

## LANCARIS, A NEW GENUS OF FRESHWATER SHRIMP FROM SRI LANKA (CRUSTACEA: DECAPODA: ATYIDAE)

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**ABSTRACT.** – *Lancaris*, new genus, is established for two freshwater shrimp species, thus far known, endemic to the highlands of central Sri Lanka. It is characterized by the absence of arthrobranch on the first pereopod, the presence of a short appendix interna on the endopod of male first pleopod, a small lateral angle and a large number of spinules on the uropodal diaeresis, and the long setae on the distal end of the telson. The new genus is compared to related genera *Parisia* Holthuis, 1956, *Pycneus* Holthuis, 1986, *Pycnisia* Bruce, 1992, and *Paracaridina* Liang & Guo, 1999, in Liang, Guo & Tang, 1999. Species assigned to the new genus, *Lancaris singhalensis* (Ortmann, 1894), and *L. kumariae* (De Silva, 1990), previously placed in *Caridina* H. Milne-Edwards, 1837, are redescribed and illustrated.

**KEYWORDS.** – Freshwater shrimp, Atyidae, *Lancaris*, new genus, Sri Lanka.

### INTRODUCTION

The atyid shrimp fauna of Sri Lanka is generally considered to be well known (Ortmann, 1894; Bouvier, 1925; Roux, 1931; Arudpragasam & Costa, 1962; Costa, 1966, 1972, 1974, 1984; De Silva, 1982a, b, 1983, 1988a, b, 1990; Benzie & De Silva, 1983, 1984). To date, two genera with 13 species have been reported from this island. An on-going taxonomic revision reveals the presence of a new genus, which comprises two species endemic to the central highlands of Sri Lanka, namely *Caridina singhalensis* Ortmann, 1894, and *C. kumariae* De Silva, 1990. Here we diagnose this genus, *Lancaris*, new genus, and compare it with closely allied genera. Specimens examined belong to collections of the Basel Natural History Museum, Basel, Switzerland (NHMB); the Raffles Museum of Biodiversity Research, National University of Singapore, Singapore (ZRC), and the Wildlife Heritage Trust, Sri Lanka (WHT). The rostral formula used follows Bouvier (1925). The abbreviation cl is used for the carapace length, given in mm and measured from the postorbital margin to the posterior dorsal margin of the carapace.

### *Lancaris*, new genus

**Type species.** – *Caridina singhalensis* Ortmann, 1894, by present designation. Gender: feminine.

**Diagnosis.** – Rostrum depressed, sharp, unarmed ventrally. Eyes well developed, pigmented. Antennular peduncle less than half of carapace length. Palp of first maxilliped ending in elongate finger-like process. Second maxilliped with a laminar-shaped podobranch. Third maxilliped with one arthrobranch. Pereiopods with epipods on first four pereiopods, without arthrobranch. Pleurobranchs present on base of all pereiopods. Endopod of male first pleopod slender, as long as or slightly shorter than exopod, with a short appendix interna near anterior margin. Distal margin of telson with intermediate pairs of setae much longer than lateral pair of spine. Uropod with diaeresis bearing 22–35 movable spinules, lateral angle much shorter than mesial spines. Ovigerous females with large eggs.

**Etymology.** – The Latinized combination of the words *Lanka*, short form for Sri Lanka, and *caris*, for shrimp.

**Remarks.** – *Lancaris*, new genus, can be placed in the subfamily Caridellinae Holthuis, 1986, members of which lack exopods and arthrobranchs on the pereiopods. Of the caridelline genera, *Lancaris* morphologically most close to *Parisia* Holthuis, 1956 (cf. Holthuis, 1956a, b; Williams, 1964), from Madagascar and Australia; and *Pycneus* Holthuis, 1986 (cf. Holthuis, 1986) and *Pycnisia* Bruce, 1992 (cf. Holthuis, 1992), both from Australia. It can, however, be differentiated from *Parisia* by the shorter lateral angle of the uropodal diaeresis; and the presence of an appendix interna on the

endopod of the male first pleopod. It also differs from *Pycneus* by the presence of a pleurobranch at the base of the fifth pereopod, and the pigmented cornea. *Lancaris* can also be easily separated from *Pycnisia* by the pigmented cornea; the laminar-shaped podobranch at the second maxilliped; and the first two pereopods with characteristic long and dense setae on the fingertips. *Lancaris* is also shares several features with *Paracaridina*, Liang & Guo, 1999, in Liang, Guo & Tang, 1999, from southern China (cf. Guo & De Grave, 2004), but can be easily separated by the laminar-shaped podobranch, the shorter lateral angle of the uropodal diaeresis, and the shape of the telson, in which, the intermediate pairs of setae are much longer than the lateral spines.

***Lancaris singhalensis* (Ortmann, 1894), new combination**  
(Figs. 1–3)

*Caridina singhalensis* Ortmann, 1894: 9, pl. I, fig.2 [type locality: Sri Lanka].

*Caridina singhalensis* Ortmann, 1895: 405; Bouvier, 1905: 78; 1912: 919; 1913: 465; 1925: 254, figs. 580–586; Arudpragasam & Costa, 1962: 11, figs. 2a–g; Costa, 1984: 199; De Silva, 1983: 205; 1982b: 219; Benzie & De Silva, 1983: 117, 1984: 632; Bossuyt et al., 2004: 480.

**Material examined.** – 4 females, cl 5.7–6.0 mm, BNHM-772a, Huwara Ellyia (= Nuwara Eliya), Ceylon (Sri Lanka), coll. M. Tausch, 1927; 2 males, cl 3.5–4.2 mm, 3 females, cl 3.9–4.9 mm, ZRC 2005.0071, Galpalama, near Kandapola in Nuwara Eliya district, Sri Lanka, 6° 50' N, 80° 49' E, alt. 1900 m, coll. M. M. Bahir, 1997; 8 males, cl 3.0–4.8 mm, 6 females, cl 2.6–3.9 mm, 8 juveniles, ZRC 2005.0072, small shallow stream between Horton Plains National Park and Ohiya in Nuwara Eliya District, 6° 50' – 80° 50' N, alt. 1980 m, coll. M. M. Bahir, 1997.

**Description.** – Rostrum very short, shorter than wide, with convex margins tapering anteriorly, not able to reach anterior margin of eyes, unarmed. Pterygostomial margin rounded (Fig. 1A).

Sixth abdominal somite 0.45 times carapace length, 1.4 times as long as fifth somite, slightly shorter than telson. Telson 2.6 times as long as wide, not terminating in a projection, with 6–7 pairs of dorsal spinules on distal 2/3 of telson length (Fig. 1B); with one pair of distal spines, and 6 pairs of plumose setae on the distal margin, intermediates setae much longer than lateral pair of distal spines (Fig. 1C). Pre-anal carina low, lacking spine (Fig. 1D).

Eyes well developed, anterior margin reaching to 0.8 times length of basal segment of antennular peduncle (Fig. 1A). Antennular peduncle half as long as carapace; basal segment much longer than second and third segment combined, anterolateral angle pointed, reaching to 0.2 times length of second segment, second segment slightly longer than third segment. Stylocerite reaching to 0.7 times length of basal segment (Fig. 1A). Scaphocerite of antenna stout, 2.4 times as long as wide (Fig. 1E).

Incisor process of mandible ending in irregular teeth, molar process truncated (Fig. 1F). Lower lacinia of maxillula broadly rounded, upper lacinia elongate, with numerous distinct teeth

on inner margin, palp slender (Fig. 1G). Upper endites of maxilla subdivided, palp short, scaphognathite tapering posteriorly, fringed with long, curved setae at posterior margin (Fig. 1H). Palp of first maxilliped ending in a finger-like process (Fig. 1I). Second maxilliped with laminar-shaped podobranch, propodus not separated from dactylus (Fig. 1J). Third maxilliped with 1 arthrobranch, reaching to end of antennular peduncle, ultimate segment distinctly longer than penultimate segment (Fig. 1K).

Pleurobranches present on all pereopods. Epipods present on first 4 pereopods. First pereopod without arthrobranch, reaching beyond end of basal segment of antennular peduncle; merus 2.5 times as long as broad, slightly longer than carpus; carpus excavated anteriorly, slightly shorter than chela, 1.6 times as long as high; chela 1.6–2.0 times as long as broad; fingers subequal to palm (Fig. 2A). Second pereopod reaching slightly beyond end of antennular peduncle; merus as long as carpus, 5.2 times as long as broad; carpus 1.4 times longer than chela, 5.4 times as long as high; chela 2.7 times as long as broad; fingers 1.6 times as long as palm (Fig. 2B). Third pereopod reaching beyond distal margin of antennular peduncle; merus sexually dimorphic, conspicuously inflated at anterior half of flexor margin in males (Fig. 2C), not inflated in females; propodus 8 times as long as broad, 3.4 times as long as dactylus; dactylus 3.0 times as long as wide (spines included), with 4–6 accessory spines on flexor margin (Fig. 2D). Fourth pereopod reaching slightly beyond distal margin of antennular peduncle, similar to third pereopod. Fifth pereopod reaching to distal margin of antennular peduncle, propodus 9 times as long as broad, 3.5 times as long as dactylus (Fig. 2E); dactylus 3.2 times as long as wide (spinules included), with 33 spinules on flexor margin (Fig. 2F).

Endopod of male first pleopod sub-triangular; similar to and as long as exopod; 4.4 times as long as wide; appendix interna situated at distal third, not reaching distally beyond end of endopod (Fig. 2G). Appendix masculina of male second pleopod reaching to distal third of endopod length; appendix interna slender, small (Fig. 2H). Uropodal diaeresis with 25 movable spinules, lateral angle much smaller than mesial spinules (Fig. 2I). Ovipigerous females with large eggs, sized 1.80 x 1.30 mm in diameter.

**Habitats.** – This species is known only from two localities: streams in and around Horton Plains National Park (alt. 1900–2000 m) and a disturbed eucalypt plantation at Galpalama. This second population is now the only one outside a protected area, and is highly threatened by forest fire, forest harvesting, and irresponsible land and pesticide use by local people. The shrimps are usually found among submerged aquatic vegetation along the stream banks.

**Remarks.** – With regard to the extremely short rostrum, the stout body form, the features of the telson and the inflated merus of third pereopod in males, *Lancaris singhalensis* shows some similarity with *Caridina atyoides* Nobili, 1900 (cf. Nobili, 1900), from western Sumatra and Moluccas, Indonesia. Besides the generic differences, *L. singhalensis* differs from *C. atyoides* by the absence of an arthrobranch

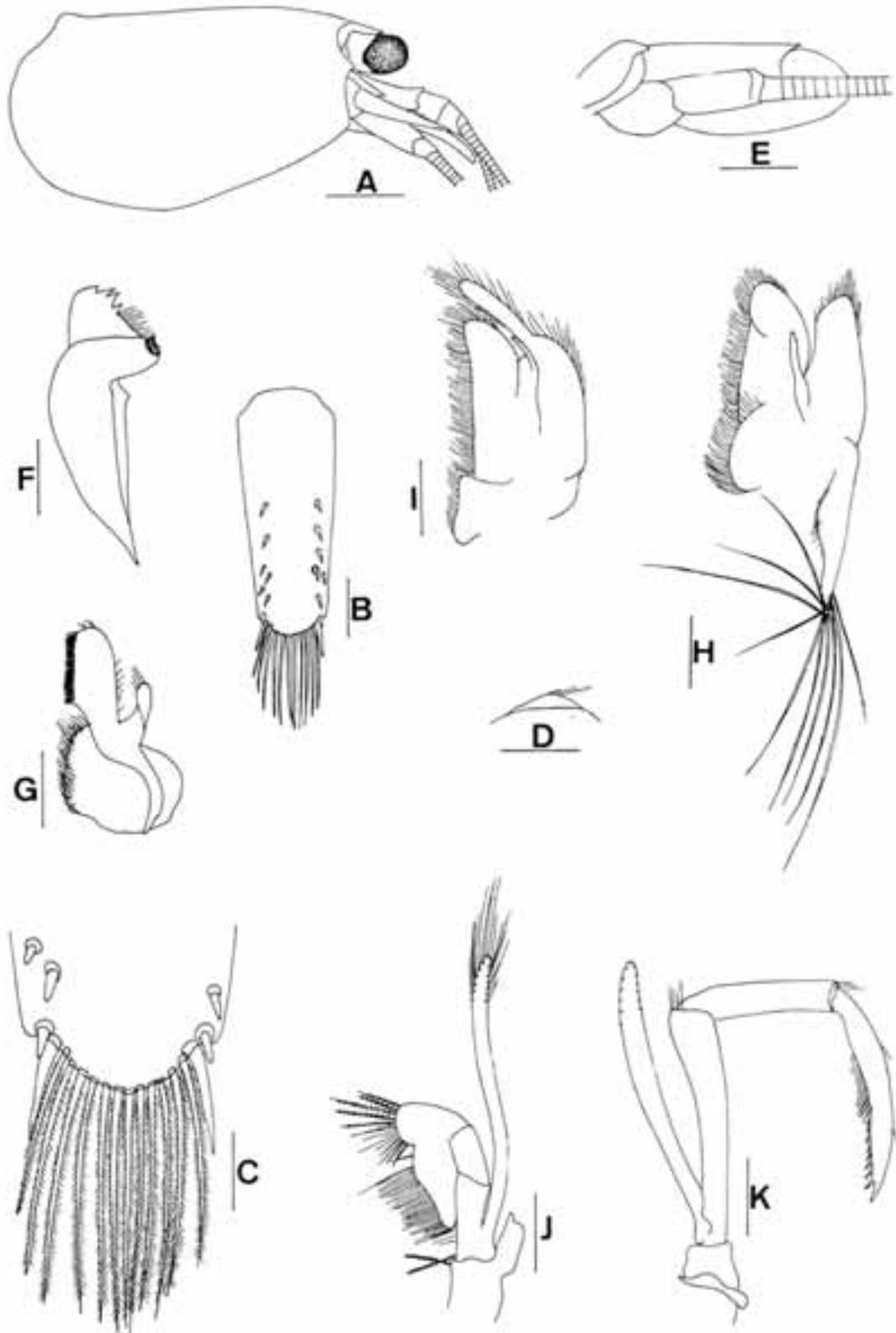


Fig. 1. *Lancaris singhalensis*. A. cephalothorax and cephalic appendages, lateral view, B. telson, C. distal portion of telson, D. preanal carina, E. scaphocerite, F. mandible, G. maxillula, H. maxilla, I. first maxilliped. J. second maxilliped, K. third maxilliped. Scales: A=1 mm; B, D-K=0.5 mm; C=0.2 mm (male, cl 3.8 mm, ZRC).

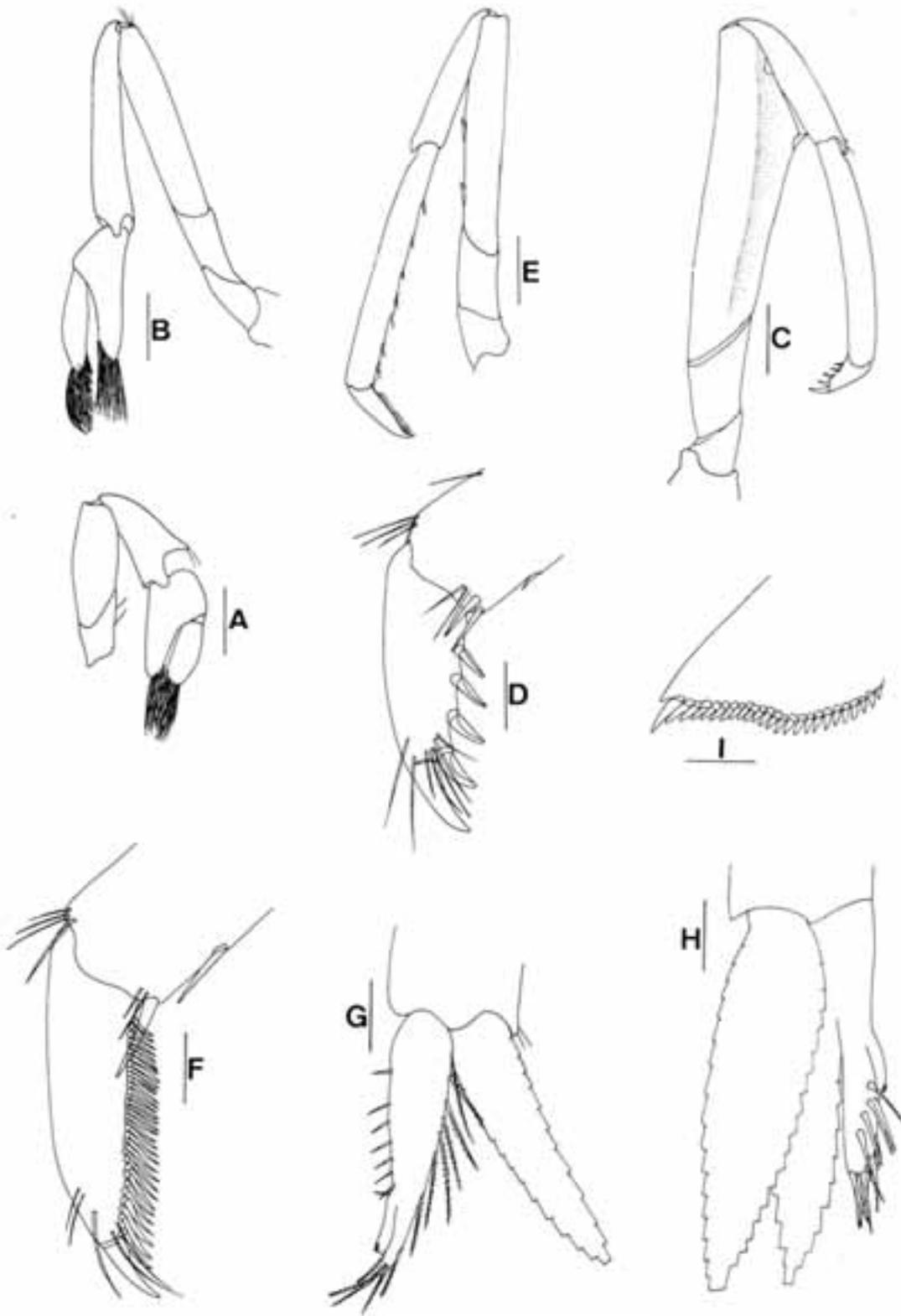


Fig. 2. *Lancaris singhalensis*. A. first pereiopod, B. second pereiopod, C. third pereiopod, D. dactylus of third pereiopod, E. fifth pereiopod, F. same, dactylus, G. male first pleopod, H. male second pleopod, I. uropodal diaeresis. Scales: A-C, E=0.5 mm; D, F=0.1 mm; G-I=0.2 mm (male, cl 3.8 mm, ZRC).



Fig. 3. *Lancaris singhalensis*, living specimen.



Fig. 4. *Lancaris kumariae*, living specimen.

on the first pereopod, the degenerated podobranch on the second maxilliped, and the much shorter lateral angle on the uropodal diaeresis.

***Lancaris kumariae* (De Silva, 1990), new combination**  
(Figs. 4–6)

*Caridina kumariae* De Silva, 1990: 9, figs.1–5 [type locality: small stream near the railway station at Rozella, Sri Lanka].

*Caridina cumaria* Bossuyt et al., 2004: 480 (erroneous spelling).

**Material examined.** – 6 males, cl 3.2–5.3 mm, 3 females, cl 5.0–6.0 mm, ZRC 2005.0073, fast flowing stream at Rozella near Hatton, Sri Lanka, 6° 56' – 6° 57' N, 80° 33' – 80° 35' E, alt. 1375 m, coll. M. M. Bahir, 1997.

**Description.** – Rostrum short, reaching nearly to or slightly beyond distal margin of basal segment of antennular peduncle; rostral formula: 1–2+3–5/0. Antennal spine sharp, fused with inferior orbital angle. Pterygostomian margin rounded or sub-rectangular (Fig. 5A).

Sixth abdominal somite 0.45 times of carapace length, 1.4 times as long as fifth somite, slightly shorter than telson. Telson 2.3 times as long as wide, with broadly rounded distal margin, without projection, with 6–7 pairs of dorsal spinules on distal 2/3 of telson length (Fig. 5B); distal margin with 1 pair of distal spines, and 6 pairs plumose setae on distal margin, lateral pair of distal spines much shorter than intermediates setae (Fig. 5C). Pre-anal carina moderately high, without spine (Fig. 5D).

Eyes well developed, anterior margin reaching to 0.8 times length of basal segment of antennular peduncle (Fig. 5A). Antennular peduncle slightly shorter than half length of carapace; basal segment much longer than sum of second and third segment lengths, anterolateral angle pointed, short, reaching to 0.2 length of second segment; second segment slightly longer than third segment. Stylocerite long, reaching to 0.9 times length of basal segment (Fig. 5A). Scaphocerite of antenna stout, 2.5 times as long as wide.

Mouthparts similar to those of previous species (Figs. 5E–I). Third maxilliped reaching to distal margin of antennular peduncle, with 1 arthrobranch; ultimate segment distinctly longer than penultimate segment (Fig. 5F).

Pleurobranchs present on all pereopods. Epipods present on first 4 pereopods. First pereopod without arthrobranch, reaching to distal margin of second segment of antennular peduncle; merus 2.5–2.6 times as long as broad, as long as or slightly longer than carpus; carpus excavated anteriorly, slightly shorter than chela, 2.2–2.3 times as long as high; chela 2.4–2.5 times as long as broad; fingers subequal to palm (Fig. 6A). Second pereopod reaching slightly beyond distal margin of basal segment of antennular peduncle; merus slightly shorter than carpus, 6.4–6.5 times as long as broad; carpus 1.5–1.6 times longer than chela, 7.2–7.6 times as long as high; chela 3.6–4.0 times as long as broad; fingers 1.3–1.7 times as long as palm (Fig. 6B). Third pereopod reaching beyond distal margin of scaphocerite, merus not sexually dimorphic, not inflated; propodus 8.0–8.5 times as long as broad, 3.6–4.3 times as long as dactylus (Fig. 6C); dactylus 3.0 times as long as wide (spinules included), with 4 accessory spines on flexor margin (Fig. 6D). Fourth pereopod reaching slightly beyond distal margin of antennular peduncle, similar to third pereopod. Fifth pereopod reaching to distal margin of antennular peduncle, propodus 9 times as long as broad, 3.5 times as long as dactylus (Fig. 6E), dactylus 3.1–3.3 times as long as wide (spinules included), with 59–71 spinules on its flexor margin (Fig. 6F).

Endopod of male first pleopod sub-triangular, 0.7 times as long as exopod, 3.0 times as long as wide, appendix interna situated at distal fourth of endopod length, not reaching beyond distal margin of endopod (Fig. 6G). Appendix masculina of male second pleopod reaching to distal third of endopod length; appendix interna slender, small (Fig. 6H). Uropodal diaeresis with 31–38 movable spinules, lateral angle much smaller than mesial spines (Fig. 5K). Ovigerous females with larger eggs, sized 1.56×1.05 mm in diameter.

**Habitats.** – Our specimens came from a rocky, fast flowing stream at elevation at 1150 m and above. Shrimps were found among submerged roots of fringing vegetation. Until now the species was only known from its type locality, which is not protected.

**Remarks.** – *Lancaris kumariae* can be easily separated from *L. singhalensis* by the longer, toothed rostrum; the non-inflated merus of the third pereopod in males; and a generally larger number of movable spinules (31–38 vs. 25–30 in *L. singhalensis*) on the uropodal diaeresis.

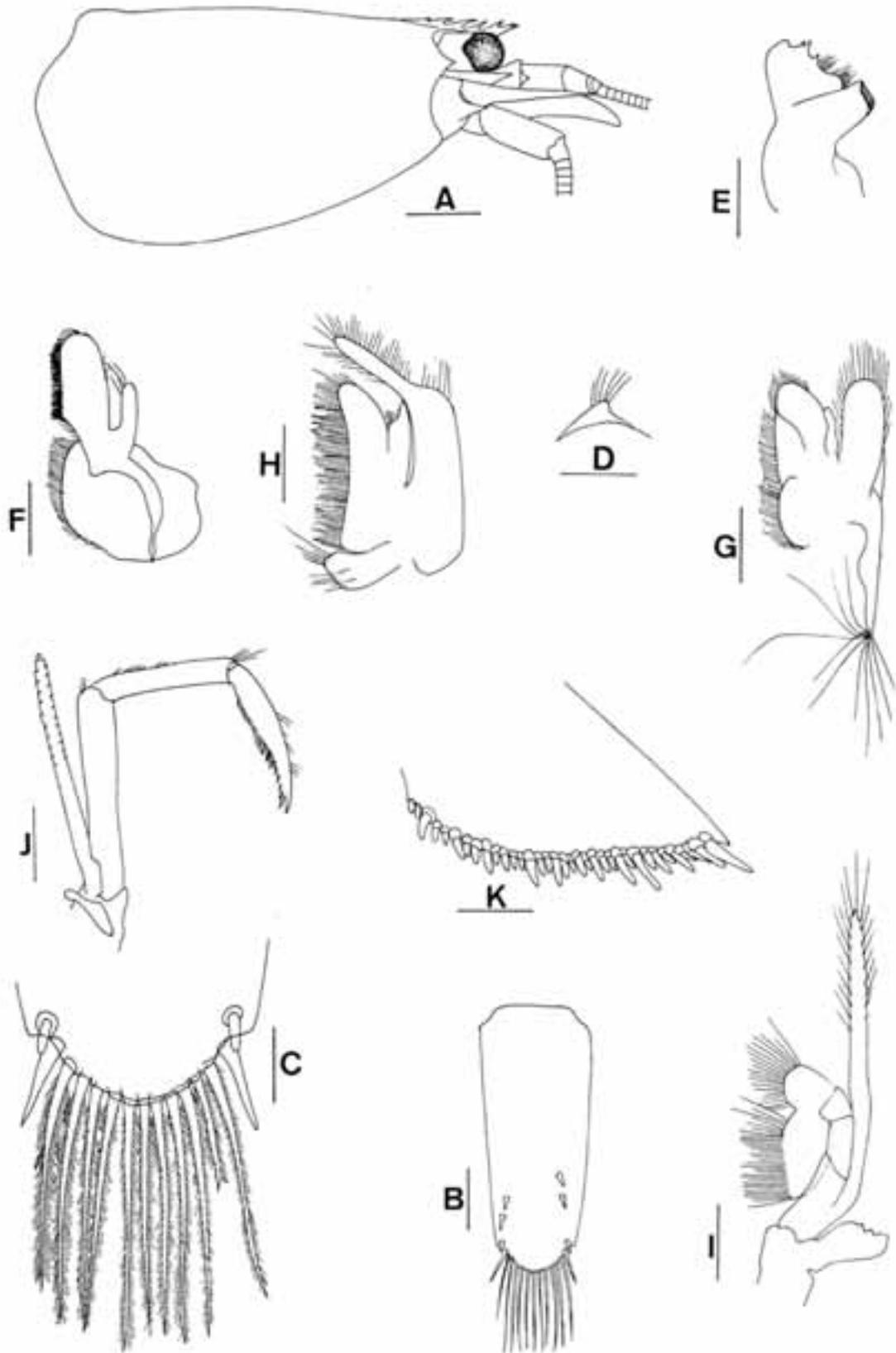


Fig. 5. *Lancaris kumariae*. A. cephalothorax and cephalic appendages, lateral view, B. telson, C. distal portion of telson, D. preanal carina, E. mandible, F. maxillula, G. maxilla, H. first maxilliped, I. second maxilliped, J. third maxilliped, K. uropodal diaeresis. Scales: A=1 mm; B, D-J=0.5 mm; C, K=0.2 mm (male, cl 4.9 mm, ZRC).

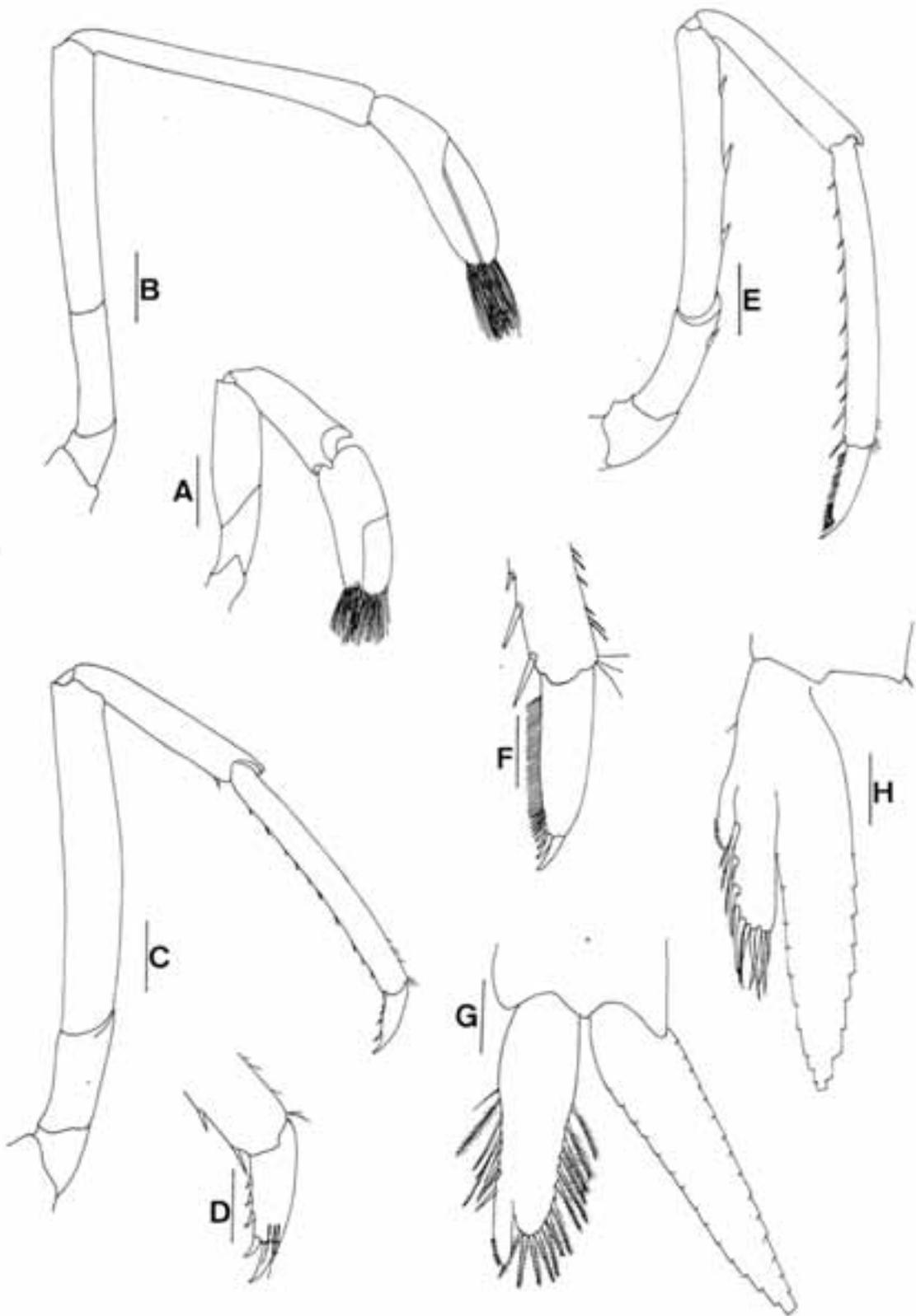


Fig. 6. *Lancaris kumariae*. A. first pereopod, B. second pereopod, C. third pereopod, D. dactylus of third pereopod, E. fifth pereopod, F. dactylus of fifth pereopod, G. male first pleopod, H. male second pleopod. Scales: A-C, E, G, H=0.5 mm; D, F=0.2 (male, cl 4.9 mm, ZRC).

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