

Freshwater shrimps of the genus *Caridina* H. Milne Edwards (Crustacea: Decapoda: Atyidae) from Myanmar

Yixiong Cai and Peter K. L. Ng

Department of Biological Sciences, National University of Singapore, Lower Kent Ridge Road,
Singapore 119260, Republic of Singapore

Abstract.—Five species of freshwater shrimps of the genus *Caridina* H. Milne Edwards, 1837 are recognised from Myanmar. Of these, three are described as new: *C. williamsi*, *C. rangoona* and *C. burmensis*. *Caridina annandalei* Kemp, 1918, a species not reported since its original description, is re-diagnosed and figured in detail. The status of *C. weberi* prox. var. *sumatrensis* De Man, 1892 is discussed.

The atyid fauna of Myanmar (formerly Burma, Fig. 1) is very poorly studied, and until now, only two species of *Caridina* H. Milne Edwards, 1837, had been reported, namely *C. annandalei* Kemp, 1918, and “*C. weberi* prox. var. *sumatrensis* De Man, 1892” (Kemp 1918). Recently, the authors had an opportunity to examine several collections of these shrimps in the Swedish Museum of Natural History, Paris Museum, and Raffles Museum of Singapore. Not surprisingly, much of this material represents new species.

The present paper reports on these collections and discusses the status of “*C. weberi* var. prox. *sumatrensis* De Man, 1892” for which no specimens are available. A total of five species are now recognised from Myanmar, of which three are described as new.

Specimens are deposited in the Zoological Reference Collection, Raffles Museum of Biodiversity Research, National University of Singapore, Singapore (ZRC); Swedish Museum of Natural History, Stockholm, Sweden (SMNH); and Muséum National d’Histoire Naturelle, Paris, France (MNHN). The abbreviation cl is used for carapace length, measured from the postorbital margin to the posterior dorsal margin of the carapace.

Genus *Caridina* H. Milne Edwards, 1837
Caridina annandalei Kemp, 1918
Figs. 2, 3

Caridina annandalei Kemp, 1918: 96, pl. 25 (type locality: Inlé Lake, Shan State, Myanmar)

Material examined.—14 specimens (3 ovig. females), syntypes (MNHN-Na663), Inlé Lake, Shan State, Myanmar, exchanged from Calcutta (Indian Museum), entry no. 41-1921, through S. Kemp; 4 ovig. females, cl 3.8–4.3 mm (ZRC.1999.2009), 20°34.87’N, 96°06.33’E, Inlé Lake at Mine Thauk canal, Shan State, Myanmar, pH 7.6, 26 Feb 1999; 4 males, cl 2.5–2.7 mm, 12 females, cl 2.5–3.7 mm, 2 ovig. females, cl 3.2–3.5 mm (SMNH 13504), Inlé Lake, mainly west shore, Salween River drainage, Nyaung Shwe, Shan State, Myanmar, leg. S. O. Kullander, Fang Fang, T. R. Roberts, 26 Feb 1994; 2 ovig. females, cl 2.5–3.0 mm (SMNH 13506), Inlé Lake, west margin, just south of Khaung Taing, Salween River drainage, Nyaung Shwe, Shan State, Myanmar, leg. S. O. Kullander, Fang Fang, 27 Feb. 1994; 1 ovig. female, cl 3.9 mm (SMNH 13507), SOK 94-007B, Inlé Lake, Inlé canal to Nyaung Shwe, Salween River drainage, Nyaung Shwe State, Shan, Myanmar, leg. S. O. Kullander, Fang Fang, T. R. Roberts, 1 Mar 1994; 1 female, cl 3.4 mm,



Fig. 1. Map of Myanmar, showing the drainage and collection sites.

19 juv. (SMNH 13903), Inlé Lake, Trungdo, southern Shan State, Myanmar, at 900 m, leg. Malaise, 12 Sept 1934.

Diagnosis.—Rostrum (Figs. 2A, 3A) convex, with tip slightly upturned, reaching to end of second segment of antennular peduncle, or slightly beyond it; rostral formula: 2–4 (mode 3) + 12–21/2–6 (mode 2–4); antennal spine sharply pointed, placed below lower orbital angle, pterygostomian margin broadly rounded; telson (Figs. 2B, C) not terminating in projection, with 5 pairs of distal spines, lateral pair of distal spines subequal to intermediates except median pair only half length of lateral pair; pre-anal carina (Fig. 2D) lacking spine; antennular peduncle 0.85 times as long as carapace, stylocerite 0.8 times length of basal segment of antennular peduncle; scaphocerite (Fig. 2E) 3.5 times as long as wide; epipods on first 3 pereopods only; carpus of first pereopod (Figs. 2F, 3B) 3.0–3.4 times as long as high, chela slightly longer than carpus, 2.3 times as long as broad, fingers distinctly longer than palm; carpus of second pereopod (Figs. 2G, 3C) 7.5–8.0 times as long as high, chela shorter than carpus, chela 3.4 times as long as broad, fingers 1.6 times as long as palm; propodus of third pereopod (Figs. 3D, E) 2.7–3.2 times as long as dactylus, dactylus 4.6 times as long as wide, with 8–12 spines on flexor margin; propodus of fifth pereopods (Figs. 3F, G) 2.2–2.5 times as long as dactylus, dactylus 4.5 times as long as broad, with 44–68 spinules on flexor margin; endopod of male first pleopod (Fig. 2H) sub-rectangular, 2.1 times as long as wide; appendix interna of male second pleopod (Fig. 2I) reaching to 0.8 times length of appendix masculina; uropodal diaeresis (Fig. 2J) with 15 spinules. Egg size 0.55–0.70 to 0.90–1.05 mm.

Habitats.—*Caridina annandalei* was abundant among green weeds in or near Inlé Lake.

Distribution.—Known only from the Inlé Lake basin in central Myanmar.

Remarks.—*Caridina annandalei*, had not been reported since its original description.

Recent collections from Myanmar seem to show that this species is indeed endemic to the Inlé Lake basin. When Kemp (1918) described *C. annandalei*, he noted that it is allied to *C. excavata* Kemp, 1913, and *C. hodgarti* Kemp, 1913, both from Assam in northeastern India, based on the absence of an epipod on the fourth pereopod. This character is, in fact, shared by many other South East Asian *Caridina* species, namely, *C. laevis* Heller, 1862, from Java, *C. excavatoides* Johnson, 1961, from Peninsular Malaysia and *C. fecunda* J. Roux, 1911, from Irian Jaya, Indonesia. *Caridina annandalei*, however, is very different from *C. excavata* and *C. hodgarti* by its much shorter rostrum which never reaches the end of the antennular peduncle (vs. distinctly reaching beyond the end of antennular peduncle in *C. excavata*, and beyond the scaphocerite in *C. hodgarti* (cf. Kemp 1913)). With regards to the short rostrum, the slender first two pereopods and the large egg size, *C. annandalei* is perhaps most similar to *C. laevis* (cf. Heller 1862, Kemp 1918b, Bouvier 1925), but can be distinguished from it by the form of the rostrum, which is convex and sloping (vs. sigmoid in *C. laevis*), and the fifth pereopod having fewer spinules (44–68 vs. 90–100 in *C. laevis*). *Caridina annandalei* differs from *C. excavatoides* (cf. Johnson 1961) by its more elongated antennular peduncle (ratio of the peduncle to carapace length 0.85 vs. 0.64 in *C. excavatoides*); more spinules on uropodal diaeresis (15 vs. 12–13); and larger egg size (0.55–0.70 to 0.90–1.05 mm vs. 0.48 to 0.78 mm). It can also be easily separated from *C. fecunda* (cf. Roux 1911, Bouvier 1925) by the proportionally shorter rostrum; the larger number of spinules on the dactylus of the third pereopod (8–12 vs. 7–8) and fifth pereopod (44–68 vs. 35–40); and the larger egg size (0.55–0.70 to 0.90–1.05 mm vs. 0.50 to 0.80 mm).

Caridina williamsi, new species

Figs. 4, 5

Material examined.—Holotype: ovig. female, cl 4.4 mm (ZRC.1999.2040),

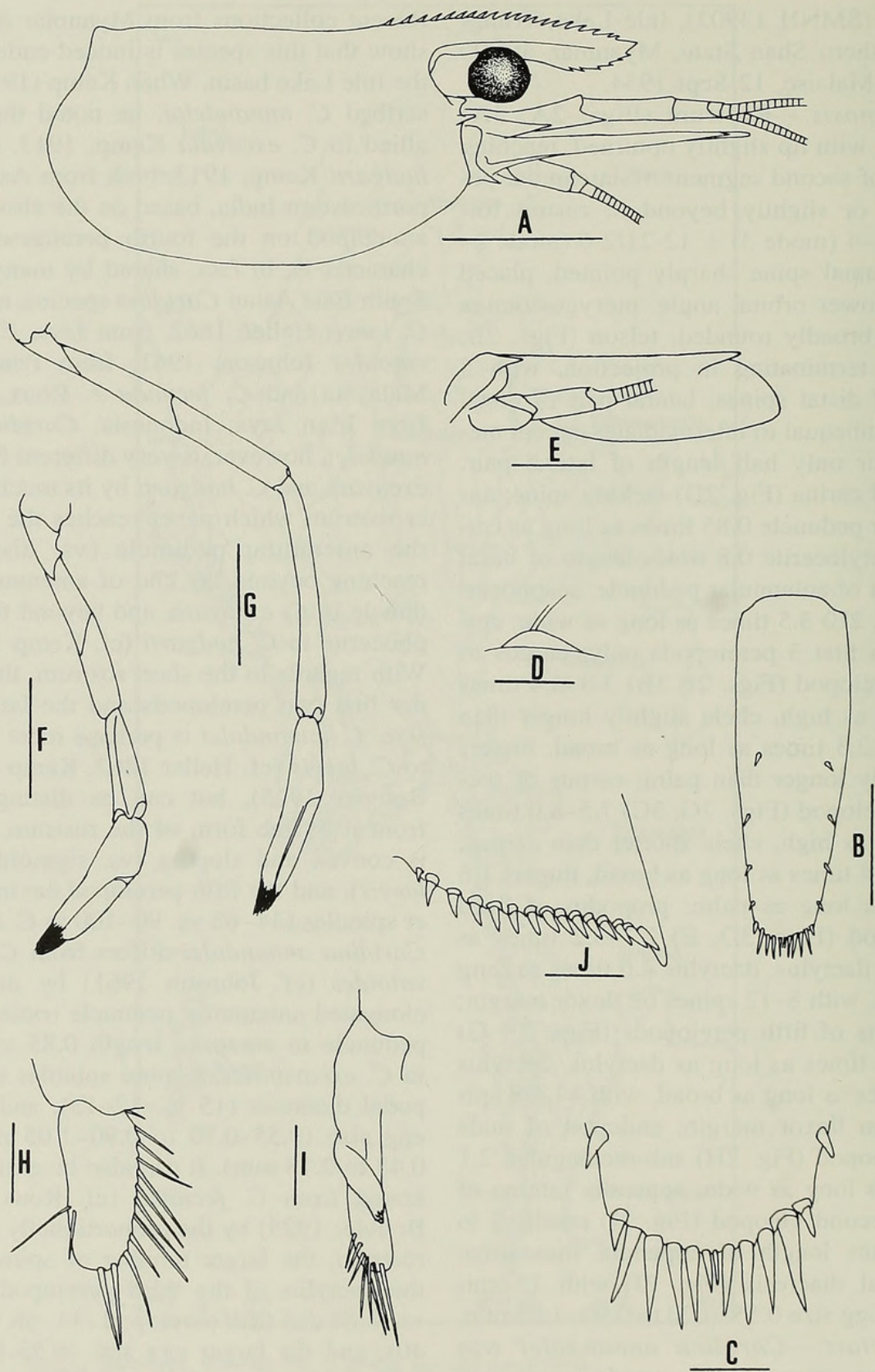


Fig. 2. *Caridina annandalei* Kemp, 1918. A, cephalothorax and cephalic appendages; lateral view; B, telson; C, distal part of telson; D, preanal carina; E, scaphocerite; F, first pereopod; G, second pereopod; H, endopod of male first pleopod; I, appendix masculina of male second pleopod; J, uropodal diaeresis. Scales: A = 2 mm; B, D, E, F, G = 1 mm; C, H, I, J = 0.2 mm. (A–G, J, ovig, female, cl. 4.3 mm, Inlé Lake, central Myanmar, ZRC, 1999.2009; H, I, male, cl. 2.7 mm Inlé Lake, central Myanmar, SMNH 13504)

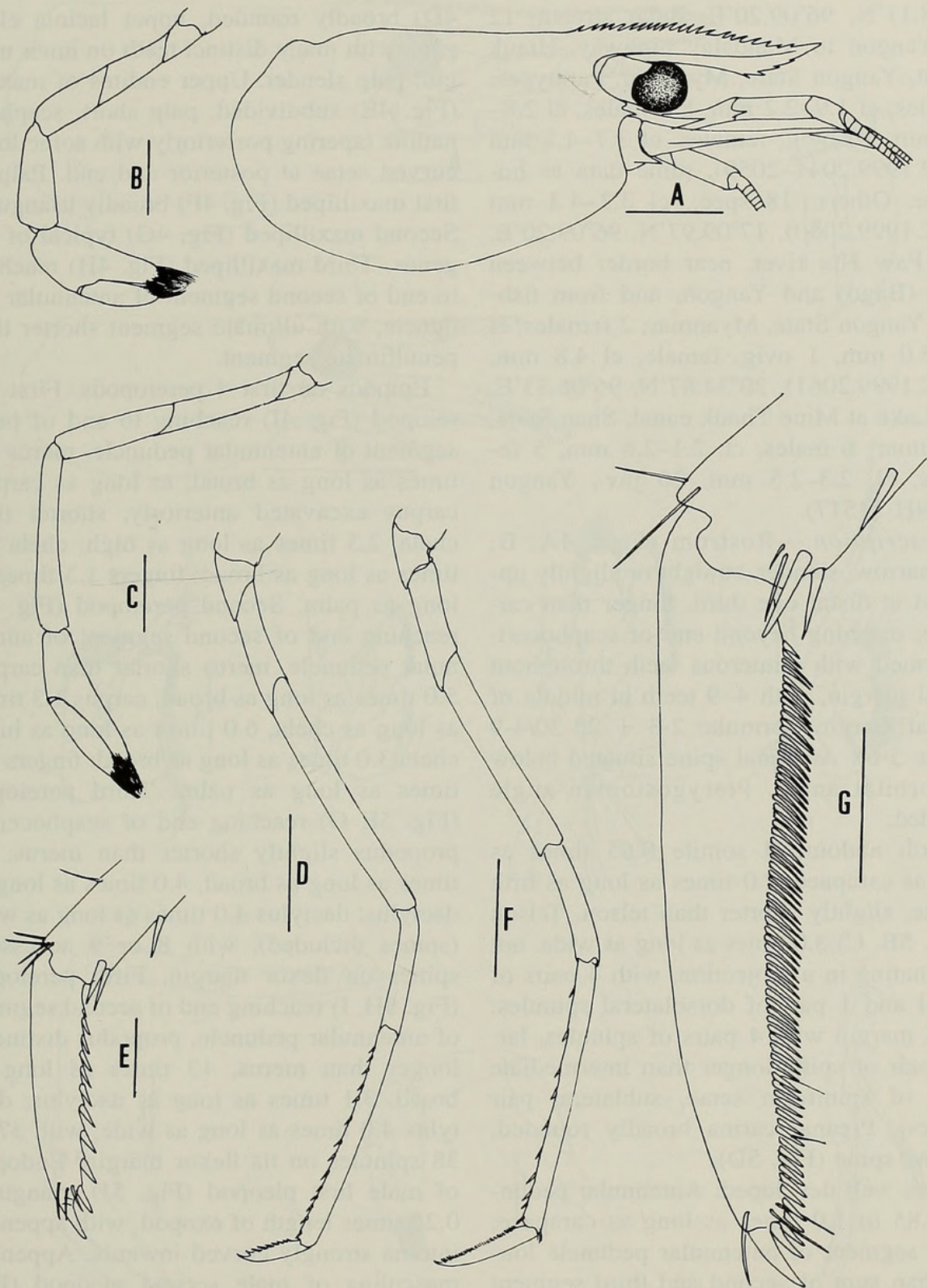


Fig. 3. *Caridina annandalei* Kemp, 1918; ovig. female, cl 3.7 mm, central Myanmar, SMNH 13903. A, cephalothorax and cephalic appendages, lateral view; B, first pereopod; C, second pereopod; D, third pereopod; E, dactylus of third pereopod; F, fifth pereopod; G, dactylus of fifth pereopod. Scales: A, D, F = 1 mm; B, C = 0.5 mm; E, G = 0.2 mm.

17°48.11'N, 96°09.20'E, Balar stream, 12 km Yangon to Mandalay highway, Htauk Kyant, Yangon State, Myanmar. Paratypes: 7 males, cl 1.9–2.2 mm, 8 females, cl 2.8–4.0 mm, 10 ovig. females, cl 3.7–4.2 mm (ZRC.1999.2041–2059), same data as holotype. Others: 18 spec., cl 3.3–4.3 mm (ZRC.1999.2060), 17°09.97'N, 96°09.20'E, Win Paw Hta river, near border between Pegu (Bago) and Yangon, and from fish-folk, Yangon State, Myanmar; 2 females, cl 2.9–3.0 mm, 1 ovig. female, cl 4.8 mm, (ZRC.1999.2061), 20°34.87'N, 96°06.33'E, Inlé Lake at Mine Thauk canal, Shan State, Myanmar; 6 males, cl. 2.1–2.6 mm, 5 females, cl. 2.3–2.5 mm, 20 juv., Yangon (SMNH 13517).

Description.—Rostrum (Figs. 4A, B; 5A) narrow, slender, straight or slightly upturned at distal one third, longer than carapace, reaching beyond end of scaphocerite; armed with numerous teeth throughout dorsal margin, with 4–9 teeth at middle of ventral margin; formula: 2-3 + 23-30/4-9 (mode 5-6). Antennal spine situated below sub-orbital angle. Pterygostonian angle rounded.

Sixth abdominal somite 0.65 times as long as carapace, 2.0 times as long as fifth somite, slightly shorter than telson. Telson (Figs. 5B, C) 3.0 times as long as wide, not terminating in a projection, with 4 pairs of dorsal and 1 pair of dorsolateral spinules; distal margin with 4 pairs of spinules, lateral pair of spine longer than intermediate pairs of spiniform setae, sublateral pair shortest. Preanal carina broadly rounded, lacking spine (Fig. 5D).

Eyes well developed. Antennular peduncle 0.85 to 1.0 times as long as carapace; basal segment of antennular peduncle longer than sum of second and third segment length. Stylocerite reaching 0.8 times length of basal segment of antennular peduncle. Scaphocerite (Fig. 5E) 3.5 times as long as wide.

Incisor process of mandible (Fig. 4C) ending in irregular teeth, molar process truncated. Lower lacinia of maxillula (Fig.

4D) broadly rounded, upper lacinia elongate, with many distinct teeth on inner margin, palp slender. Upper endites of maxilla (Fig. 4E) subdivided, palp short, scaphognathite tapering posteriorly with some long, curved setae at posterior and end. Palp of first maxilliped (Fig. 4F) broadly triangular. Second maxilliped (Fig. 4G) typical of the genus. Third maxilliped (Fig. 4H) reaching to end of second segment of antennular peduncle, with ultimate segment shorter than penultimate segment.

Epipods on first 4 pereopods. First pereopod (Fig. 4I) reaching to end of basal segment of antennular peduncle, merus 3.0 times as long as broad, as long as carpus; carpus excavated anteriorly, shorter than chela, 2.3 times as long as high; chela 2.4 times as long as broad; fingers 1.3 times as long as palm. Second pereopod (Fig. 4J) reaching end of second segment of antennular peduncle, merus shorter than carpus, 5.0 times as long as broad; carpus 1.3 times as long as chela, 6.0 times as long as high; chela 3.0 times as long as broad; fingers 1.4 times as long as palm. Third pereopod (Fig. 5F, G) reaching end of scaphocerite, propodus slightly shorter than merus, 13 times as long as broad, 4.0 times as long as dactylus; dactylus 4.0 times as long as wide (spines included), with 8 or 9 accessory spines on flexor margin. Fifth pereopod (Fig. 5H, I) reaching end of second segment of antennular peduncle, propodus distinctly longer than merus, 13 times as long as broad, 3.1 times as long as dactylus; dactylus 4.0 times as long as wide, with 37 or 38 spinules on its flexor margin. Endopod of male first pleopod (Fig. 5J) triangular, 0.25 times length of exopod, with appendix interna strongly curved inwards. Appendix masculina of male second pleopod (Fig. 5K) half length of endopod, appendix interna reaching distal one-third of appendix masculina.

Uropodal diaeresis (Fig. 5L) with 9 or 10 movable spinules. Egg size 0.75–0.85 to 0.45–0.6 mm in diameter.

Habitat.—*Caridina williamsi*, new spe-

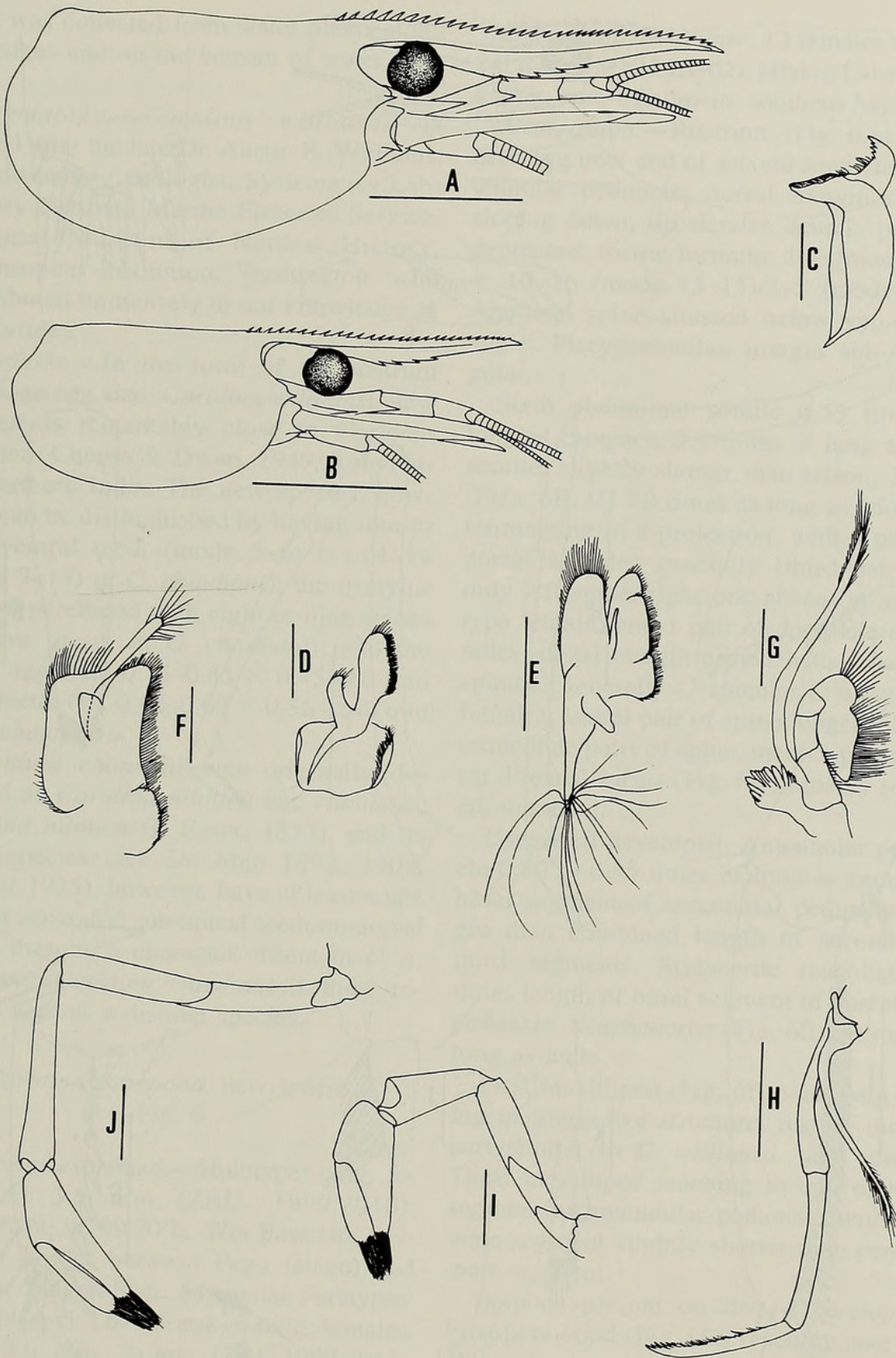


Fig. 4. *Caridina williamsi*, new species. A, B, cephalothorax and cephalic appendages, lateral view; C, mandible; D, maxillula; E, maxilla; F, first maxilliped; G, second maxilliped; H, third maxilliped; I, first pereopod; J, second pereopod. Scales: A, B = 2 mm, C, D, F, G, I, J = 0.5 mm; E, H = 1 mm. (A, C–J, ovig. female, cl 4.2 mm; B, male, cl 2.2 mm, paratype, ZRC.1999.2041–2042, Htauk Kyant, Yangon State, Myanmar)

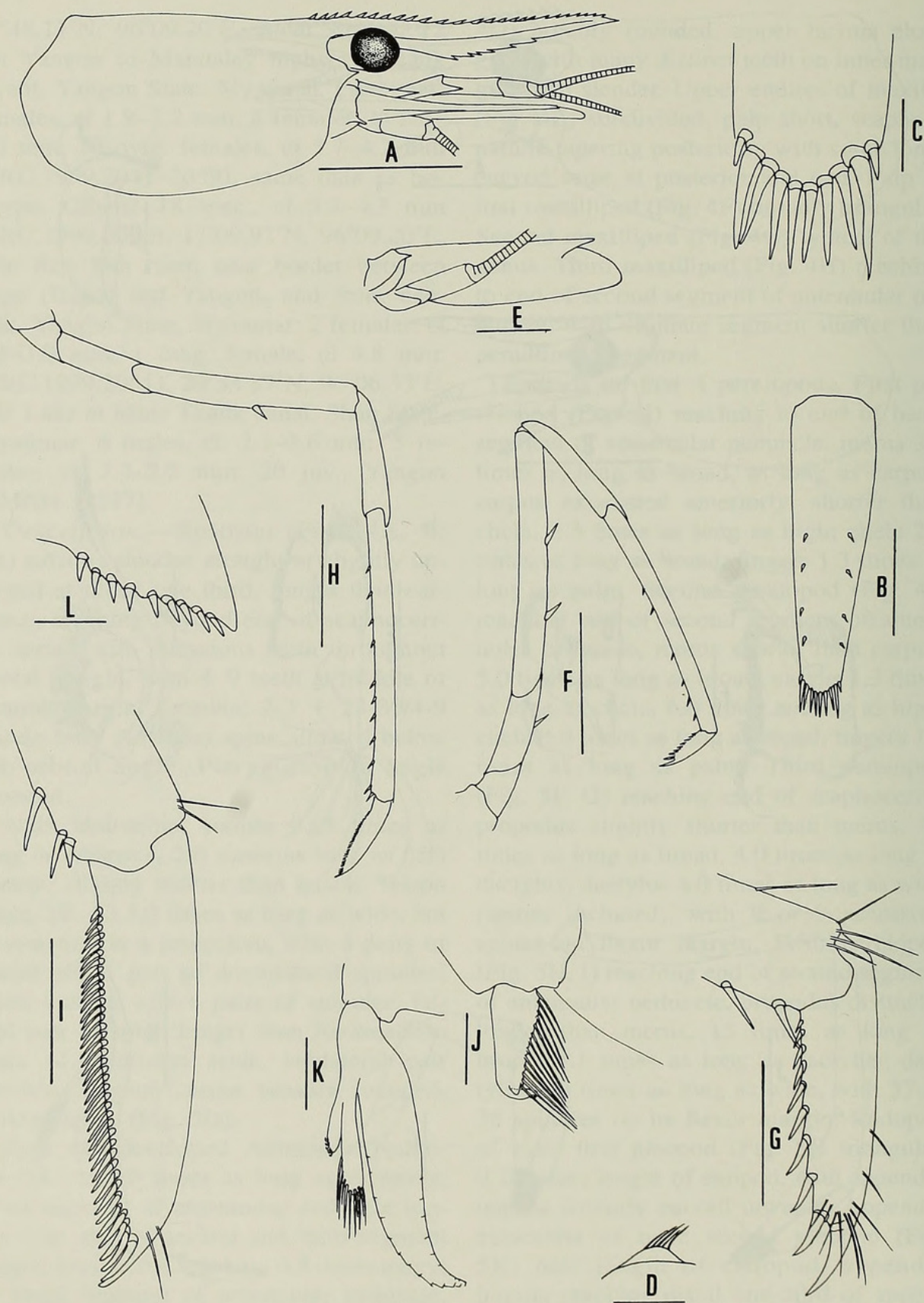


Fig. 5. *Caridina williamsi*, new species. A, cephalothorax and cephalic appendages; lateral view; B, telson; C, distal part of telson; D, preanal carina; E, scaphocerite; F, third pereiopod; G, dactylus of third pereiopod; H, fifth pereiopod; I, dactylus of fifth pereiopod; J, endopod of male first pleopod; K, appendix masculina of male second pleopod; L, uropodal diaeresis. Scales: A = 2 mm; B, E, F, H = 1 mm; C, G, I, J, K, L = 0.2 mm; D = 0.5 mm. (A–I, L, ovig. femal, cl. 3.7 mm, paratype; J, K, male, cl 2.2 mm, paratype, ZRC.1999.2042–2043, Htauk Kyant, Yangon State, Myanmar)

cies, was collected from water plants along the edges and on the bottom of water bodies.

Etymology.—*Caridina williamsi*, is named after the late Dr. Austin B. Williams, an outstanding zoologist, Systematics Laboratory National Marine Fisheries Service, National Museum of Natural History, Smithsonian Institution, Washington, who contributed immensely to our knowledge of the Caridea.

Remarks.—In the form of the rostrum and large egg size, *Caridina williamsi*, new species, is remarkably close to *Caridina chauhani* Chopra & Tiwari, 1949, from Patna, northern India. The new species, however, can be distinguished by having four to nine ventral teeth (mode 5–6) (vs. 4–14 (mode 7–13) in *C. chauhani*); the dactylus of third pereopod with eight or nine spines (vs. five to six in *C. chauhani*); and the larger egg size: $0.75\text{--}0.85 \times 0.45\text{--}0.6$ mm in diameter (vs. $0.62\text{--}0.69 \times 0.36\text{--}0.40$ mm in *C. chauhani*).

Caridina chauhani was originally described as *Caridina nilotica* var. *chauhani*. *Caridina nilotica* (P. Roux, 1833), and its allied species (see De Man 1892, 1908; Bouvier 1925), however, have at least some distinct separated sub-apical teeth on dorsal rostral margin, a character absent in *C. n. chauhani*. *Caridina chauhani* is thus, regarded here as a distinct species.

Caridina rangoona, new species

Fig. 6

Material examined.—Holotype: ovig. female, cl 3.5 mm (ZRC. 1999.2010), $17^{\circ}09.97'N$, $96^{\circ}09.20'E$, Win Paw Hta River, near border between Pegu (Bago) and Yangon, Yangon State, Myanmar. Paratypes: 13 females, cl 2.6–3.3 mm, 8 ovig. females, cl 2.6–3.6 mm, 7 juv. (ZRC.1999.2011–2038), data same as holotype. Others: 2 females, cl 3.1 mm, 3 ovig. females, cl 3.5–3.9 mm (ZRC.1999.2039), $17^{\circ}48.11'N$, $96^{\circ}09.20'E$, Balar stream, 12 km from Yangon to Mandalay highway, Htauk Kyant,

Yangon State, Myanmar; 12 females, cl 1.6–2.0 mm (SMNH 13902), Hlaing Lake, Kaw-kareik, near Moulmein, southern Myanmar.

Description.—Rostrum (Fig. 6A) short, reaching near end of second segment of antennular peduncle; dorsal margin slightly sloping down, tip slender, acutely pointed, depressed, rostral formula: 4–6 (mode 4–5) + 10–16 (mode 13–15)/2–5 (mode 3–4). Antennal spine situated below sub-orbital angle. Pterygostomian margin sub-rectangular.

Sixth abdominal somite 0.55 times as long as carapace, 1.9 times as long as fifth somite, slightly shorter than telson. Telson (Figs. 6B, C) 3.3 times as long as wide, not terminating in a projection, with 4 pairs of dorsal spinules generally (third pair with only left spine, right one absent in a paratype female) and 1 pair of dorsolateral spinules; distal margin armed with 4 pairs of spinules generally (7 spinules in a paratype female), lateral pair of spine longer than intermediate pairs of spine, median pair shortest. Preanal carina (Fig. 6D) broadly rounded, unarmed.

Eyes well developed. Antennular peduncle 0.80 to 0.85 times as long as carapace; basal segment of antennular peduncle longer than combined length of second and third segments. Stylocerite reaching 0.8 times length of basal segment of antennular peduncle. Scaphocerite (Fig. 6E) 4 times as long as wide.

First maxilliped (Fig. 6F) with palp ending in finger-like structure; rest of mouthpart similar to *C. williamsi*, new species. Third maxilliped reaching to end of basal segment of antennular peduncle, with ultimate segment slightly shorter than penultimate segment.

Epipods present on first 4 pereopods. First pereopod (Fig. 6G) reaching near end of basal segment of antennular peduncle, chela 2.2 times as long as broad; fingers 1.5 times as long as palm; carpus excavated anteriorly, slightly shorter than chela, 2.3 times as long as high; merus 2.3 times as long as broad; ischium as long as merus.

Second pereopod (Fig. 6H) reaching end of second segment of antennular peduncle, merus as long as ischium, shorter than carpus, 4.4 times as long as broad; carpus 1.6 times as long as merus, 1.2 times as long as chela, 6.3 times as long as high; chela 3.5 times as long as broad; fingers 1.5 times as long as palm. Third pereopod (Figs. 6I, J) reaching end of antennular peduncle, propodus shorter than merus, 13 times as long as broad, 3.4 times as long as dactylus; dactylus 4.3 times as long as wide (spines included), with 8 or 9 accessory spines on its flexor margin. Fifth pereopod (Figs. 6K, L) reaching end of second segment of antennular peduncle, propodus distinctly longer than merus, 11 times as long as broad, 2.5 times as long as dactylus; dactylus slender, 5.0 times as long as wide, with 65–67 spinules on flexor margin.

Uropodal diaeresis (Fig. 6M) with 15 or 16 movable spinules. Egg size 0.60–0.70 to 0.31–0.40 mm in diameter.

Habitat.—Specimens of *Caridina rangoona*, new species, were collected from water plants along edges and on the bottom of water bodies, together with *C. williamsi*, new species (H. H. Tan, pers. comm.).

Etymology.—*Caridina rangoona*, is named after the type locality. Rangoon is the old name for Yangon, the capital of Myanmar.

Remarks.—In rostral shape, rostral formula, and slender pereopods, *C. rangoona* is most similar to *C. temasek* Choy & Ng, 1991, originally described from Singapore, but has since been found from many parts of Peninsular Malaysia (unpublished data). *Caridina rangoona*, however, differs by its proportionally broader chela (2.2 times as long as broad vs. 2.4–2.5 in *C. temasek*); the length of ischium in first pereopods (as long as merus in *C. rangoona* vs. distinctively shorter than the merus in *C. temasek*); the ratio of propodus to dactylus of fifth pereopod (2.5 in *C. rangoona* vs. 2.6–3.0 in *C. temasek*); the smaller number of spinules on the dactylus of the fifth pereopod (55–65 vs. 65–75) and the smaller egg

size (0.30–0.40 × 0.60–0.70 mm in *C. rangoona* vs. 0.44–0.54 × 0.70–0.80 mm in *C. temasek*). In the shape of the rostrum, *C. rangoona* is morphologically closest to a Vietnamese species, *C. clinata* Cai, Nguyen, & Ng, 1999, but can be distinguished from the latter (cf. Cai et al. 1999) by the fewer and shorter distal setae on the telson (Cai et al. 1999: figs. 2A, 6C); the longer carpus of first pereopod (2.2 times as long as high vs. 1.5 times in *C. clinata*); the longer finger of the first pereopod (1.5 times as long as palm vs. shorter, subequal in *C. clinata*); the larger number of spinules on the dactylus of the fifth pereopod (65–67 vs. 45–49) and the much smaller egg size (0.30–0.40 × 0.60–0.70 mm vs. 0.60–0.75 × 1.10–1.15 mm in *C. clinata*).

Caridina burmensis, new species
Fig. 7

Material examined.—Holotype: female, cl 3.7 mm (SMNH 13901), Myitkyina, Myanmar, leg. Malaise, 6 Mar 1934.

Description.—Rostrum (Fig. 7A) short, straight, narrow, reaching to end of second segment of antennular peduncle, dorsal margin convex and sloping ventrad anteriorly, with teeth more closely placed posteriorly than anteriorly; ventral margin horizontal, with small teeth; rostral formula: 3 + 11/4. Antennal spine placed below sub-orbital angle; pterygostomian margin rounded.

Abdomen with sixth somite 0.58 times as long as carapace, 1.5 times as long as fifth somite, slightly shorter than telson. Telson (Fig. 7B, C) slightly longer than sixth somite, tapering posteriorly, ending in rounded margin, 1 pair of dorso-lateral spines near distal end; 3 pairs of spiniform setae on distal margin, lateral pair longer than intermediate pairs; preanal carina (Fig. 7D) with a spine.

Eyes well developed. Antennular peduncle 0.8 times as long as carapace; basal segment slightly longer than half of peduncle, third segment shortest; stylocerite reaching

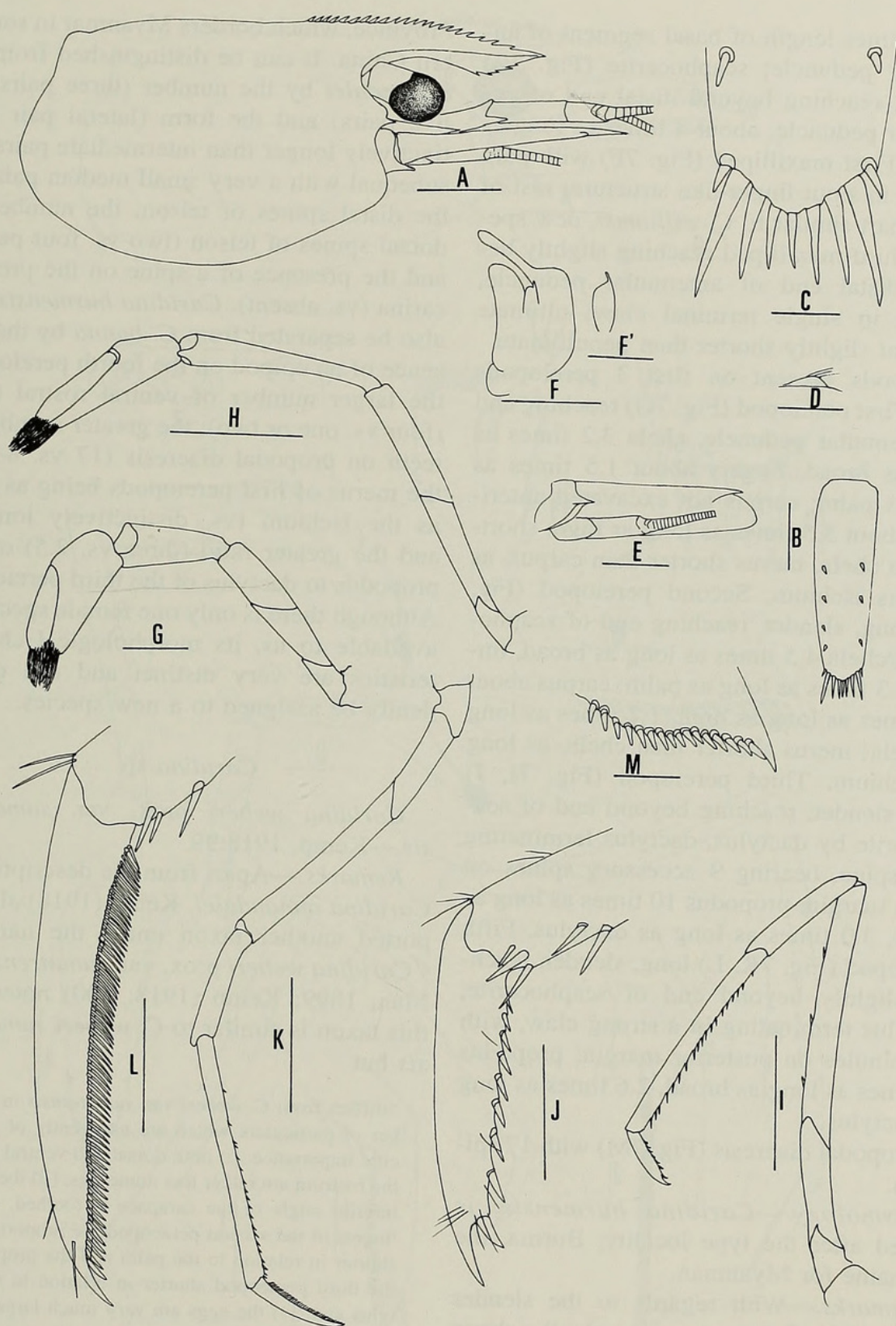


Fig. 6. *Caridina rangoona*, new species, female, cl 3.9 mm, paratype, ZRC.1999.2011, Yangon, Myanmar. A, cephalothorax and cephalic appendages; lateral view; B, telson; C, distal part of telson; D, preanal carina; E, scaphocerite; F, F', first maxilliped; G, first pereopod; H, second pereopod; I, third pereopod; J, dactylus of third pereopod; K, fifth pereopod; L, dactylus of fifth pereopod; M, uropodal diaeresis. Scales: A, B, D, E, F, H, I, K = 1 mm; F', G = 0.5 mm; C, M, J, L = 0.2 mm.

to 0.7 times length of basal segment of antennular peduncle; scaphocerite (Fig. 7E) narrow, reaching beyond distal end of antennular peduncle, about 4 times as long as broad. First maxilliped (Fig. 7F) with palp ending in stout finger-like structure; rest of mouthpart similar to *C. williamsi*, new species. Third maxilliped reaching slightly beyond distal end of antennular peduncle, ending in single terminal claw; ultimate segment slightly shorter than penultimate.

Epipods present on first 3 pereopods only. First pereopod (Fig. 7G) reaching end of antennular peduncle, chela 3.2 times as long as broad, fingers about 1.5 times as long as palm; carpus not excavated anteriorly, about 3.5 times as long as high, shorter than chela, merus shorter than carpus, as long as ischium. Second pereopod (Fig. 7H) long, slender, reaching end of scaphocerite; chela 4.5 times as long as broad, fingers 1.3 times as long as palm; carpus about 6.8 times as long as high, 1.2 times as long as chela; merus shorter than chela, as long as ischium. Third pereopod (Fig. 7I, J) long, slender, reaching beyond end of scaphocerite by dactylus, dactylus terminating in 1 spine, bearing 9 accessory spines on flexor margin; propodus 10 times as long as broad, 3.0 times as long as dactylus. Fifth pereopod (Fig. 7K, L) long, slender, reaching slightly beyond end of scaphocerite; dactylus terminating in a strong claw, with 48 spinules on posterior margin; propodus 12 times as long as broad, 2.6 times as long as dactylus.

Uropodal diaeresis (Fig. 7M) with 17 spinules.

Etymology.—*Caridina burmensis*, is named after the type locality, Burma, the old name for Myanmar.

Remarks.—With regards to the slender shape of the first two pereopods, the shape of the rostrum and the presence of a long and slender antennular peduncle, *Caridina burmensis*, new species, most closely resembles *C. annandalei* Kemp, 1918, from Inlé Lake, and *C. banna* Cai & Dai, 1999, from the Xishuangbanna region of Yunnan

Province, which borders Myanmar in southern China. It can be distinguished from *C. annandalei* by the number (three pairs vs. five pairs) and the form (lateral pair distinctively longer than intermediate pairs vs. subequal with a very small median pair) of the distal spines of telson; the number of dorsal spines of telson (two vs. four pairs); and the presence of a spine on the preanal carina (vs. absent). *Caridina burmensis* can also be separated from *C. banna* by the absence of an epipod on the fourth pereopod; the larger number of ventral rostral teeth (four vs. one or two); the greater number of teeth on uropodal diaeresis (17 vs. 8–11); the merus of first pereopods being as long as the ischium (vs. distinctively longer); and the greater ratio (three vs. 2.5) of the propodus to dactylus of the third pereopod. Although there is only one female specimen available to us, its morphological characteristics are very distinct and can confidently be assigned to a new species.

Caridina sp.

Caridina weberi prox. var. *sumatrensis*.—Kemp, 1918:99.

Remarks.—Apart from the description of *Caridina annandalei*, Kemp (1918) also reported another taxon under the name of "*Caridina weberi* prox. var. *sumatrensis* De Man, 1899; Kemp (1918: 100) noted that this taxon is similar to *C. weberi sumatrensis* but

"differs from *C. weberi* var. *sumatrensis* in a number of particulars which are apparently of subspecific importance: (i) both dorsal and ventral teeth of the rostrum are rather less numerous, (ii) the antero-inferior angle of the carapace is toothed, (iii) the fingers of the second pereopod are proportionately shorter in relation to the palm and the propodus of the third pereopod shorter in relation to the dactylus and (iv) the eggs are very much larger."

Based on our current understanding of species of *Caridina*, the larger egg size, which is 1.1 mm by 0.7 mm (vs. 0.4 mm by 0.25 mm in *C. w. sumatrensis*), suggests that the larval development of Kemp's Burmese taxon is of the abbreviated pattern. Based

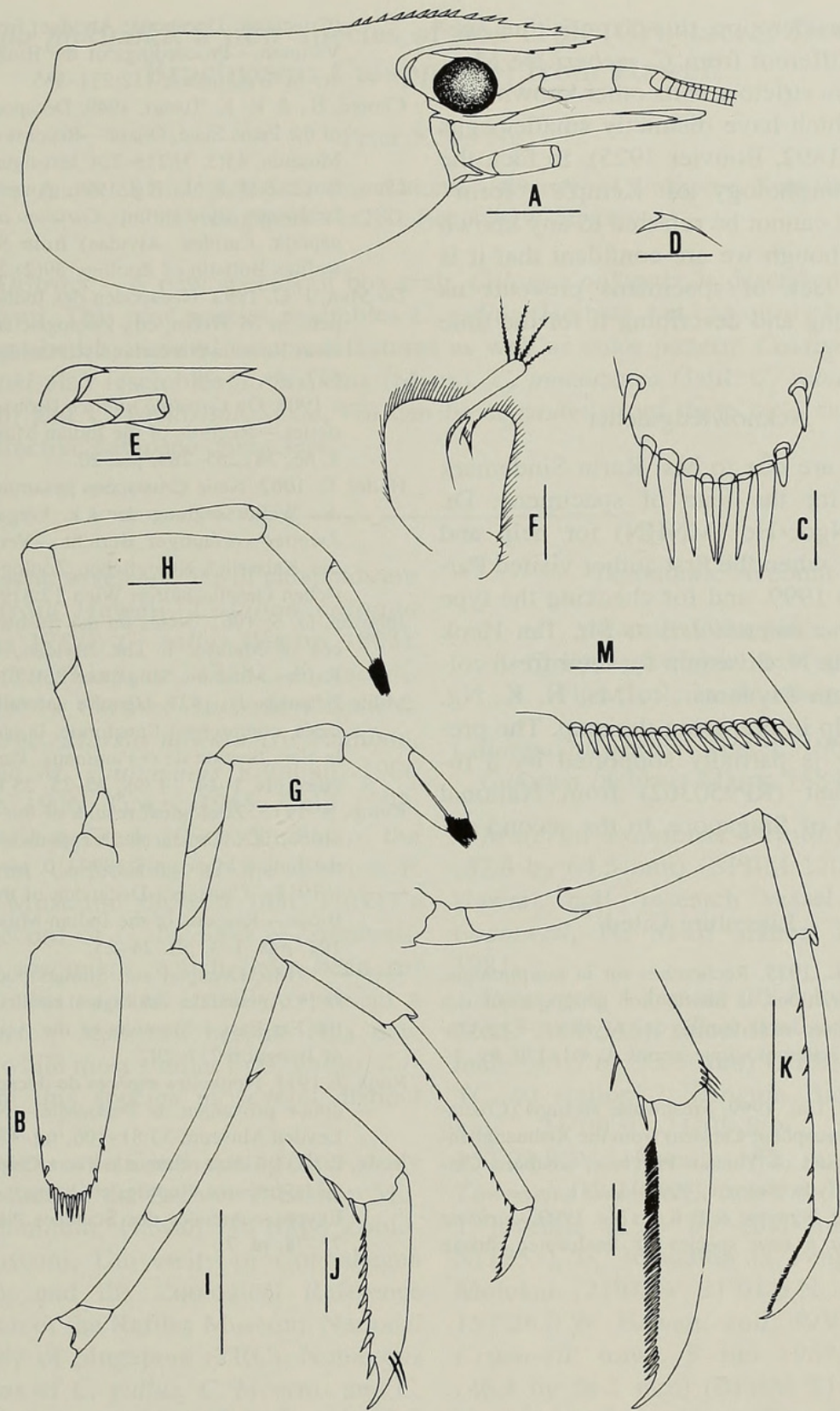


Fig. 7. *Caridina burmensis*, new species, female, cl 3.7 mm (SMNH 13901), holotype, Myitkyina, Myanmar. A, cephalothorax and cephalic appendages; lateral view; B, telson; C, distal part of telson; D, preanal carina; E, scaphocerite; F, first maxilliped; G, first pereopod; H, second pereopod; I, third pereopod; J, dactylus of third pereopod; K, fifth pereopod; L, dactylus of fifth pereopod; M, uropodal diaeresis. Scales: A, B, D, I, K, = 1 mm; C, J, L = 0.2 mm; E, F, G, H = 0.5 mm.

on this consideration, this taxon is thus specifically different from *C. weberi* De Man, 1892, sensu stricto and its other known subspecies which have distinctly smaller eggs (De Man 1892, Bouvier 1925). In fact, the overall morphology of Kemp's "form" suggests it cannot be referred to any known taxon. Although we are confident that it is new, the lack of specimens prevents us from naming and describing it for the time being.

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