

PROSCINA VINOGRADOVI, NEW SPECIES, AND
CHELOSCINA ANTENNULA, NEW GENUS, NEW SPECIES
 (AMPHIPODA; HYPERIIDEA: PROSCINIDAE) FROM THE
 EASTERN NORTH PACIFIC

Chang-tai Shih and Ed A. Hendrycks

ABSTRACT

Two new species of the Proscinidae collected from the eastern North Pacific are described. *Proscina vinogradovi* is distinct from all other species of the genus by the propodus of pereopod 2 with a palm, and by the broad carpus of pereopod 7. A key to all known species of *Proscina* is presented. *Cheloscina antennula* is different from all known species of the family by the prehensile pereopods 1 and 2, and by the segmentation and presence of 2 long large aesthetascs on antenna 1.

The Proscinidae is a relatively poorly known family. In the revisions of the Hyperidei by Bowman and Gruner (1973) and Vinogradov *et al.* (1982) this family is listed under the superfamily Scinoidea of the infraorder Physosomata. The Proscinidae was established by Pirlot (1933) to house the two genera *Proscina* and *Mimoscina*. This family is characterized by: (1) the more or less similar body form in both sexes, (2) the telson separate from the double urosomite, (3) the absence of eyes, (4) the insertion of antenna 1 on the dorsal part of the anterior surface of the head, (5) the rudimentary antenna 2 in males, (6) the absence of mandibular palp and molar, (7) the free maxilliped inner lobes, (8) the simple pereopods (dactyls of pereopods 5-7 sometimes hooded), and (9) free exopods and endopods in all uropods. According to Bowman and Gruner (1973), *Proscina* and *Mimoscina* mainly differ from each other in the antennae, mandible, and pereopods. In *Proscina*, antenna 2 of females is reduced to an unsegmented knob, the lacinia mobilis of the left mandible is as broad as the incisor, and the dactyls of pereopods 5-7 are simple; while in *Mimoscina*, antenna 2 of females is 4-segmented, the lacinia mobilis of the left mandible is not as broad as the incisor, and the dactyls of pereopods 5-7 are strongly curved and hooded.

In the revision of *Mimonectes* and related genera, Stephensen and Pirlot (1931) erected the genus *Proscina* to include *Parascina stephenseni* Pirlot, 1929, and a new species *Proscina magna*. Vinogradov (1956) added a new species, *Proscina birsteini*, and then

(1964) moved *Sphaeromimonectes scinoides* Woltereck, 1906 (changed to *Mimonectes scinoides* by Stephensen and Pirlot [1931]), to the genus *Proscina*. Pirlot (1933) established the genus *Mimonectes* to contain the new species *M. gracilipes* and the other species *M. setosa* (Bernard, 1930). The latter was originally described under the genus *Proscina*, then transferred to *Mimonectes* by Stephensen and Pirlot (1931).

In a study of the taxonomy and distribution of the Hyperidei in the eastern Pacific Ocean, we came across two interesting specimens belonging to two species of the Proscinidae. One species seems to fit well within the generic characteristics of *Proscina*; the other falls within the general diagnosis of the Proscinidae, but appears to differ from all species of the two known genera in the family. Both specimens are immature individuals. In light of the distinct characters they possess, nevertheless, we believe they belong to two undescribed species of the Proscinidae.

Morphological terminology follows Bowman and Gruner (1973).

MATERIALS AND METHODS

The two specimens reported here are among several plankton collections of the Hyperidei from the eastern Pacific Ocean sent to one of us (C-tS) by the Smithsonian Oceanographic Sorting Center. They were initially fixed in Formalin and stored in 70% ethanol. The body length was measured from the front end of the head to the distal end of the longer ramus of uropod 3. The whole specimen was drawn with a Wild M5 dissecting microscope equipped with a camera lucida. The specimens were dissected in ethanol. The right antennae, mouthparts, right pereopods, right uropods, and telson were removed and mounted, with the me-

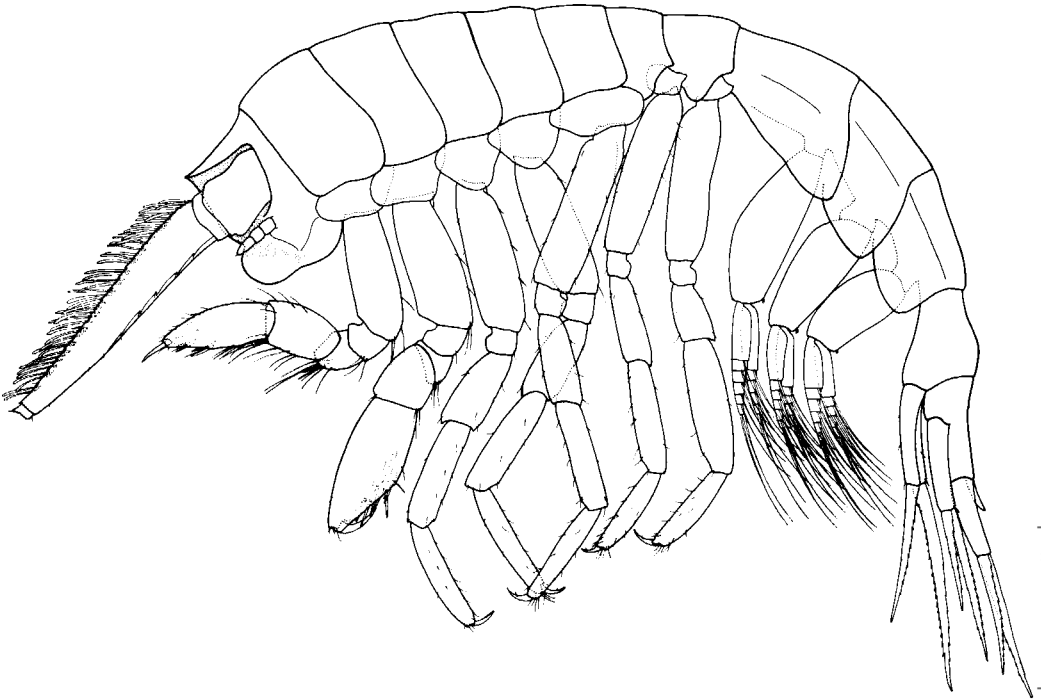


Fig. 1. *Proscina vinogradovi*, new species. Holotype, subadult male, 4.70 mm, lateral view of whole animal.

dial side up, on a slide in polyvinyl lactophenol with a little lignin pink added. A Wild M20 compound microscope fitted with a drawing tube was used for drawing and measuring the appendages.

SYSTEMATICS

Proscina vinogradovi, new species

Figs. 1–3

? non *Proscina stephenseni* (Pirlot, 1929), Vinogradov, 1957: 167–169, fig. 13.

Material.—Holotype: subadult ♂, body length 4.70 mm; right antennae, mouthparts, right pereopods, right uropods, and telson dissected and mounted in polyvinyl lactophenol on 1 slide, the dissected specimen preserved in 70% alcohol, USNM 264246, North Pacific, 54°40'N, 155°10'W, 700–900 m, 14 April 1930.

Description.—Body not inflated. Head as high and as long as pereonite 1, rectangular when viewed laterally, anterior surface semicircular when view dorsally. Pereon about 1.5 times as long as pleon, height of pereonites decreasing posteriorly, pereonite 1 about 1.5 times as high as pereonite 7. Coxae separate from pereonites. Telson separate from double urosomite, distal end rounded, 1.3 times as long as broad.

Antenna 1 inserted on anterior surface near lateral margin, therefore appearing

close to posterior end of head from lateral view. Peduncle 2-segmented. Flagellum multi-segmented, straight; segment 1 slightly longer than pereonites 1–3 combined and 3 times as long as peduncle, tapering distally, superior surface bearing numerous fine setae and ribbonlike aesthetascs, superior margin with short sawlike teeth, inferior margin bearing few isolated feeble setae and short sawlike teeth; distal segments broken, remaining segment rectangular, higher than long. Antenna 2 slightly shorter than peduncular segment 1 of antenna 1, 3-segmented of equal length; distal segment cone-shaped, with short fine seta at distal end.

Upper lip bilobed, slightly asymmetric. Mandible 3 times as long as broad, without palp or molar. In left mandible, incisor with 10 teeth, most inferior tooth strongest and separate from other teeth by large gap; lacinia mobilis 0.8 times as broad as incisor, with 11 teeth, tuft of dense fine setae at base of lacinia mobilis and on inferior margin near incisor. Maxilla 1 with palp 1-segmented, elongate, slightly longer than outer lobe, with 2 fine long and 2 short subter-

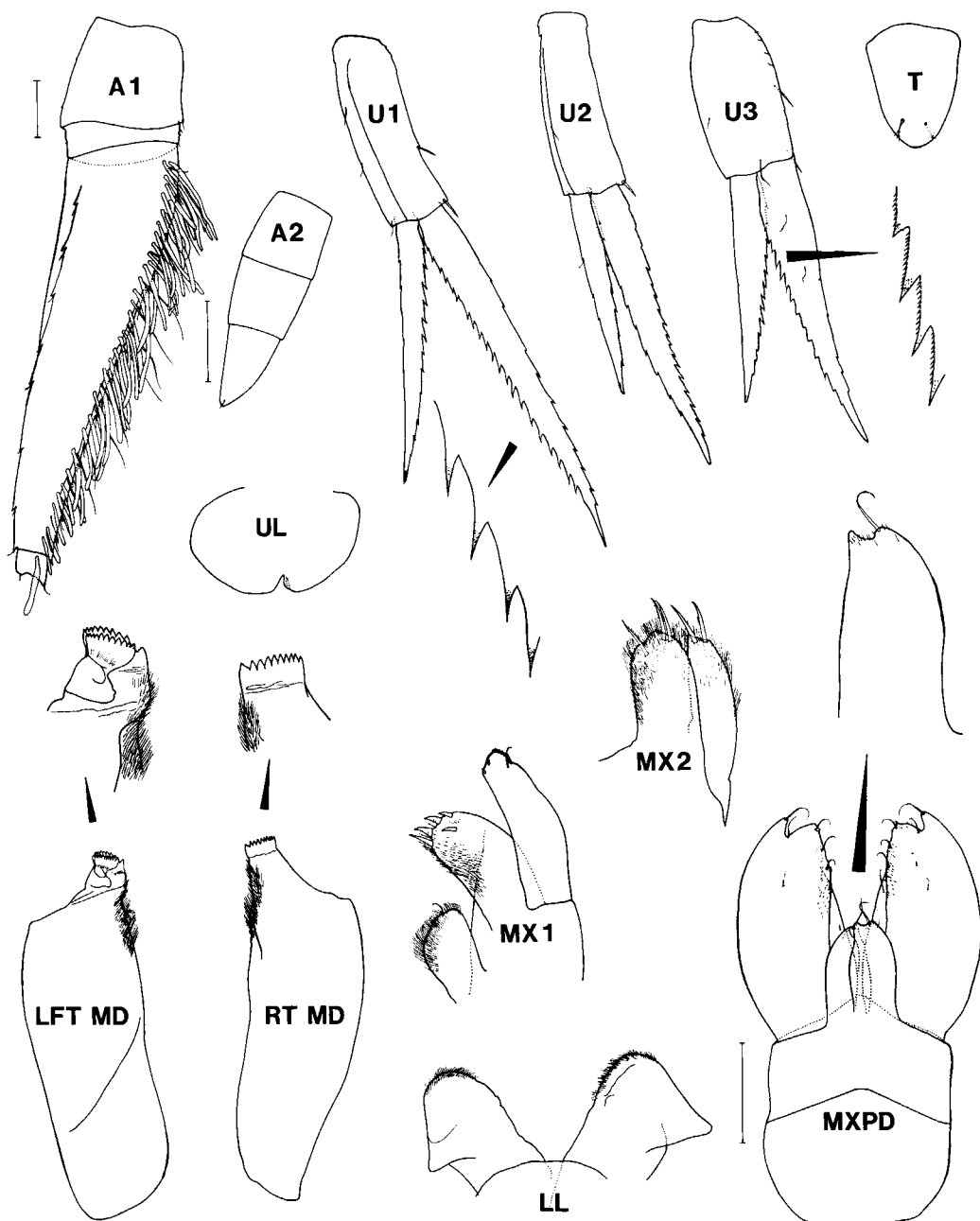
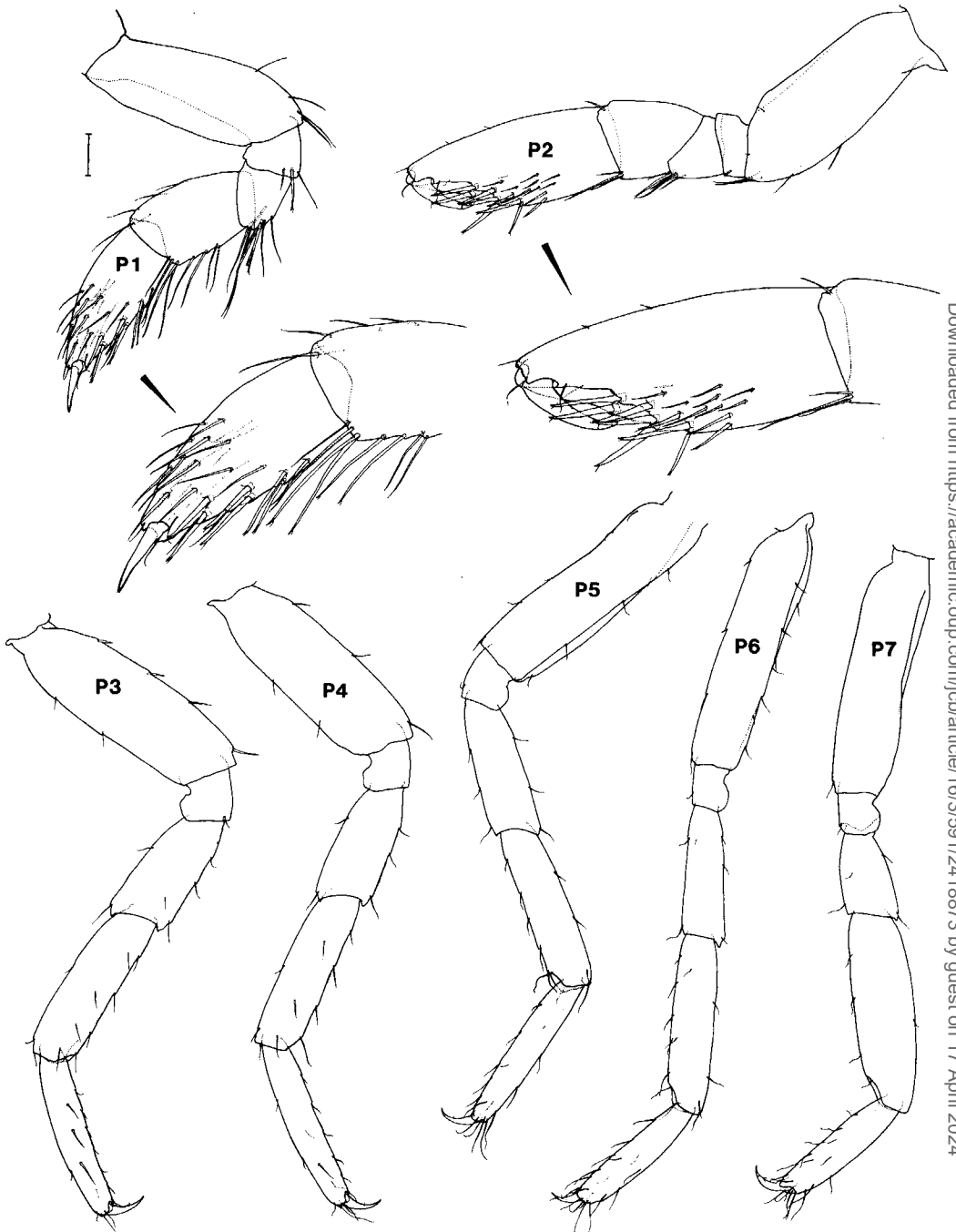


Fig. 2. *Proscina vinogradovi*, new species. A1 and A2 = antenna 1 and 2; LFT MD = left mandible; LL = lower lip; MX1 and MX2 = maxilla 1 and 2; MXPD = maxilliped; RT MD = right mandible; T = telson; U1-U3 = uropods 1-3; UL = upper lip. Scale = 0.1 mm.

minial spines, and few short spinules on distal margin. Outer lobe with 1 subterminal and 4 terminal spines, and tufts of fine setae on medial surface. Inner lobe small, with 1 fine terminal spine and tuft of fine setae on medial surface near distal margin. Maxilla

2 with outer lobe having acute tip, as long and half as broad as inner lobe; bearing 2 terminal spines and tuft of fine setae on distal half. Inner lobe rounded, with 3 subterminal spines and tuft of dense long setae on distal half and medial margin. Maxilliped



Downloaded from https://academic.oup.com/jcb/article/16/3/591/2418873 by guest on 17 April 2024

Fig. 3. *Proscina vinogradovi*, new species. P1-P7 = pereiopods 1-7. Scale = 0.1 mm.

without palp. Outer lobe with excavation at distal end, slightly more than 2 times as long as inner lobe, 2 times as long as broad; lateral margin circular with fine terminal spine, 2-4 fine spines on medial margin, tuft of fine short setae on surface near me-

dial margin. Inner lobes separate, distal end slightly indented, with fine terminal spine.

Pereiopod 1 with basis 2.6 times as long as broad; posterior margin slightly convex, with 4 long spines at distal half. Merus with 9 spines on posterodistal corner. Carpus

about two-thirds as long as basis; anterior margin slightly convex, bearing 4 spines; distal half of posterior margin with 8 spines. Propodus slightly longer than carpus, tapering distally; with numerous spines, some relatively strong, on both lateral and medial surfaces. Dactyl strong and smooth, curved, slightly less than one-third as long as propodus. Pereiopod 2 generally similar to and 1.1 times longer than pereiopod 1. Propodus 2 times as long as carpus, forming palm by expansion of proximal half of posterior margin. Pereiopod 3 basis 3 times as long as broad. Long fine spines on anterior and posterior margins of basis, merus, carpus, and propodus, and also on medial and lateral surfaces of last 3 segments. Length ratio of merus : carpus : propodus 1.00:1.36:1.40. Dactyl slightly curved, nearly one-fourth as long as propodus. Pereiopod 4 nearly identical with pereiopod 3. Length ratio of merus : carpus : propodus 1.00:1.40:1.40. Pereiopods 5–7 with tuft of long fine spines on distal end of propodus. Pereiopod 5 about as long as and slightly slenderer than pereiopod 3; basis 3.5 times as long as broad; length ratio of merus : carpus : propodus 1.00:1.25:1.18; dactyl slightly curved, barely more than one-fifth as long as propodus. Pereiopod 6 subequal to pereiopod 5 in length; basis 5 times as long as broad; ratio of merus : carpus : propodus 1.00:1.35:1.05. Pereiopod 7 about 0.9 times as long as pereiopod 5; basis 3.8 times as long as broad; ratio of merus : carpus : propodus 1.00:2.40:1.75; carpus one-third as broad as long, as broad as basis.

Uropod 1 with peduncle having parallel margins, 3 times as long as broad, medial margin bearing 2 spines, lateral margin with 3 fine spines. Both rami lanceolate, free from peduncle. Length ratio of peduncle : exopod : endopod 1.00:1.36:2.00. Exopod 8.5 times as long as broad, serration on medial margin much stronger than that on lateral margin. Endopod 10 times as long as broad, serration on lateral margin much stronger than that on medial margin. Uropod 2 similar to uropod 1 in general. Peduncle with single distal spine on medial margin; length ratio of peduncle : exopod : endopod 1.00:1.15:1.70. Exopod 8 times as long as broad; serration on medial margin slightly stronger than that on lateral margin. Endopod 8 times as long as broad; serration

on medial margin stronger than that on lateral margin. Uropod 3 stouter than uropods 1 and 2. Peduncle 1.6 times as long as broad. Length ratio of peduncle : exopod : endopod 1.00:1.50:2.00. Exopod 7 times as long as broad, serration on medial margin much stronger than that on lateral margin. Endopod 6 times as long as broad, serration on medial margin much stronger than that on lateral margin.

Etymology.—This species is named after Dr. M. E. Vinogradov in recognition of his eminent contribution to the systematics of Hyperiidæ and the biology of marine zooplankton.

Remarks.—According to Bowman and Gruner (1973), the lacinia mobilis of the left mandible in *Proscina* is as broad as the incisor. This description is not in accord with Stephensen and Pirlot (1931) who stated in their diagnosis for the new genus, "... Mandibules sans palpe ni processus molaire; bord coupant [=incisor] orné de denticules; celui de la mandibule gauche divisé en deux plaques [i.e., incisor and lacinia mobilis] se recouvrant incomplètement ..." The descriptions of the mandible in *P. stephenseni* (by Vinogradov, 1957), *P. magna* (by Vinogradov, 1957), and *P. scinoides* (by Vinogradov, 1964) showed that the lacinia mobilis is not as broad as the incisor. In *P. vinogradovi*, the lacinia mobilis is also not as broad as the incisor. It is, therefore, apparent that the length of the lacinia mobilis can not be regarded as a generic character to distinguish *Proscina* from *Mimoscina*.

Morphologically the new species is unique in having: (1) the insertion of antenna 1 close to the posterior margin of the head, (2) an excavation at the distal end of the maxilliped outer lobe, (3) a palm-shaped propodus of pereiopod 2 that is twice as long as the carpus, and (4) the short merus and broad carpus of pereiopod 7. This specimen is similar to *Proscina stephenseni* illustrated by Vinogradov (1957), especially in the maxilliped and pereiopod 2. According to the original description given by Pirlot (1929) for *P. stephenseni*, the propodus of pereiopod 2 is not subchelate and is only 1.5 times as long as the carpus, and the dactyls are proportionally shorter in all pereiopods. The original description of *P. magna* by Woltereck (1906) is brief and

inadequate, but Vinogradov (1964) supplied a detailed description. All the known species of the genus *Proscina* may be separated follows:

KEY TO THE KNOWN SPECIES OF THE GENUS *PROSCINA*

- 1. Propodus of pereopod 2 weakly subchelate, 2 times as long as carpus. Carpus of pereopod 7 as broad as basis. . . . *P. vinogradovi*, new species
- Propodus of pereopod 2 simple, equal to or less than 1.5 times as long as carpus. Carpus of pereopod 7 not as broad as basis 2
- 2. Carpus of pereopod 1 longer than propodus. Basis of pereopod 5 much broader than basis of pereopod 6 *P. magna* Stephensen and Pirlot
- Carpus of pereopod 1 shorter than propodus. Basis of pereopod 5 not or only slightly broader than basis of pereopod 6 3
- 3. Outer lobe of maxilliped with excavation at distal end. Merus of pereopod 1 bearing row of robust spines *P. stephenseni* (Pirlot)
- Outer lobe of maxilliped without excavation at distal end. Merus of pereopod 1 bearing normal spines 4
- 4. Merus of pereopods 3-7 about 1.5 times or less as long as ischium; dactyl longer than one-third length of propodus *P. scinoides* (Woltereck)
- Merus of pereopods 3-7 about 2 times or more as long as ischium; dactyl shorter than one-fourth length of propodus *P. birsteini* Vinogradov

Cheloscina, new genus

Diagnosis.—Body not inflated. Coxae separate from pereionites. Telson small, not fused with double urosomite. Eyes absent. Antenna 1 longer than head, inserted on dorsal part of anterior surface of head, flagellum bearing enormous aesthetascs, with first flagellar segment shorter than combined length of distal segments. Mandible without palp or molar; lacinia mobilis of left mandible not as broad as incisor. Maxilliped with large outer lobes; inner lobes free. Pereiopods 1 and 2 subchelate and prehensile, distal half of posterior margin of propodus indented. Pereiopods 5-7 without hooded dactyls. Uropods slender, both rami not fused with peduncle. Gills on pereionites 2-6.

Etymology.—From the Greek *chele* (=claw), referring to the *Scina*-like appearance with subchelate pereiopods.

Gender.—Feminine.

Type Species.—*Cheloscina antennula*, new species, by monotypy.

Cheloscina antennula, new species
Figs. 4, 5

Material.—Holotype: immature ♀, body length 2.70 mm; right antennae, mouthparts, right pereiopods, right uropods, and telson dissected and mounted in polyvinyl lactophenol on 1 slide, the dissected specimen preserved in 70% alcohol, USNM 264047, North Pacific, 53°20'N, 155°16'W, 700-900 m, 13 April 1930.

Description.—Body not inflated. Head slightly higher than pereionite 1, rectangular when viewed laterally, anterior surface semicircular when viewed dorsally. Pereionite nearly 2 times as long as pleon, height of pereionites decreasing posteriorly, pereionite 1 about 2 times as high as pereionite 7. Coxae separate from pereionites. Telson separate from double urosomite, distal end rounded, with 2 pairs of setules on dorsal surface, 1.35 times as long as broad.

Antenna 1 inserted on anterior surface near lateral margin, therefore appearing close to posterior margin of head from lateral view. Peduncle 2-segmented, segment 1 nearly 2.5 times as long as segment 2, superior margin of segment 2 bearing 2 fine spines. Flagellum 4-segmented, straight, as long as combined length of pereionites 1-4, length ratio of segments 1.00:0.50:0.75:1.50; superior and inferior distal ends of proximal segments spinous; segment 1 rectangular from lateral view, as long as segment 1 of peduncle, 1.6 times as long as high, superior surface naked, inferior margin with 2 large, 3 small sawlike teeth and 4 fine spines, broad aesthetasc inserted near distal margin on lower medial surface and extended to tip of segment 4, distal margin with fine spine and spinous process overhanging aesthetasc; segment 2 subquadrate, 0.9 times as high as segment 1, distal ends of superior and inferior margin pointed, broad aesthetasc inserted near distal margin on medial surface and extended to distal third of segment 4; segment 3 slightly tapering distally, 0.65 times as high as segment 1, bearing toothlike spine near distal margin inferior to distal process of superior margin; segment 4 slender and tapering distally, 0.3 times as high as segment 1, bearing 2 fine terminal spines of unequal length. Antenna 2 reduced to unsegmented knob.

Upper lip bilobed. Lower lip with median lobes. Mandible 3 times as long as broad, without palp or molar. In left man-

Downloaded from https://academic.oup.com/jcb/article/16/3/596/18873 by guest on 17 April 2024

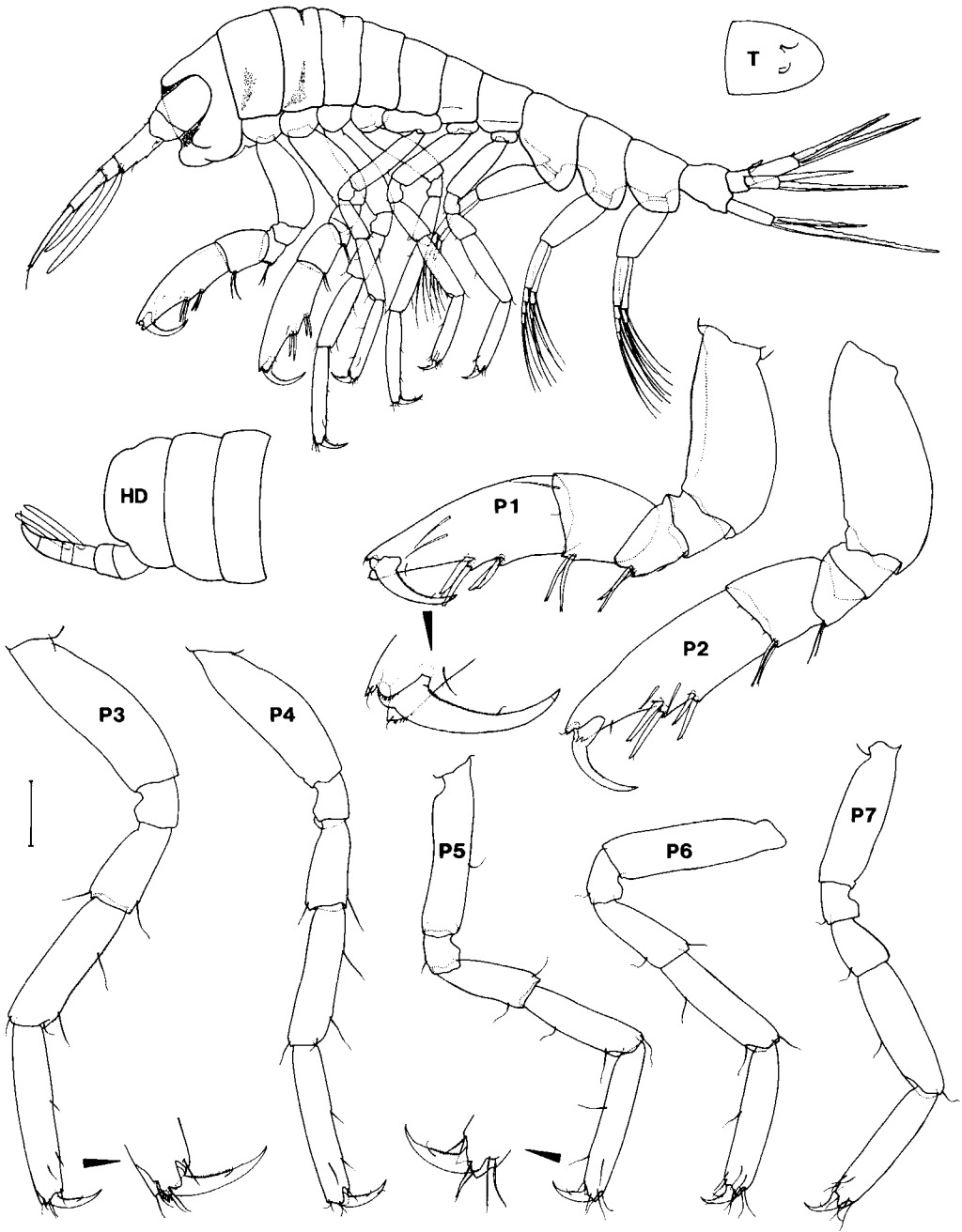


Fig. 4. *Cheloscina antennula*, new genus, new species. Holotype, immature female, 2.70 mm, lateral view of whole animal; HD = dorsal view of head and anterior part of pereopod; P1–P7 = pereopods 1–7; T = telson. Scale = 0.1 mm.

dible, incisor bearing 9 teeth, most inferior tooth not separate from other teeth by large gap; lacinia mobilis 0.75 times as broad as incisor, bearing 7 teeth, tuft of dense fine setae on inferior margin near incisor. Max-

illa 1 with palp 1-segmented, elongate, longer than outer lobe, with 2 short stout and 2 fine subterminal spines, and row of short spinules on distal margin. Outer lobe bearing 1 subterminal and 4 terminal spinous

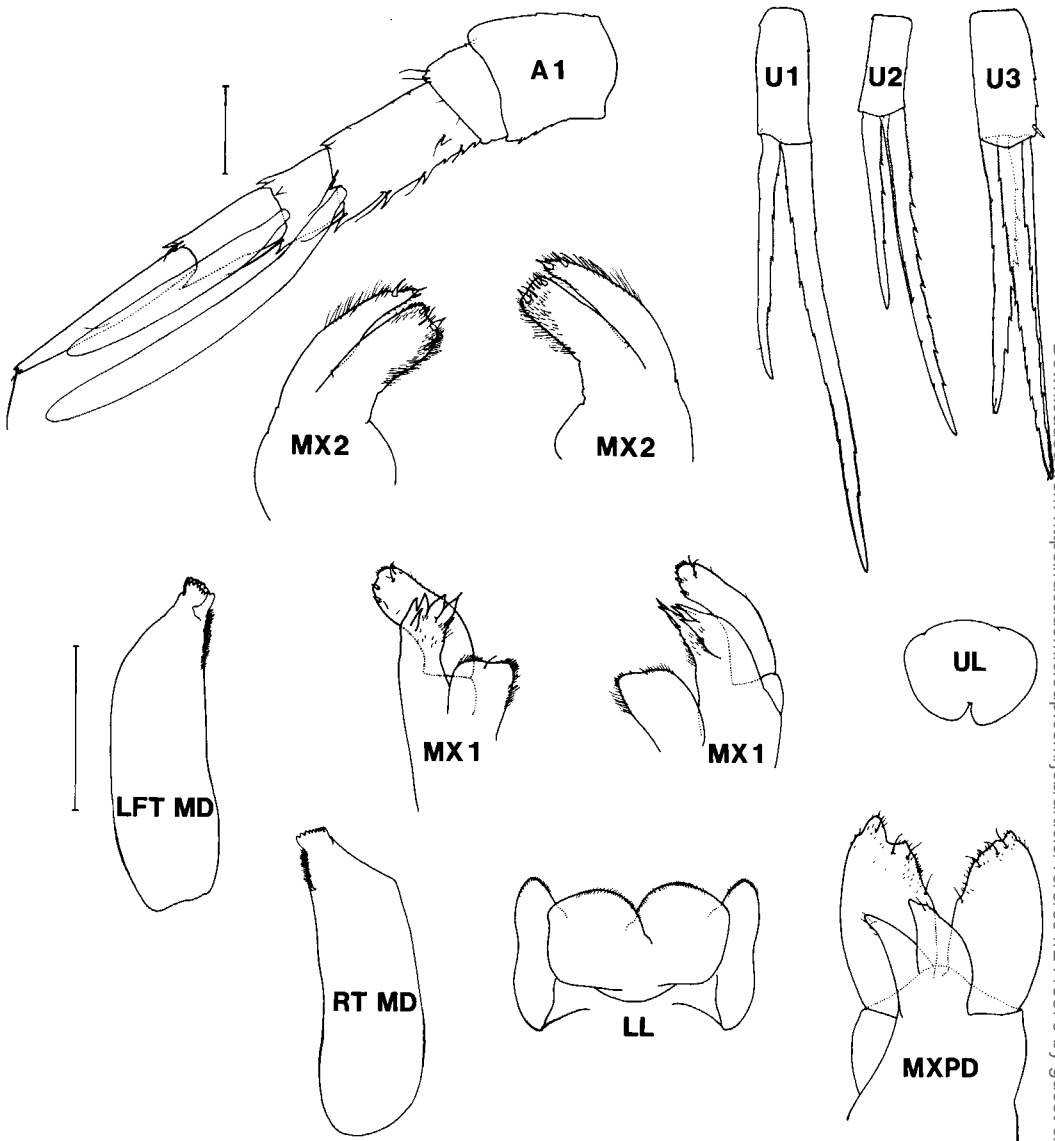


Fig. 5. *Cheloscina antennula*, new genus, new species. A1 = antenna 1; LFT MD = left mandible; LL = lower lip; MX1 and MX2 = maxilla 1 and 2; MXPD = maxilliped; RT MD = right mandible; U1-U3 = uropods 1-3; UL = upper lip. Scale = 0.1 mm.

processes and 1 fine medial spine, fine setae on medial surface. Inner lobe subquadrate, with 1 fine subterminal spine and tuft of fine setae on medial surface near distal margin. Maxilla 2 with outer lobe as long and half as broad as inner lobe; bearing 1 terminal and 1 subterminal short strong spine and fine setae on distal half near lateral margin. Inner lobe with 2 strong and 4 fine subterminal spines, and tuft of dense setae near distal half of lateral and medial mar-

gins. Maxilliped without palp. Left outer lobe with excavation at distal end, 2 times as long as inner lobe, 2 times as long as broad, lateral margin convex, medial margin straight, slightly narrowed at distal half, short setae on and near distal inner margin, 1 medial and 3 subterminal fine spines. Right outer lobe similar to left outer lobe, lack of distal excavation probably due to injury. Inner lobes free, distal end pointed, with few fine terminal spines.

Table 1. Published and present records of the species of Proscinidae.

Species	Atlantic	Indian	Pacific	Arctic	Southern Ocean
<i>Cheloscina antennula</i>	—	—	53°20'N, 155°16'W (700–900 m)	—	—
<i>Mimoscina gracilipes</i>	41°29'N, 15°44'W (0–2,000 m)	N. Arabian Sea (16°20'N, 155°16'W; 1,900–3,750 m)	27°15'S, 175°39'W (1,900–3,750 m)	—	—
<i>Mimoscina setosa</i>	41°29'N, 15°44'W	N. Arabian Sea (16°20'N, 155°16'W; 27°15'S, 175°39'W)	—	—	67°23'S, 177°59'W (500 m); 64°25'S, 92°52'E (0–2,700 m); 64°03'S, 161°59'E
<i>Proscina birsteini</i>	—	—	Bering Sea (60°47'N, 175°38'W; 500–1,500 m)	—	—
<i>Proscina magna</i>	36°27'N, 28°53'W (Carnary Islands, 0–300 m)	—	E. and S.E. Kuril Trench (30°53'N, 153°09'E; 0–5,500 m)	—	—
<i>Proscina scinoides</i>	41°29'N, 15°44'W	30°07'N, 87°50'E (1,600–1,800 m); 03°00'S, 66°67'E (2,120–3,130 m; 1,940–3,135 m)	—	—	—
<i>Proscina stephensi</i>	47°10'N, 18°02'W (0–2,240 m); 36°17'N, 28°53'W	S. Arabian Sea (0–1,500 m)	E. and S.E. Kuril Trench (0–2,000 m; 0–3,000 m); 44°07'N, 150°32'E	85°53.5'N, 136°47'W to 80°34'N, 136°50'W (300–900 m)	—
<i>Proscina vinogradovi</i>	—	—	54°40'N, 155°10'W (700–900 m)	—	—

Pereopod 1 subchelate by form of prehensile propodus. Basis 2.3 times as long as broad, posterior margin convex. Posterior margin of merus slightly serrate, bearing 2 spines on posterodistal corner. Carpus 0.5 times as long as basis; anterior margin slightly convex; medial distal margin bearing 1 fine spine; posterior margin bearing 2 spines. Propodus 2 times as long as carpus; proximal half of posterior margin straight, bearing 2 pairs of robust spines, distal pair inserted in middle of posterior margin, few fine spines on medial and lateral surfaces; distal half of posterior margin narrowed and tapering distally and forming palm; distal end of both anterior and especially posterior margins prolonged to form process. Dactyl heavy and strongly curved, about 0.43 times as long as propodus; proximal half of posterior margin weakly serrate. Pereiopod 2 generally similar to pereiopod 1 and subequal in length. Propodus 2.1 times as long as carpus, distal two-fifths of propodus forming palm. Dactyl heavy and strongly curved. Pereiopod 3 about 1.15 times as long as pereiopod 1. Basis 2.3 times as long as broad. Long fine spines on anterior and posterior margins of basis, merus, carpus, and propodus, and also on medial surface of propodus. Length ratio of merus:carpus:propodus 1.00:1.86:2.14. Dactyl slightly curved, one-third as long as propodus. Pereiopod 4 nearly identical with pereiopod 3. Length ratio of merus:carpus:propodus 1.00:1.62:1.89. Pereiopod 5 about 0.9 times as long as and slenderer than pereiopod 3. Basis 3.9 times as long as broad. Length ratio of merus:carpus:propodus 1.00:1.49:1.81. Dactyl slightly curved, 0.27 times as long as propodus. Pereiopod 6 about 1.1 times as long as pereiopod 5. Basis 3.5 times as long as broad. Length ratio of merus:carpus:propodus 1.00:1.40:1.50. Pereiopod 7 about 1.05 times as long as pereiopod 5. Basis 3 times as long as broad. Length ratio of merus:carpus:propodus 1.00:2.19:2.37.

Uropod 1 with peduncle naked, with parallel margins, 2.35 times as long as broad. Both rami slender and lanceolate, free from peduncle, with weak serration on medial margin of exopod and lateral margin of endopod. Length ratio of peduncle:exopod:endopod 1.00:2.60:3.50. Exopod 13 times as long as broad. Endopod 12 times as long

as broad. Uropod 2 similar to uropod 1 in general. Length ratio of peduncle:exopod:endopod 1.00:2.00:3.30. Serration on medial margin of both rami. Exopod 10 times as long as broad. Endopod 12 times as long as broad. Uropod 3 broader than uropods 1 and 2. Peduncle 2.2 times as long as broad; medial margin jagged, bearing 1 distal spine. Length ratio of peduncle:exopod:endopod 1.00:1.88:2.30. Exopod 11 times as long as broad, serration on medial margin. Endopod 10 times as long as broad, serration on lateral margin.

Etymology.—Referring to the distinct characteristics of antenna 1 in this species.

Remarks.—*Cheloscina antennula*, as in all species of *Proscina*, has antenna 2 unsegmented in the female and unhooded dactyls in all pereiopods. It is similar to the species of *Mimoscina* in possessing very slender uropods. However, it is distinct from all known species of the Proscinidae in having two enormous aesthetascs on the flagellum of antenna 1 and the strongly prehensile pereiopods 1 and 2. We believe, therefore, that there is sufficient justification in assigning *Cheloscina antennula* to a new genus.

Records of the Proscinidae are very rare (Table 1). Except for *Proscina birsteini*, which is known only from the Bering Sea, all species of the family are widely distributed. *Proscina stephensi* is the most common species and has the widest range of distribution, including the Indian, North Pacific, North Atlantic, and Arctic oceans. The depth of capture, if known, is usually from 500 m or more below the surface. Apparently all species of the Proscinidae live in deep water.

ACKNOWLEDGEMENTS

We thank the Smithsonian Sorting Center for providing the material for the present study. The late Dr. Thomas E. Bowman of the United States National Museum of Natural History is acknowledged for his confirmation of the taxonomic status of the new species based on our original pencil sketches. Ms. Susan Laurie-Bourgue inked our pencil drawings. This work was supported by a Canadian Museum of Nature research grant to C-tS.

LITERATURE CITED

- Barnard, K. H. 1930. Crustacea. Part XI.—Amphipoda.—British Antarctic ("Terra Nova") Expedition 1910. Natural History Report. Zoology 8: 307–354.

- Bowman, T. E., and E.-H. Gruner. 1973. The families and genera of Hyperidea (Crustacea: Amphipoda).—*Smithsonian Contributions to Zoology* 146: 1–64.
- Pirlot, J.-M. 1929. Les amphipodes hypérides recueillis dans l'Atlantique au cours de la croisière océanographique de L' "Armauer Hansen" Mai-Juin 1922. Classification des amphipodes hypérides.—*Mémoires de la Société Royale des Sciences de Liège* (3) 15: 1–196.
- . 1933. Les Proscinidae, nouvelle famille d'Amphipodes Hypérides.—*Bulletin de l'Institut Océanographique*, Monaco 631: 1–11.
- Stephensen, K., and J.-M. Pirlot. 1931. Les Amphipodes Hypérides du genre *Mimonectes* Bovallius (inclus: *Sphaeromimonectes* Woltereck et *Parascina* Stebbing) et de quelques genres voisins (*Archaeoscina* Stebbing, *Micromimonectes* Woltereck, *Microphasma* Woltereck et *Proscina* n.g.).—*Archives de Zoologie Expérimentale et Générale* 71: 501–553.
- Vinogradov, M. E. 1956. Hyperiid (Amphipoda—Hyperidea) of the western Bering Sea.—*Zoologicheskii Zhurnal* 35: 194–218.
- . 1957. Hyperiid (Amphipoda) of the north-west Pacific Ocean. 1. Tribe Hyperidea Physosomata.—*Trudy Instituta Okeanologii Akademii Nauk SSSR* 20: 186–227.
- . 1964. The Hyperidea Physosomata from the northern part of the Indian Ocean.—*Trudy Instituta Okeanologii Akademii Nauk SSSR* 65: 107–151.
- , A. F. Volkov, and T. N. Semenova. 1982. Amphipody—Giperiidy (Amphipoda, Hyperidea) mirovogo okeana.—*Opredeliteli po Faune SSSR, Izdabaemye Zoologicheskim Institutom Akademii Nauk SSSR* 132: 1–492.
- Woltereck, R. 1906. Weitere Mitteilung über Hyperiden der "Valdivia"—(Nr. 6) und *Gauss*-Expedition (Nr. 3): *Sphaeromimonectes scinoides* (n.sp.), *S. gausi*, *S. cultricornis* (n.sp.) und *S. valdiviae*, eine morphologische Reihe.—*Zoologischer Anzeiger* 30: 865–869.

RECEIVED: 30 October 1995.

ACCEPTED: 29 January 1996.

Addresses: Research Division, Canadian Museum of Nature, Ottawa, Ontario, Canada K1P 6P4; (C-tS, present address) Department of Zoology, National Taiwan University, Taipei, Taiwan 106, Republic of China. (e-mail: ctshih@ccms.ntu.edu.tw)