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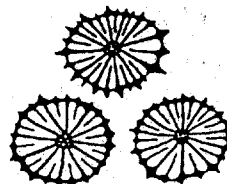
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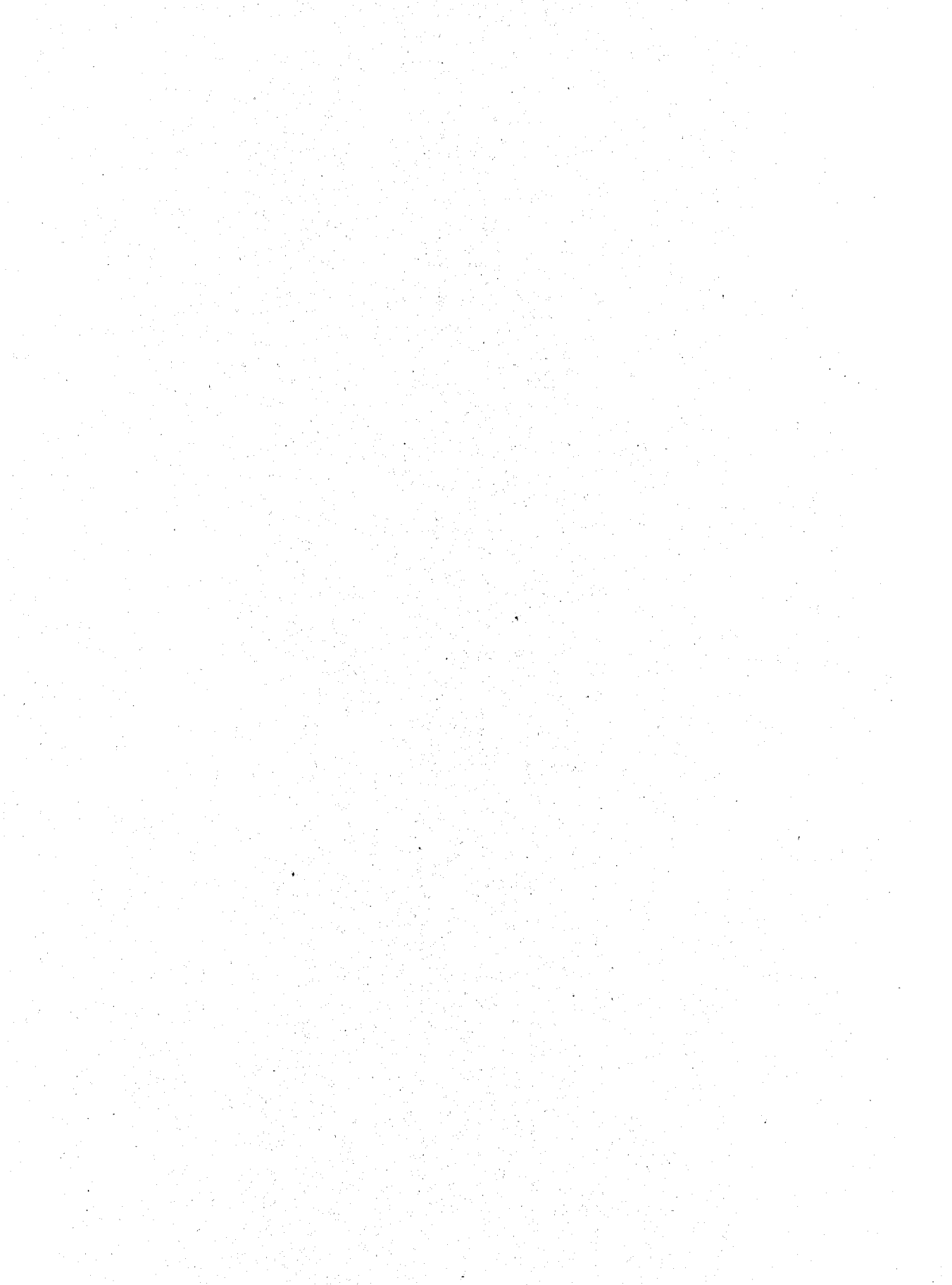
Galaxea, 4:1-21. (1985)

SOME CARIDEAN ASSOCIATES OF SCLERACTINIAN CORALS
IN THE RYUKYU ISLANDS

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Abstract. Information is provided on a small collection of caridean shrimps from the Ryukyu Islands, mainly found in association with the oculinid coral *Galaxea fascicularis* L. Four species of pontonine shrimp were represented, three of which are new to the Japanese fauna (*Ischnopontonia lophos* (Barnard), *Platycaris latirostris* Holthuis and *Metapontonia fungiacola* Bruce). Six species of alpheid shrimp were collected, three of which are new to the Japanese fauna (*Racilius compressus* Paulson, *Alpheus acutofemoratus* Dana and *Synalpheus hastilicrassus* Coutière). *Ischnopontonia lophos*, *Platycaris latirostris* and *Racilius compressus* are considered obligatory associates of *G. fascicularis* and their early juvenile stages are described. *Alpheus deuteropus* and *A. acutofemoratus* are associated with live corals but are not specific to *Galaxea*. The other species are associates of encrusting sponges, often found on corals, or free-living species often found in coral rubble.

Through the kindness of Mr. H. Yamashiro it has been possible for me to study a small collection of caridean shrimps that have been found in association with the oculinid coral *Galaxea fascicularis* L. The Zanpa-misaki specimens were collected from ten colonies of the host coral and the Sesoko-jima specimens from three colonies, except for the *Metapontonia* specimens, which were collected from the fungiid coral *Herpolitha limax* (Houttuyn). All carapace lengths refer to the post-orbital carapace length.

Specimens of *Ischnopontonia lophos*, *Platycaris latirostris* and *Racilius compressus* have been deposited in the collections of the Sesoko Marine Science Center, University of the Ryukyus. The remainder of the specimens are in the collection of the Northern Territory Museum, Darwin.

SYSTEMATIC ACCOUNT

PALAEMONIDAE

Pontoninae

Ischnopontonia lophos (Barnard) (Fig. 1-3)

Restricted synonymy:

Philarius lophos Barnard, 1962: 242-243, fig. 2.

Ischnopontonia lophos --- Bruce, 1966: 585-595, figs. 1-5.

Materials examined - 24 spms. (5♂, 2♀, 6 ovig. ♀, 11 juv.), Zanpa-misaki, Okinawa, 26°26'N. 127°43'E., 1.0 m, 24 October 1984, coll. H. Yamashiro. 3 spms (1♂, 2♀), Sesoko-jima, Okinawa, 26°39'N. 127°52'E., 1.0 m, 13 October 1984, coll. H. Yamashiro.

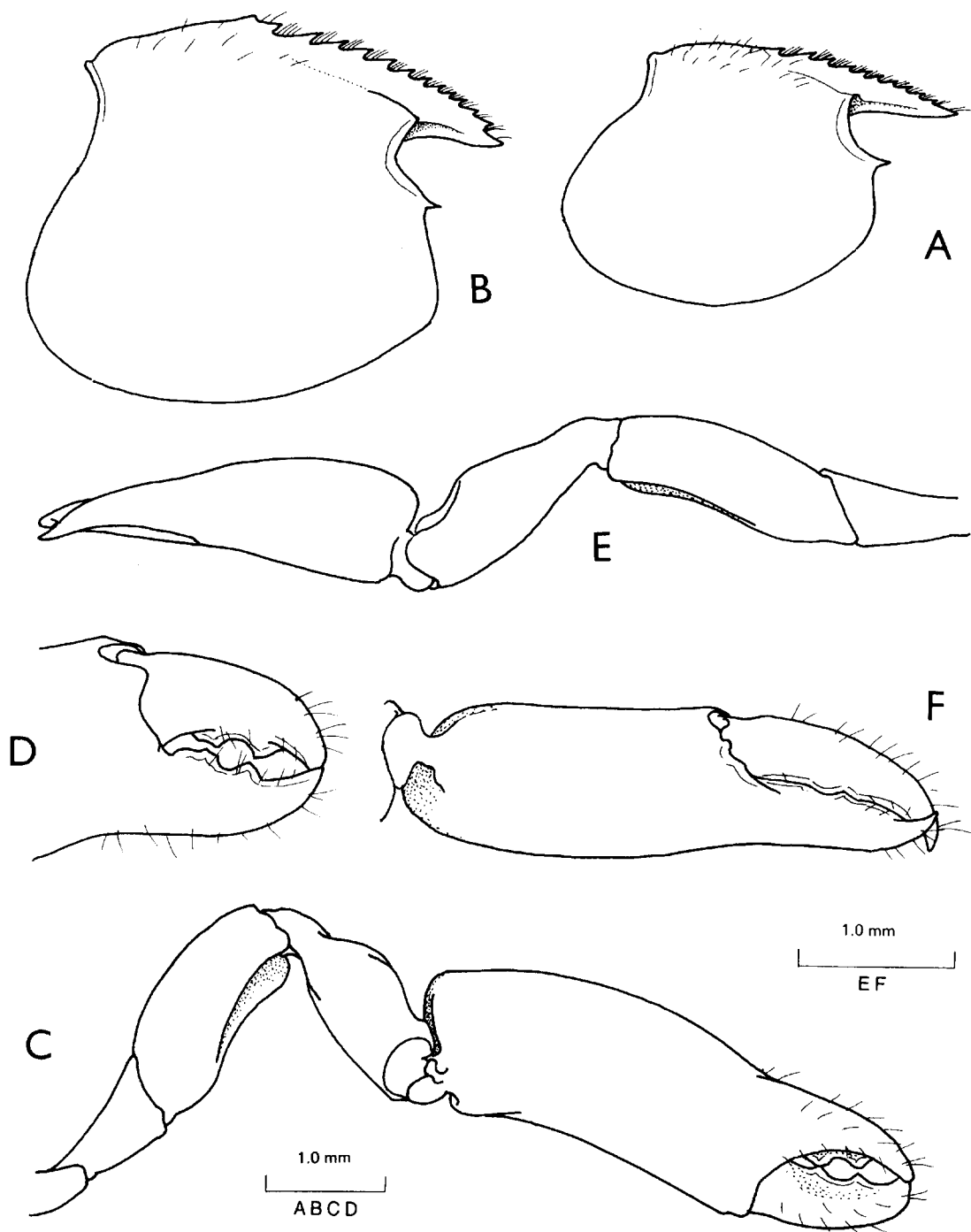


Fig. 1. *Ischnopontonia lophos* (Barnard). Carapace. A, male. B, female. C, second pereiopod, male. D, same, fingers of chela. E, second pereiopod, female, f, same, chela.

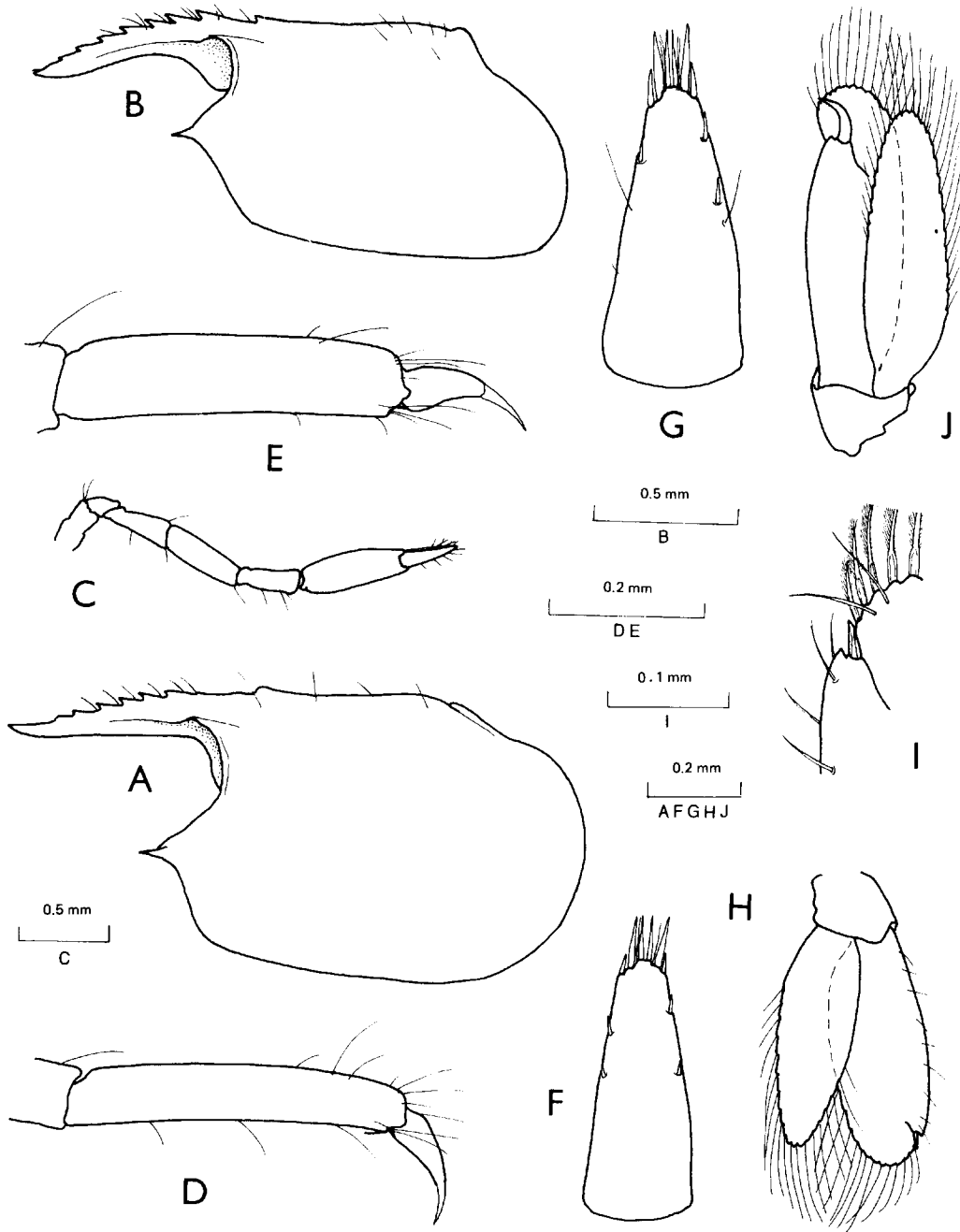


Fig. 2. *Ischnopontonia lophos* (Barnard). A, b, carapace. C, first pereiopod. D, third pereiopod, E, same, propod and dactyl. F, G, telson. H, J, uropod. I, uropod, postero-lateral angle of exopod. A, C, D, F, H, I, post-larva, Cl. 0.5 mm. B, E, G, J, juvenile, CL. 0,85 mm.

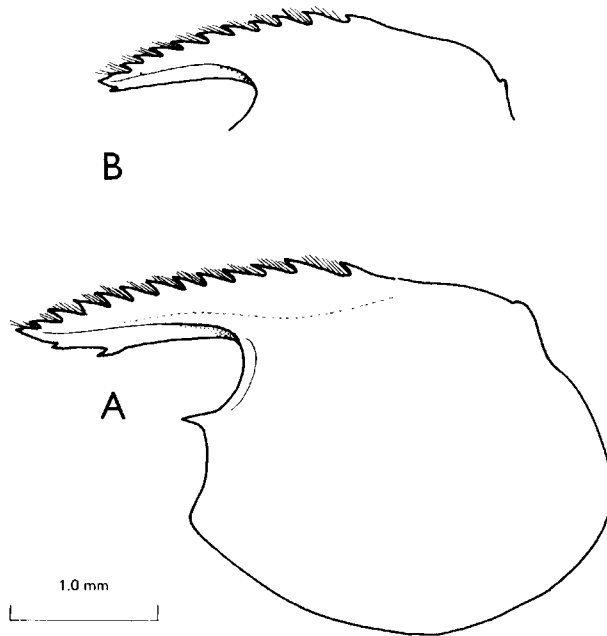


Fig. 3. *Ischnopontonia lophos* (Barnard). Sesoko-jima, carapace. A, male. B, female.

Remarks - The specimens agree closely with the previous descriptions and a broad spectrum of sizes from post-larvae to adults is represented. The six ovigerous females from Zanpa-misaki, carapace lengths from 4.9 to 8.5 mm, had a rostral dentition of $\frac{9-12}{0}$, with up to six teeth on the carapace. The males, with carapace lengths 3.8 to 6.0 mm, had a rostral dentition of $\frac{10-12}{0}$. Two of the specimens from Sesoko-jima were unique, having ventral rostral teeth present. A female, carapace length 5.2 mm, had ten dorsal rostral teeth and a single small preterminal ventral rostral tooth. A male, carapace length 5.6 mm, had thirteen dorsal rostral teeth, of which four were situated on this carapace, and the most distal was minute, with two well developed ventral teeth. Ventral rostral teeth have not been previously recorded in this species and the third specimen from Sesoko-jima had a normal rostral dentition of $\frac{11}{0}$.

The chelae of the second pereopods were also as previously described, and of very characteristic appearance, with the exception of a single male, carapace 6.0 mm, from Zanpa-misaki. In this specimen only a single second pereopod was present and in this the palm of the chela was more inflated and less distally tapered than usual, with the fingers short and stout, with strong teeth, and distinctly less than half the length of the palm. Normally the fingers are slender and tapering, well over half the length of the palm.

Numerous juveniles were also collected, from the first post-larval stage onwards. In this stage the juvenile, carapace length 0.5 mm, presents an unspecialized pontoniine appearance, with a straight slender rostrum bearing six small acute teeth, all anterior to the orbital margin. A distinct epigastric tubercle is present and a well developed antennal spine. The second pereopods are small and slender and do not show the specialized adult form. The ambulatory pereopods are slender, with the propods about 6.0 times longer than wide, sparsely setose and devoid of spines. The dactyl is slender, curved and simple, with a distinct unguis, equal to about 0.33 of the propod length. The telson is of normal pontoniine form, about 2.4 times longer than broad, tapering, with two pairs of small submarginal dorsal spines, at about 0.55 and 0.72 of the telson length. The intermediate dorsal spines are about 0.2 of the telson length. The exopod of the uropod has the postero-lateral angle with a small acute tooth with a small mobile spine medially.

The next largest juvenile, carapace length 0.8 mm, has a slightly depressed rostrum with eight teeth. A small epigastric tooth is also present, but no tubercle. The second pereopods are more strongly developed but without special features. The ambulatory pereopods are more robust, with the propod 4.7 times longer than deep and the dactyl 2.8 of the propod length. The telson is 2.1 times longer than broad and the dorsal spines are relatively longer than in the post-larva. The exopod of the uropod now bears an enlarged outwardly curved postero-lateral spine.

Distribution - Not previously recorded from Japanese waters. Type locality, Inhaca Island, Mocambique. Also known from Zanzibar, Kenya, Comoro Islands, Seychelle Islands, Madagascar, Réunion, Singapore, Australia and Fiji.

Platycaris latirostris Holthius (Figs. 4-5)

Restricted synonymy:

Platycaris latirostris Holthius, 1952: 173-176, figs. 85-86. --- Bruce, 1966a: 1-8, figs. 1-5.

Material examined - 14 spms (2♂, 3♀, 9 juv.), Zanpa-misaki, Okinawa, 26°26'N, 127°43'E, 1.0 m, 24 October 1984, coll. H. Yamashiro.

Remarks - The mature specimens agree closely with the previously published descriptions and require little further elaboration. It can be confirmed that the antennal spine is completely absent. The first pereopod is rather more robust than in previous descriptions with slightly longer fingers, with acute hooked tips. The carpus is slightly longer than the merus and equal to about 1.25 of the chela length. The dactyl is provided with a finely serrated, slightly laterally situated cutting edge, that is not present on the fixed finger. The peg-like setae are only present distally and may represent merely broken setae. The palm tapers slightly distally and is a little compressed, about 1.8 times longer than maximum depth and about 1.3 times longer than the dactyl, which is 4.5 times longer than wide. The ambulatory propods are robust. The third has the propod about 3.5 times the dactyl length and is devoid of spines. The dactyl is robust, simple, slightly curved, about 4.7 times longer than wide, with a distinctly demarkated unguis, equal to about 0.28 of the corpus length. The telson of the dissected specimen has two pairs of well developed, marginal dorsal spines at 0.55 and 0.8 of the telson length. The posterior border is without a minute acute median point and the setulose submedian spines are distinctly shorter than the intermediates.

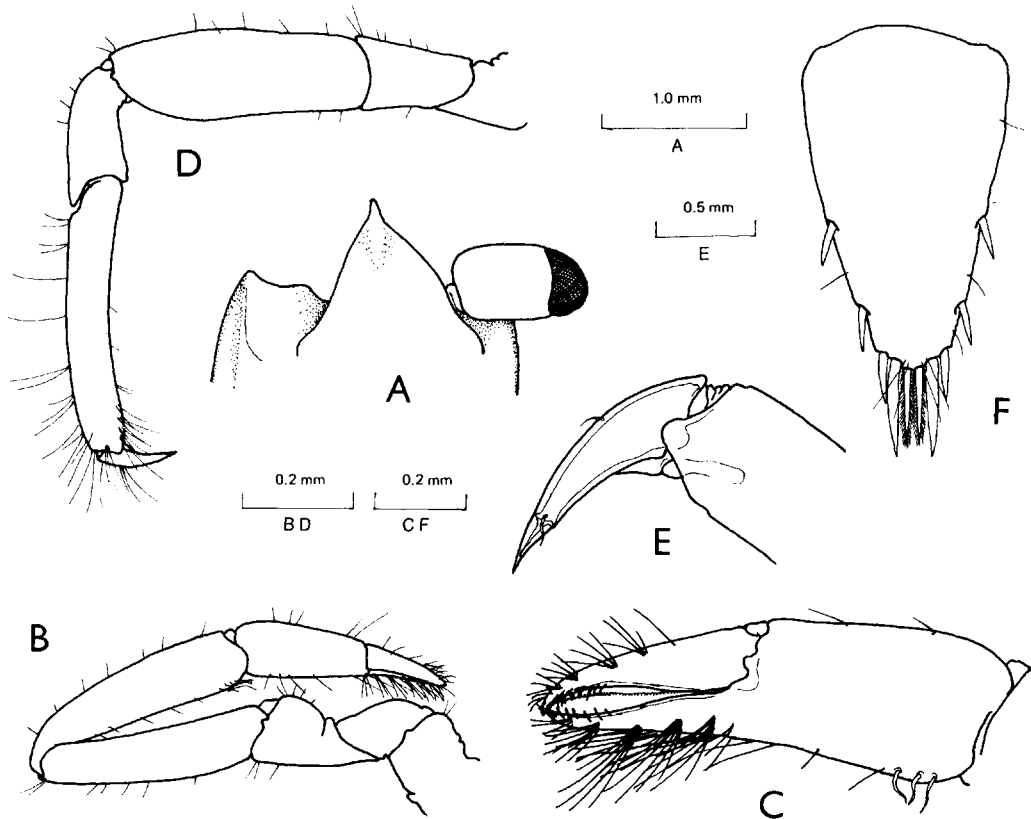


Fig. 4. *Platycaris latirostris* Holthuis, female. A, anterior carapace, dorsal aspect. B, first pereiopod. C, same, chela. D, third pereiopod, E, same, dactyl. F, telson.

The post-larval specimens have a well developed slender acute, slightly decurved toothless rostrum, broadly expanded posteriorly to form well developed orbits, a feebly developed inferior orbital angle with a small antennal spine laterally. First and second pereiopods are both small. The first pereiopod has the chela equal to 1.6 of the carpus length, with the fingers equal to about 1.1 of the palm length, slender, with cutting edges rather gaping and with a finely serrate cutting edge in the dactylus only, as in the adult. The merus is about 1.2 of the carpus length, and 1.7 of the ichium length. The second pereiopods are subequal, similar and more robust than the first. The palm is subcylindrical, slightly compressed and not tapering and curved as in the adults, about 2.4 times longer than deep and 1.9 times the length of the fingers, which have small hooked tips and entire distal cutting edges. The carpus is short and stout, distally expanded, unarmed, equal to about 0.4 of the palm length. The merus is 0.8 of the palm length, uniform, about 3.0 times longer than deep and unarmed. The basis and coxa are without special features. Compared with the adults, the ambulatory pereiopods are relatively slender. The dactyl is about 0.3 of the propod length, 4.1 times longer than deep, and only slightly curved, with unguis

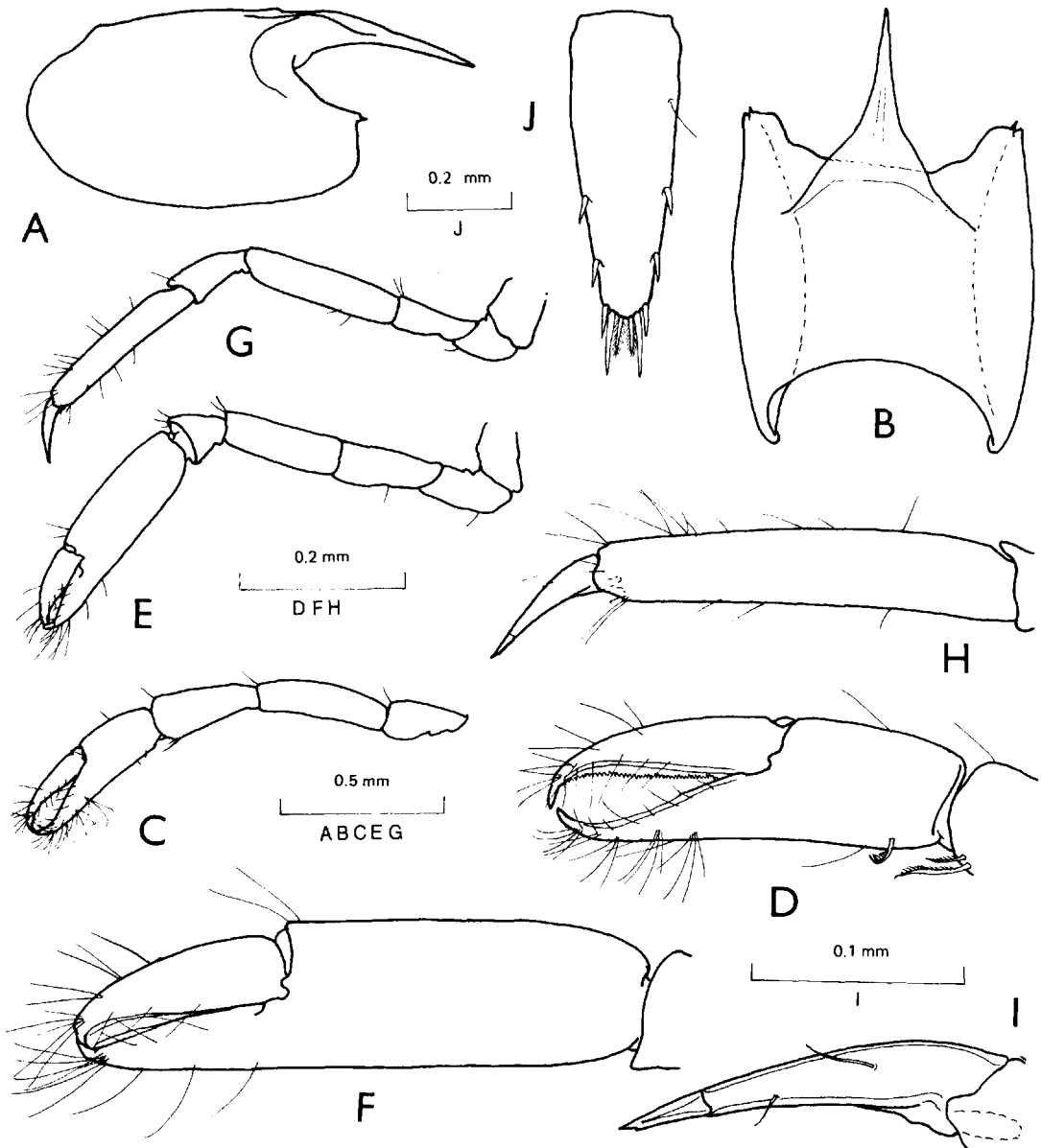


Fig. 5. *Platycaris latirostris* Holthuis, post-larva. A, carapace, lateral. B, same, dorsal. C, first pereiopod. D, same, chela. E, second pereiopod. F, same, chela. G, third pereiopod. H, same, propod and dactyl. I, same, dactyl. J, telson.

distinct. The propod is about 5.3 times longer than deep, tapering slightly distally and devoid of spines. The carpus is about 0.45 of the propod length and the merus 0.9, both are unarmed. The telson is narrower than in the adults, about 2.7 times longer than wide, with dorsal spines 0.59 and 0.8 of the telson length.

Distribution - Not previously recorded from Japanese waters. Type locality, Ende, Flores, Indonesia. Subsequently reported from Mocambique, Zanzibar, Tanganyika, Kenya, Madagascar, Comoro Islands, Réunion, Seychelle Islands, Singapore, Great Barrier Reef and Fiji.

Metapontonia fungiacola Bruce (Fig. 6)

Restricted synonymy:

Metapontonia fungiacola Bruce, 1967: 24-32, figs. 10-12; 1974, 196-197, fig. 5.

Material examined - 2 spms (σ), Sesoko-jima, Okinawa, 26°39'N. 127°52'E., 3 m, 22 September 1984, coll. H. Yamashiro, from *Herpolitha limax* (Houttuyn).

Remarks - The specimens agree closely with previously published reports. It may be noted that, in comparison with most other pontoniine shrimps, the third maxillipeds are extremely short and are exceeded and almost obscured by the elongated antero-lateral lobes of the carapace.

The present association with *Herpolitha limax* represents a new host record. Specimens have been previously found in association with the Fungiidae, *Fungia* spp. and *Halomitra pileus* (Linn.) but have not been found on *Heliofungia*. Specimens have also been found in association with faviid corals, *Goniastrea pectinata* (Ehrenberg) and *Hydnophora microconus* (Lam.).

Distribution - Not previously recorded from Japanese waters. Type locality, Pamanzi Reef, Mayotte, Comoro Islands. Also known from Kenya, Tanganyika, Réunion and the Seychelle Islands.

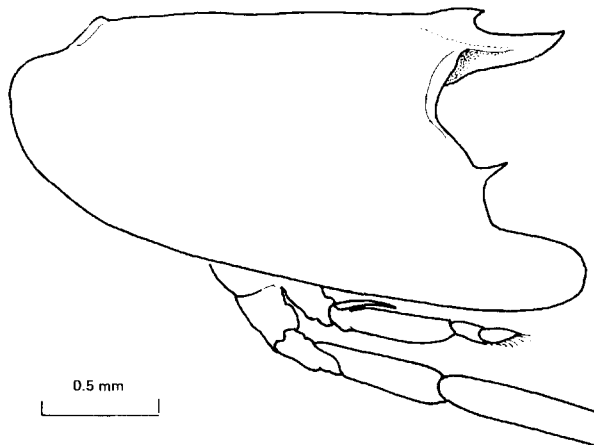


Fig. 6. *Metapontonia fungiacola* Bruce. Carapace and third maxilliped, lateral aspect.

Onyccaris spinosa Fujino & Miyake, 1969 (Fig. 7)

Restricted synonymy:

Onyccaris spinosa Fujino & Miyake, 1969: 429-435, figs. 13-15.

Material examined - 1♂, Zanpa-misaki, Okinawa Island, 26°26'N., 127°43'E, 1.0 m, 24 October 1984, coll. H. Yamashiro, post-orbital carapace length 1.0 mm.

Remarks - *Onyccaris spinosa* was first recorded from Terasaki, Yoronjima, Ryukyu Islands, collected in 1968, and found in association with a sponge host. The species has not been subsequently reported from other localities. Although found in association with specimens of *Racilius compressus* from *Galaxea fascicularis*, the present single specimen was presumably associated with an encrusting sponge growing on the coral.

The specimen agrees well with the original description. The rostrum has a definite, but inconspicuous median carina and the eyes are distinctly quadrate. The second pereopods are well developed but appear rather less robust and strongly armed than in the type material. In particular, the major chela has only two ventral lateral spines and one ventral medial spine on the merus and a single ventral spine on the ischium. The minor second pereopod has only a single ventro-lateral spine on both merus and ischium. The major chela is 1.2 times the minor chela length and the palm is 1.4 times longer than deep, smooth and strongly compressed. The dactyl is 0.66 of the palm length, about 3.4 times longer than deep, with an irregular tooth at about the middle of the cutting edge, separated by a small gap, from a distal series of about 10 small, subacute teeth. The tip is robust, curved and acute. Small groups of long setae are present along the sides of the dactyl. The fixed finger is about 1.7 times longer than deep. An irregular tooth is present at the middle of the cutting edge, opposing distally to the tooth on the fixed finger, with a small diastema proximally and laterally. The proximal cutting edge is irregularly crenulate and the distal part finely denticulate, with the denticles extending on to the acute hooked tip. A well developed flange, with a denticulate upper edge, with about 18 denticles, is present disto-laterally. The palm of the minor chela is about 1.45 times longer than deep, compressed and smooth. The dactyl is 0.64 of the palm length, about 3.3 times longer than deep. The central cutting edge bears a small low acute tooth and the distal cutting edge is denticulate, with about 13 teeth; the tip is acute and hooked. The fixed finger is about 1.8 times longer than deep, with an irregular, feebly toothed proximal cutting edge and a denticulate distal cutting edge, with about 14 small subacute teeth. A well developed lateral flange is present distally, similar to the major pereopod.

The third pereopod is provided with a well developed pair of terminal disto-ventral spines, which have the proximal upper surface finely ribbed or denticulate. The longer spine is equal to about 0.3 of the dactyl length. In the type material a group of four shorter spines is present. The dactyl is strongly compressed, with a long slender clearly demarkated unguis present, equal to about 0.8 of the corpus length. The distal accessory tooth of the corpus is conspicuously bidentate, but less broad than in the type material. The ventral border also bears four smaller acute teeth, as in the types.

Distribution - Known previously only from the type-locality, Terasaki, Yoronjima, Ryukyu Islands.

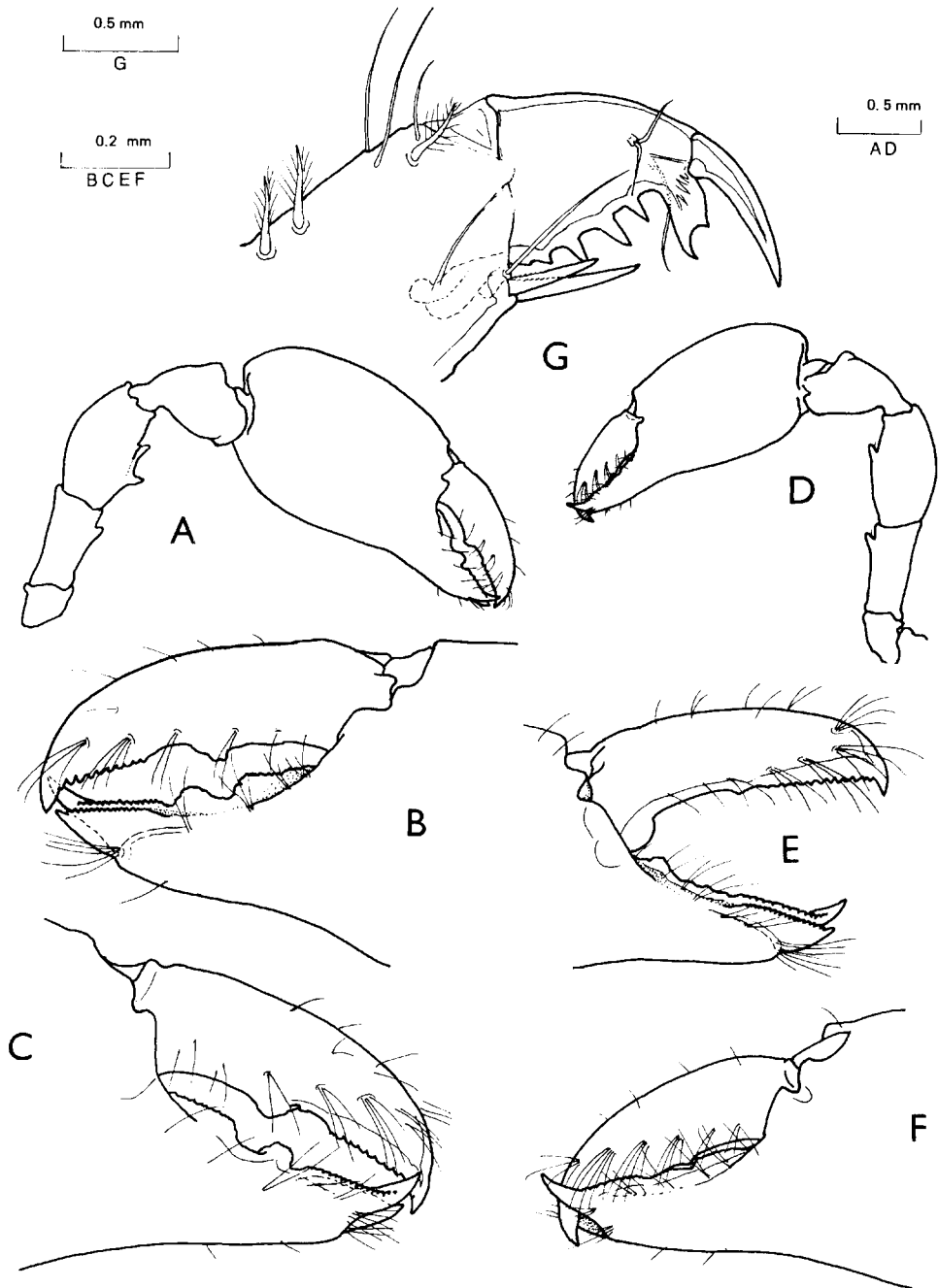


Fig. 7. *Onycocaris spinosa* Fujino & Miyake, juvenile. A, major second pereiopod. B, same, fingers of chela, lateral. C, same, medial. D, minor second pereiopod. E, same, fingers of chela, lateral. F, same, medial. G, dactyl of third pereiopod.

ALPHEIDAE

Athanas djiboutensis Coutière*Restricted synonymy:*

Athanas djiboutensis Coutière, 1897: 233. --- Miya & Miyake, 1968: 131-133, fig. 1.

Material examined - 11 spms (3 ovig. ♀, 4 juv.), Zanpa-misaki, Okinawa, 26°26'N. 127°43'E, 1.0 m, 24 October 1984, coll. H. Yamashiro.

Remarks - The species has been previously reported from the Ryukyu Islands by Miya and Miyake (1968), who described a single ovigerous female from Kamiyama-jima. There appear to be no records from other Japanese localities. Most species of *Athanas* appear to be free-living and are commonly found around the dead bases of coral colonies. Other species are associated with echinoids. *A. djiboutensis* appears to belong to the former category and not to be a commensal of the coral host.

Distribution - Type locality, Jibouti. Widespread throughout most of the Indo-West Pacific region from the Red Sea to South Africa, east to the Phoenix, Society and Marquesa Islands.

Racilius compressus Paulson (Figs. 8-12, pl. 1)*Restricted synonymy:*

Racilius compressus Paulson, 1875: 107-108, pl. 14, fig. 2. --- Barnard, 1958: 732. --- Banner & Banner, 1966: 159, fig. 62; 1973: 350-352, fig. 19. --- Bruce, 1974a: 1-8, figs. 1-5.

Material examined - 16 spms (6 ovig. ♀, 1 juv.), Zanpa-misaki, Okinawa, 26°26'N. 127°43'E, 1 m, 24 October 1984, coll. H. Yamashiro.

Remarks - Okinawan material of *Racilius compressus* agrees well with previously published reports. Previous authors have particularly noted considerable variation in the outline of the rostrum and post-rostral carina, a feature that occurs in the specimens under study.

Points of morphological interest are several. The posterior border of the carapace lacks a cardiac notch, a feature that is almost diagnostic of the family Alpheidae (Coutière, 1899). The antennule has a well developed statocyst on the proximal peduncular segment, which also has a large acute, forwardly directed ventro-medial tooth. The scaphocerite has a particularly robust lateral spine which has a concave medial border and is almost completely separated from the lamella. The telson has a pair of well developed anal tubercles and the posterior border is provided with a pair of small lateral spines and ten long plumose setae; dorsal spines are lacking.

The mandible has a well developed two segmented palp, the distal segment with sparse setae. The incisor process is broad with eight small acute subequal marginal teeth. The molar process is feebly developed, with a slightly oblique crushing surface, tessellate and surrounded by short setae. The maxilla has a well developed bilobed palp, the smaller lower lobe bearing a simple seta. The upper lacinia has a very oblique distal margin armed with a double row of short simple spines. The lower lacinia is short and slender, with a few distal setae only. The maxilla has a short slender simple palp with a simple terminal seta.

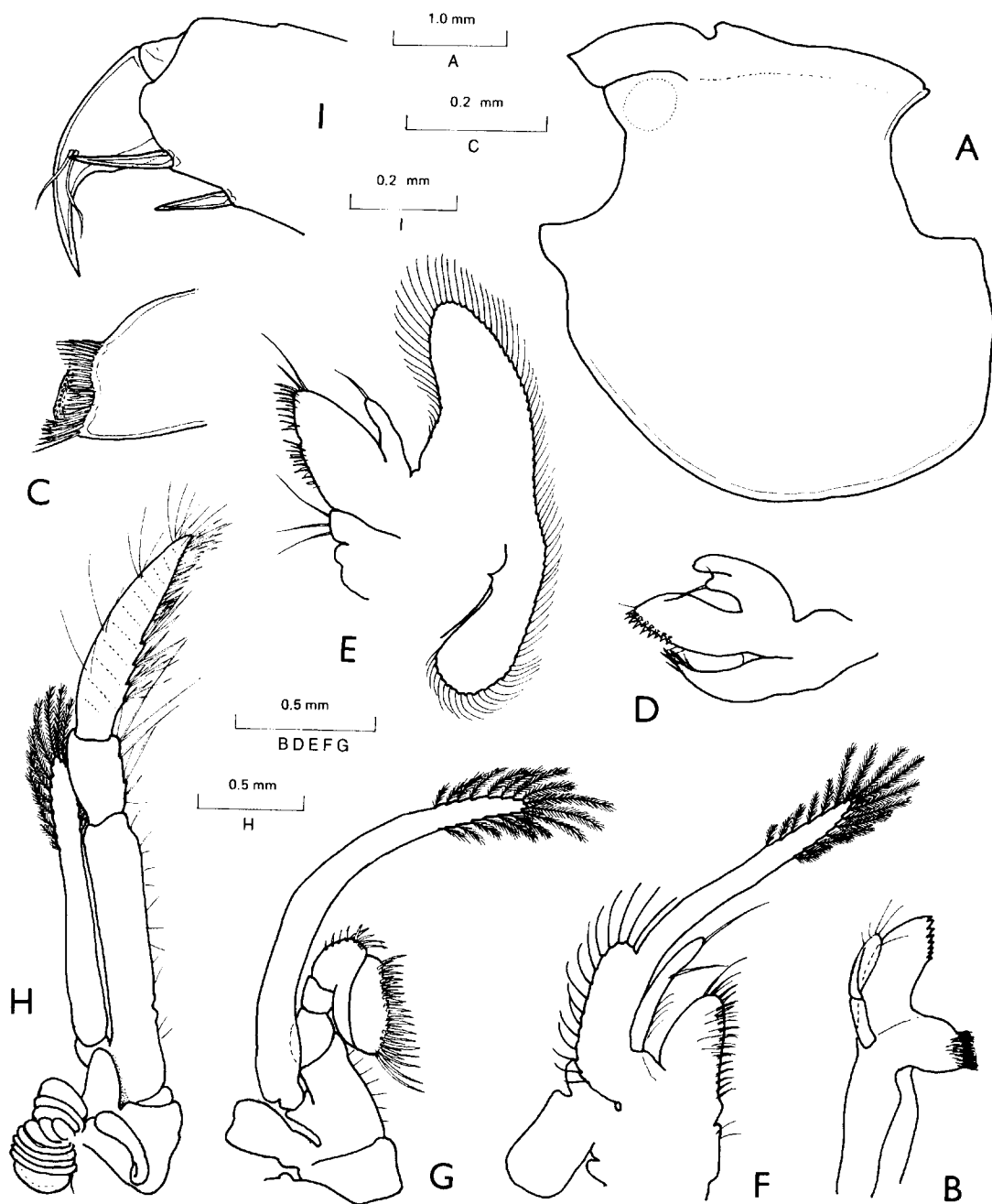


Fig. 8. *Racilius compressus* Paulson, male. A, carapace, lateral. B, mandible. C, molar process. D, maxillula. E, maxilla. F, first maxilliped. G, second maxilliped. H, third maxilliped. I, dactyl of third perciopod.

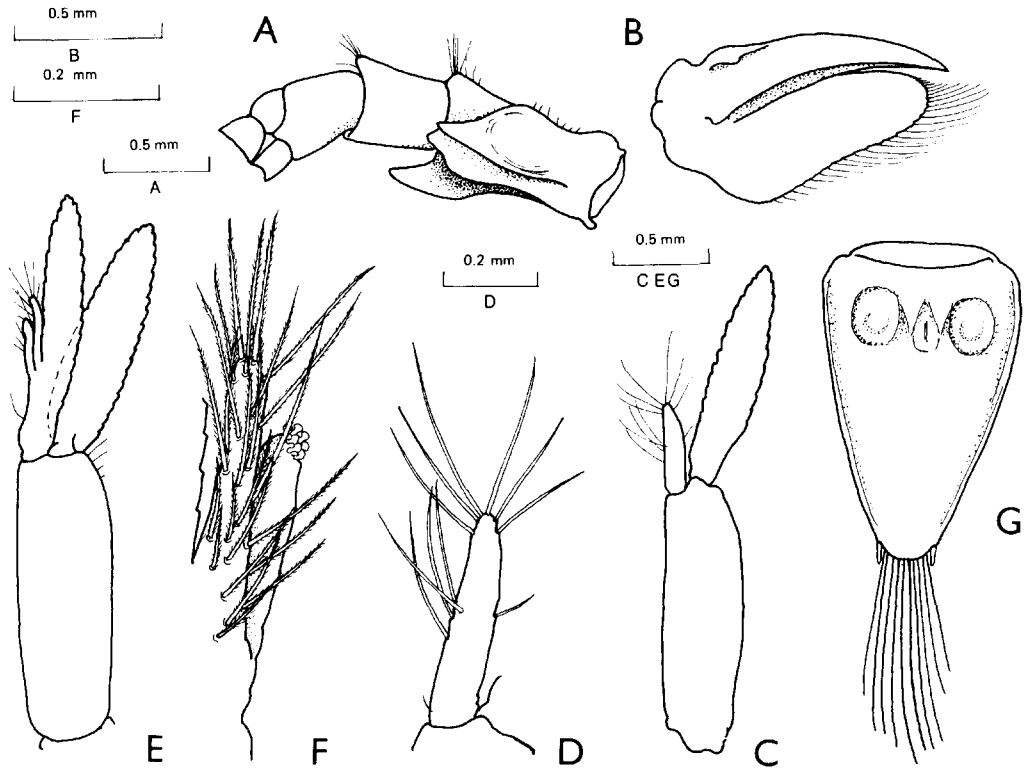


Fig. 9. *Racilius compressus* Paulson, male. A, antennular peduncle, lateral aspect. B, scaphocerite. C, first pleopod. D, same, endopod. E, second pleopod. F, same, appendix masculina and appendix interna. G, telson.

The basal endite is broad, with medial border feebly notched only, with rather sparse short spiniform setae; coxal endite reduced, feebly bilobed, distal lobe larger, with three simple setae only. The scaphocerite is well developed, about 3.4 times longer than broad, with the anterior lobe broad and the posterior lobe narrow. The first maxilliped has an elongated slender subcylindrical palp with simple terminal and pre-terminal setae and a few short proximo-medial setae. The basal endite is moderately narrow, sparsely setose and separated by a small notch from the coxal endite, which is almost devoid of setae. The exopod is well developed with the flagellum flattened, with numerous plumose setae distally; a narrow caridean lobe is present and a bilobed epipod, the smaller anterior lobe being rounded and the larger posterior lobe subrectangular. The second maxilliped is of normal form. The exopod is well developed and a small subrectangular epipod is present. The third maxilliped is well developed. The endopod has the ischio-merus and basis fused, the junction indicated by a small medial notch. The combined segment is about 5.75 times longer than wide, rather uniform and sparsely setose medially; the penultimate segment is about 0.3 of the antipenultimate segment length; the terminal segment about 5.0 times longer than wide, 2.4 times the length of the penultimate segment, tapering distally and densely setose ventrally and medially. The exopod is well developed. The coxa is stout, with

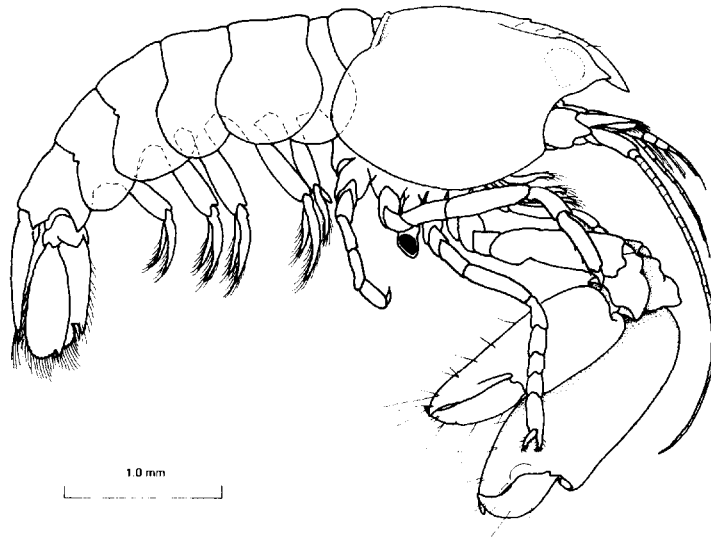


Fig. 10. *Racilius compressus* Paulson, post-larva.

a distinct antero-lateral lobe and epipodite, and a well developed small arthrobranch.

The dactyls of the ambulatory pereopods are strongly compressed and the unguis is not distinct from the corpus. A pair of sensory setae are present laterally.

The endopod of the male first pleopod is slender, about 4.5 times longer than wide, about 0.4 of the exopod length, tapering slightly, with seven finely serrulate setae medially and four laterally. The endopod of the second pleopod is about 1.1 times the length of the exopod with appendix masculina and appendix interna at 0.3 of the medial border length. The appendix masculina is 4.0 times longer than wide, tapering slightly distally with some 24 finely serrulate setae ventrally. The appendix interna reaches to about 0.6 of the appendix masculina length and bears a few distal concinni only.

The undeveloped ova are about 1.2 mm and developed 1.2 mm in length, and a female typically carries about 35 ova only.

The pseudo-larva of *Racilius compressus* has been described by Bruce (1974a). A single juvenile, probably a first post-larval stage, occurs in the present collection and is readily identifiable as a *Racilius*, although most of the characteristic features of the adults are present in a much less exaggerated form. The general body form is only feebly compressed, as are the chelae of the second pereopods. The rostrum is acute, slender and depressed, orbital teeth acute, and post-rostral carina distinct, with a small tooth at 0.3 of its length; the antero-lateral angle is also distinctly produced but normally medially curved and not apparent in lateral view; posteriorly without cardiac notch. The antennular peduncle has the proximal segment without a statocyst and stylocerite (but developing statocyst is visible beneath cuticle); upper flagellum uniramous, with proximal three segments stout, with groups of aesthetascs distally, and distal three segments slender; lower

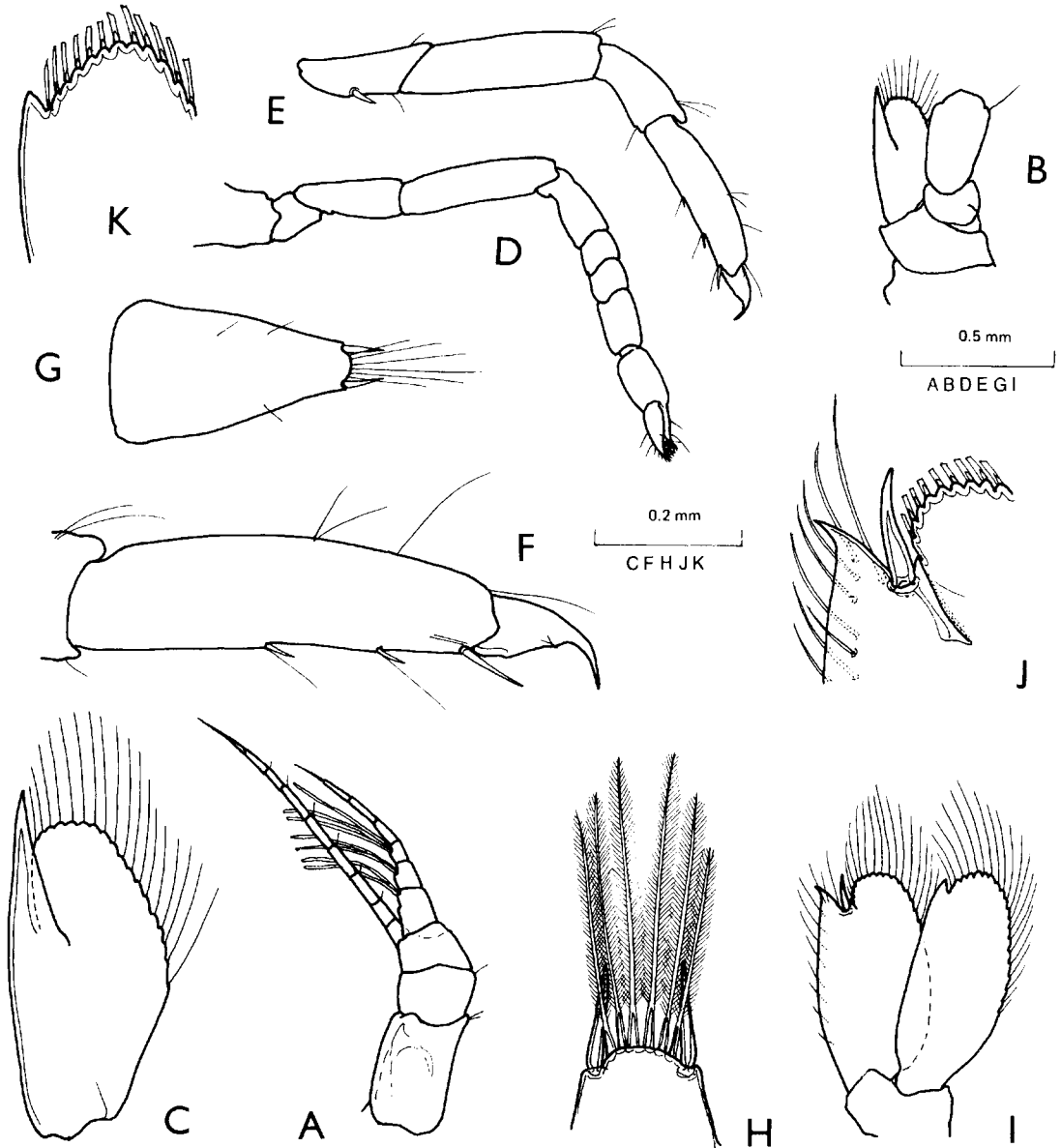


Fig. 11. *Racilius compressus* Paulson, post-larva. A, antennule. B, antenna. C, scaphocerite. D, second pereiopod. E, third pereiopod, F, same, propod and dactyl. G, telson. H, same, posterior margin. I, uropod. J, same, postero-lateral angle of exopod. K, same, endopod.

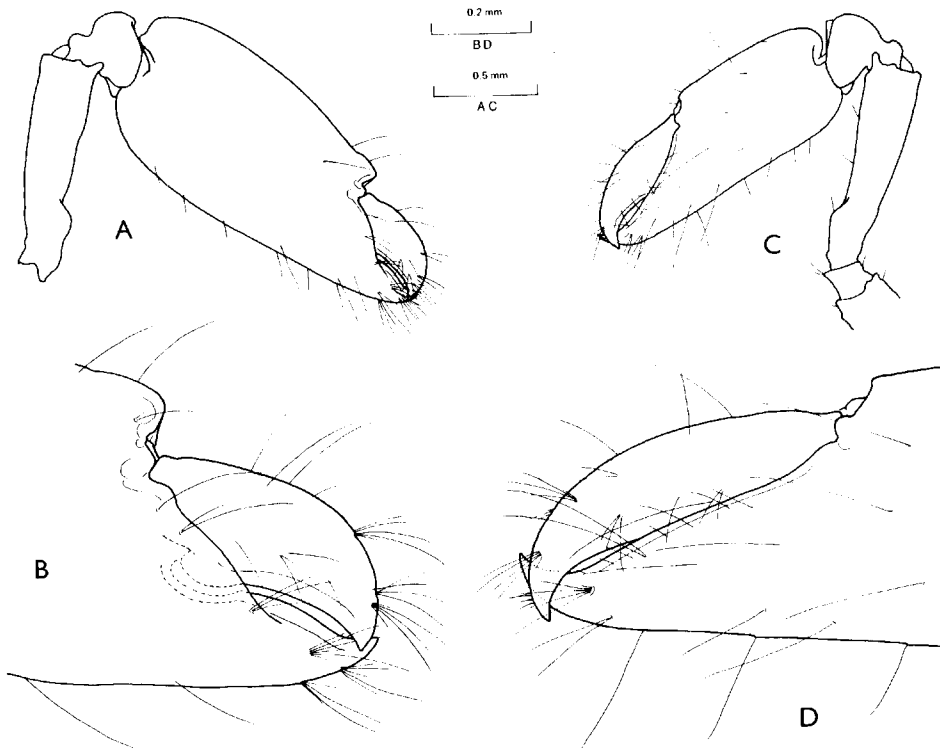


Fig. 12. *Racilius compressus* Paulson, post-larva, first pereopod. A, major pereopod. B, same, fingers of chela. C, minor pereopod. D, same, fingers of chela.

flagellum with nine slender segments. The antenna has a stout basicerite with a broad acute disto-lateral tooth; scaphocerite with a well developed disto-lateral tooth, extending well beyond lamella, which is 2.0 times longer than broad. The major first pereopod is about 1.3 times the post-rostral carapace length, with the palm about 1.7 times longer than deep and the dactyl 0.8 of the palm length, with an entire cutting edge. The fingers of both chelae are provided with numerous long setae. In both first pereopods, the merus bears a blunt disto-ventral tooth and appears completely fused to the ichium. The second pereopod has the carpus four-segmented. The third pereopod has a simple dactyl, with the unguis slender and strongly curved, not distinct from the corpus; propod about 4.0 times longer than deep, with 2 ventral and 1 longer disto-ventral spines, equal 15 about 0.17 of the telson length, rounded, with six long plumose setae. The uropod has the protopodite feebly armed postero-laterally; exopod with lateral border ventrally setose, with large acute laterally curved posterior tooth, with strong mobile spine medially and a small acute medial tooth; endopod with a distinct tooth at postero-lateral angle.

Distribution - Not previously recorded from Japanese waters. Type locality, Red Sea. Also known from Suez Canal to Mocambique; Madagascar, Mauritius, R union, Seychelles, Singapore, Thailand, Philippines and Great Barrier Reef.

Alpheus parvirostris Dana*Restricted synonymy:*

Alpheus parvirostris Dana, 1852a: 22; 1852b: pl. 35, fig. 3a-f. --- Ortman, 1890: 483.

Material examined - 5 spms (2 juv.), Zanpa-misaki, Okinawa, 26° 26'N. 127° 43'E, 1.0 m, 24 October 1984, coll. H. Yamashiro.

Remarks - The specimens agree precisely with available information. The species is a common coral reef rubble inhabitant and does not appear to be specifically associated with any other marine invertebrate, although often found in male-female pairs. Reported associations with *Tubipora* and *Galaxea* may be accidental.

Parasites - One specimen was infected by a rhizocephalan parasite, *Thompsonia* sp., with a conspicuous red infra-abdominal reproductive body.

Distribution - Type locality, Balabac Strait, Philippines. Widely distributed from the Red Sea to the Society Islands. First recorded from Japan at Kagoshima (Ortmann, 1890).

Alpheus deuteropus Hilgendorf*Restricted synonymy*

Alpheus deuteropus Hilgendorf, 1878: 834, pl. 4, figs. 8-10. --- Miya, 1974: 107-109, pl. 15.

Material examined - 4 spms (3 juv.), Zanpa-misaki, Okinawa, 26° 26'N. 127° 43'E, 1.0 m, 24 October 1984, coll. H. Yamashiro.

Remarks - The adult specimen, a male, agrees well with the description of Miya (1974). Preserved in alcohol, the distal parts of the chelae of the first pereopods have a marked orange red colour. This species is commonly found in male-female pairs in deep fissures in scleractinian corals, so these specimens may have been directly associated with *Galaxea fascicularis* as host animal.

Distribution - Type locality, Zanzibar. Not previously reported from the Ryukyu Islands but recorded by Miya (1974) from Yakushima, Southern Kyushu, Japan. Also known from the Western Indian Ocean to the Hawaiian Islands.

Alpheus acutofemoratus Dana*Restricted synonymy:*

Alpheus acutofemoratus Dana, 1852: 550, pl. 35, fig. 2 --- Banner & Banner, 1982: 77-79, fig. 19.

Material examined - 5 spms (2 juv.), Zanpa-misaki, Okinawa, 26° 26'N. 127° 43'E, 1.0 m, 24 October 1984, coll. H. Yamashiro.

Remarks - Banner & Banner (1982) have reported that Indonesian specimens live in fissures in live coral colonies like *A. deuteropus*, so these specimens may also

be true associates of the coral *Galaxea fascicularis*. The larger specimens correspond well with the Banners' description of Australian material.

Distribution - Not previously recorded from Japanese waters. Type locality: Balabac Strait, Philippines. Also known from Thailand, Indonesia, Australia, Marshall Islands and Samoa.

Synalpheus hastilicrassus Coutière

Restricted synonymy:

Synalpheus hastilicrassus Coutière, 1905: 875, pl. 72, fig. 12. --- Banner & Banner, 1975: 353-356, fig. 21.

Material examined - 12 spms (3 ovig. ♀, 3 juv.), Zanpa-misaki, Okinawa, 26°26'N. 127°43'E, 1.0 m, 24 October 1984, coll. H. Yamashiro, det. D.M. Banner. 2 spms (1 ovig. ♀), Sesoko-jima, Okinawa, 26°39'N. 127°59'E, 1.0 m, 13 October 1984, coll. H. Yamashiro.

Remarks - The specimens agree closely with the description given by Banner & Banner (1975). The species is rather variable in its morphology, particularly with reference to the acute tooth above the dactylar articulation on the chela of the major second pereopod.

This species has been reported by Banner & Banner (1975) in coral heads and also inside sponges. It seems probable that it is primarily a sponge commensal that may occur in encrusting sponges on coral heads.

Parasites-- One specimen was infected by a branchial bopyrid parasite, *Parabopyrella indica* (Chopra). The association with *S. hastilicrassus* represents a new host record. For discussion of parasite, see Markham (1982).

Distribution - Not previously recorded from Japanese seas. Type localities: Maldive and Laccadive Islands. Also known from Somalia, Kenya, Madagascar, Seychelle Islands, Réunion, Mauritius, Ceylon, Indonesia, Australia, Philippines, Fiji, Marshall and Caroline Islands.

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LITERATURE CITED

- Banner, D.M. & A.H. Banner. 1966. The Alpheid Shrimp of Thailand. Siam Soc. Monog., 3:1-v, 1-168, figs. 1-62.
 Banner, D.M. & A.H. Banner. 1973. The Alpheid Shrimp of Australia, I. The Lower Genera. Rec. Aust. Mus., 28:291-382, figs. 1-19.

- Banner, D.M. & A.H. Banner. 1975. The Alpheid Shrimp of Australia, II. The Genus *Synalpheus*. Rec. Aust. Mus., 29:267-389, figs. 1-29.
- Banner, D.M. & A.H. Banner. 1982. The Alpheid Shrimp of Australia. III. The remaining alpheids, principally the genus *Alpheus* and the family Ogyrididae. Rec. Aust. Mus., 34:1-357, fig. 1-94.
- Barnard, K.H. 1958. The rediscovery of Genus *Racilius* Paulson (Crustacea, Decapoda, Alpheidae). Ann. Mag. Nat. Hist., (12)10(118):752.
- Barnard, K.H. 1962. New records of marine crustacea from the East African region. Crustaceana, 3:239-245, figs. 102.
- Bruce, A.J. 1966. Notes on some Indo-Pacific Pontoniinae, XI. A re-examination of *Philarius lophos* Barnard, with the designation of a new genus *Ischnopontonia*. Bull. mar. Sci., 16:584-598, figs. 1-5.
- Bruce, A.J. 1966a. Notes on some Indo-Pacific Pontoniinae, II. *Platycaris latirostris* Holthuis. Crustaceana, II(1):1-9, figs. 1-3.
- Bruce, A.J. 1967. Notes on some Indo-Pacific Pontoniinae, III-IX. Descriptions of some new genera and species from the western Indian Ocean and South China Sea. Zool. Verhand., Leiden, 87:1-73, figs. 1-29.
- Bruce, A.J. 1974. A report on a small collection of pontoniid shrimps from the Island of Farquhar. Crustaceana, 27:189-203, figs. 1-8.
- Bruce, A.J. 1974a. Abbreviated larval development in the alpheid shrimp *Racilius compressus* Paulson. J. East Afr. Nat. Hist. Soc. & Nat. Mus., 147:1-8, figs. 1-5.
- Coutière, H. 1897. Note sur quelques alpheides nouveaux ou peu connus rapportés de Djibouti (Afrique Orientale). Bull. Mus. Hist. Nat., Paris, 3:233-236.
- Coutière, H. 1905 (1905). Les Alpheidae. In: J.S. Gardiner, (ed). The fauna and geography of the Maldive and Laccadive Archipelagoes, 2:852-921, figs. 127-139, pls. 70-87.
- Dana, J.D. 1852a. Crustacea. In: United States Exploring Expedition, during the years 1838, 1839, 1840, 1841 under the command of Charles Wilkes, U.S.N., 13:vii+685. C. Sherman, Philadelphia.
- Dana, J.D. 1852b. *Op. cit.* Folio Atlas, 13:1-27, pls. 1-96.
- Fujino, T. & S. Miyake. 1969. Studies on the genus *Onycocaris* with description of five new species (Crustacea, Decapoda, Palaemonidae). Jour. Fac. Agric., Kyushu Univ., 15:403-448, figs. 1-18.
- Hilgendorf, F. 1879 (1878). Die von Hr. W. Peters in Mocambique gesammelten Crustaceen. Mber. Akad. Wiss. Berlin, 25:782-851, 4 pls.
- Holthuis, L.B. 1952. The Decapoda of the Siboga Expedition XI. The Palaemonidae collected by the Siboga and Snellius Expeditions with remarks on other species. II. Sub-family Pontoniinae. Siboga Exped. Mon., 39a¹⁰. 1-252, figs. 1-110, Tab. 1.
- Markham, J.C. 1982. Bopyrid isopods parasites on decapod crustaceans in Hong Kong and Southern China. Proc. First Internat. Mar. Biol. Workshop. The Marine Fauna and Flora of Hong Kong and Southern China, Hong Kong, 1980. ((Eds.) B.S. Morton & C.K. Tseng, Hong Kong University Press, 1:325-391, figs. 1-33.
- Miya, Y. 1974. The Alpheidae (Crustacea, Decapoda) of Japan and its adjacent waters, II. Publ. Amakusa Mar. Biol. Lab., Kyushu Univ., 3:103-195, pls. 1-31.
- Miya, Y. & S. Miyake. 1968. Revision of the genus *Athanas* of Japan and the Ryukyu Islands, with description of a new species (Crustacea, Decapoda, Alpheidae). Publ. Amakusa Mar. Biol. Lab., Kyushu Univ., 1:129-168, figs. 1-13.

- Ortmann, A. 1890. Die Unterordnung Natantia Boas. I. Die Decapoden-Krebse der Strassburger Museums, mit besonderer Berücksichtigung der von Herrn Dr Doderlein bei Japan und bei den Liu-Kiu-Inseln gesammelten und z.Z. im Strassburger Museum aufbewahrten Formen. Zool. Jb. Syst., 5: 437-542, pls. 36-37.
- Paulson, O. 1875. Investigations on the Crustacea of the Red Sea with notes on the Crustacea of Adjacent Seas. I. Podophthalmata and Edriophthalmata (Cumacea), i-xiv, 1-144, pls. 1-21.



Plate 1. *Racilius compressus* Paulson, adult male (upper) and ovigerous female (lower). Scale bar equals 5 mm.

