

New Record of the Family Cyproideidae (Crustacea: Amphipoda: Gammaridea) from Korean Waters

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Abstract - Newly recorded cyproideid species of the genus *Terepeltopes* was collected from Korean waters. The monotypic genus *Terepeltopes* erected with *T. dolichorhunia* Hirayama, 1983 was only known to be found at West Kyushu, Japan. In this study, the family Cyproideidae Barnard, 1974 is first recorded from Korea by the discovery of *T. dolichorhunia*, and we provide description and illustrations of this species.

Key words: *Terepeltopes dolichorhunia*, cyproideids, amphipod, taxonomy, Korea

INTRODUCTION

The family Cyproideidae Barnard, 1974 is characterized by the immensely broadened coxae of pereopods 3~4 concealing gnathopods 1~2 with quite reduced coxae (Barnard and Karaman 1991; Azman 2009). To date, about 19 genera constituted with 49 species/subspecies are assigned in this family (Barnard and Karaman 1991; Lowry and Azman 2008; WoRMS 2015).

Most species of Cyproideidae are parasitic or symbiotic with other invertebrates (Myers 1985; Lowry and Azman 2008; Azman 2009) in the intertidal rocks, coral debris or algal communities (Barnard 1972; Lowry and Stoddart 2003), and known to occur mostly in the Southern Hemisphere around the Indo-West Pacific (Lowry and Stoddart 2003; Lowry and Azman 2008). However, the monotypic genus *Terepeltopes* erected with *T. dolichorhunia* Hirayama, 1983 is only known in the West Kyushu, Japan (Hirayama 1983), and the species belonging to the family Cyproideidae was not yet recorded from Korean waters.

Therefore, this is the first report of the family Cyproideidae from Korean waters by the discovery of *Terepeltopes dolichorhunia*, and we also provide the description and illustrations of this species.

MATERIALS AND METHODS

Specimens were collected by SCUBA diving or light trap from the subtidal zone of several sampling stations. They were preserved directly in 95% ethyl alcohol after sorting in the laboratory. Before identification, they were stained by lignin pink dyes and the appendages were dissected in a Petri dish filled with glycerol using dissection forceps and needle under stereomicroscope (SZH10; Olympus, Tokyo, Japan). They were mounted on a temporary slide using a glycerol-ethanol mixed solution or on a permanent slide using polyvinyl lactophenol solution. Drawings were performed by light microscope (LABOPHOT-2; Nikon, Tokyo) with the aid of a drawing tube.

RESULTS AND DISCUSSION

Order Amphipoda Latreille, 1816 단각 목

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Suborder Gammaridea Latreille, 1816 옆새우 아목

Family Cyproideidae Barnard, 1974

넓은마디옆새우 과 (신칭)

Genus *Terepeltopes* Hirayama, 1983

마루넓은마디옆새우 속 (신칭)

***Terepeltopes dolichorhunia* Hirayama, 1983**

긴마루넓은마디옆새우 (신칭)

Synonyms: *Terepeltopes dolichorhunia* Hirayama, 1983: 118, figs. 26-28.

Material examined: Korea: 3 specimens, Gyeongsangnam-do, Namhae-gun, ryeongsan, 14 Jul 1999, by light trap, collected by Kim YH; 2 ♀♀, Gyeongsangnam-do, Tongyeong-si, Somaemuldo Isl., 34°37'31"N, 128°33'12"E, 27 Sep 2009, by SCUBA diving (depth of 15 m), collected by Jung TW; 52 specimens, Jeonranamdo, Yeosu-si, Geomundo Isl. Seodo port, 18 Oct 2013, by light trap, collected by Hong SS; 10 specimens, Incheon-si, Ongjin-gun, Baekryeong-do Isl. Yonggipo, 31 May 2014, by light trap, collected by Hong SS; 2 ♂♂ 2 ♀♀, Chungcheongnam-do, Boryeong-si, Ocheon-myeon, Oeyeondo Isl., 36°13'22"N, 126°04'48"E, 27 Apr 2015, by light trap (depth of 2 m), collected by Jung TW.

Description: Female: Body (Fig. 2A) about 1.9 mm long. Pereonites 3~7 much swollen. Coxae 1~2 hidden by enlarged coxa 3. Coxae 3~4 extremely broadened. Each pleonal epimeron with rounded-quadrate posteroventral corner. Urosomite 1 elongate, with well-developed dorsodistal laminate keel; urosomites 2, 3 reduced.

Head (Fig. 2B) slightly longer than pereonites 1~2 combined. Rostrum weak. Anterior cephalic lobe, apex truncated concavely. Eyes large, circular in form.

Antenna 1 (Fig. 2B) subequal to head, pereonites 1~2 combined. Peduncles 1~3 in length ratio of 1.00 : 0.70 : 0.39. Flagellum reduced, shorter than peduncle 3, 4-articulate bearing aesthetascs,.

Antenna 2 (Fig. 2B) slender, subequal to antenna 1 in length. Peduncle 4 slightly longer than peduncle 5. Flagellum 4-articulate, longer than peduncle 5.

Maxilla 1 (Fig. 2C). Outer plate diminished distally in width; mediodistal margin lined with 9 stout and 4 minute spines. Palp slender and curved, extending beyond outer plate with 4 setae.



Fig. 1. *Terepeltopes dolichorhunia* Hirayama, 1983, female, habitus, lateral view.

Maxilliped (Fig. 2D). Inner plate elongate, subrectangular, with 4 blunt spines apically. Outer plate also elongate-ovate, apex reaching distal end of palp article 2; mediodistal margin weakly pectinate; apex with 1 large toothed and 1 slender spines. Palp slender, 4-articulate; article 2 with 1 large toothed and 1 normal spines distally; article 3, mediodistal corner produced; article 4 falcate, shorter than article 3.

Gnathopod 1 (Fig. 2E). Basis as long as carpus and propodus combined; anterior margin straight, lined with many setae; medioproximal surface with set of 3 long setae; posterior margin bare, dilated distally. Ischium with small anterior lobe; posterodistal corner with stout seta. Merus triangular in shape; posterodistal margin with 1 stout and 1 minute setae. Carpus shorter than half length of basis; anterior margin convex; posterior margin lined with 4 stout spines; carpal lobe developed, reaching about 1/3 of ventral margin of propodus, apex blunt with set of 2 stout and one pectinate spines. Propodus subrectangular, simple; anterior margin slightly convex with pectinate spine on distal 3/4 margin, anterodistal corner minutely pectinated; posterior margin bare; palm short, defined by produced process and pair of spines. Dactylus falcate, as long as 2/3 of propodus; inner margin serrulate, with minute accessory tooth.

Gnathopod 2 (Fig. 2F) slightly larger than gnathopod 1. Coxa vestigial, undefined. Basis, anterior margin slightly concave, lined with short setae; posterior margin convex, slightly dilated distally, distal corner with stout spine. Ischium with small anterior lobe; posterior margin with 2 stout spines. Merus, posterior margin weakly concave proximally, distal margin swollen with 5 stout spines and

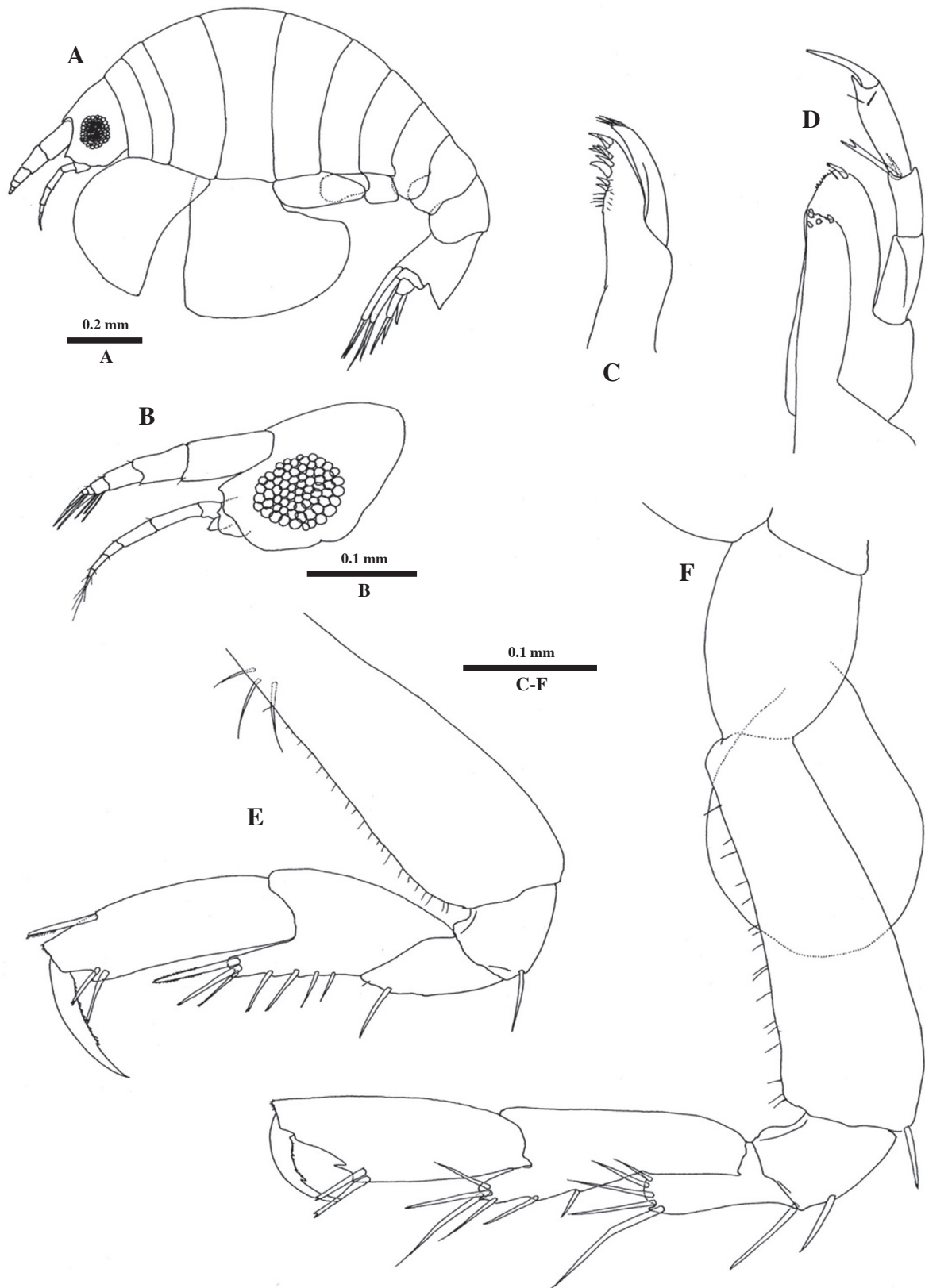


Fig. 2. *Terepeltopes dolichorhunia* Hirayama, 1983, female. A, habitus, lateral view; B, head, antenna 1-2; C, maxilla 1; D, maxilliped; E, gnathopod 1; F, gnathopod 2.

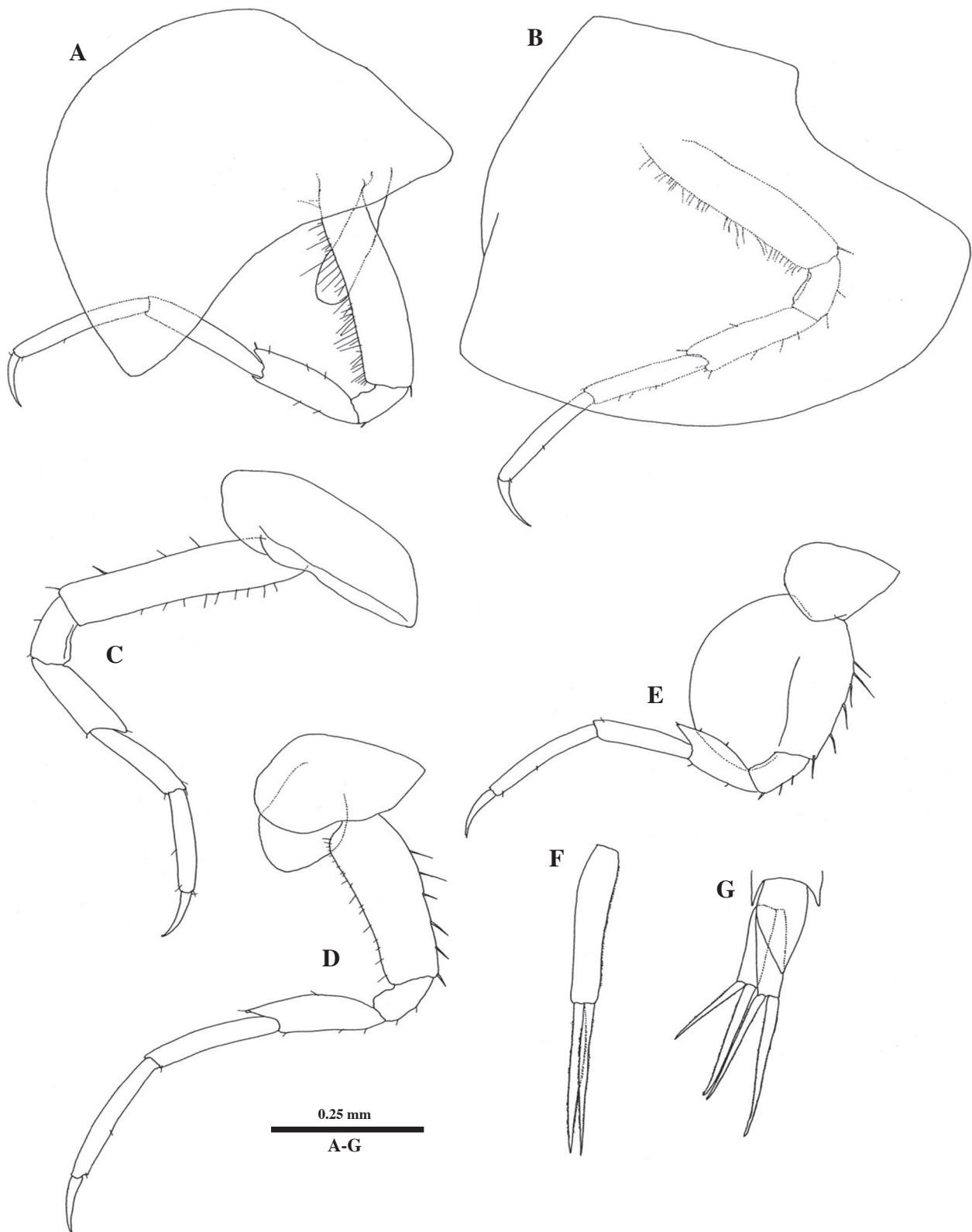


Fig. 3. *Terepeltopes dolichorhunia* Hirayama, 1983, female. A, pereopod 3; B, pereopod 4; C, pereopod 5; D, pereopod 6; E, pereopod 7; F, uropod 1; G, uropod 2-3, telson, dorsal view.

small acute protrusion. Carpus about half length of basis, anterior margin flattened, unarmed; posterior margin, distal half forming developed carpal lobe with 1 small protrusion and 1 set of 4 stout spines on apex. Propodus shorter than carpus, proximal 1/3 gradually increased in width; anterior margin bare, anterodistal corner weakly pectinate; palm distinguished, defined by pair of pectinate spines, margin obliquely concave bearing protrusion near defining spines. Dactylus falcate, about 1/3 as long as propodus; inner margin serrulate, with minute accessory tooth

Pereopod 3 (Fig. 3A). Coxa largely broadened, anterior margin reaching ventral margin of head; anterior and ventral margins convex; posteroventral corner angulate, expanded posteroventrally. Basis slender, uniform in width, slightly curved; anterior margin lined with numerous setae; posterior margin bare, distal corner with seta. Ischium slightly elongate with small anterior lobe; posterodistal corner with seta. Merus, carpus and propodus in length ratio of 1.00 : 1.23 : 1.26. Merus, anterior margin somewhat expanded, with 3 minute setae, distal corner produced with seta. Carpus and propodus slender; Dactylus falcate, slightly shorter than half of propodus.

Pereopod 4 (Fig. 3B). Coxa also massively broadened and roundly expanded posteroventrally, covering most of pereopod 4; anteroventral corner angulate; posteroproximal margin narrowly excavate. Other segments of pereopod 4 similar to those of pereopod 3.

Pereopod 5 (Fig. 3C). Coxa, posterior margin expanded backward, posteroventral corner produced; with subventral ridge along ventral margin. Basis linear; anterior margin with 2 setae and 1 spine mesially, distal corner with spine; posterior margin, proximal half slightly convex, lined with 9 setae. Ischium somewhat elongate, with small posterior lobe. Merus, carpus and propodus in length ratio of 1.00 : 1.03 : 1.16. Merus, posterior margin expanded, distal corner produced; antero- and posterodistal corner with seta, respectively. Carpus and propodus slender. Dactylus falcate, slightly longer than half of propodus.

Pereopod 6 (Fig. 3D). Coxa smaller than that of pereopod 5; posteroventral margin expanded downward. Basis subrectangular; anterior margin somewhat convex, lined with 6 stout spines; posterior lobe slightly concave, posteroproximal corner bluntly angulate, posterior margin lined with minute setae. Merus, posterior margin slightly convex,

posterior lobe expanded backward. Carpus and propodus slender; propodus 1.13 times as long as carpus. Dactylus falcate, about half of propodus.

Pereopod 7 (Fig. 3E) shorter than pereopod 6. Coxa, anterior margin oblique; posterior and ventral margins rounded, slightly dilated ventrally. Basis ovate; anterior margin convex, lined with 5 stout spines, anterodistal corner with stout spine; posterior margin roundly expanded, unarmed. Ischium, anterior margin with 2 medial and 1 distal spines. Merus, anterior margin with 1 mesial and 1 distal short setae; posterior lobe expanded with 2 setae, posterodistal corner produced with short seta. Carpus slender, longer than merus, slightly dilated distally, posterodistal corner with minute seta. Propodus slender, about half of carpus; anterior margin with 1 mesial and 1 distal setae. Dactylus falcate, about half of propodus in length.

Uropod 1 (Fig. 3F) subequal to urosomites 1~3 combined, apex beyond tip of uropod 2. Peduncle slender; mediolateral margin weakly pectinate. Rami lanceolate, equal to peduncle; medial and lateral margins of each ramus weakly pectinate except for near apex.

Uropod 2 (Fig. 3G) shorter than uropod 1. Peduncle rectangular, 0.55 times as long as that of uropod 1. Rami lanceolate, longer than peduncle; medial and lateral margins of each ramus weakly pectinate except for near apex; inner ramus longer than outer ramus.

Uropod 3 (Fig. 3G) similar but shorter than uropod 2. Inner ramus equal to outer ramus of uropod 2; outer ramus 0.68 time as long as inner ramus.

Telson (Fig. 3G) elongate triangular, narrowing distally, subequal to peduncle of uropod 2.

Remarks: The monotypic genus *Terepeltopes* erected with *T. dolichorhunia* Hirayama, 1983 from West Kyushu, Japan (Hirayama 1983), is based on the following generic features: the shape of gnathopods is not simple; the basis of pereopods 6 and 7 are more slender than other cyproideids; and the laminate dorsal keel of urosomite 1 is well developed. In this study, the Korean specimens also showed common character states mentioned above, and can be easily identified as *T. dolichorhuniai* as a result.

Habitat: This species collected from the algal community of subtidal zone of Korea.

World distribution: Japan (Hirayama 1983), Korea.

Deposition: NIBR0000317120.

Identifiers: Tae Won Jung, Young-Hyo Kim, Seong Myeong Yoon.

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