DESIGNATION OF A NEW GENUS *LIPKEMENES*, WITH SUPPLEMENTARY DESCRIPTION AND RANGE EXTENSION OF ITS TYPE SPECIES, *L. LANIPES* (KEMP, 1922) (DECAPODA, PALAEMONIDAE)

BY

ALEXANDER J. BRUCE[1,3]) and JUNJI OKUNO[2])

[1]) Crustacea Section, Queensland Museum, P.O. Box 3300, South Brisbane, Q4101, Australia

[2]) Coastal Branch of Natural History Museum and Institute, Chiba, 123 Yoshio, Katsuura, Chiba 299-5242, Japan

ABSTRACT

A new pontoniine genus, *Lipkemenes* gen. nov. is established for the ophiuroid-associated shrimp, *Periclimenes lanipes* Kemp, 1922. The present new genus can be distinguished from other genera of the subfamily Pontoniinae by the combination of the presence of the hepatic spine on the carapace, the slender first pereiopod, with fingers distinctly subspatulate with cutting edges pectinate, and the spines on the distoventral part of the meri of ambulatory pereiopods. The supplementary description of the type species, *L. lanipes*, is provided on the basis of numerous specimens collected from various localities from the Indo-West Pacific. A juvenile specimen of the species is described for the first time. Of these, the specimens recorded from the Ryukyu Islands, Japan, Bali, Indonesia, and Western Australia and the Northern Territory, Australia document the distributional range extension of the species. *Lipkemenes lanipes* is also the only Indo-West Pacific pontoniine shrimp known to associate with an ophiuroid host.

RÉSUMÉ

Un nouveau genre *Lipkemenes* gen. nov. est établi pour la crevette associé aux ophiuroides, *Periclimenes lanipes* Kemp, 1922. Le nouveau genre peut être distingué des autres genres de la sous-famille Pontoniinae par la présence de l'épine hepatique sur la carapace, les premières péréiopods minces, avec les doigts spatulés aux bordes pectinés, et les épines sur la partie distoventrale des meri des péréiopods ambulatories. L'espèce type, *L. lanipes* Kemp, est rapporté pour la premiéres fois des eaux japonaises, en se basent sur six spécimens remassés à Ie-shima amd Kume-jima Islands, Isles Ryu-kyus. Des spécimens sont aussi rapportés pour la première fois de Bali, Indonesia, et Western Australia et le Northern Territory, Australia. *Lipkemenes lanipes* est aussi le seul espèce de pontoniine Indo-Ouest Pacifique qui vit associé aux ophiuroides.

[3]) Corresponding author, e-mail: abruce@broad.net.au

INTRODUCTION

The ophiuroid-associated shrimp, *Periclimenes lanipes* Kemp, 1922 was first described by Kemp (1922), based on the ovigerous female holotype from the Mergui Archipelago, and two non-type specimens from Mozambique. Subsequently, this species has been reported several times from various localities of the Indo-West Pacific (Bruce, 1971a, b, 1978, 1992; Monod, 1973; Chace & Bruce, 1993; Li & Bruce, 2006; Marin & Savinkin, 2007). Morphologically, this species is characterized by the generally robust body form, the ventrally directed and strongly arched rostrum, and the robust ambulatory pereiopods with meri armed distoventrally with row of spines and propodi with dense long woolly setae distally. The structure of the meri of ambulatory pereiopods is not found in any other species of the genus *Periclimenes* Costa, 1844. Therefore, we establish herein a new monospecific genus, *Lipkemenes*, for *P. lanipes*. In this paper, furthermore, the supplementary description of the type species is provided on the basis of the additional material from East Africa, Indonesia, the South China Sea, Japan, and Australia.

The designation of *Lipkemenes* gen. nov. increases to 112 the number of genera in the Pontoniinae, with 96 genera present in the Indo-West Pacific region and 24 in the East Pacific and Atlantic-Mediterranean regions, with 8 occurring in both the Indo-West Pacific and the other regions. Of the 96 Indo-West Pacific genera, 45 (46.8%) are currently monospecific.

Illustrations were made with the aid of a drawing tube mounted on a Leica MZ12 and a Wild M3Z stereomicroscope. The abbreviation CL is used for postorbital carapace length. The specimens are deposited in the collections of the Australian Museum, Sydney (AM); the Coastal Branch of Natural History Museum and Institute, Chiba (CMNH); the Northern Territory Museum, Darwin (NTM); the Queensland Museum, Brisbane (QM); the National Museum of Natural History, Washington (USNM); the Ryukyu University Museum, Fujukan (RUMF).

TAXONOMY

Lipkemenes gen. nov.

Type species. — *Periclimenes* (*Periclimenes*) *lanipes* Kemp, 1922, present designation.

Diagnosis. — Small sized pontoniine shrimps with subcylindrical, robust body form. Carapace smooth, antennal and hepatic spines present, inferior

orbital angle produced, pterygostomial margin bluntly produced. Rostrum well developed, directed ventrally, arched, dorsally and ventrally dentate, lateral carina well developed, setose, proximally continuous with well developed supraocular eave. Ophthalmic somite without interocular process. Abdomen smooth, pleura of first three segments broadly rounded, fourth and fifth posteroventrally produced, third tergite not posterodorsally produced. Telson gradually tapered distally, dorsally setose, with two pairs of dorsolateral spines, posterior margin with three pairs of spines. Eyes with globular cornea. Antennule normally developed. Antenna with well developed scaphocerite. Epistome without well developed horns. Mandible without palp, molar and incisor processes normal. Maxillula with bilobed palp, upper and lower laciniae well developed. Maxilla with normal palp, distal endite bifid, proximal endite weakly produced, rounded, scaphognathite broad. Maxillipeds with slender exopodal flagella, with four long plumose terminal setae. First maxilliped with caridean lobe large, epipod triangular. Second maxilliped with epipod subquadrate, without podobranch. Third maxilliped with coxal plate large, oval; arthrobranch well developed. First pereiopod slender, with dactylus distinctly subspatulate, cutting edges pectinate. Second pereiopod generally with chela densely setose. Ambulatory pereiopods stout, meri armed with distoventral row of 3-11 spines, distoventral angle acute; propodi with long, woolly setae distoventrally, these setae obscuring large distolateral spines.

Etymology. — Named in honour of the late Dr. Lipke B. Holthuis (1921-2008) in recognition of his great contributions to knowledge of the carcinology over the world, combined with part of *Periclimenes* Costa, 1844. Gender: masculine.

Common name. — Tezurumozuru-ebi zoku (new Japanese name).

Remarks. — The presence of the row of ventral spines on the meri of ambulatory pereiopods is an unusual morphological feature within the subfamily Pontoniinae. These spinose meri are only found in *Periclimenes lanipes* and some of species of the genus *Periclimenaeus* Borradaile, 1915, e.g., *P. arabicus* (Calman, 1939); *P. arthrodactylus* Holthuis, 1952; *P. gorgonidarum* (Balss, 1913), and *P. rhodope* Nobili, 1904 (see Calman, 1939; Holthuis, 1952; Miyake & Fujino, 1967). Current taxonomic studies dealing with pontoniine shrimps suggest the genus *Periclimenes* sensu lato still needs further subdivision (see Okuno & Bruce, 2009). Thus, we consider the meral armature as a distinguishing character in separating *P. lanipes* from other species of *Periclimenes* at the generic rank.

Lipkemenes lanipes (Kemp, 1922) comb. nov.
(figs. 1-6)

Periclimenes (*Periclimenes*) *lanipes* Kemp, 1922: 156-158, pl. 4 fig. 4; Holthuis, 1952: 9 (list).
Periclimenes (*Harpilius*) *brooki* [sic.]. — Johnson, 1961: 59. Not *Periclimenes brocki* (De Man, 1888).
P[*ericlimenes*]. *lanipes.* — Bruce, 1965: 493 (list).
Periclimenes lanipes. — Bruce, 1971a: 9; 1971b: 11-15, figs. 3, 4, 5c, d; 1978: 228-230, fig. 11; 1979: 225; 1990: 160, fig. 7; 1991: 237; 1992: 77-78, fig. 24; Monod, 1973: 9-10, figs. 14-23; Chace & Bruce, 1993: 116-117; Fransen, 1997: 1065, fig. 21.11; Li & Bruce, 2006: 698-699, fig. 23; Marin & Savinkin, 2007: 188-189.
P[*ericlimenes*]. *brocki.* — Johnson, 1979: 33 (list). Not *Periclimenes brocki* (De Man, 1888).

Material examined. — **Somalia**: 1 ♀, CL 2.6 mm, off Ras Binnah, R.V. "Anton Bruum", cruise 9, IIOE, stn 9-459, 11°18.0′N 51°08.0′E to 11°21.0′N 51°09.0′E, 25.5-30.0 m, AJB #203, on *Astroboa nuda* (Lyman), det. D.M. Devaney, USNM 1132473. — **Kenya**: 6 spms (1 ovig. ♀, CL 3.3 mm), Wasin Channel, 4°39.4′N 39°22.3′E, 13 m, sand, on *Astroboa nuda* (Lyman), scuba, 23 January 1972, coll. B. Benbow, AJB#1738, QM W28991. — **Zanzibar**: 66 spms (1 ovig. ♀, CL 3.2 mm); mainly juveniles, between Prison Island and Fungu Fuwatu, Unguja, Agassiz trawl, 33-36.5 m, 8 June 1961, coll. A.J. Bruce, #8, on large ?*Astroboa*, QM W28992. — 1 ovig. ♀, CL 2.3 mm; 9 small, juvenile or ♂, between Chumbe Island and Fungu Fuwatu, Unguja, Agassiz trawl, 33-36.5 m, 8 June 1961, coll. A.J. Bruce, AJB#9, on large ?*Astroboa*, QM W28993. — 1 ♂, Fawatu Bank, Unguja, trawl, 33-36.5 m, 8 June 1961, coll. A.J. Bruce, AJB#218, on gorgonocephalid, QM W28994. — 1 ♂, CL 1.9, 6 juv., Mazizini Bay, Unguja, trawl, 9-12.5 m, 10 February 1962, coll. A.J. Bruce, AJB#378, on *Astroboa*, QM W28995. — 6 ovig. ♀♀, 1 ♀, 1 ♂, CLs 3.9-2.7 mm, east of Murogo Island, Unguja, 6°13.0′S 39°07.9′E, 18 m, scuba, coll. B. Benbow, 25 November 1971, on *Astroboa nuda* (Lyman), AJB#1659, QM W28996. — 29 spms (2 ovig. ♀♀), Chumbe Island reef, Unguja, Zanzibar, stn 80, 6°16′40″S 39°11′06″E, 4 June 1970, scuba, coll B. Benbow, ? depth, from 5 gorgonocephalid hosts, AJB#1179, QM W28997. — 23 spms (1 ovig. ♀; mainly juveniles), Zanzibar Channel, 6°11.65′S 39°09.1′E, scuba, 27.5 m, 24 December 1972, coll. B. Benbow, *Astroboa nuda* (Lyman), AJB#1936, QM W28998. — 22 spms (3 ovig. ♀♀), mainly juvenile, off Chapani Island, Unguja, Zanzibar, 6°11.65′S 39°09.1′E, 27.5 m, 24 December 1972, coll. B. Benbow, scuba, on *Astroboa nuda* (Lyman), AJB#1936, QM W28999. — 1 ♀, CL 2.0 mm, off Bawi Island, Unguja, Zanzibar, 6°09.8′S 39°09.0′E, 10.0 m, 7 December 1973, coll. B. Benbow, scuba, on *Astroboa nuda* (Lyman), AJB#2048, QM W29000. — **Indonesia**: 1 ♀, CL 4.3 mm, Tulamben, Bali, 12 m, November 1996, coll. N. Coleman, AMPI 1501, on *Astroboa nuda* (Lyman), QM W23114. — **Japan**: 1 ovig. ♀, CL 3.1 mm, RUMF-ZC-1085, 1 ♂, CL 1.6 mm, RUMF-ZC-1086, Oura Bay, Okinawa-jima Island, Ryukyu Islands, 45-50 m, 24 June 2009, coll. D. Uyeno, on unidentified basket star. — 1 ovig. ♀, CL 2.4 mm, CMNH-ZC 02378, 1 ♂, CL 1.4 mm, 1 ovig. ♀, CL 2.3 mm, 2 ♀♀, CL 2.2 & 1.4 mm, CMNH-ZC 02379, Kanan-zaki, Ie-shima Island, Ryukyu Islands, 18 m, 28 October 2005, coll. K. Iinuma, on unidentified basket star. — 1 ♂, 1 ♀, 1 juv., Mifugar, Kume-jima Island, Ryukyu Islands, coll. S. Hirayama, stn 10, 10 m, 31 July 1993, QM W25586. — **South China Sea**: 13 spms (5 ovig. ♀♀), FRV "Cape Saint Mary", Cr.3/64, stn 63, 16°04.6′N 114°39.4′E to 16°03.6′N 114°42.2′E, 80.5-84.1 m, Granton trawl, sand, 21 June 1964, on *Astroboa glymna* (Döderlein) det. A.M. Clark AJB#19, QM W29001. — 1 ovig. ♀, CL 3.1 mm, FRV "Cape Saint Mary", Cr.7/64, stn 60, 2°23.5′N 110°29.5′E to 2°29.5′N 110°9.5′E, 42-43.9 m, Granton trawl, sand, 8 November 1964, from *Euryale aspera* Mortensen, det. A.M. Clark, AJB#129, QM W29002. — 5 spms (0 ovig. ♀),

FRV "Cape Saint Mary", Cr.7/64, stn 108, 7°50.0′N 107°37.0′E to 7°53.0′N 107°36.0′E, 54.8-62.1 m, Granton trawl, sand, 19 November 1964, coll. R.G. Lester, from gorgonocephalid, AJB#136, QM W29003. — **Western Australia**: 3 spms, FRV "Soela", A50283 stn B-5, 19°4.3′S 118°50.5′E, 80 m, epibenthic sledge, 27 Apr. 1983, 80 m *Astroglymnum sculptum* (Döderlein), det. F. Rowe, AJB-NWS-16, NTM Cr010403. — 2 ♀♀, FRV "Soela", A50283 stn B-5, 19°5.4′S, 118°53.3′E, 0283-B4, 82 m, trawl, *Astroboa nigrofurcata* (Döderlein), det. F. Rowe, 27 Apr. 1983, AJB-NWS-16, Cr010404. — 1 ♂, CL 3.5 mm, FRV "Soela", A30283 stn B-12, 19°3.8′S 119°3.8′E, 83 m, trawl, 30 June 1983, Cr010402. — 1 ovig. ♀, CL 4.0 mm, FRV "Soela", A30483-B1, 19°59.1′S 11°51.0′E, 42 m, trawl, 25 June 1983, Cr010401. — 1 ♀, CL 2.6 mm, FRV "Soela", A30483-B9, 19°28.4S 118°55.2′E, 39 m, trawl, 31 August 1983, Cr010405. — 1 ovig. ♀, CL ca 3.5 mm, FRV "Soela", A30583-D4, 19°29.S 6°118′52.2′E, 38 m, trawl, 25 October1983, Cr010400. — 1 ovig. ♀, CL 3.6 mm, Joseph Bonaparte Gulf, 13°34.3′S 127°40.0′E, 70-80 m, 1 July 1990, coll. D. White, NTM Cr007831. — **Northern Territory**: 1 ♀ CL 1.2 mm, RV "Southern Surveyor", SS0591-29, NE of Caledon Bay, NT, Australia, 12°37.1′S 136°49.3′E, 26 m, dredge, 23 November 1991, coll. A.J. Bruce & R.S. Williams, on basket star, NTM Cr008864. — Queensland: 3 ovig. ♀♀, 1 ♀, 2 ♂♂, 4 juv., FIS "Endeavour", 40 km south east of Double Island, Queensland, 60 m, 1909-1914, from *Euryale aspera*, AM E.4498. — 1 ovig. ♀, CL 3.2 mm, Broadhurst Reef, south east of Townsville, Queensland, 19.16°S, 146.49°E, probably from basket star *Astroboa nuda* Lyman, AM P.21842.

Hosts. — *Lipkemenes lanipes* has been reported from five species of gorgoncephalid ophiuroid: *Astroboa nuda* (Lyman, 1874) (Bruce, 1971a; Li & Bruce, 2006); *Astroboa nigra* Döderlein, 1911 (Bruce, 1965): *Astroglymna sculptum* (Döderlein, 1896) (Bruce, 1965): *Astroboa aspera* Lamarck, 1816 (Bruce, 1971b; Li & Bruce, 2006); *Astrophyton purpurea* Mortensen, 1934 (Bruce, 1965). The present report adds only *Astroboa nigrofurcata* Döderlein, 1927.

Bathymetric range. — Recorded from depths of 15-120 m.

Common name. — Tezurumozuru-ebi (new Japanese name, basket-star shrimp).

Colouration (fig. 1). — General chocolate brown, with narrow transverse white postorbital band, similar band across central thoracic region and on posterior margin of each abdominal segment, margined by paler mottled bands, caudal fan proximally and uropodal exopod laterally pale, whitish, centrally chocolate and distally pale mottled. Appendages mottled chocolate, pereiopods with carpo-meral joints whitish.

Remarks. — The present specimens agree quite well with the previous descriptions of the species listed above. The identification of Johnson's (1961, 1979) specimens from Singapore followed Bruce (1992).

The available descriptions may be augmented by some further details. The rostrum is strongly depressed in large females (figs. 2A, 3A); rostral angle (the long axis of the rostrum against the long axis of the cephalothorax, measured from the most posterior orbital margin) depressed about 27° compared with

Fig. 1. *Lipkemenes lanipes* (Kemp), female, CL 4.3 mm, Bali, Indonesia, QM W23114. Photo by N. Coleman, AMPI 1501.

7° in some males (fig. 2E). The posterior expansion of the lateral carinae shows considerable variation, being particularly well developed in some large females, and the lateral carinae bear numerous short simple setae (fig. 3B), a feature not noted in any other pontoniine shrimps. The ventral carina is generally non-setose (fig. 3A). The inferior orbital angle is slightly produced, without a ventral flange but with a small setose medial carina (fig. 3C). The antennal and hepatic spines are well developed, with the latter at a higher level. The eye has a well pigmented cornea, diameter about 0.22 of the CL in the female, 0.3 in the male, without an accessory pigment spot. The epistome has low rounded swellings laterally and the labrum is broadly rounded, without an anterior carina. The ophthalmic somite is small, without a median process or median pigment spot. The proximal segment of the antennular peduncle has a well developed ventromedial tooth and the intermediate segment a well developed lateral lobe. The upper flagellum is biramous with the first four segments fused, the shorter ramus with five free segments, with about 13 groups of aesthetascs. The thoracic sternites have the fourth without a median process, unarmed; fifth with low angular transverse carinae separated by a median notch; the sixth with transverse carinae separated by a small median notch; the seventh and eighth unarmed. The first pereiopod with the chela (fig. 3D) about 0.36 of CL, robust, the palm 1.8 times longer than

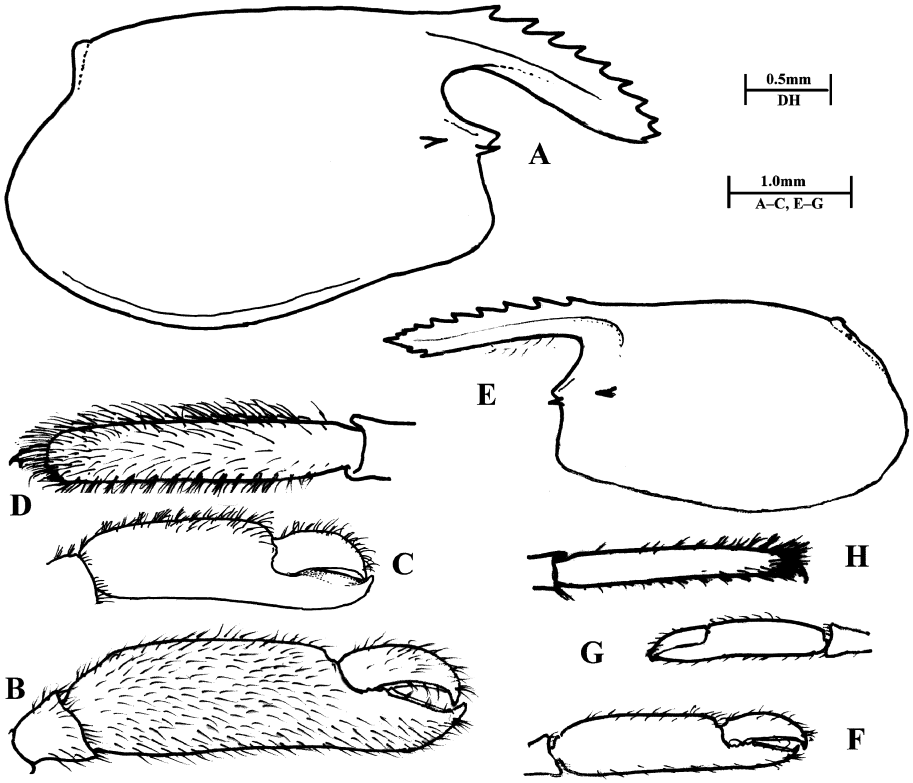

Fig. 2. *Lipkemenes lanipes* (Kemp), ovigerous female, CL 3.2 mm, Murogo Island, QM W28996: A, carapace and rostrum; B, major second pereiopod chela; C, minor second pereiopod chela; D, third pereiopod, propod and dactyl. Male, CL 2.1 mm, Murogo Island, QM W28996: E, carapace and rostrum; F, major second pereiopod chela; G, minor second pereiopod chela; H, third pereiopod, propod and dactyl.

deep, fingers about 0.78 of palm length, similar, broad, subspatulate, distally rounded (fig. 3E), cutting edges finely pectinate (fig. 3F), with numerous groups of simple setae, the carpus is about 1.25 times palm length, 1.1 times the meral length, the ischium and basis are normal, the coxa with a small setose distoventral process. The second pereiopods are similar, equal or unequal. The major chela (fig. 2B) may be subequal to the CL, with the fingers 0.45 of the palm length. The fingers (fig. 3G) are robust with stout hooked tips; the dactyl stout, dorsally strongly convex, distal two-thirds of lateral cutting edge entire, with a single acute tooth on proximal third; the fixed finger is very stout, the distal two-thirds similar to dactyl, proximal third with the cutting edge with four or five small teeth laterally and a deep fossa for the reception of the dactylar tooth medially. The minor second pereiopod (figs. 2C, 3H-J) is

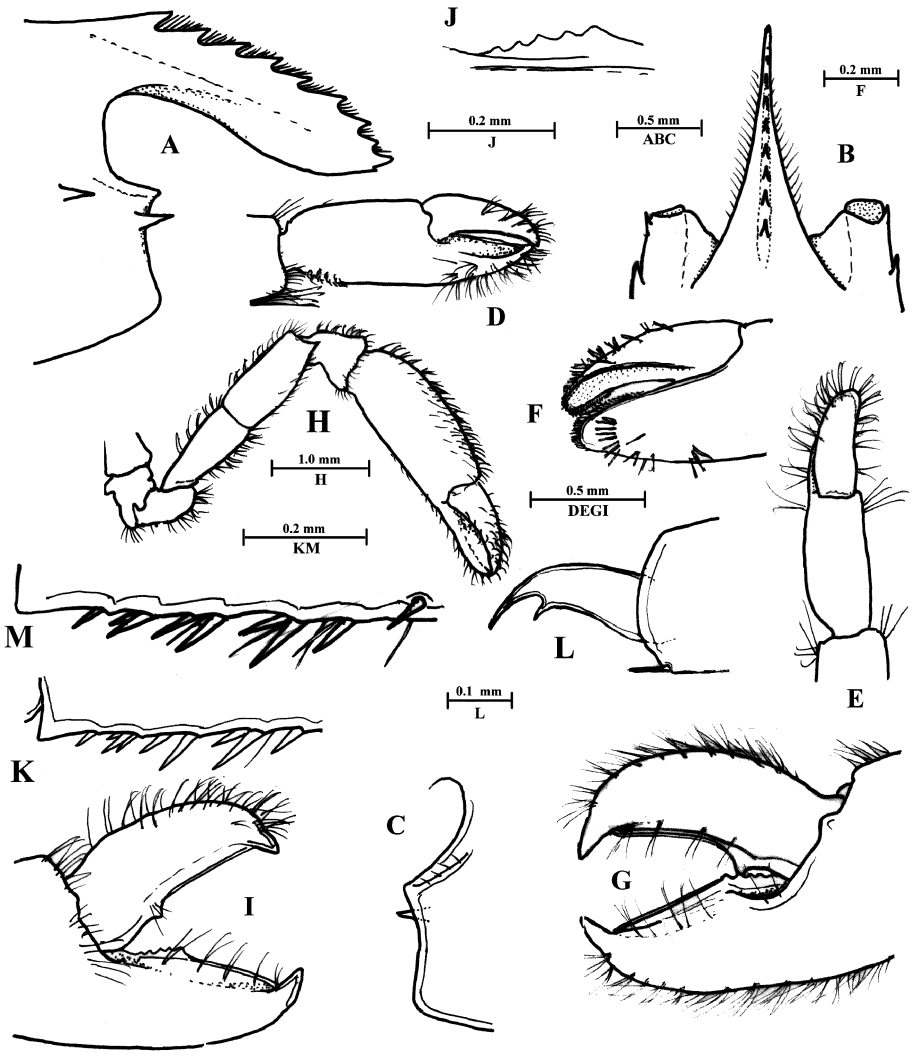

Fig. 3. *Lipkemenes lanipes* (Kemp), ovigerous female, CL 3.2 mm, Murogo Island, QM W28996. A, anterior carapace and rostrum; B, anterior carapace and rostrum, dorsal; C, anterolateral carapace, internal aspect; D, first pereiopod chela, lateral; E, same, dorsal; F, same, fingers, squashed; G, major second pereiopod, fingers; H, minor second pereiopod; I, same, fingers; J, same, proximal cutting edge of fixed finger; K, same, distoventral merus; L, third pereiopod, distal propod and dactyl, setae omitted; M, same, distoventral merus.

similar but frequently smaller than the major; the merus is distoventrally acute, the distal ventral margin with up to 10 spines, some arranged in transverse pairs or triplets (fig. 3K). The third pereiopod (fig. 2D) has the dactyl (fig. 3L) relatively small and slender, about 0.15 of the propod length, as long as the

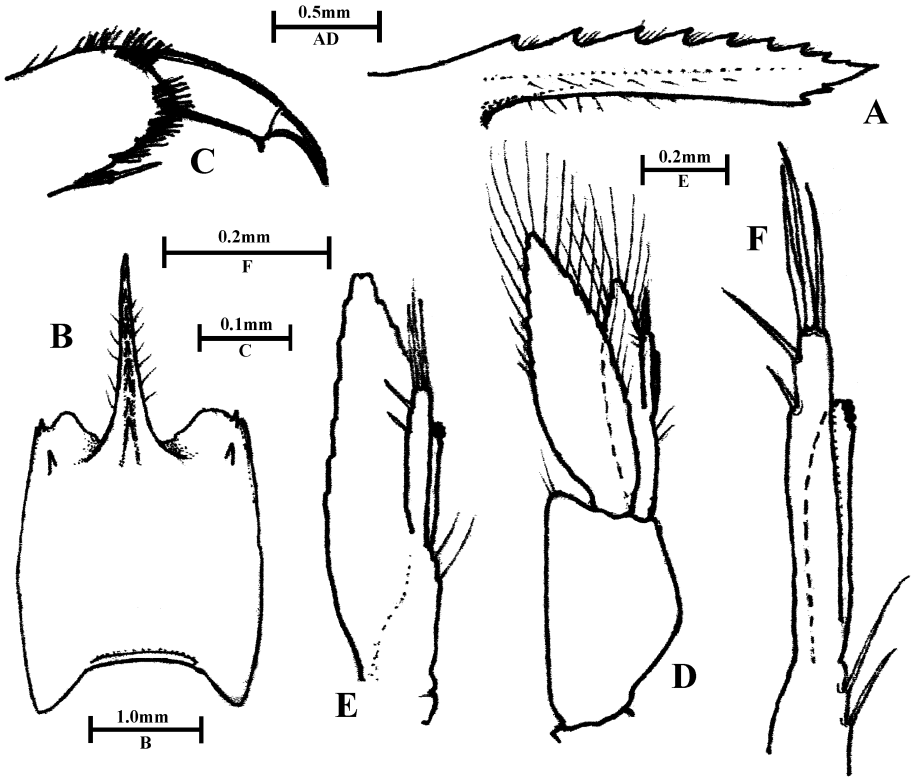

Fig. 4. *Lipkemenes lanipes* (Kemp), male, CL 2.1 mm, Murogo Island, QM W28996. A, rostrum; B, carapace and rostrum, dorsal; C, third pereiopod, distal propod and dactyl, setae omitted; D, second pleopod; E, same, endopod; F, same, appendices masculina and interna.

propod is wide, the dorsal margin is strongly concave, the unguis is slender, about 3.5 times longer than basal width, the corpus is about twice as long as its basal width, the ventral margin is concave with a slender accessory tooth distally, about 0.3 of the unguis length; the propod is 5.5 times as long as wide, densely setose, with setae slightly grouped ventrally, largely obscuring the ventral and distal spines, the merus is distoventrally angular (fig. 3M), the distal ventral margin with up to 11 small spines.

The male (fig. 2E-H) is essentially similar to the female but generally much less setose. The rostrum (fig. 4B) is 0.75 of the CL, slightly depressed, rostral angle about 7°, more slender and straight than in the female. The lateral carinae (fig. 4A) are similarly setose and the ventral margin may be sparsely setose. The corneal diameter is 0.3 of the CL. The pereiopods are similar to the female, but markedly less setose. The major second pereiopod is about half the CL, with the fingers half the palm length and the minor 0.72 of

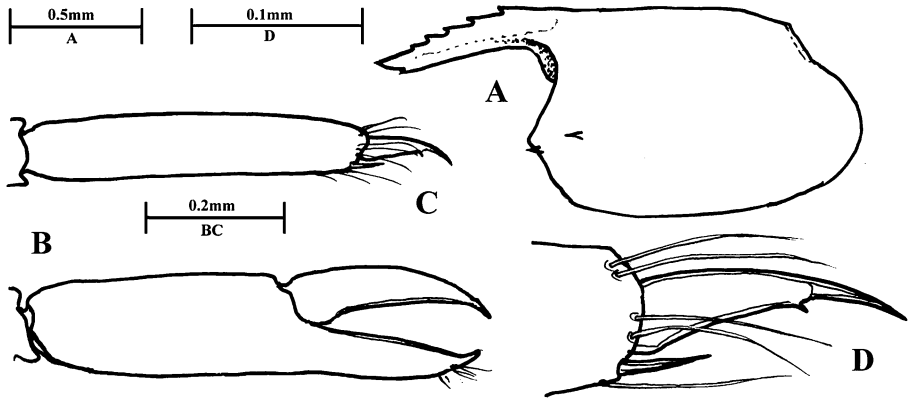

Fig. 5. *Lipkemenes lanipes* (Kemp), juvenile, CL 0.85 mm, Zanzibar Channel, QM W28998. A, carapace and rostrum; B, second pereiopod chela; C, third pereiopod, propod and dactyl; D, same, distal propod and dactyl.

the CL. The ambulatory dactyl (fig. 4C) is about 0.16 of the propod length, more slender than in the female and less strongly curved, with a smaller accessory tooth, The propod is 6.7 times as long as wide, sparsely setose, with numerous ventral spines distally. The second pleopod (fig. 4D) has the basipodite 1.6 times as long as broad, with the lateral margin straight, the distolateral angle is produced, the medial margin convex; the exopod about 1.4 times the basipodite length; the endopod (fig. 4E) 0.8 of the exopod length, the appendices (fig. 4F) are at 0.3 of medial margin length, the appendix masculina with the corpus 6.5 times as long as wide, 0.33 of the endopod length, with three long simple terminal spines, longest about 0.6 of the corpus length, 2 short simple distomedial spines, the appendix interna is about 0.75 of the appendix masculina corpus length.

The juveniles of *L. lanipes* have not been previously described. The example studied, which may be a first post-larval example, has a CL of about 0.9 mm. The rostrum (fig. 5A) is straight, about 0.70 of the CL, with a dentition of 5/1, depression about 10°, with distinct non-setose lateral carinae. The antennal and hepatic spines are present, small. The eye is large, with the cornea about 0.45 of the CL. The second pereiopod chelae (fig. 5B) are similar, about 0.72 of the CL, the fingers about 0.75 of the palm length, slender and unarmed. The third pereiopod propod (fig. 5C) is about 0.62 of the CL, with a single distoventral spine only, the dactyl (fig. 5D) is about 0.25 of the propod length and is distinctly biunguiculate, more slender and much less strongly curved than in the adults, with a smaller accessory spine. All appendages are very sparsely setose.

The transverse spine groups on the second pereiopod meri show some resemblance to those found in abundance on the second pereiopod meri in *Periclimenes acanthimerus* Bruce, 2006, where they also extend along the ventral carpus and ischium (Bruce, 2006). *Periclimenes acanthimerus* also resembles *L. lanipes* in the general form of the carapace and rostrum, the latter also having well developed lateral carinae, the maxillipedal exopods are slender with four long plumose terminal setae, unlike most of the deeper water *Periclimenes* species, the first pereiopod chelae are also similar, with broad, distally rounded fingers with pectinate cutting edges and the ambulatory dactyls are biunguiculate.

Distribution (fig. 6). — Type locality: 12°48′N, 98°16′10″E, Mergui Archipelago, 44 m (Kemp, 1922). Also known from various localities on the Indo-West Pacific: South China Sea (Bruce, 1979); Philippines (Chace & Bruce, 1993; Li & Bruce, 2006); Vietnam (Marin & Savinkin, 2007); Singapore (Johnson, 1961, 1979; Bruce, 1992); Indonesia (Fransen, 1997; Queensland (Bruce, 1971b, 1977, 1981); New Caledonia (Monod, 1973; Bruce, 1990, 1991); Fiji (Li & Bruce, 2006); Somalia (Bruce, 1971a); Mozambique (Kemp, 1922); Madagascar (Bruce, 1978). To these the following may now be added: the Ryukyu Islands, Japan, Bali, Indonesia, and Western Australia and the Northern Territory, Australia.

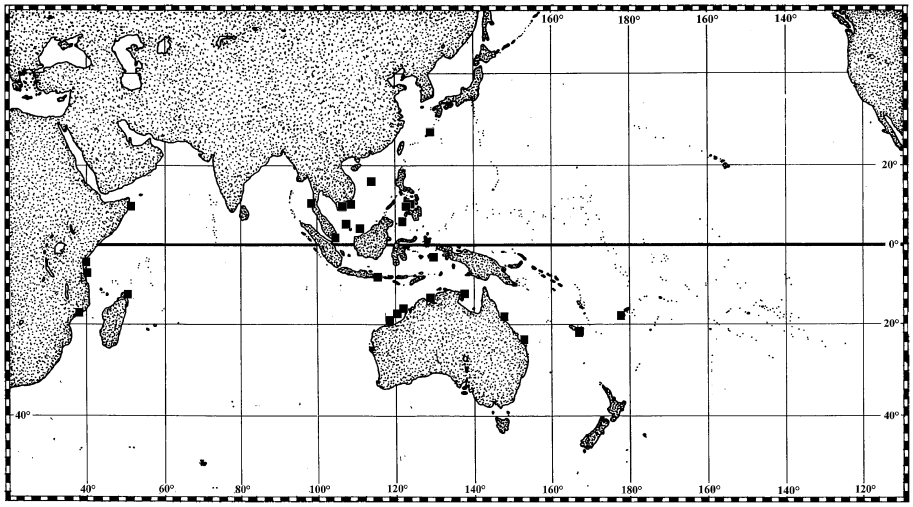

Fig. 6. *Lipkemenes lanipes* (Kemp), Distribution. Precise localities for Mozambique and Suluwesi records uncertain.

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