

## Two New Records of *Lamprops* Species (Cumacea, Lampropidae) from Korea

Sung-Hyun Kim<sup>1</sup>, Chang-Mok Lee<sup>2</sup>, Young-Hyo Kim<sup>1,\*</sup>

<sup>1</sup>Department of Life Sciences, Dankook University, Cheonan 330-714, Korea

<sup>2</sup>Unjeong High School, Paju 413-110, Korea

### ABSTRACT

Two newly recorded species belonging to the genus *Lamprops*, family Lampropidae found in the East Sea (Sea of Japan) of Korea are reported: *Lamprops carinatus* Hart, 1930 and *L. pseudosarsi* Tsareva and Vassilenko, 1993. *Lamprops carinatus* is characterized by having a smooth carapace without oblique ridges and one long and two pairs of terminal unequal setae on the telson. *Lamprops pseudosarsi* is easily distinguished by having two pairs of oblique ridges on the carapace and one long and two pairs of terminal subequal setae on the telson. The collected specimens were congruent with the original descriptions, except for several minor differences. This is the first record of the genus *Lamprops* from Korea. Especially, new information on the mouthparts of these species is given, and the male of *L. pseudosarsi* is described for the first time. Keys are also provided to the Korean genera of the Lampropidae and species of *Lamprops*.

**Keywords:** Cumacea, Lampropidae, *Lamprops*, recorded species, Korea

### INTRODUCTION

Lampropidae is a relatively small family, comprised of about 100 species in 13 genera, and is generally found in colder, deeper waters (Gerken, 2010). Among the genera, *Lamprops* Sars, 1863 is represented by 23 species worldwide (WoRMS, 2014). The diagnostic characteristics of the genus *Lamprops* are as follows: 1) carapace with definite antennal notch; 2) pleon without pleopods; 3) telson with more than three terminal setae (Given, 1964; Gamô, 1967). In the present paper, two newly recorded species belonging to the genus *Lamprops* were described and illustrated, based on samples collected from the East Sea (Sea of Japan) in Korea. *Lamprops carinatus* Hart, 1930 and *L. pseudosarsi* Tsareva and Vassilenko, 1993. To date, only one species belonging to the family Lampropidae, *Hemilamprops californicus* Zimmer, 1936 was provided from Korea (Lee and Lee, 1998). Therefore, this represents the first record on the genus *Lamprops* from Korea. New information on the mouthparts of these species is also provided, and the male of *L. pseudosarsi* is described for the first time on the basis of the specimen from Korean waters.

Keys to the Korean genera of the Lampropidae and species of *Lamprops* are also given. The terminology of the setae follows that used by Watling (1989) and Gerken (2010, 2013).

### SYSTEMATIC ACCOUNTS

Order Cumacea Kröyer, 1846

Family Lampropidae Sars, 1878

<sup>1</sup>\*Genus *Lamprops* Sars, 1863

<sup>2</sup>\**Lamprops carinatus* Hart, 1930 (Figs. 1–6)

*Lamprops carinata* Hart, 1930: 34, fig. 4A–E; Zimmer, 1943: 158, fig. 48; Lomakina, 1958: 94, fig. 42; Given, 1965: 222; Lie, 1968: 229; 1969: 21.

*Lamprops carinatus*: Băcescu, 1988: 15.

**Material examined.** 3♂♂, 10♀♀, Korea: Gangwon-do, Goseong-gun, Geojin-eup, Geojin Port, 38° 26'44"N, 128° 27'40"E, 11 Apr 2013, Hong SS, Kim SH.

**Description. Female (cat no. DKUCUM 201401):** Body

Korean name: <sup>1</sup>\*삼꼬리올챙이새우속 (신칭), <sup>2</sup>\*용골삼꼬리올챙이새우 (신칭)

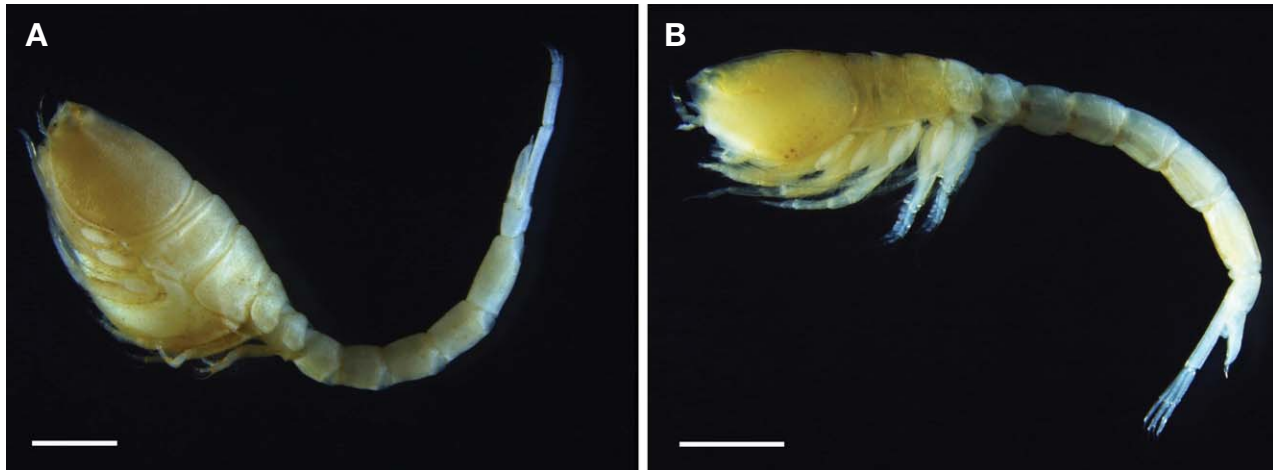
© This is an Open Access article distributed under the terms of the Creative Commons Attribution Non-Commercial License (<http://creativecommons.org/licenses/by-nc/3.0/>) which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

pISSN 2234-6953 eISSN 2234-8190

\*To whom correspondence should be addressed

Tel: 82-41-550-3442, Fax: 82-41-559-7861

E-mail: yhkim@dankook.ac.kr



**Fig. 1.** *Lamprops carinatus* Hart, 1930. A, Female, 8.3 mm; B, Male, 7.3 mm. Scale bars: A, B=1.0 mm.

(Figs. 1A, 2A) about 7.0–9.2 mm long, surface is decorated with a scale-like sculpturing. Carapace (Fig. 2A, B) smooth, without oblique ridges, 0.2 times as long as body, 1.3 times as long as wide.

Thorax (Fig. 2A, B) 1.2 times as long as carapace, 0.3 times as long as body.

Antenna 1 (Fig. 2C) peduncle triarticulate; article 1 slightly shorter than remaining articles combined, with hair-like setae on ventroproximal margin, 3 complex pedunculate and 2 pedunculate setae dorsodistally; article 2 about 0.7 times as long as article 1, with 2 small simple and 4 complex pedunculate setae dorsodistally, and 1 small seta ventrodistally; article 3 about 0.9 times as long as article 2, with 3 simple and 1 complex pedunculate setae distally; main flagellum triarticulate, subequal to peduncular article 3; accessory flagellum triarticulate, subequal to flagellum article 1.

Antenna 2 vestigial.

Right mandible (Fig. 2D) boat-shaped, with row of 11 lifting setae between lacinia mobilis and pars molaris; incisor with 3 cusps.

Left mandible (Fig. 2E) similar to right, with row of 9 lifting setae; incisor with 4 cusps; lacinia mobilis with 6 cusps.

Maxilla 1 (Fig. 2F) outer endite broad with a row of 3 stout simple, 9 microserrate, and 1 pappose setae terminally and hair-like setae subterminally, lateral margin with 1 microserrate and 3 slender simple setae, medial with hair-like setae; inner endite with 1 papposerrate, 3 microserrate, and 1 simple setae terminally, lateral margin with hair-like setae.

Maxilla 2 (Fig. 2G) broad endite with 8 simple, 7 papposerrate, and 1 plumose setae terminally, near medial face with a row of 29 simple, 2 microserrate, and 1 pappose setae; outer narrow endite with 4 simple and 3 microserrate setae terminally, inner narrow endite with 3 microserrate setae

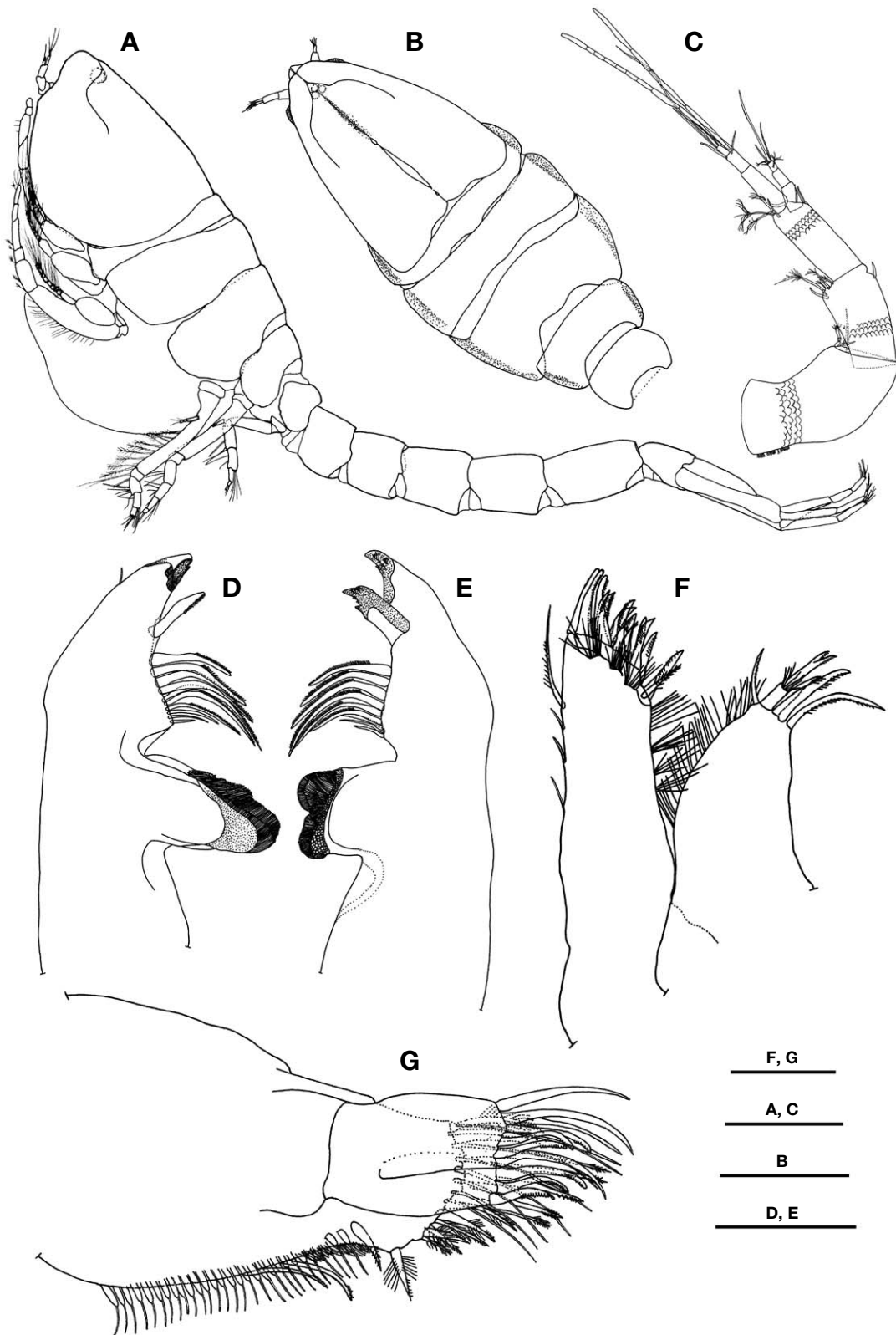
terminally.

Maxilliped 1 (Fig. 3A) basis produced distally as blunt lobe, 2 hook, 5 pappose medially, 5 simple, 1 stout knoblike, and 1 pappose setae distally; ischium absent; merus with 4 pappose seta medially; carpus with many simple, 5 plumose, 11 comb setae on medial face, 1 long plumose seta laterodistally; propodus with 3 plumose, 3 pappose, and 18 simple setae medially; dactylus with 2 microserrate and 1 simple setae terminally.

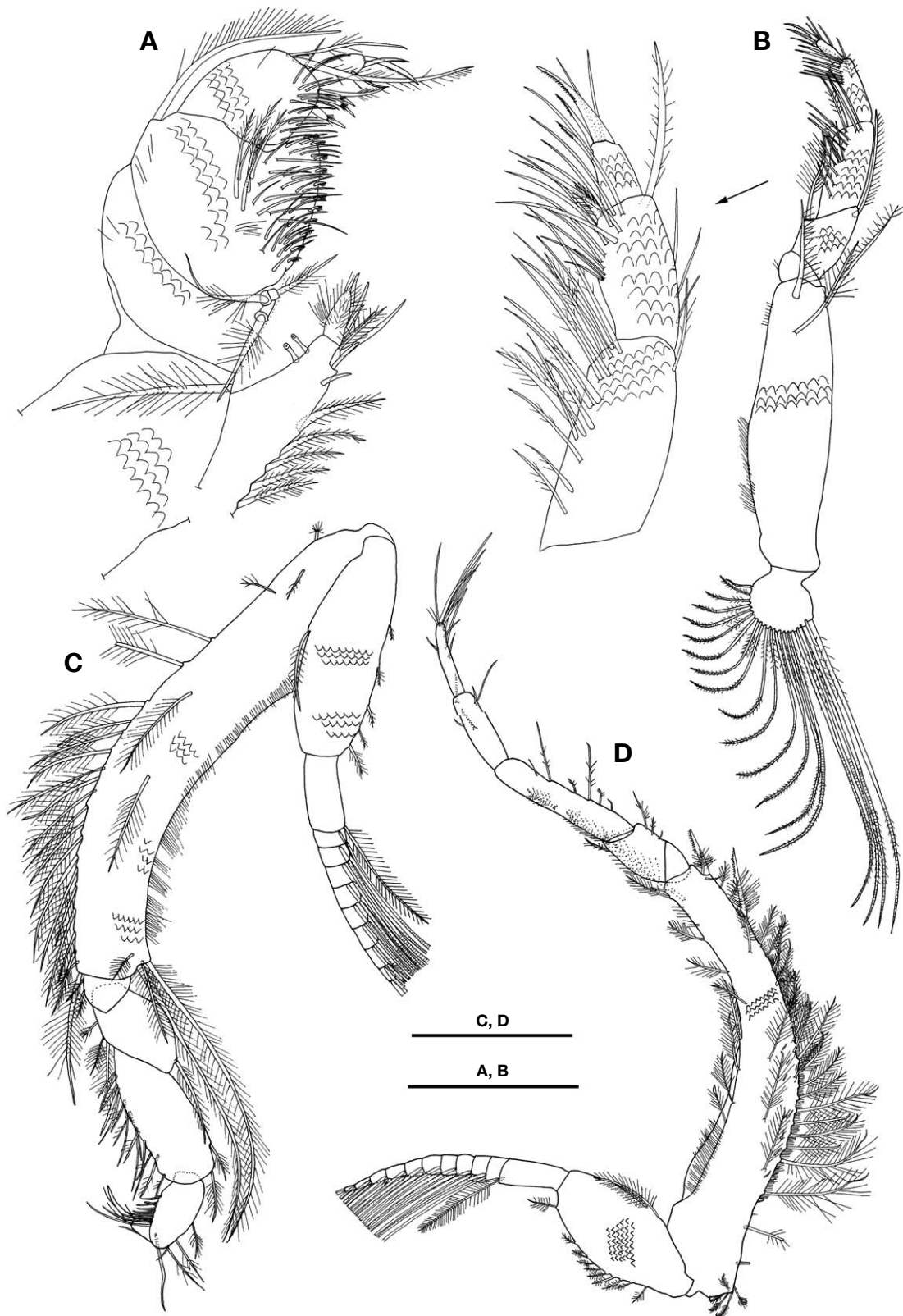
Maxilliped 2 (Fig. 3B) basis subequal to remaining articles combined, with 3 plumose setae on subdistal surface, several hair-like setae on medial margin; merus 0.8 times as long as carpus, with 2 plumose setae distally; carpus with 1 plumose seta laterodistally, 14 plumose setae medially; propodus 0.7 times as long as carpus, with 3 simple setae laterally, 1 long plumose seta laterodistally, 13 simple and 1 pappose setae medially; dactylus with 2 simple, 2 microserrate, and 1 stout microserrate setae terminally.

Maxilliped 3 (Fig. 3C) basis elongate, 1.7 times as long as remaining articles combined, with a row of 19 plumose setae posteriorly, 1 pappose seta posterodistally, row of hair-like setae anteriorly, 1 pappose and 3 plumose setae anterodistally; ischium short, with 2 small plumose setae posteriorly; merus 0.8 times as long as carpus, with 4 plumose setae; carpus with 2 plumose setae anterodistally, 8 plumose and 6 simple setae posteriorly; propodus 0.5 times as long as carpus, with 3 plumose, 1 simple setae anteriorly, 9 simple setae posteriorly; dactylus with 1 stout simple and 4 slender simple setae terminally; exopod shorter than basis, flagellum with 1 simple and numerous plumo-annulate setae.

Pereopod 1 (Fig. 3D) basis curved, subequal to remaining articles combined, with 5 pappose, numerous plumose, 12 small simple, 1 simple, 2 papposerrate, and numerous hair-



**Fig. 2.** *Lamprops carinatus* Hart, 1930, female, 7.8 mm. A, Habitus, lateral; B, Cephalothorax, dorsal; C, Antenna 1; D, Right mandible; E, Left mandible; F, Maxilla 1; G, Maxilla 2. Scale bars: A, B=1.0 mm, C-E, G=0.1 mm, F=0.05 mm.



**Fig. 3.** *Lamprops carinatus* Hart, 1930, female, 7.8 mm. A, Maxilliped 1; B, Maxilliped 2; C, Maxilliped 3; D, Pereopod 1. Scale bars: A=0.1 mm, B, C=0.2 mm, D=0.3 mm.

like setae posteriorly, 10 plumose and hair-like setae anteriorly; ischium short, unarmed; merus 0.4 times as long as carpus, with 4 plumose and 1 small simple setae; carpus with 5 plumose and 2 small simple setae; propodus 0.6 times as long as carpus, with 5 simple setae; dactylus 0.9 times as long as propodus, with 9 simple, 2 microserrate, and 2 slender simple setae; exopod shorter than basis, flagellum with 1 simple and numerous plumo-annulate setae.

Pereopod 2 (Fig. 4A) basis shorter than remaining articles combined, with numerous plumose setae posteriorly, 6 pappose setae on near postero-proximal margin, 8 plumose setae anteriorly, 1 pappose and 2 plumose setae distally; ischium with 1 plumose seta on medial posterior surface; merus 0.6 times as long as carpus, with 3 plumose and 1 papposerrate setae; carpus with 1 small simple, 1 plumose, 3 papposerrate, 3 small microserrate setae and 4 microserrate setae with single subterminal setule; propodus 0.3 times as long as carpus, with 1 microserrate seta with single subterminal setule; dactylus 1.4 times as long as propodus, with 1 small simple, 5 microserrate, 1 annulate setae and 1 microserrate setae with single subterminal setule; exopod longer than basis, flagellum with 1 simple and numerous plumo-annulate setae.

Pereopod 3 (Fig. 4B) basis elongate, 1.7 times as long as remaining articles combined, with 1 pappose and 18 plumose setae; ischium 0.4 times as long as merus, with 5 annulate and 1 plumose setae distally; merus subequal to carpus, with 4 annulate and 1 simple setae anteriorly; carpus longer than propodus, with 4 annulate, and 1 plumose setae; propodus with 1 annulate seta; dactylus 0.6 times as long as propodus, with 1 stout simple and 2 simple setae; exopod rudimentary, biarticulate, article 2 shorter than article 1, with 2 plumose setae terminally.

Pereopod 4 (Fig. 4C) basis subequal to remaining articles combined, with 7 plumose, 4 simple, and 2 complex pedunculate setae; ischium 0.4 times as long as merus, with 2 simple and 6 annulate setae distally; merus subequal to carpus, with 1 simple and 3 annulate setae distally; carpus longer than propodus, with 3 simple, 1 plumose, and 5 annulate setae; propodus longer than dactylus, with 1 complex pedunculate and 1 annulate setae; dactylus with 1 plumose, 1 stout simple and 1 simple setae; exopod rudimentary, triarticulate, article 1 longer than remaining articles 2–3 combined.

Pereopod 5 (Fig. 4D) basis 0.6 times as long as remaining articles combined, with 6 plumose and 1 complex pedunculate setae; ischium 0.2 times as long as merus, with 5 annulate setae and 2 setules anterodistally; merus subequal to carpus, with 5 annulate and 1 simple setae anteriorly; carpus longer than propodus, with 6 annulate setae; propodus longer than dactylus, with 1 annulate seta posterodistally; dactylus with 1 stout and 2 simple setae; exopod absent.

Telson (Fig. 4E) triangle form, slightly concave midlater-

ally, 1.9 times as wide as long, 1.3 times as long as pleonite 6, with 5 stout microserrate setae of which middle one is longest, a pair of setae between middle and lateral setae shorter than lateral ones. Uropodal peduncle (Fig. 4E) 1.4 times as long as telson, with 10–11 small stout simple setae medially; endopod triarticulate, 0.8 times as long as peduncle; article 1 longest, 2.7 times as long as article 2, with 12–13 small stout microserrate and 1–2 complex pedunculate setae medially; article 2 slightly longer than article 3, with 4–5 small stout microserrate setae medially; article 3 with 1 simple, 1 long microserrate, and 1 small stout microserrate setae terminally, 1 simple and 1 long microserrate setae with single subterminal setule; exopod biarticulate, 0.8 times as long as endopod, article 1 1.7 times as long as article 2, with 5–6 plumose setae medially; article 2 with 3 plumose setae medially, 2–3 simple and 1 long microserrate setae terminally.

**Male (cat no. DKUCUM 201402):** Body (Figs. 1B, 5A) about 7.2–7.9 mm long, surface is decorated with a scale-like sculpturing. Carapace (Fig. 5A, B) 0.2 times as long as body length, 1.5 times as long as wide.

Thorax (Fig. 5A, B) subequal to length of carapace, 0.2 times as long as body length.

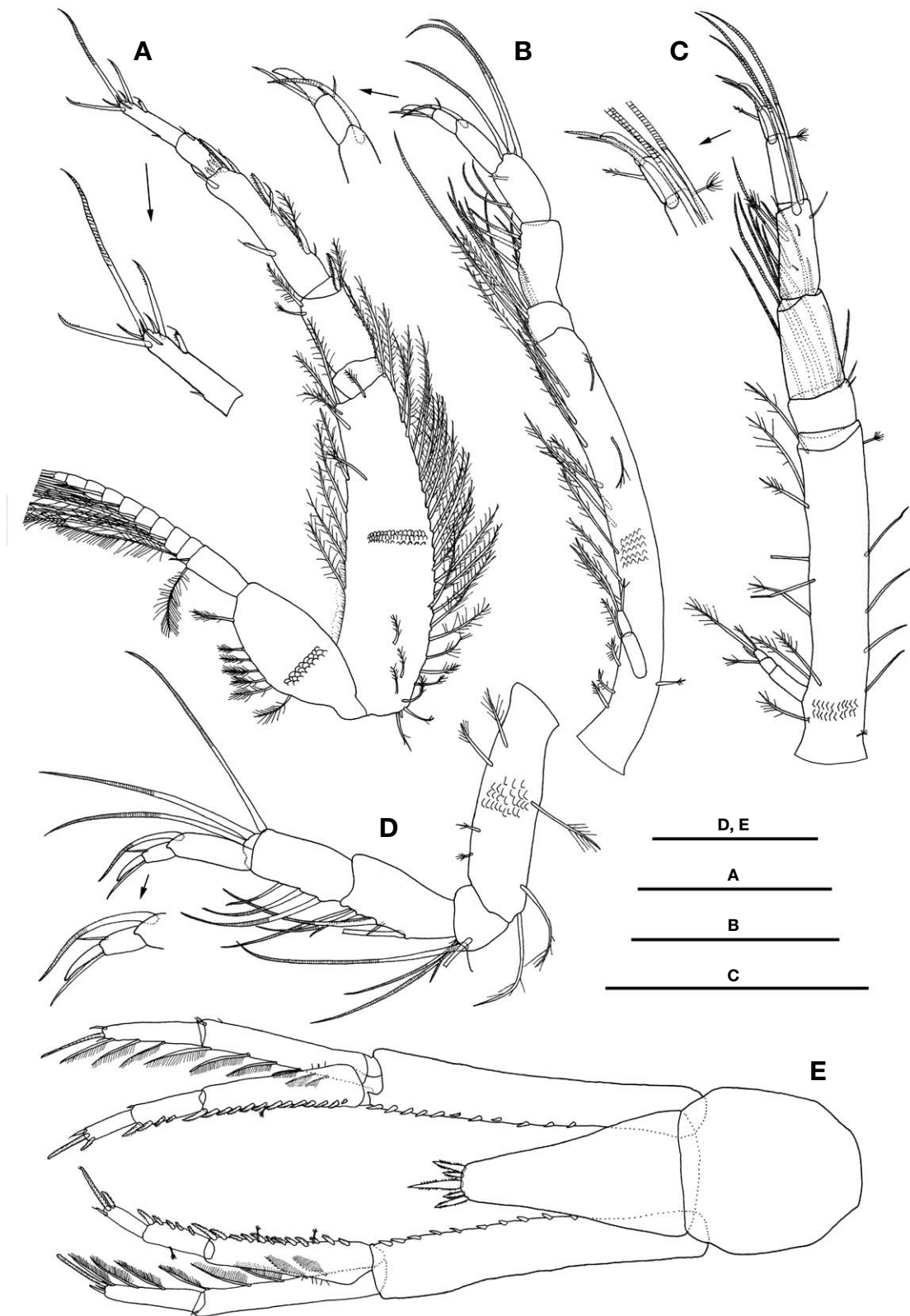
Antenna 1 similar to that of female.

Antenna 2 broken.

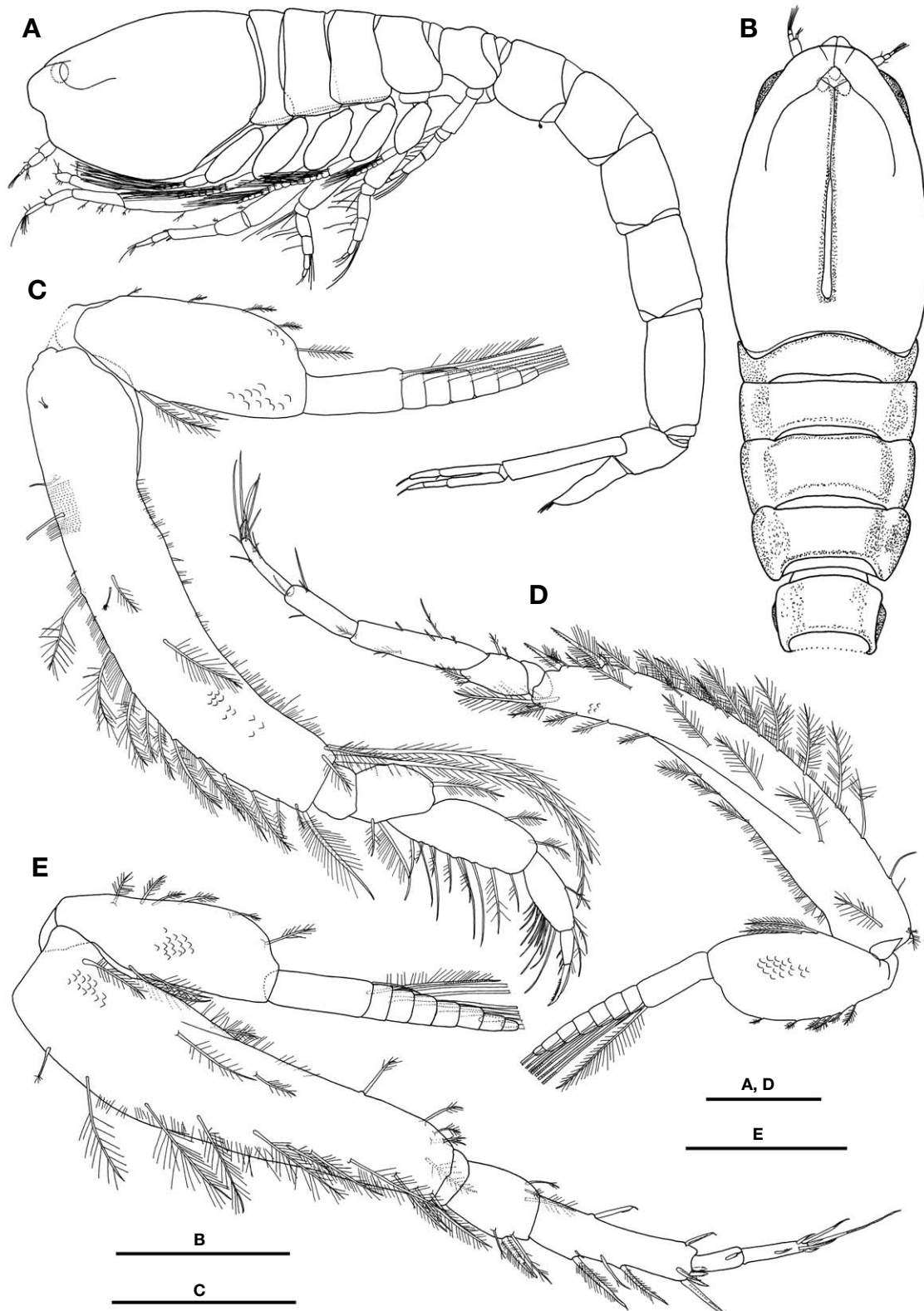
Mouth parts similar to these of female except exopod of maxilliped 2 is not fan form.

Maxilliped 3 (Fig. 5C) basis 1.5 times as long as remaining articles combined, with 11 plumose, 1 pappose and hair-like setae posteriorly, 1 pappose, 1 complex peduncle and 2 plumose setae on lateral surface, numerous hair-like setae anteriorly, 2 plumose and 2 long plumose setae anterodistally; ischium unarmed; merus 0.6 times as long as carpus, with 2 plumose setae posteriorly, 1 plumose seta anterodistally; carpus with 2 plumose setae anteriorly, 7 plumose and 4 simple setae posteriorly; propodus 0.6 times as long as carpus, with 3 plumose setae and 1 setule anteriorly, 13 simple setae posteriorly; dactylus with 1 stout microserrate and 3 small plumose setae posterodistally; exopod subequal to basis, flagellum with 1 simple and numerous plumo-annulate setae.

Pereopod 1 (Fig. 5D) basis 1.3 times as long as remaining articles combined, with 15 plumose, 2 simple, 2 papposerrate, and hair-like setae posteriorly, 1 pappose and 1 complex peduncle setae on postero-proximal margin, 5 plumose setae on lateral surface, 6 plumose and hair-like setae anteriorly, 3 plumose setae anterodistally; ischium unarmed; merus 0.5 times as long as carpus, with 4 plumose setae; carpus with 4 plumose and 2 small simple setae; propodus 0.6 times as long as carpus, with 4 simple setae; dactylus subequal to propodus, with 10 simple and 1 long microserrate setae; exopod shorter than basis, flagellum with 1 simple and numerous plumo-

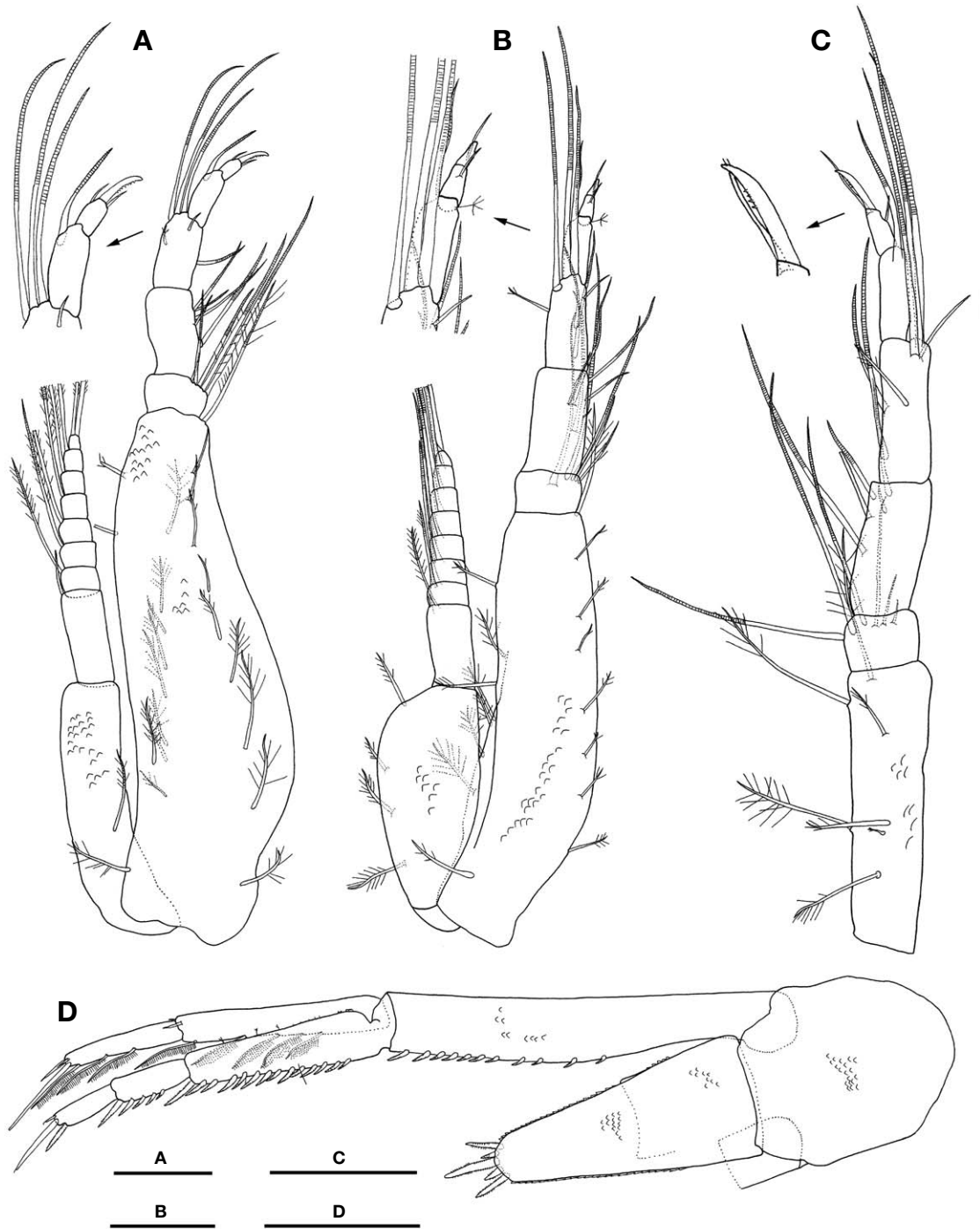


**Fig. 4.** *Lamprops carinatus* Hart, 1930, female, 7.8 mm. A, Pereopod 2; B, Pereopod 3; C, Pereopod 4; D, Pereopod 5; E, Telson and uropod, dorsal. Scale bars: A-C, E=0.3 mm, D=0.2 mm.



**Fig. 5.** *Lamprops carinatus* Hart, 1930, male, 7.9 mm. A, Habitus, lateral; B, Cephalothorax, dorsal; C, Maxilliped 3; D, Pereopod 1; E, Pereopod 2. Scale bars: A, B=1.0 mm, C-E=0.4 mm.





**Fig. 6.** *Lamprops carinatus* Hart, 1930, male, 7.9 mm. A, Pereopod 3; B, Pereopod 4; C, Pereopod 5; D, Telson and uropod, dorsal. Scale bars: A–C=0.2 mm, D=0.4 mm.

annulate setae.

Pereopod 2 (Fig. 5E) basis longer than remaining articles combined, with 1 complex pedunculate, 11 plumose, and hair-like setae posteriorly, 3 plumose setae on lateral surface,

6 plumose and hair-like setae anteriorly, 1 plumose mediodistally; ischium unarmed; merus 0.5 times as long as carpus, with 5 plumose and 1 papposerrate setae; carpus with 1 small simple, 2 papposerrate, 3 small microserrate, 1 plumose setae



and 4 microserrate with single subterminal setule setae; propodus 0.3 times as long as carpus, with 1 microserrate with single subterminal setule setae; dactylus 1.3 times as long as propodus, with 6 microserrate and 1 annulate setae; exopod slightly longer than basis, flagellum with 1 simple and numerous plumo-annulate setae.

Pereopod 3 (Fig. 6A) basis longer than remaining articles combined, with 9 plumose setae on near posterior surface, 1 plumo-annulate seta posterodistally, 9 plumose setae medially, 2 plumose setae on near anterior margin; ischium 0.4 times as long as merus, with 3 annulate, 1 simple and 2 plumo-annulate setae posterodistally; merus subequal to carpus, with 5 annulate setae posteriorly; carpus with 4 annulate, 1 simple, and 1 small plumose setae; propodus 0.8 times as long as carpus, with 1 annulate seta anterodistally; dactylus 0.4 times as long as propodus, with 2 simple and 1 stout microserrate setae terminally; exopod slightly shorter than basis, flagellum with 1 simple and numerous plumo-annulate setae.

Pereopod 4 (Fig. 6B) basis longer than remaining articles combined, with 16 plumose setae; ischium 0.5 times as long as merus, with 5 annulate setae mediodistally; merus subequal to carpus, with 1 simple and 2 annulate setae posterodistally, 3 annulate setae mediodistally; carpus longer than propodus, with 1 simple seta posterodistally, 1 plumose seta anteriorly, 2 annulate setae medially, 3 annulate setae anterodistally; propodus longer than dactylus, with 1 complex pedunculate and 1 annulate setae; dactylus with 1 stout simple and 2 simple setae; exopod longer than basis, flagellum with 1 simple and numerous plumo-annulate setae.

Pereopod 5 (Fig. 6C) basis 0.6 times as long as remaining articles combined; with 6 plumose and 1 complex pedunculate setae; ischium 0.4 times as long as merus, with 1 plumose seta anteriorly, 2 annulate, 3 simple setae mediodistally; merus subequal to carpus, with 4 annulate and 1 simple setae medially; carpus longer than propodus, with 1 plumose seta on lateral surface, 2 annulate setae anteriorly, 1 simple and 3 annulate setae posterodistally; propodus longer than dactylus, with 1 annulate seta posterodistally; dactylus with 1 simple setae posteriorly, 1 stout microserrate and 1 simple setae terminally; exopod absent.

Telson (Fig. 6D) similar to that of female, except slightly more narrow, 2.2 times as wide as long and lateral margin straight. Uropodal peduncle (Fig. 6D) 1.5 times as long as telson, with 11 small stout microserrate setae on inner margin, outer margin unarmed; endopod triarticulate, 0.9 times as long as peduncle; article 1 2.8 times as long as article 2, with 14 small stout microserrate setae medially, small acute saw teeth on near lateral proximal corner; article 2 subequal

to article 3, with 5 small stout microserrate setae medially; article 3 with 1 microserrate setae and 2 simple setae with single subterminal setule terminally; exopod biarticulate, article 1 1.8 times as long as article 2, with 5 plumose setae medially, 1 small simple seta and 1 simple seta with single subterminal setule on near lateral distal; article 2 with 3 plumose setae medially, 1 small simple seta and 2 simple setae with single subterminal setule terminally.

**Distribution.** Canada (Gabriola, Vancouver, British Columbia), Korea (East Sea), USA (Homer, Unimak Island, Alaska; Eureka, San Francisco, San Jose, California).

**Remarks.** The following characteristics of the specimens of *Lamprops carinatus* coincided with the descriptions given by Hart (1930) and Lomakina (1958); 1) carapace smooth and without oblique ridges; 2) in female, maxilliped 3 and pereopod 1 ratio of article lengths similar to each other; 3) the setae patterns of the uropod and telson showed no significant differences. However, several minor differences were also found between the specimens and the previous report by Hart (1930) (original descriptions in parentheses); 1) pereopod 2, carpus 1.3 times as long as propodus and dactylus combined (vs. subequal in original description); 2) pereopod 4 with triarticulate exopod (vs. biarticulate exopod in original description); 3) uropodal peduncle less than twice as long as pleonite 6 (vs. more than twice as long as pleonite 6 in original description).

<sup>1</sup>*Lamprops pseudosarsi* Tsareva and Vassilenko, 1993 (Figs. 7–10)

*Lamprops pseudosarsi* Tsareva and Vassilenko, 1993: 13, figs. 1–3.

**Material examined.** 11 ♂♂, Korea: Gangwon-do: Goseong-gun, Geojin-eup, Geojin Port, 38° 26'44"N, 128° 27'40"E, 11 Apr 2013, Hong SS, Kim SH; 6 ♂♂, Goseong-gun, Geojin-eup, Geojin Port, 15 Feb 2014, Hong SS.

**Description. Male (cat no. DKUCUM 201403):** Body (Figs. 7, 8A) about 5.1–5.6 mm long, surface is decorated with a scale-like sculpturing. Carapace (Fig. 8A, B) with two pairs of oblique ridges, 0.2 times as long as body, 1.4 times as long as wide; dorsal carina well developed, reaching 0.9 times distal end of carapace, with narrow groove dorsodistally; frontal lobe close to upper oblique ridge, but not reached; two pairs of oblique ridges well marked, both not connected posterodorsally, concave between two ridges. Ocular lobe round with 7 lenses. Pereonites 1–4 carinate dorsally, with transverse mesial ridges.

Antenna 1 (Fig. 8C) peduncle triarticulate; article 1 unarmed, subequal to remaining articles combined; article 2 0.6

Korean name: <sup>1</sup>\*두줄삼꼬리올챙이새우 (신칭)



Fig. 7. *Lamprops pseudosarsi* Tsareva and Vassilenko, 1993, male, 5.5 mm. Scale bar=1.0 mm.

times as long as article 1, with 4 small simple setae subdistally and 1 simple setae with single subterminal setule, 3 complex pedunculate setae ventrodistally; article 3 subrectangular, 0.8 times as long as article 2, with 3 simple, 1 complex pedunculate, 1 pedunculate setae and 1 simple setae with single subterminal setule distally; main flagellume 4-articulate including distal minute article, slightly longer than peduncular article 3; accessory flagellume triarticulate, subequal to main flagellum article 1.

Antenna 2 (Fig. 8A, D) elongate, reaching end of plenoite 3; peduncle 5-articulate, articles 4–5 with stout and simple setae, and numerous long setules.

Right mandible (Fig. 8E) boat-shaped, with row of 11 lifting setae, incisor with 3 cusps.

Left mandible (Fig. 8F) similar to right, but bearing lacinia mobilis with 2 cusps.

Maxilla 1 (Fig. 8G) outer endite with row of 10 stout simple, 1 stout serrate, and 1 stout pappose setae terminally, 3 tufts of 7 setules subterminally, 5 tufts of setules medially; inner endite with 1 stout pappose, 1 stout scimitar shape simple, 1 stout microserrate by blunt teeth, and 1 simple setae on terminal corner, hair-like setae on lateral margin.

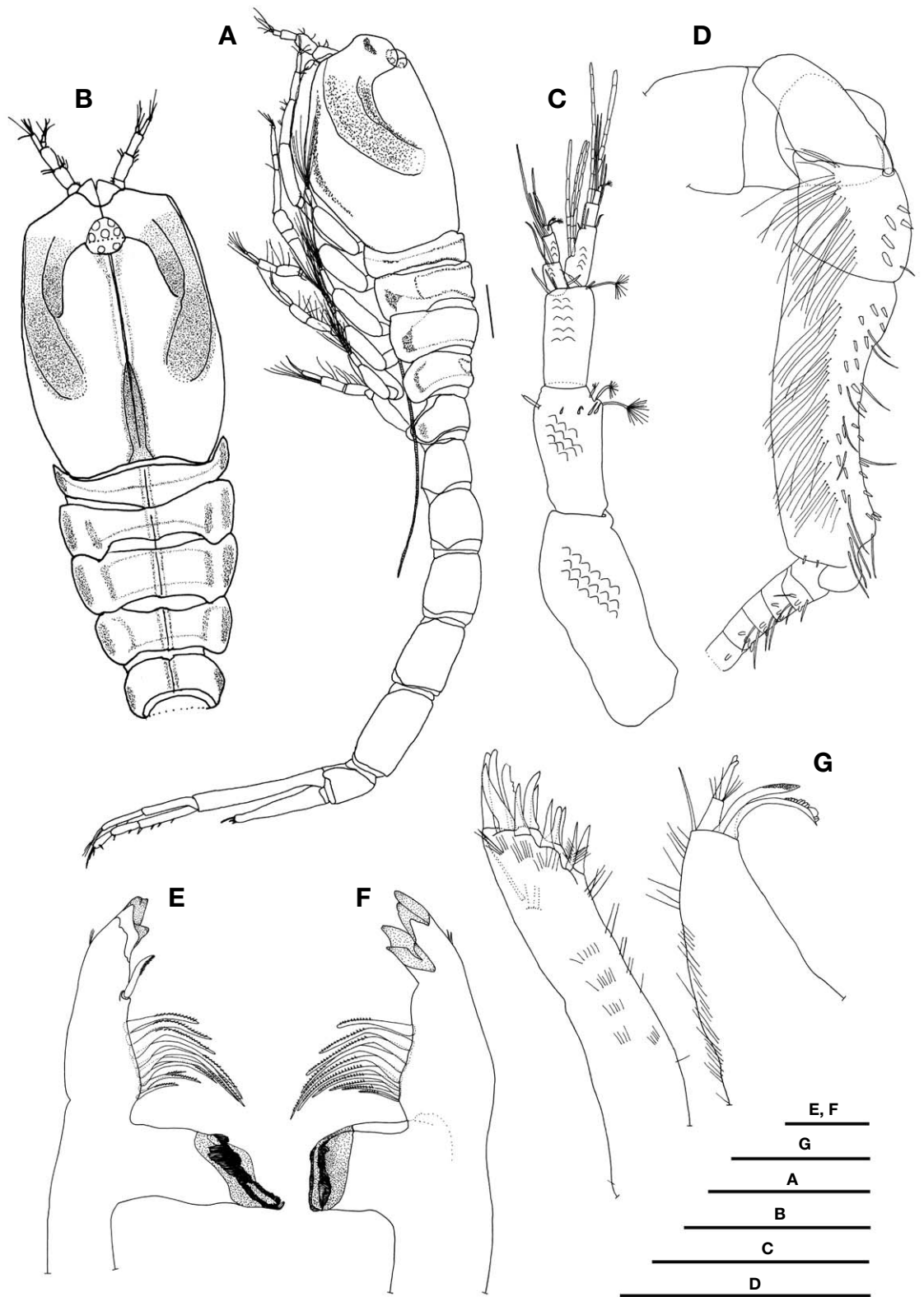
Maxilla 2 (Fig. 9A) broad endite with 1 plumose, 16 simple, 4 papposerrate, and 1 microserrate setae terminally, near medial face with a row of 28 simple, 1 pappose, 1 microserrate, and hair-like setae; outer narrow endite with 6 microserrate setae terminally, inner narrow endite with 4 microserrate setae terminally.

Maxilliped 1 (Fig. 9B) basis produced distally as blunt

lobe, with 5 simple setae on face, 2 hook, 7 papposerrate, and 1 pappose setae medially, 1 stout knoblike, 1 simple, and 1 pappose setae distally; ischium absent; merus with 1 plumose and 3 pappose setae medially; carpus with 12 simple, 11 comb, and 5 plumose setae medially, 2 simple setae dorsally, 1 long plumose seta laterodistally; propodus with 4 plumose, 2 pappose, and 5 simple setae medially, 3 simple setae dorsally; dactylus with 4 simple setae subterminally.

Maxilliped 2 (Fig. 9C) basis longer than remaining articles combined, with 4 plumose setae subdistally; ischium short, unarmed; merus slightly shorter than carpus, with 2 plumose setae distally; capus with 11 plumose and 2 simple setae medially, 1 plumose seta laterodistally; propodus 0.9 times as long as carpus, with 2 plumose and 8 simple setae subterminally; dactylus slender, slightly longer than propodus, with 1 stout simple and 4 simple setae terminally.

Maxilliped 3 (Fig. 9D) basis longer than remaining articles combined, with 6 plumose and hair-like setae posteriorly, 6 plumose setae on lateral surface, 8 plumose and hairlike setae anteriorly, 3 plumose setae anterodistally; ischium short, with 1 small plumose seta posterodistally; merus 0.7 times as long as carpus, with 1 plumose seta posteriorly, 1 plumose seta anterodistally; carpus with 7 plumose and 4 simple setae posteriorly, 2 plumose setae anterodistally; propodus 0.5 times as long as carpus, with 4 simple setae posteriorly, 2 plumose setae anterodistally; dactylus with 1 simple seta anteriorly, 3 simple and 1 stout simple setae terminally; exopod longer than basis, flagellum with 1 simple and numerous plumo-annulate setae.



**Fig. 8.** *Lamprops pseudosarsi* Tsareva and Vassilenko, 1993, male, 5.5 mm. A, Habitus, lateral; B, Cephalothorax, dorsal; C, Antenna 1; D, Antenna 2; E, Right mandible; F, Left mandible; G, Maxilla 1. Scale bars: A, B=1.0 mm, C, D=0.2 mm, E-G=0.05 mm.



**Fig. 9.** *Lamprops pseudosarsi* Tsareva and Vassilenko, 1993, male, 5.5 mm. A, Maxilla 2; B, Maxilliped 1; C, Maxilliped 2; D, Maxilliped 3; E, Pereopod 1. Scale bars: A=0.05 mm, B, C=0.1 mm, D, E=0.3 mm.

Pereopod 1 (Fig. 9E) basis 1.2 times as long as remaining articles combined, with 6 plumose, 2 papposerrate, and hair-like setae posteriorly, 5 plumose and 2 pappose setae on lateral surface, 8 plumose setae anteriorly; ischium unarmed; merus 0.6 times as long as carpus, with 1 simple seta on posteriorly, 2 pappose setae anterodistally; carpus with 5 plumose and 2 small simple setae; propodus 0.6 times as long as carpus, with 6 simple setae; dactylus 0.8 times as long as propodus, with 2 simple setae anteriorly, 7 simple setae subterminally; exopod shorter than basis, flagellum 1 simple and numerous plumo-annulate setae.

Pereopod 2 (Fig. 10A) basis longer than remaining articles combined, with 3 small simple setae on near medial postero-proximal margin, 7 plumose and hair-like setae posteriorly, 1 plumose seta posterodistally, 4 plumose setae on lateral surface, 9 plumose anteriorly; ischium unarmed; merus 0.6 times as long as carpus, with 1 plumose and 1 papposerrate setae posterodistally; carpus with 2 papposerrate and 3 small stout microserrate setae, 1 microserrate and 4 simple setae with single subterminal setule; propodus 0.4 times as long as carpus, with 1 simple seta with single subterminal setule; dactylus 1.8 times as long as propodus, with 1 long simple, 2 small simple setae, and 5 simple setae with single subterminal setule; exopod longer than basis, flagellum with 1 simple and numerous plumo-annulate setae.

Pereopod 3 (Fig. 10B) basis longer than remaining articles combined, with 1 pappose seta and setules on postero-proximal margin, 10 plumose setae posteriorly, 4 plumose setae on lateral surface, 4 plumose setae anteriorly, 3 plumose setae on medial surface; ischium 0.4 times as long as merus, with 3 annulate, 1 simple and 1 plumose setae medially; merus 1.3 times as long as carpus, unarmed; carpus with 2 simple and 4 annulate setae; propodus subequal to carpus, with 1 annulate seta on lateral surface; dactylus 0.5 times as long as propodus, with 1 slender simple and 1 stout simple setae terminally; exopod shorter than basis, flagellum with 1 simple and numerous plumo-annulate setae.

Pereopod 4 (Fig. 10C) basis longer than remaining articles combined, with 11 plumose, 1 complex pedunculate, 1 simple, and 1 long pappose setae; ischium 0.4 times as long as merus, with 1 simple and 4 annulate setae mediodistally; merus subequal to carpus, with 3 annulate setae mediodistally; carpus 1.1 times as long as propodus, with 2 annulate setae medially, 1 complex pedunculate seta anteriorly, 3 long annulate setae terminally; propodus longer than dactylus, with 1 annulate setae distally; dactylus with 2 simple and 1 stout simple setae; exopod longer than basis, flagellum with 1 simple and numerous plumo-annulate setae.

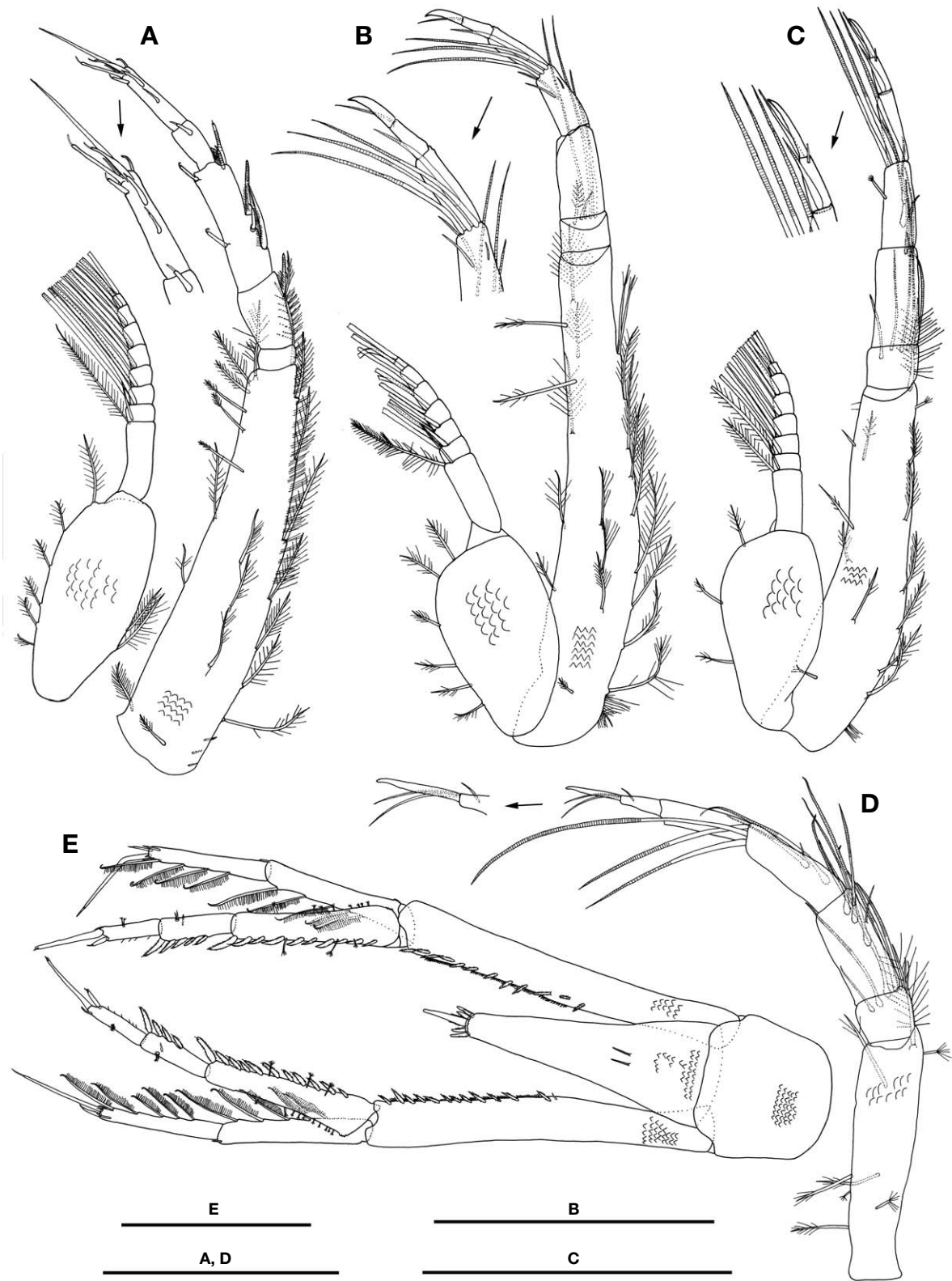
Pereopod 5 (Fig. 10D) basis 0.6 times as long as remaining articles combined; with 5 plumose and 3 complex pedunculate setae; ischium 0.5 times as long as merus, with 2 simple

setae posterodistally, 4 annulate, 1 simple setae mediodistally; merus subequal to carpus, with 1 simple and 1 annulate setae posterodistally, 3 annulate setae mediodistally; carpus 1.3 times as long as propodus, with 1 small simple seta mid-posteriorly, 2 annulate setae medially, 3 annulate setae terminally; propodus unarmed; dactylus 0.5 times as long as propodus, with 1 simple seta posterodistally, 2 simple and 1 stout simple setae terminally; exopod absent.

Telson (Fig. 10E) isosceles triangle form, about 2.5 times as wide as long, 1.8 times as long as pleonite 6, with 2 small simple setae dorsomesially, 5 stout microserrate setae terminally of which middle one is longest, two pairs of lateral setae subequal in length. Uropodal peduncle (Fig. 10E) 1.4 times as long as telson, with 12 small stout microserrate setae and small acute saw teeth medially; endopod triarticulate, 0.8 times as long as peduncle; article 1 2.4 times as long as article 2, with 10–11 small stout microserrate and 3 complex pedunculate setae medially, each microserrate setae with single subterminal setule, small acute saw teeth on near lateral proximal corner, 7–10 complex pedunculate setae on lateral margin; article 2 1.2 times as long as article 3, with 4–5 small stout microserrate setae medially, each microserrate setae with single subterminal setule, 1 small simple, 1 pedunculate, and 1 complex pedunculate setae laterally; article 3 with 4–5 setules medially, 2 complex pedunculate setae on lateral distal margin, 1 simple setae and 2 simple setae with single subterminal setule terminally; exopod biarticulate, 0.9 times as long as endopod, article 1 1.3 times as long as article 2, with 5 plumose setae medially, small acute saw teeth on near lateral proximal corner, 1 small simple seta on lateral distal corner; article 2 with 4–5 plumose setae medially, 2 small simple setae and 3 simple setae with single subterminal setule terminally.

**Distribution.** Korea (East Sea), Russia (Far East, Peter the Great Bay).

**Remarks.** In the original description, only the female of *Lamprops pseudosarsi* was described (Tsareva and Vassilenko, 1993). Unfortunately, only male specimens were collected in the present study, however, there is no doubt that the specimens belong to *L. pseudosarsi* due to the following critical characters: 1) carapace bearing two pairs of oblique ridges laterally; 2) dorsal carina of carapace well developed with groove posteriorly; 3) pereonites with transverse medial ridges. However, several differences were found between the collected specimens and the original description by Tsareva and Vassilenko, 1993 (original descriptions in parentheses): 1) dorsal carina of carapace with narrow groove (vs. with rhombic groove); 2) pereonites 1–4 with transverse medial ridges (vs. pereonites 1–3 with transverse medial ridges); 3) telson with one long mesial and two pairs of subequal lateral terminal setae (vs. with one long mesial and two pairs of



**Fig. 10.** *Lamprops pseudosarsi* Tsareva and Vassilenko, 1993, male, 5.5 mm. A, Pereopod 2; B, Pereopod 3; C, Pereopod 4; D, Pereopod 5; E, Telson and uropod, dorsal. Scale bars: A-C, E=0.3 mm, D=0.2 mm.

unequal lateral terminal setae). It is notable that these differences were possibly the result of sexual variation.

**Key to the Korean *Lampropidae* genera  
(referred to Gamô, 1967)**

Carapace with distinct antennal notch; male without pleopods ..... *Lamprops*  
Carapace without antennal notch; male with pleopods .....  
..... *Hemilamprops*

**Key to the Korean *Lamprops* species**

Carapace with two oblique ridges laterally; in male, telson with one long mesial and two pairs of subequal lateral terminal setae ..... *Lamprops pseudosarsi*  
Carapace without oblique ridge laterally; in male, telson with one long mesial and two pairs of unequal lateral terminal setae ..... *Lamprops carinatus*

**ACKNOWLEDGMENTS**

This work was supported by a grant from the National Institute of Biological Resource (NIBR), funded by Ministry of Environment (MOE) of the Republic of Korea (NIBR No. 2013-02-001).

**REFERENCES**

Băcescu M, 1988. Cumacea I (Fam. Archaeocumatidae, Lampropidae, Bodotriidae, Leuconidae). In: Crustaceorum catalogus (Eds., Gruner HE, Holthuis LB). SPB Academic Publishing, The Hague, pp. 1-173.  
Gamô S, 1967. Studies on the Cumacea (Crustacea, Malacostraca) of Japan Part II. Publication of the Seto Marine Biological Laboratory, 15:245-274.  
Gerken S, 2010. *Watlingia*, a new genus (Cumacea: Lamprop-

idae) from the waters of New Zealand. Journal of Crustacean Biology, 30:296-306.  
Gerken S, 2013. New Zealand Bodotriidae (Crustacea: Cumacea). Zootaxa, 3630:1-38.  
Given RR, 1964. The Cumacean fauna of the southern California continental shelf. No. 2. The new Mesolampropidae. Crustaceana, 7:284-292.  
Given RR, 1965. Five collections of Cumacea from the Alaskan Arctic. Arctic, 18:213-229.  
Hart JFL, 1930. Some Cumacea of the Vancouver island region. Contributions to Canadian Biology and Fisheries, 6:23-40.  
Lee CM, Lee KS, 1998. Three species of cumaceans (Crustacea, Cumacea) from Korean Waters. Korean Journal of Systematic Zoology, 14:71-89.  
Lie U, 1968. A quantitative study of benthic infauna in Puget Sound, Washington, USA, in 1963-1964. Fiskeridirektoratets Skrifter Serie Havundersøkelser, 14:229-556.  
Lie U, 1969. Cumacea from Puget Sound and off the northwestern coast of Washington, with descriptions of two new species. Crustaceana, 17:19-30.  
Lomakina NB, 1958. Cumacea of the regions of the Kuril-Sakhalin expedition works. Exploration of the Far Eastern Seas of U.S.S.R., 5:1-301.  
Tsareva LA, Vassilenko SV, 1993. Four new species of Cumacea from Peter the Great Bay, Sea of Japan. Asian Marine Biology, 10:13-26.  
Watling L, 1989. A classification system for crustacean setae based on the homology concept. In: Functional morphology of feeding and grooming in Crustacea. Crustacean Issues 6 (Eds., Felgenhauer BE, Watling L, Thistle AB). A. A. Balkema, Rotterdam, pp. 15-26.  
World Register of Marine Species (WoRMS), 2014 [Internet]. World Register of Marine Species, Accessed 14 Jul 2014, <<http://www.marinespecies.org> at VLIZ>.  
Zimmer C, 1943. Cumaceen des stillen Ozeans. Archiv für Naturgeschichte, 12:130-174.

Received November 11, 2014  
Revised January 10, 2015  
Accepted January 12, 2015