods' endopod.

DESCRIPTION. - Holotype: an ovigerous female, 2 mm in length: carapace lacking lateral carina, 0.52 mm in length, pseudorostral lobes short, meeting in front of the ocular lobe, siphonal tube short, dorsomedian line not pronounced, antennal notch tiny, anteroventral margin of carapace smooth, integument well calcified, laterally spotted with pigments on carapace and second free thoracic segment. Pigmented eye present, with eight lenses. Four free thoracic segments visible from above, 0.5 mm in length, equal in length to

carapace. Abdomen 0.96 mm in length, slightly shorter than carapace and free thoracic segments combined, fifth pleonite 1.3 times longer than fourth; pleonite 6 only somewhat shorter than pleonite 5 (factor 0.87).

One of the paratypes: a subadult female, extremities: maxilliped 3 with exopod, basis longest article, slightly bent and distally elongated, reaching the basal margin of merus, ischium subequal in length to merus, merus and carpus dilatated and distally elongated; pereopod 1 basis longer than rest of limb, carpus second longest article, propodus short, exopod present; pereopod 2 basis subequal in length to rest of limb, ischium minute, merus and carpus equal in length, dactylus elongated and tapering; pereopod 3 basis subequal to rest of limb, merus, carpus and propodus subequal in length, dactylus short, pereopod 5 basis shorter than rest of limb, carpus second longest article; uropods' peduncle 1.3 times as long as pleonite 6 and only slightly longer (factor 1.04) than two-segmented endopod. Endopod subequal in length to exopod.

ETYMOLOGY. - The new species is named after the type locality.

REMARKS. - There are only two *Bodotria* species with two-segmented uropods' endopod in females and lacking the lateral carina at the carapace: *B. magna* Zimmer, 1921 and *B. nitida* Day, 1978, both species with well-developed side plates at the free thoracic segments. The new species does not have any well developed side plates, it is also differing from the mentioned known species in having the third maxillipeds' merus and carpus dilatated, the propodus of the first pereopod rounded, and the uropods' peduncle being relatively short compared to the pleonite 6 and the rami.

Genus *Vaunthompsonia* Bate, 1858

Vaunthompsonia dawydoffi Zimmer, 1952
Figs. 4J-M, 5A-B

MATERIAL. - SRI LANKA. - ZMH K39790, SL 25, 2 females, 2 juveniles; SL 35, 1 female, 2 juveniles; SL 36, 4 males, 1 female, 1 subadult male, 2 juveniles; ZMA Cu. 204907, SL 23, 2 males, 2 females, 1 subadult female.

DESCRIPTION. - The description of this species from Vietnam is rather incomplete, only the pleonite 6 and the uropods, first antenna, and the first and second pereopods of the male are figured. A more detailed description is given herein.

A male sized 2.88 mm in length: carapace smooth, 0.81 mm in length, pseudorostral lobes not meeting in front of the ocular lobe; siphonal tube short; antennal notch shallow, not pronounced; anterolateral margin smooth, rounded; anteroventral margin of carapace smooth; eyes large; first free thoracic segment not visible in male, thoracic segments 0.63 mm in length; abdomen as long as carapace and free thoracic segments combined (1.43 mm), with five pairs of pleopods; telsonic segment with smooth margin and produced between the insertion of the uropods, according to Zimmer (1952) the diagnostic character for this species. Second maxilliped basis little longer than rest of limb, ischium not visible, merus elongated, longer than carpus and propodus combined, dactylus short with strong terminal spine; third maxilliped exopod present, basis longer than rest of limb combined, ischium present, merus as long as carpus, propodus shorter than preceding articles, dactylus stout with long terminal seta; pereopod 1 as in Zimmer (1952); pereopod 2 broken; pereopod 3 exopod present, basis longer than rest of limb, ischium little shorter than merus, carpus second longest article, propodus short, dactylus even shorter with short terminal seta; pereopod 4 and 5 similar in shape, pereopod 4 with exopod; basis shorter than rest of limb, carpus second longest article, propodus short, dactylus with slender terminal seta. Uropods' peduncle shorter than pleonite 6 including terminal anal valves prolongations, and also shorter than endopod (factor 0.8), this ramus is two-segmented and longer than exopod. Terminal seta of endopod longer than its distal article, eight setae at the inner margin of the peduncle, nine at the inner margin of the proximal article of the endopod and four at the distal article, one short hairy seta, one long terminal and two shorter subterminal setae.

In the present material also some females are available, the description is given here.

Ovigerous female: length 3.36 mm, carapace 0.92 mm, smooth; pseudorostral lobes not meeting in front of ocular lobe; siphonal tube short;

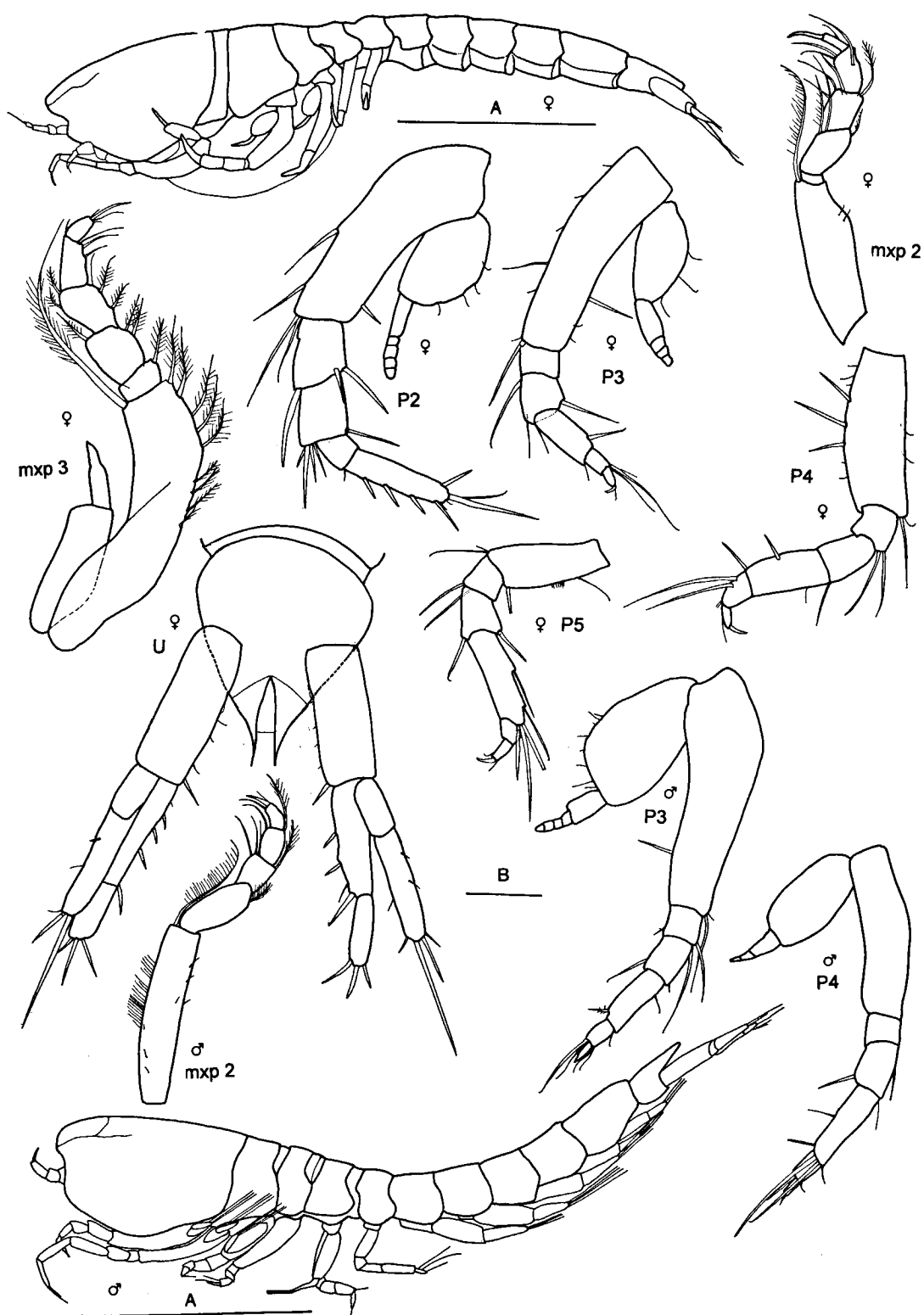


Fig. 5. *Vaunthompsonia dawydoffi*. A, female and male habitus (male habitus: exopod of third pereiopod was broken). B, extremities. Mxp 2 (or 3) = maxilliped 2 (or 3); p 1 to 5 = pereiopods 1 to 5; U = pleonite 6 and uropods (scale bars: A = 1 mm; B = 0.1 mm).

antennal notch shallow; anterolateral margin not pronounced, subacute; anteroventral margin of carapace smooth; eyes present; five free thoracic segments visible, the first very short, the second laterally elongated backwards, overlapping parts of the third free segment; abdomen 1.56 mm in length, shorter than carapace and free thoracic segments combined; telsonic segment produced between insertion of uropods as in male. Maxilliped 2 basis longer than rest of limb, merus second longest article, carpus, propodus and dactylus declining in length, dactylus with strong terminal seta; maxilliped 3 exopod present, basis longer than rest of limb, slightly bent, merus, carpus and propodus subequal in length, dactylus short with long terminal seta; pereopod 1 broken in present material; pereopod 2 exopod present, basis subequal in length to rest of limb, dactylus second longest article; pereopod 3 exopod present, basis longer than rest of limb, carpus second longest article, propodus short, only somewhat little longer than dactylus; pereopod 4 basis shorter than rest of limb, carpus second longest article; pereopod 5 similar to pereopod 4 but basis shorter and carpus longer; uropods as in male, inner margin of uropods' peduncle and endopod with four setae each, endopod two-segmented and little longer than exopod.

REMARKS. - Because of the characters of the telsonic segment (Figs. 4, 5) the present material is thought to be conspecific with Zimmer's specimens.

DISTRIBUTION. - Supposed to range in the more eastern part of the Indian Ocean and Indo-Westpacific from Sri Lanka to Vietnam.

Genus *Eocuma* Marcusen, 1894

Eocuma gorgasiae Mühlenhardt-Siegel, 1996b

MATERIAL. - MALDIVES. - Velidhu, 4° 11'N 72° 49' E, 8 - 10 m, 1 female.

REMARKS. - A specimen of this species described for the South Male Atoll (4°04' 30"N 73°31' E) in 21 m is also found in the Ari Atoll.

Genus *Cyclaspis* Sars, 1865

Cyclaspis herdmani Calman, 1904

MATERIAL. - MALDIVES. - Velidhu, 4°11'N 72°49' E, 8-10 m, 6 brooding females, 4 females, 1 male, 1 subadult male, 1 juvenile.

REMARKS. - As mentioned earlier (Mühlenhardt-Siegel, 1996b) this species described for India, Sri Lanka and Vietnam is also known for the Maldives, first found here at 4°04' 30"N 73°31' E.

Genus *Cyclaspoides* Bonnier, 1896

Cyclaspoides flokkeri n.sp.

Figs. 6A-B, 7A-B

MATERIAL. - SEYCHELLES. - Holotype: ZMH K39800, PR 4, 1 adult female, 3-X-1996. Paratypes: 1 adult female, 1 subadult female, 4 males, 1 juvenile. Additional material: ZMH K39801, PR 1, 3 females, 16 juveniles, 1 male, 1 subadult male, 1-X-1996; ZMH K39802 PR 3, 1 female, 3 subadult females, 1 decalcified female, 3-X-1996; PR 4, 1 adult female, 1 subadult female, 4 males, 1 juvenile, 3-X-1996; ZMA Cu. 204910, PR 2, 1 female, 3 juvenile females, 1 adult male, 1 subadult male, 2-X-1996.

TYPE LOCALITY. - Seychelles, Isle Praslin, PR 4; close to nature reserve, fine sand with a lot of plant detritus, 0.5 m.

DIAGNOSIS. - Carapace inflated, ridge from anteromedial to dorsomedial part, more pronounced in juveniles; pedigerous segments 1 and 2 fused with carapace, third 'free' thoracic segment fused dorsally with carapace side plates, visible laterally; pseudorostrum short; antennal notch not pronounced.

DESCRIPTION. - Holotype: an ovigerous female, length 3.24 mm: ocular lobe well developed; frontal lobe wide; integument granular; eyes not pigmented, reduced; carapace inflated, fused with pedigerous segments 1 and 2 entirely, and 3 dorsally, ridge from anteromedial to dorsomedial part; pseudorostral lobes short, meeting in front of ocular lobe; siphonal tube not seen; antennal notch small; anteroventral margin of carapace smooth, anteroventral corner of carapace not pronounced; two free thoracic segments, the pedigerous segments 4 and 5; total length of free

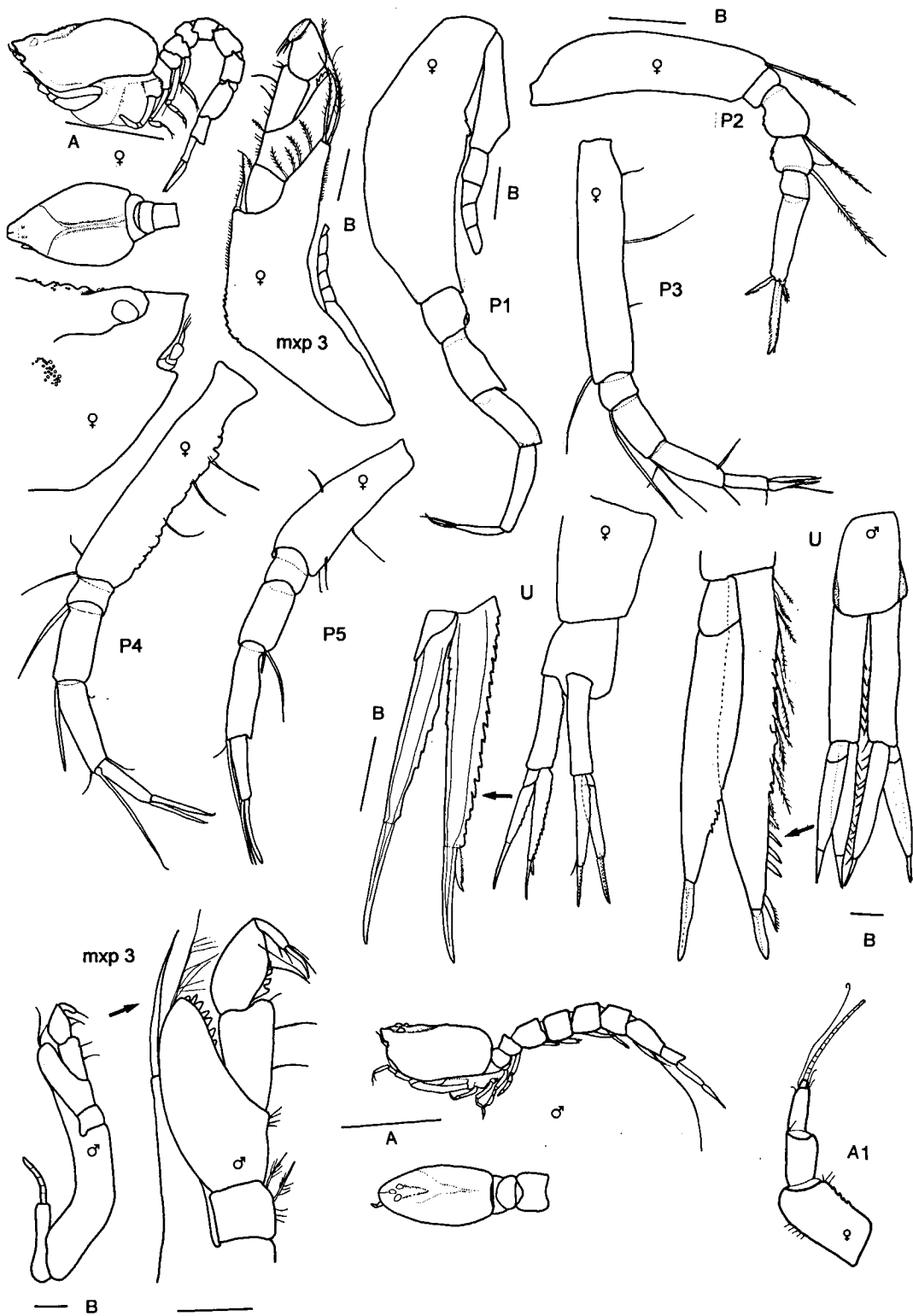


Fig. 6. *Cyclospoides flokkeri* n.sp. A, female and male habitus. B, extremities. A1 = first antenna; mxp 3 = maxilliped 3; p 1 to 5 = pereiopods 1 to 5; U = pleonite 6 and uropods (scale bars: A = 1 mm; B = 0.1 mm).

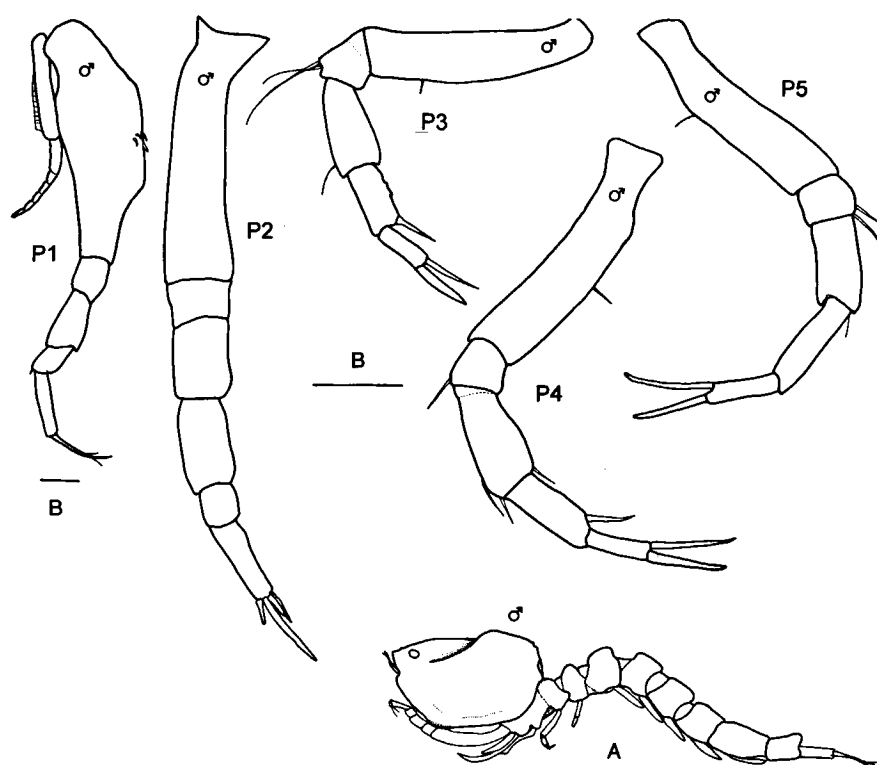


Fig. 7. *Cyclospoides flokkeri* n.sp. A, juvenile male habitus. B, male's extremities. p 1 to 5 = pereopods 1 to 5 (scale bars: A = 1 mm; B = 0.1 mm).

thoracic segments 0.29 mm. Abdomen 1.69 mm, little shorter than carapace and free thoracic segments combined, with lateral articular processes, last abdominal segment shorter than uropods' peduncle.

Paratype: a female, extremities: first antenna with no accessory flagellum and 1 aesthetasc at short main flagellum's tip; second antenna reduced; third maxilliped with basis longest article, basis and merus with distal outer part elongated, elongation of basis with six setae, elongation of merus serrated; propodus wider than carpus (Fig. 6); first pereiopod basis longest article subequal in length to rest of limb; second pereiopod, basis longer than remaining segments together, dactylus second longest article with three serrated distal spines, medial one longest; pereopods 3 to 5 similar in shape, fifth pereiopod shortest, dactylus slender and fused with terminal seta. Uropods' peduncles longer than pleonite 6 and longer than rami; uropods' endopod unseg-

mented, inner margin serrated, terminal seta stout, subterminal seta serrated; exopod two-segmented, little shorter than endopod, terminal seta about 2/3 as long as terminal article.

An adult male, 3.28 mm long; with 5 pairs of pleopods, carapace more squarish, shorter compared to abdomen than in female, carapace ridge less pronounced, eyes well developed, at least five lenses, antennal notch minute, second antenna longer than body; uropods' endopod with 12 plumose setae, at distal part 3 stout spines plus one terminal and one subterminal spine.

ETYMOLOGY. - This species is dedicated to my very best friend Flokker.

REMARKS. - The new species is placed into the genus *Cyclospoides* Bonnier, 1896 because the pedigerous segments 1 to 3 are fused at least dorsally with the carapace. Characters not fitting with the generic diagnosis are: pleonite 6 shorter than the

uropods' peduncles, and the short pseudorostrum. The other species in this genus are deep water species, all of them having the ocular lobe reduced and lacking eyes.

Family Nannastacidae Bate, 1866

Genus *Schizotrema* Calman, 1911

***Schizotrema depressum* Calman, 1911**

MATERIAL. - SRI LANKA. - ZMH K39797, SL 23, 5 females; SL 25, 7 females; SL 30, 9 females; SL 36, 12 females; SL 38, 1 female; SL 40, 32 females, 4 males, 2 juveniles; ZMA Cu. 204917, SL 35, 6 females.

REMARKS. - The species is easily identified by the depressed habitus and the acute, strong lateral spines and hairy setae on the pereion and pleon.

DISTRIBUTION. - Gulf of Thailand, South Australia, Malaysia (Petrescu, 1997) and now known for Sri Lanka, shallow water to 2 m.

***Schizotrema* cf. *macrodactylus* Fage, 1945
Figs. 8L-P**

MATERIAL. - SEYCHELLES. - ZMH K39803, Praslin, PR 4, 2 ovigerous females, 3 subadult females, 2 males.

DESCRIPTION. - Of the ovigerous female: length 1.76 mm, carapace longer than free thoracic segments, globose laterally, few short hairy setae on carapace; short pseudorostrum, siphones divided and short, pseudorostral lobes not meeting in front of ocular lobe, which is widened laterally, two eyes with at least two lenses each. Five free thoracic segments, 0.3 mm long, first not seen from lateral, second to fourth with side plates developed; abdomen shorter than thoracic segments and carapace combined. First antenna with projection at second segment of peduncle.

Male: pereopod 2 exopod present, large basis, longer than rest of limb, ischium longer than merus, dactylus spatulate with two terminal and two subterminal spines; pereopods 3 and 4 exopods present, basis wide, more rounded in pereopod 4 than in pereopod 3, propodus second longest article, dactylus with terminal spine fused, claw-shaped. Pereopod 5 basis not widened, relatively short, dactylus with claw-

shaped terminal seta. Pleonite 6 subequal in length to uropods' peduncle, the latter about half as long as uropods' endopod. Uropods' exopod very short, even including long terminal spine shorter than uropods' endopod. The latter with acute terminal spine.

REMARKS. - Fage (1945) gave the description of a male and figured only the habitus, pleonite 4 to 6, and the uropods. He compared his new species with *S. bifrons* Calman, 1911 and *S. sordidum* Calman, 1911 and stressed the short siphonal tubes of his new species. Another character separating this species from the two Calman species is the length of the uropods' exopod with its terminal spine not reaching the terminal margin of the endopod in *S. macrodactylus*, but doing so in both *S. bifrons* and *S. sordidum*.

The more closely related species to *S. macrodactylus* was considered to be *S. sordidum*, from which the former differs in: the lack of long hairy setae but presence of tubercles on the pereion and pleon, the serrated margin of the respiratory orifices, fine serration at the anterolateral angle of carapace, which is not pronounced, and the length of the dactylus of the first pereopod.

The specimens from the Seychelles fit quite well the description given by Fage (1945), only the uropods peduncles, although being shorter than pleonite 6, seem to be longer than in the Vietnam material.

DISTRIBUTION. - Vietnam and Seychelles, shallow water.

Genus *Scherocumella* Watling, 1991

***Scherocumella micronodosus* Mühlenhardt-Siegel, 1996b**

MATERIAL. - MALDIVES. - Veligandu, 4 brooding females, 3 males.

REMARKS. - The species was described for the Ari Atoll and the South Male Atoll and is now also reported from the lagoon of an island in the Rasdhu Atoll.

Genus *Cumella* Sars, 1865

Subgenus *Cumella* Sars, 1865

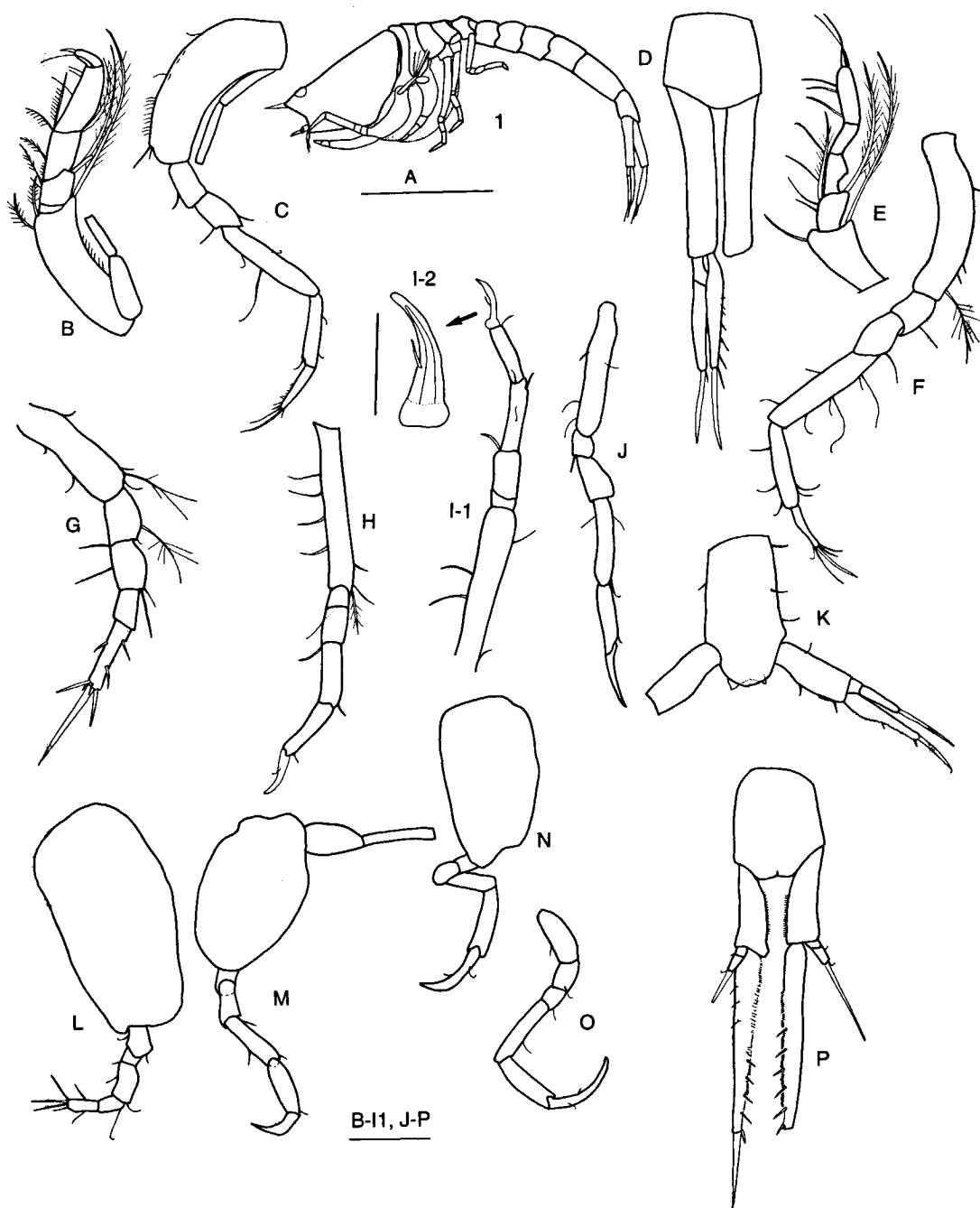


Fig. 8. A-D: *Cumella* aff. *similis*, female. A, habitus. B, maxilliped 3. C, pereopod 1. D, pleonite 6 and uropods. E-K: *Cumella indosinica*, female. E, maxilliped 3. F, pereopod 1. G, pereopod 2. H, pereopod 3. I-1, pereopod 4. I-2, its dactylus in higher magnification. J, pereopod 5. K, pleonite 6 and uropods. L-P: *Schizotrema* cf. *macrodactylus*, male (exopods not figured). L, pereopod 2. M, pereopod 3. N, pereopod 4. O, pereopod 5. P, pleonite 6 and uropods (scale bars: A = 0.5 mm; B-I-1, J-P = 0.1 mm; I-2 = 0.05 mm).

Cumella aff. similis Fage, 1945
Figs. 8A-D

MATERIAL. - SRI LANKA. - ZMH 39794, SL 40, 3 females; SL 38, 1 female; SL 30, 2 females; SL 29, 1 male; 39793, SL 25, 3 females, 1 male; SL 23, 1 female, 4 males.

REMARKS. - The Sri Lanka specimens are supposed to be similar to *C. similis* because of the characters of long uropods' peduncles compared to pleonite 6, number of spines at inner margin of the uropods' endopod, and the habitus; the uropods of the females in the Sri Lanka material are not serrated along the inner margin of the peduncle and endopod as described by Petrescu (1997). It differs from the described species in the character of the third maxilliped having one tooth at the distal inner margin of the basis and propodus, and at the outer distal margin of the merus in the description of Petrescu (1997) which differs from the one of Fage (1945), who figured the tooth of the merus at the outer distal margin, no tooth is visible at the third maxilliped in the present specimens.

DISTRIBUTION. - This species is recorded for shallow waters from West Australia and Queensland (Hale, 1945), Vietnam (Fage, 1945), Malaysia (Petrescu, 1997), Red Sea (Radhadevi & Kurian, 1986) and now Sri Lanka. As there are some minor differences within this species, we maybe have three subspecies.

Subgenus *Cumewingia* Bacescu, 1971

Cumella indosinica Zimmer, 1952
Figs. 8E-K

MATERIAL. - SRI LANKA. - ZMH K39791, SL 23, 20 females, 19 males; SL 25, 4 females, 1 male; SL 30, 2 females, 6 males; ZMH K39792, SL 36, 1 female; SL 40, 2 females; SL 49, 4 males; ZMA Cu. 204914, SL 29, 2 females, 2 males.

REMARKS. - Table 1 compares the species described in the subgenus *Cumewingia*. The specimens of the present material are supposed to belong to the species *Cumella indosinica*. Comparing the descriptions given by Zimmer (1952) for males from Vietnam, by Petrescu (1997) for males from Malaysia, and the present material from Sri Lanka, there are some differences mostly con-

cerning the proportions of the uropods, because that is one of the few characters Zimmer figured. The uropods' peduncle is subequal in length to pleonite 6 in all of the three items but there are some differences in the following characters: third maxilliped: Malaysia specimen figured by Petrescu has teeth at the distal elongated basis, the Sri Lanka material does not, while the Sri Lanka material has the basis bended and the Malaysia does not; proportion uropods' exopod to its terminal spine in male: about 1.1 in Vietnam and Malaysia material, 1.4 in Sri Lanka; proportion uropods' endopod to its terminal spine: 1.65 (male) in Vietnam, 2.1 (male) in Malaysia, and 0.7 in male but 1.8 in females of Sri Lanka material; proportion uropods' peduncle to endopod in male: 1.2 in Zimmer's description, but 0.8 in Petrescu's and 1.0 in the present material (not figured). The conclusion could be that there is a variation within the characters, and the Sri Lanka material is between the Malaysia and the Vietnam specimens.

Cumella praslinensis n.sp.
Figs. 9A-B

MATERIAL. - SEYCHELLES. - Holotype: ZMH K39798, Isle Praslin, PR 4, 1 ovigerous female. Paratypes: ZMH K39799, 1 female used for preparation, 1 female used for SEM, 1 male, 1 male used for preparation, 1 male used for SEM, not figured; ZMA Cu. 204913, 2 females.

TYPE LOCALITY. - Seychelles, Isle Praslin, PR 4; close to nature reserve, fine sand with a high percentage of plant detritus, 0.5 m.

DIAGNOSIS. - *Cumella* (*Cumewingia*) with uropods' peduncle subequal in length to pleonite 6, uropods' exopod subequal in length to its terminal spine, uropods' endopod about twice as long as its terminal spine, articles of the third maxilliped without teeth, its basis and merus elongated.

DESCRIPTION. - Holotype: an ovigerous female, length 1.87 mm: carapace granulated, 0.58 mm long, pseudorostral lobes moderate long, meeting in front of ocular lobe; siphonal tube short; antennal notch shallow, anterolateral margin rounded, anteroventral margin of carapace

Table 1. The species of *Camella* (Camevingia). Abbreviations: length proportions: P:T = uropods' peduncle to pleonite 6; P:E = uropods' peduncle to endopod; L:H = carapace length to height; mxp 3 = maxilliped 3; exo/endo = uropods' exopod or endopod; f = female; m = male; B = basis; M = merus; C = carpus; + = present; - = absent; n. d. = no data.

Species	Locality	P:T male	P:T female	dorsom. teeth	mxp3 teeth	mxp3 elongated	mxp3 basis elongated	mxp3 merus elongated	mxp3 basis banded	longest urop. ramus, fem.	longest urop. ramus, male	P:E female	P:E male	carapace L:H	uro-exo exo:spine	uro-endo endo:spine
<i>ocellata</i>	Bermudas	n.d.	0.83	-	n.d.	n.d.	n.d.	n.d.	n.d.	endo	endo	1.1	1.4/1.6	1.84m	0.91m/0.81f	1.3m/1.58f
<i>antipai</i>	Jamaica	n.d.	0.95	1 tooth	n.d.	n.d.	n.d.	n.d.	n.d.	endo	endo	1.5	1.4	1.79m/1.63f	1.36m/0.88f	2.4m/1.32f
<i>sianakana</i>	Mexico	0.5	n.d.	-	-	-	+	+	-	n.d.	endo	n.d.	1.2	n.d.	1.6m	no term. spine
<i>foficuloides</i>	Gulf of Siam	0.81	0.41	female	n.d.	n.d.	n.d.	n.d.	n.d.	endo	endo	1.7	1.7	2.1m/1.73f	1.0m/1.67f	1.2m/1.5f
<i>foficuloides</i>	Red Sea	0.6	0.49	female	-	n.d.	-	-	n.d.	endo	endo	1.3	1.5	2.15m/1.74f	1.5m/1.6f	2.13m/1.55f
<i>clavicauda</i>	Antilles	0.64	0.55	-	-	little	+	+	little	n.d.	endo	2.0	1.9	1.54m/1.43f	0.86m/0.83f	2.25m/0.92f
<i>vicina</i>	trop. W Atlant.	0.79	n.d.	-	M	little	-	-	little	n.d.	endo	n.d.	1.2/1.5	1.59	3.25	2.87
<i>hispida</i>	Gulf of Siam	0.9	0.75	-	-	+	+	+	little	endo	endo	1.1	1.1	1.9m/1.9f	1.67m/1.4f	4m/2.4f
<i>schiockei</i>	Red Sea	0.86	0.79	-	n.d.	n.d.	n.d.	n.d.	n.d.	endo	endo	1.4	1.4	2.05m/1.5f	1m/0.8f	2m/2f
<i>anae</i>	Bahamas	0.62	n.d.	-	-	-	+	+	-	n.d.	endo	n.d.	1.4	2.21	0.8	1.5
<i>indosinica</i> Petr.	Malaysia	0.8	n.d.	-	B	little	+	+	-	endo	endo	n.d.	1.1	n.d.	1.07	2.1
<i>indosinica</i> SL	Sri Lanka	1.0	0.7-0.55	-	-	-	-	-	little	endo	endo	0.9	1.1	1.87m/2.25f	1.4m/0.92f	0.7m/1.79f
<i>indosinica</i> Zimmer	Vietnam, Cambodia	0.12	n.d.	-	n.d.	n.d.	n.d.	n.d.	n.d.	endo	endo	n.d.	1.7	1.82	1.08	1.65
<i>angelae</i>	Bahamas	0.92	n.d.	-	-	-	+	+	little	endo	endo	n.d.	1.3	1.81	0.81	1.21
<i>turgidula</i>	S Australia	0.5	n.d.	-	n.d.	n.d.	n.d.	n.d.	n.d.	endo	endo	n.d.	1.5	1.82	1.17	2.4
<i>praslinensis</i> n.sp.	Seychelles	1.0	1.0	-	-	+	+	+	little	endo	endo	1.5	1.7	1.9m/1.81f	1.3m/1.06f	2.17m/1.9f
<i>limicoloides</i>	Red Sea	1.1	1.0	-	M,C	little	+	+	little	endo	endo	1.3	1.7	2.25m/1.44f	1.67m/1.33f	1.99m/1.85f
<i>sterneri</i>	Bermudas	1.18	n.d.	-	n.d.	n.d.	n.d.	n.d.	n.d.	endo	endo	n.d.	0.8	n.d.	0.55	1.42
<i>limicola</i>	Mediterranean	1.22	n.d.	-	n.d.	n.d.	n.d.	n.d.	n.d.	endo	endo	n.d.	1.5	n.d.	0.96	2.0
<i>carribana</i>	Florida	1.27	0.78	-	-	little	+	+	-	endo	endo	2.0	1.9	1.71	1.45	1.43
<i>serratus</i>	Antilles	1.3	1.6	female	n.d.	n.d.	n.d.	n.d.	n.d.	endo	endo	1.7	1.5	2m/1.6f	1.42f	2.4m/2.73f
<i>bacescui</i>	Bahamas	1.4	1.35	-	-	little	+	+	-	endo	endo	1.6	1.6	1.93	1.25	1.75
<i>siamensis</i>	Vietnam	1.78	n.d.	-	n.d.	n.d.	n.d.	n.d.	n.d.	endo	endo	n.d.	1.5	1.86	0.92	1.45
<i>leptopus</i>	Antilles	2.2	n.d.	-	n.d.	n.d.	n.d.	n.d.	n.d.	endo	endo	n.d.	2.2	1.91	0.8	0.91
<i>abacoensis</i>	Bahamas	2.17	1.82	-	B,M,C	-	+	+	little	endo	endo	1.4	1.4	1.61	1.69	1.5

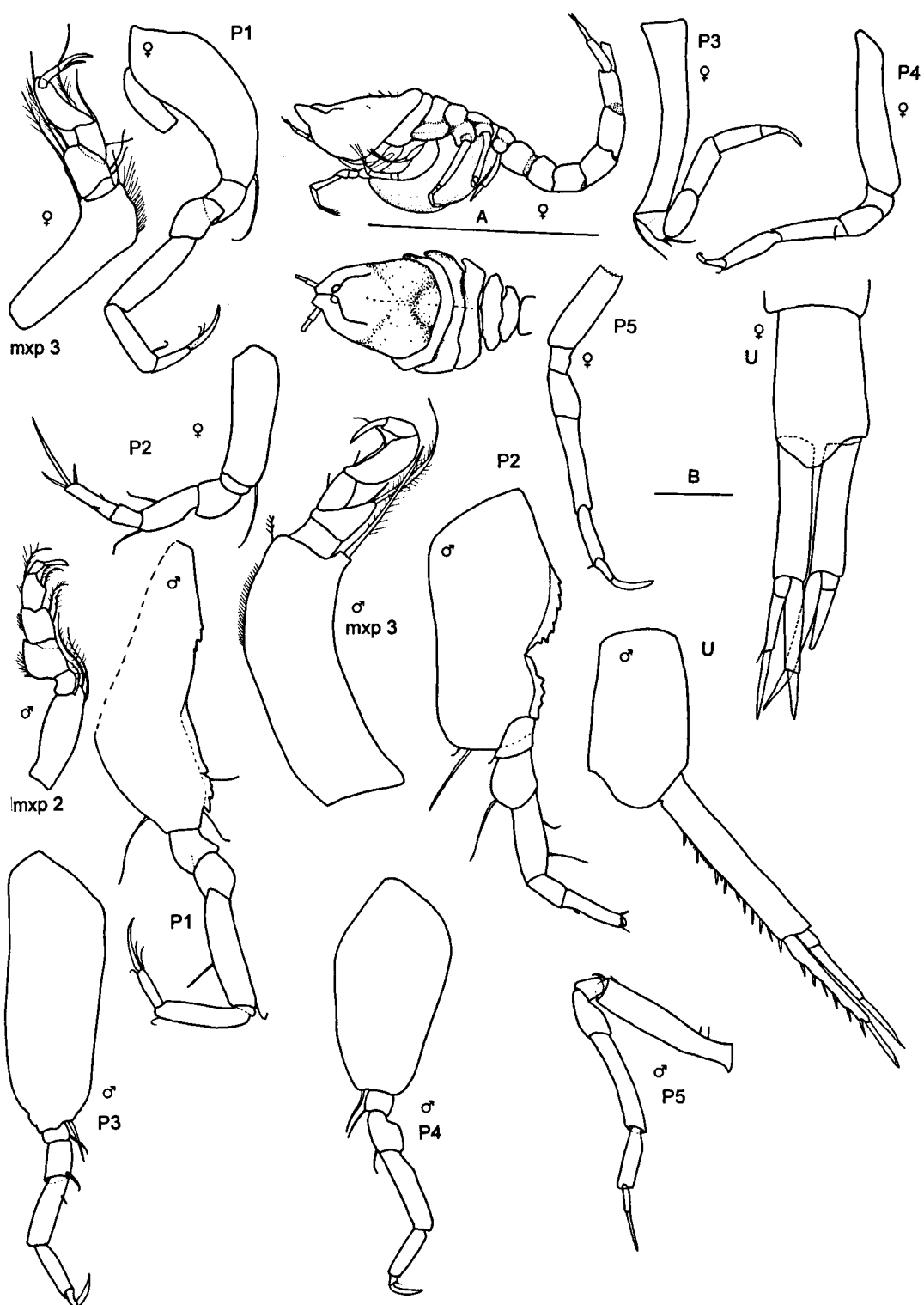


Fig. 9. *Cumella prastlinensis* n.sp. A, habitus female. B, female's and male's extremities. Mxp 2 (or 3) = maxilliped 2 (or 3); p 1 to 5 = pereopod 1 to 5; U = pleonite 6 and uropods (scale bars: A = 1 mm; B = 0.1 mm).

smooth; eyes present; five free thoracic segments, 0.39 mm long; abdomen subequal in length to carapace and free thoracic segments combined, telsonic segment relatively long compared with 5th pleonite and the uropods' peduncle.

One of the paratypes: a female, extremities: maxilliped 3 exopod present, basis subequal in length to rest of limb, distal process shorter than in male, ischium short, merus stout, short carpus inserting not terminally but laterodistally on merus, propodus second longest article, stout; dactylus slender with one stout and two hairy terminal setae; pereopod 1 exopod present, basis shorter than rest of limb, ischium relatively long, carpus second longest article, dactylus with one stout and two hairy terminal setae; pereopod 2 stout, basis shorter than rest of limb, ischium not visible, merus short, carpus stout, propodus and dactylus subequal in length; pereopods 3 through 5 similar to each other, basis longest article, ischium short, carpus second longest article, dactylus margin to terminal seta hardly visible, dactylus and its terminal seta claw-shaped; uropods' peduncle slightly shorter than telsonic segment and equal in length to unsegmented endopod. Rami, including terminal setae, equal in length, exopod shorter than endopod measured without setae.

Male, length 2.04 mm: carapace 0.66 mm in length, scattered with tiny hairy setae, pseudorostral lobes short, meeting in front of ocular lobe, siphonal tube short, antennal notch shallow, anterolateral margin rounded, anteroventral margin of carapace smooth, eyes large, lenses on pseudorostral lobes (subgenus *Cumewingia*), five free thoracic segments (length 0.36 mm), abdomen slightly shorter than carapace and free thoracic segments combined, first four pleonites with lateral ridge; telsonic segment in males subequal in length to fifth pleonite.

Male's extremities: maxilliped 2 basis shorter than rest of extremity, ischium short, merus stout, laterally dilatated, carpus and propodus subequal in length to merus, dactylus short, slender with claw-like terminal seta; maxilliped 3 exopod present, basis much longer than rest of extremity, distally little elongated, ischium short, merus distally elongated, carpus half as wide as merus, propodus widened, dactylus short with claw-like distal seta; pereopod 1 exopod present, basis with

row of teeth at proximal and distal outer margin, subequal in length to rest of extremity, ischium and merus about equal in length, carpus second longest article, propodus shorter than carpus, dactylus slender with stout claw-like distal seta and three subterminal hairy setae; pereopod 2 exopod present, basis stout with row of teeth at inner margin, about as long as rest of extremity, ischium short, merus stout, carpus second longest article, propodus short, about as long as ischium, dactylus tapering; pereopod 3 and pereopod 4 similar in shape, only basis different, exopod present, stout basis longest article, more elongate in pereopod 3 than in pereopod 4, ischium short, carpus second longest article, propodus slender, dactylus small, ending with a claw-like seta; pereopod 5 slender, basis shorter than rest of extremity, carpus second longest article, propodus longer than merus, dactylus slender, with one terminal seta; uropods' peduncle little longer (factor 1.1) than pleonite 6, with 10 setae at inner margin, rows of hairy setae between them, endopod unsegmented, six setae at inner margin, longer than exopod.

ETYMOLOGY. - The species is named after the type locality, the island of Praslin, Seychelles.

REMARKS. - The new species belongs to the subgenus *Cumewingia* Bacescu, 1971. Within this subgenus there are several species with the peduncle shorter than or equal to the telsonic segment (Table 1). The species closely related to *C. praslinensis* is *C. turgidula* Hale, 1945 from South Australia according to the length proportions of the uropods' peduncle in relation to the pleonite 6, the carapace proportions and the habitus. The new species differs from *C. turgidula* in the uropods rami's proportions to their terminal spines.

The new species also resembles *C. limicoloides* Bacescu & Muradian, 1975 in the proportions of the peduncle to pleonite 6 (P:T), and to the endopod. It differs from *C. limicoloides* by missing the teeth at merus and carpus of the third maxilliped, the carapace length to height proportions being smaller in males and larger in females in the new species and the proportions of the rami and their terminal spines being different.

Cumella limicoloides Bacescu & Muradian, 1975

MATERIAL. - RED SEA. - ZMH K39809, 13 females, 135 males, 27-III-1999; 111 adult males, 9 subadult males, 88 adult females, 92 subadult females and juveniles, 28-III-1999; ZMA Cu. 204904, 10 adult males, 10 adult females, 28-III-March 1999.

REMARKS. - The species described by Bacescu & Muradian (1975) for the northern part of the Red Sea was considered to be closely related to *C. limicola* Sars, 1879, differing from this species by the lack of dorsomedian spines in females and the dactylopodite of the second pereopod which is much shorter than the former two segments. The present specimens from the Egypt coast of the Red Sea are closely fitting the description of *C. limicoloides*.

Cumella forficuloides Bacescu & Muradian, 1975

MATERIAL. - RED SEA. - ZMH K39808, 27-III-1999, 5 males; 49 females, 27-III-1999; 16 subadult males, 28-III-1999; ZMA Cu. 204911, 5 males, 10 females, 27-III-1999.

REMARKS. - The striking character of *C. forficuloides* is the long pleonite 6 compared with the short uropods' peduncle, a character that only few *Cumella*-species of the subgenus *Cumewingia* Bacescu, 1971 have: from the Indian Ocean including the Red Sea: *C. hispida* Calman, 1911, *C. forficula* Calman, 1911, *C. forficuloides* and *C. schieckei* Bacescu & Muradian, 1975. Some more *Cumella* (*Cumewingia*) species with a long pleonite 6 have been described from the tropical West Atlantic, most of them more recently: *C. anae*, *C. angelae* both described by Petrescu & Iliffe, 1992, *C. antipai* Petrescu, Iliffe & Sarbu, 1994, *C. clavicauda* Calman, 1911, *C. ocellata* Bacescu, 1992, *C. siankaana* Donath-Hernandez, 1992, and *C. vicina* Zimmer, 1944.

The present material fits very well the description Bacescu & Muradian (1975) gave for *C. forficuloides*.

Genus *Campylaspis* Sars, 1865

Campylaspis totzkei n.sp.

Figs. 10A-B

MATERIAL. - SRI LANKA. - Holotype: ZMH K39795, SL 35, 1 female, 9-III-1993. Paratypes: ZMH K39815, SL 21, 1 female, 1-III-1993, SL 23, 4 females, 4-III-1993; SL 25, 1 female; SL 35, 21 females, 1 male, 9-III-1993; SL 49, 1 female, 16-III-1993; ZMA Cu. 204915, SL 36, 5 females, 11-III-1993.

TYPE LOCALITY. - Sri Lanka, SL 35: Tangalle Bay, seagrass/ Halimeda- mix, 1 - 2 m.

DIAGNOSIS. - *Campylaspis* with smooth carapace, length proportion of uropods' peduncle to pleonite 6 (P:T) less than 2, basis of third maxilliped short and its merus large and serrated.

DESCRIPTION. - Holotype: a female (length in total 2.06 mm): carapace smooth, 1.1 mm in length, 0.7 mm in height; pseudorostral lobes very short, meeting for a short distance in front of the ocular lobe; siphonal tube short; antennal notch narrow, anterolateral margin rounded. Anteroventral margin of carapace smooth, free thoracic segments 0.35 mm in length, abdomen 0.68 mm in length, shorter than carapace and free thoracic segments combined; telsonic segment short.

Paratype: a female, extremities: maxilliped 2 dactylus with 3 teeth; maxilliped 3 exopod present, basis about equal in length to large, stout merus, the latter with inner margin serrated and a hyaline lamella at outer margin; carpus shorter with similar armature, propodus even shorter than carpus, with four teeth on inner margin, dactylus slender, one long terminal and two shorter subterminal spines; pereopod 1 exopod present, basis shorter than rest of limb, merus second longest article, carpus and propodus subequal in length, dactylus slender, as long as propodus; pereopod 2 short and stout, basis as long as rest of limb through propodus, ischium short, merus stout, carpus with few hairy setae at inner margin, insertion to merus half as wide as merus, propodus short, dactylus second longest article, tapering, with lateral setae, one long terminal and two small subterminal; pereopod 4 and pereopod 5 similar in shape, pereopod 4 being longer because of longer basis, propodus and dactylus short, terminal spine claw-like; uropod's peduncle short, only 1.3 times longer than pleonite 6 and 1.4 times longer than unsegmented endopod, the

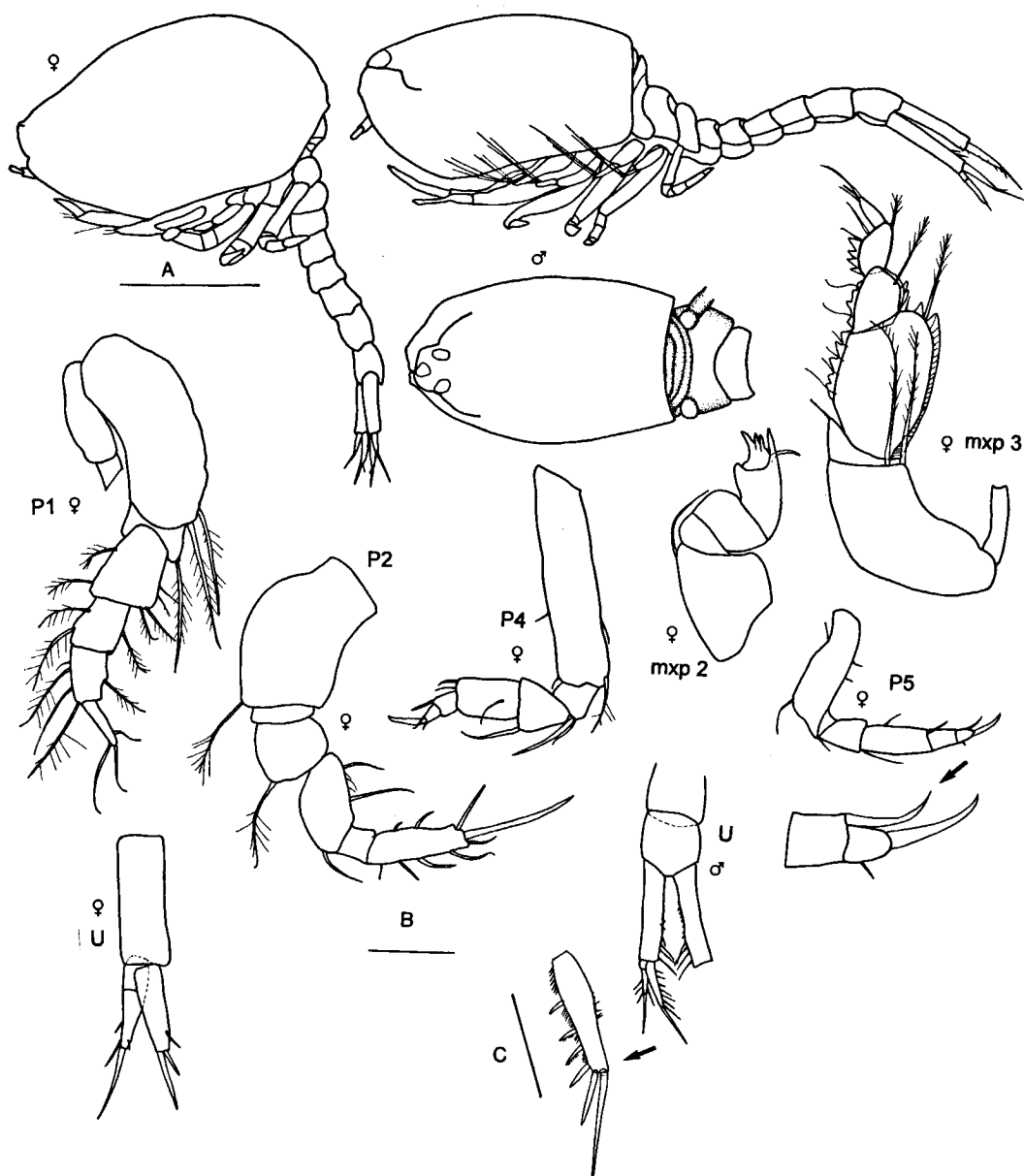


Fig. 10. *Campylaspis totzkei* n.sp. A, female and male habitus. B, extremities. C, higher magnifications. Mxp 2 (or 3) = maxilliped 2 (or 3); p 1 to 5 = pereopods 1 to 5; U = pleonite 6 and uropods, right uropod in higher magnification (scale bars: A: = 0.5 mm; B = 0.1 mm; C = 0.05 mm).

latter longer than exopod, both rami longer than their terminal spine.

Males: with typical sexual dimorphisms, such as exopods up to fourth pereopod, eye with three lenses, carapace proportion length to height 1.8; total length 1.95 mm, carapace 1 mm long, free thoracic segments 0.2 mm, abdomen 0.7 mm;

uropods' peduncle 1.6 times longer than the pleonite 6 and two times longer than the unsegmented endopod (measured without terminal spine), peduncle with at least ten minute and four long spines at inner margin, left endopod with six serrated spines at inner margin and one subterminal one, terminal spine subequal in length to

Table 2. Selected species of the *Campylaspis rubicunda*-group. Abbreviations: Length proportions: P:T = uropods' peduncle to pleonite 6; P:E = uropods' peduncle to endopod; L:H = carapace length to height; maxil. = maxilliped; norm. = normal; serr. = serrated; elong. = elongated; + = present; - = absent; n.d. = no data.

	P:T	P:E	third maxil. basis long	basis serr.	merus	carpus	carapace structure	L:H	subrostral tooth
<i>angularis</i>	1.9	2.1	+	-	norm.	norm.	with hairs	1.7	subacute
<i>orientalis</i>	1.8	2.4	+	-	shorter	norm.	n.d.	1.5	rounded
<i>rubicunda</i>	1.8	2.0	n.d.	n.d.	n.d.	n.d.	n.d.	1.9	no
<i>excavata</i>	1.75	1.5	+	-	elong., 1 tooth	slender	pigment spots	1.5	2 teeth
<i>guttata</i>	1.6	1.3	+	-	elong.	wide	smooth	1.4	no
<i>totzkei</i> n.sp.	1.3	1.4	short	-	large, serr.	stout, serr.	smooth	1.7	subacute
<i>gamoi</i>	1.1	1.25	+	1 tooth	elong.	slender, serr.	with 2 horns	1.9	2 tiny teeth

endopod, terminal spine of the exopod being longer than the two articles combined. Right endopod with four serrated spines only at inner margin.

ETYMOLOGY. - The species is dedicated to my dear colleague Mr. Hans-Dieter Totzke.

REMARKS. - The new species belongs to the *rubicunda* - species group of the genus *Campylaspis* (Jones, 1974) which is characterised by having the carapace smooth, without lateral depressions, and with at most a pair of low rounded protuberances or with small granulations. This species group contains 28 species. Within this group there are only few species having the length proportion uropods' peduncle to pleonite 6 less than 2 in females: *C. angularis* Gamô, 1960, from Japan, *C. excavata* Ledoyer, 1993, from Antarctica, *C. gamoi* Jones, 1984, from the N Atlantic, *C. guttata* Jones, 1974, SW Africa, *C. orientalis* Calman, 1911, NW Pacific, and *C. rubicunda* (Lilljeborg, 1855), N Atlantic, Arctic, N Pacific. The differences between these species are given in Table 2. The new species is the only one with the third maxilliped having a relatively short basis and a very stout and large merus.

Campylaspis akabensis Bacescu & Muradian, 1975

MATERIAL. - RED SEA. - ZMH K39806, 1 juvenile, 27-III-1999.

REMARKS. - The present specimen, a juvenile, is clearly fitting the description of *Campylaspis*

akabensis that Bacescu & Muradian (1975) gave.

Campylaspis nemoi n.sp.

Figs. 11A-C, 12

MATERIAL. - RED SEA. - Holotype: ZMH K39813, a female, 27-III-1999. Paratypes: ZMH K39814, 4 females, 3 males, 12 juveniles, 27-III-1999; ZMA Cu. 204905, 2 females and 2 males, 27-III-1999.

TYPE LOCALITY. - Red Sea, 20 km south of Al Quseir, Egypt, 'House reef North', soft sandy sediment, 6 m.

DIAGNOSIS. - *Campylaspis* belonging to the *sulcata*-group (Jones, 1974) with uropods' rami subequal in length to their terminal spines, dactylus of the second maxilliped with four distal spines.

DESCRIPTION. - Holotype: a female, length in total 2.58 mm: carapace 1.34 mm in length, length to height ratio 1.52, with a depression on either side, two ridges on each side, not extending to dorsal hind end of carapace, pseudorostral lobes moderately long, meeting in front of ocular lobe; siphonal tube as long as pseudorostrum; antennal notch shallow, anterolateral margin subacute, not serrated; free thoracic segments 0.3 mm in length, abdomen 1.09 mm, shorter than carapace; pleonite 6 short, proportion uropods' peduncle to pleonite 6 is 2.06.

One of the paratypes: a female, extremities: maxilliped 2 dactylus with four unequal distal spines, propodus with two robust setae, maxilliped 3 exopod present, basis stout and short, only little longer than merus, the latter serrated at

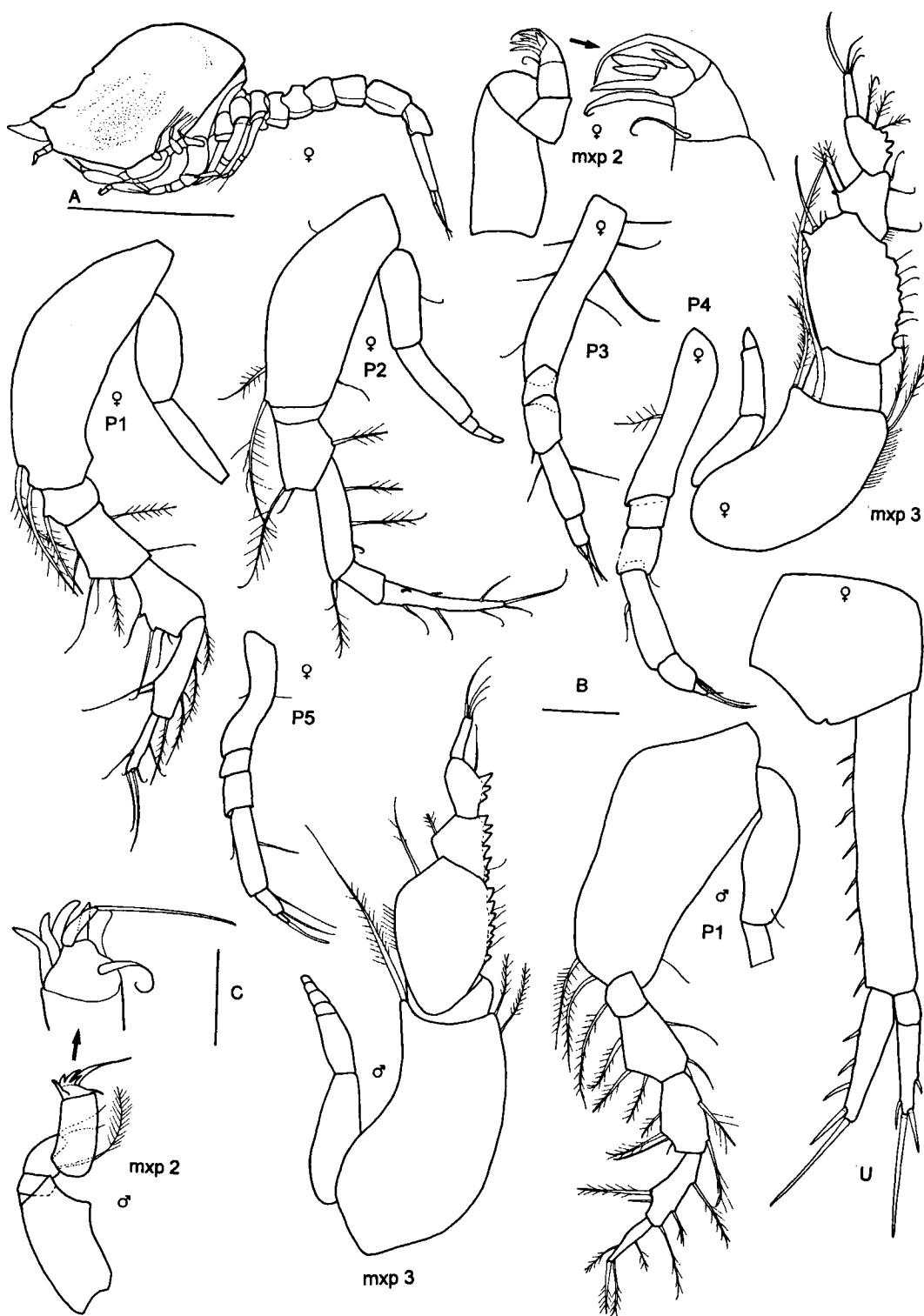


Fig. 11. *Campylaspis nemoi* n.sp. A, female habitus. B, female's and male's extremities. C, higher magnification. Mxp 2 (or 3, respectively) = maxilliped 2 (or 3, respectively); p 1 to 5 = pereopods 1 to 5; U = pleonite 6 and uropods (scale bars: A = 1 mm; B = 0.1 mm; C = 0.05 mm).

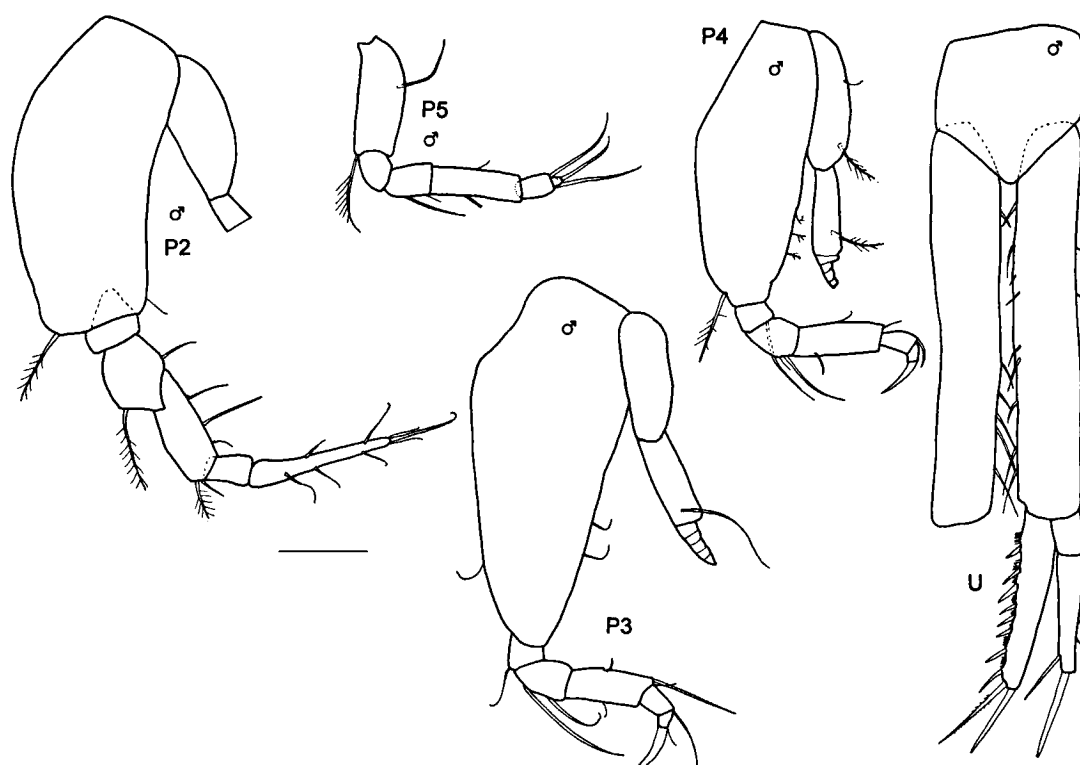


Fig. 12. *Campylaspis nemoi* n.sp. Male's extremities. p 2 to 5 = pereopods 2 to 5; U = pleonite 6 and uropods (scale bar = 0.1 mm).

inner margin and bearing one tooth at distal outer margin and a hyaline lamella, carpus trapezoid with one long seta, propodus with three teeth at inner margin, dactylus slender, with one terminal and three subterminal spines; pereiopod 1 exopod present, basis longest article but shorter than rest of limb, merus and carpus subequal in length, propodus slender, elongated, second longest article, dactylus even more slender; pereiopod 2 exopod present, basis longest article, shorter than rest of limb, ischium short, merus widened, carpus long, propodus short, dactylus second longest article, tapering, three pairs of lateral setae, one terminal and one subterminal seta; pereiopod 3 exopod present, similar to pereiopods 4 and 5, but getting progressively shorter, basis longest article, ischium and merus short, carpus second longest article, propodus and dactylus short, with distal spines; uropods' peduncle long, more than twice as long as pleonite 6 and the unsegmented endopod, peduncle with eight spines at inner margin, endo-

pod with three lateral spines at inner margin, one subterminal and one terminal spine, the latter subequal in length to endopod. Exopod little shorter than endopod, its terminal spine subequal in length to ramus.

Male: similar to female except for the sexual differences, second antenna reaching to end of body, bases of third and fourth pereiopods widened, five exopods present, uropods' peduncle 2.5 times longer than pleonite 6 and 2.2 times longer than unsegmented endopod, inner margin of peduncle with nine setae, of endopod with eight spines, between these spines rows of hairy setae, one terminal and one subterminal spine, exopod shorter than endopod, terminal spine shorter than rami.

ETYMOLOGY. - The species is dedicated to my dear friend Nemo, who died too early.

REMARKS. - The new species is the second one of the genus *Campylaspis* described for the Red Sea

Table 3: The species of the *Campylaspis sulcata*-group. Abbreviations: Length proportions: P:T = uropods' peduncle to pleonite 6; P:E = uropods' peduncle to endopod; mxp 2 = maxilliped 2; mxp 3 = maxilliped 3; uro-exo/endo = uropods' exopod or endopod; f = female; m = male; B = basis; I = ischium; M = merus; C = carpus; P = propodus; + = present; - = absent; n.d. = no data.

species	locality	P:T female	P:T male	P:E female	P:E male	uro-endo: spine	uro-exo: spine	mxp 2, no. of term. spine	mxp 3 merus widened	mxp 3, M as long as B	mxp 3 articles serrated
<i>minor</i>	E Indic	3.17	2.22	2.53	1.67	1.6	0.77	4	+	-	M
<i>depressa</i>	Mozambique Chan.	3		1.67		3.2	2	3	+	+	IMCP
<i>propinqua</i>	Surinam	2.89		2		1	1.5	3	+	-	-
<i>latidactyla</i>	E Indic	2.5		1.92		1.53	1.1	3 + 1	little	-	-
<i>canalicula</i>	E Pacific	2.3		2.25		2.67	1.75	4	-	-	MC
<i>menziesi</i>	Peru	2.3		2.13		2.57	1.1	3	-	-	IMC
<i>cognata</i>	W Atlantic	2.27		1.67		2	1.5	3	-	-	-
<i>sticta</i>	S Atlantic	2.25		1.79		1.4	1.2	4	+	-	MCP
<i>pumila</i>	Japan	2.18	2.58	2.08	1.72	1.4/1.6	0.8/1.12	3	+	-	CP
<i>mozambica</i>	Mozambique Chan.	2.18		2.38		1.53	1.33	3	-	-	IMC
<i>legendri aff.</i>	Mauretania	2.11		2.56		2.43	1.27	4	+	+	MCP
<i>fusiformis</i>	Japan	2.09		1.47		2.08	1.11	4	+	-	MC
<i>nemoti</i> n.sp.	Red Sea	2.06	2.54	2.31	2.19	1.18f/2.18m	1.02f	4	+	-	MCP
<i>sulcata</i>	Mediterranean	2.04		1.96		2.25	1.5	4	little	-	MCP
<i>striata</i>	Japan	2	2.53	1.5	1.52	2.67f/2.18m	1.4f/1.47m	4	+	+	MC
<i>macrophthalma</i>	Mediterranean	1.92		2.08		2.4	1.43	n.d.	n.d.	n.d.	n.d.
<i>aulacois</i>	Ivory Coast	1.87		1.56		2.67	2.13	3	+	+	MCP
<i>aperta</i>	NW Pacific	1.83		3.03		2.25	3	2?	-	-	MC
<i>jonesi</i>	Mauretania	1.73		1.49		1.4	1.2	4	+	-	MCP
<i>platyuropus</i>	E Indic	1.67		1.3		2.67	1.82	n.d.	+	+	-
<i>porcata</i>	W Atlantic	1.6	2.5	1.6	1.8	1.4	1.7	3	-	-	-
<i>bacescui</i>	Falkland	1.58	2.44	1.89	1.72	1.37	1.1	4	-	-	MCP
<i>mansa</i>	N Atlantic		3.27		2	?	?	3	-	-	IMCP
<i>unisulcata</i>	E Indic		3.04		2.13	2.06	1.24	4	+	-	BMCP
<i>antipai</i>	Brazil		2.4		1.39	2.93	1.7	3	+	+	CP
<i>tubulata</i>	Vietnam		2.4		1.79	1.44	0.96	n.d.	+	-	MC
<i>blakei</i>	California			2.3		1.86	1.64	?	?	?	?

besides *Campylaspis akabensis*; it belongs to the *sulcata*-group according to Jones (1974). This group contains 26 species (Table 3). Only seven of them resemble the new species in respect of the proportions of the uropods and maxilliped 3: *C. legendri africana* Bacescu & Muradian, 1972, from Mauretania, *C. fusiformis* Gamô, 1960 from Japan, *C. sulcata* Sars, 1870 from the north-eastern Atlantic and Mediterranean, *C. striata* Gamô, 1960 from Japan, *C. macrophthalma* Sars, 1879 from the Mediterranean, *C. antipai* Bacescu & Petrescu, 1989 from southern Brazil, and *C. tubulata* Fage, 1945 from Vietnam. The new species differs from all these species in the proportions of the uropods' rami to their terminal spines.

Genus *Nannastacus* Bate, 1865

Nannastacus gibbosus Calman, 1911

MATERIAL. - SRI LANKA. - ZMH K39796, SL 25, 5 females, 3 males; SL 28, 2 females; SL 30, 2 females, 1 juvenile; SL 35, 13 females, 14 males, 3 juveniles; SL 36, 8 females, 3 males, 5 juveniles; SL 49, 1 female, 3 males; SL 40, 18 females, 10 males, 1 juvenile; ZMA Cu. 204906, SL 23, 2 females, 3 males, 1 juvenile.

REMARKS. - The typical characters for this species are the pair of lateral humps and an additional smaller one medio-dorsally topped with a spine on the caudal side of the carapace, the latter is scattered with few long hairy setae. Paired eyes present, a black pigmented spot behind them. The first three pleon segments with dorsal spines in females, and very short uropods' exopods are typical for this species.

DISTRIBUTION. - This species is distributed widely in the West Pacific and the eastern Indian Ocean. It is described for India (Kurian, 1954), Gulf of Siam (Calman, 1911), Malaysia (Petrescu, 1997), Vietnam (Fage, 1945), South Australia (Hale, 1936) and Japan (Gamô, 1962) and is now reported for Sri Lanka.

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REFERENCES

- BACESCU, M., 1988. Cumacea I. Crustaceorum Catalogus Pars 7. GRUNER, H.-E. & L.B. HOLTHUIS (Eds). The Hague: 1-173.
- BACESCU, M., 1992. Cumacea II. Crustaceorum Catalogus Pars 8. GRUNER, H.-E. & L.B. HOLTHUIS (Eds). The Hague: 175- 468.
- BACESCU, M. & Z. MURADIAN, 1973. Contributions à la connaissance des Cumacés de la Mer Rouge. Rapp. Procès-Verbaux Réun. **22** (4): 83.
- BACESCU, M. & Z. MURADIAN, 1975. New Cumacea from the Red Sea. Trav. Mus. Hist. nat. 'Grigore Antipa' **16**: 35-69.
- CALMAN, W.T., 1904. On the Cumacea. Ceylon Pearl Oyster Fisheries Suppl. Rep. **12**: 161-180.
- CALMAN, W.T., 1911. On new or rare Crustacea of the order Cumacea from the collection of the Copenhagen Museum. Part II. The families Nannastacidae and Diastylidae. Trans. zool. Soc. London **18** (4): 341-399.
- DAY, J., 1975. South African Cumacea. Part 1: Fam. Bodotriidae, subfamily Vaunthompsoniinae. Ann. South African Mus. **66** (9): 177-222.
- DAY, J., 1978. South African Cumacea. Part 2: Fam. Bodotriidae, subfamily Bodotriinae. Ann. South African Mus. **75** (7): 159-290.
- DAY, J., 1980. South African Cumacea. Part 4: Families Gynodiastylidae and Diastylidae. Ann. South African Mus. **82** (6): 187-292.
- FAGE, L., 1945. Les cumacés du plancton nocturne des côtes d'Annam. Arch. Zool. exp. gén. **84**: 165-224.
- GAMÔ, S., 1962. On the cumacean Crustacea from Tanabe Bay, Kii Peninsula. Publ. Seto Mar. Biol. Lab. **10** (2): 153-210.
- HALE, H.M., 1936. Cumacea from a South Australian reef. Rec. South Australian Mus. **5**: 404-438.
- HALE, H.M., 1945. Australian Cumacea. The family Nannastacidae. Rec. South Australian Mus. **8**: 145-218.

- JONES, N.S., 1974. *Campylaspis* species (Crustacea: Cumacea) from the deep Atlantic. Bull. Br. Mus. nat. Hist. **27** (b): 249-300.
- KURIAN, C.V., 1954. Notes on Cumacea (Sympoda) in the Zoological Surves of India. Rec. Indian Mus. **52**: 275-311.
- MUHLENHARDT-SIEGEL, U., 1996a. Ein Beitrag zur Cumacea-Fauna aus dem Küstenflachwasser des südlichen Afrika, mit Beschreibung von *Cumella hartmanni* sp.n. Mitt. hamb. zool. Mus. Inst. **93**: 117-140.
- MUHLENHARDT-SIEGEL, U., 1996b. Cumacea (Crustacea) from the Red Sea and the Maldives (Indian Ocean) in the collection of the Zoological Museum, Hamburg, with the description of seven new species and a new genus. Beaufortia **46** (7): 105-134.
- PETRESCU, I., 1997. Nannastacidae (Crustacea: Cumacea) from the Malayan shallow waters (South China Sea). Beaufortia **47** (4): 109-151.
- RADHADEVI, A. & C.V. KURIAN, 1986. Cumacea of the Israel South Red Sea Expedition, 1926. Rec. zool. Surv. India **83** (1+2): 13-18.
- RADHADEVI, A. & C.V. KURIAN, 1989. A collection from the south west and south east coasts of India. Rec. zool. Surv. India Misc. Publ., Occ. Papers no. **121**: 1-37.
- WATLING, L., 1991. Rediagnosis and revision of some Nannastacidae (Crustacea: Cumacea). Proc. biol. Soc. Wash. **104** (4): 751-757.
- ZIMMER, C., 1921. Mitteilungen über Cumaceen des Berliner Zoologischen Museums. Mitt. zool. Mus. Berlin **10**: 117-149.
- ZIMMER, C., 1952. Indochinesische Cumaceen. Mitt. zool. Mus. Berlin **28**: 5-35.

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