

***Parabrachiella trichiuri* (Copepoda, Siphonostomatoida) Parasitic on the Ribbonfish *Trichiurus lepturus*, a New Record of Korean Fauna**

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ABSTRACT

Parabrachiella trichiuri (Yamaguti, 1939), a copepod parasitic on the ribbonfish *Trichiurus lepturus* (Linnaeus, 1758), is recorded as a new record of Korean fauna. The copepod is the only known species of the family Lernaepodidae parasitic on *T. lepturus*. *Parabrachiella trichiuri* can be differentiated from its congeners by a combination of characters: the trunk is pyriform, with two pairs of processes, the maxilla is less than half as long as the cephalothorax, and the genital process is not protruding from the margin of the trunk. This species had been assigned to different genera, such as *Clavellopsis* Wilson, 1915, *Isobranchia* Heegaard, 1947, and *Neobrachiella* Kabata, 1979.

Keywords: copepod parasite, Lernaepodidae, fish host, Yellow Sea

INTRODUCTION

Fishes are hosts of various parasitic copepods. Copepods of the family Lernaepodidae are parasites of fishes and consist of about 250 known species in 48 genera (Boxshall and Halsey, 2004; Piasecki et al., 2010). They parasitize mainly on the gills of their hosts but also occur in the mouth, nostrils, and other parts (Boxshall and Halsey, 2004). The females of these copepods firmly attach to the host tissues by means of the attachment organ which is transformed from the maxilla (Ho and Do, 1984). During a field survey made in 2021 along the southwestern coast of Korea, the author found a copepod parasite on the ribbonfish *Trichiurus lepturus* Linnaeus, 1758, a commercial fish in Korea. The copepod is identified as *Parabrachiella trichiuri* (Yamaguti, 1939), a new record of Korean fauna, and briefly described herein.

SYSTEMATIC ACCOUNTS

Order Siphonostomatoida Burmeister, 1835
Family Lernaepodidae Milne Edwards, 1840
Genus *Parabrachiella* Wilson C.B., 1915

Parabrachiella trichiuri (Yamaguti, 1939) (Fig. 1)

Clavellopsis trichiuri Yamaguti, 1939: 562, Pl. 52, figs. 182–191.

Isobranchia trichiuri: Yamaguti, 1963: 260, Pl. 286, fig. 1.

Neobrachiella trichiuri: Ho & Do, 1984: 334, figs. 1–3.

Parabrachiella trichiuri: Piasecki et al., 2010: 61.

Material examined. Korea: 2 ♀♀ (each attached by 1 ♂) from palate of the ribbonfish *Trichiurus lepturus* Linnaeus, 1758, fish market, Jeollanam-do: Jindo-gun, Imhoe-myeon, Seomang, Chindo Island, 34°21'50"N, 126°08'01"E, 29 Mar 2021, coll. I.-H. Kim. One pair of specimens (HNIBRIV40) have been deposited in the Honam National Institute of Biological Resources (HNIBR), Mokpo, Korea.

Descriptive note. Female: Body (Fig. 1A) consisting of cephalothorax and trunk. Body length 3.27 mm in smaller dissected specimen, measured from tip of maxilla to posterior end of trunk. Cephalothorax cylindrical, slightly shorter than trunk, directed dorsally. Trunk (Fig. 1B) longer than wide (about 2.09 × 1.27 mm), with 2 pairs of long posterior processes; ventral pair shorter than dorsal pair, 1.05 mm long; dorsal pair 1.33 mm long. Genital process short but distinct (Fig. 1B). Egg sac (Fig. 1A) large, 2.72 × 0.76 mm. Caudal rami absent.

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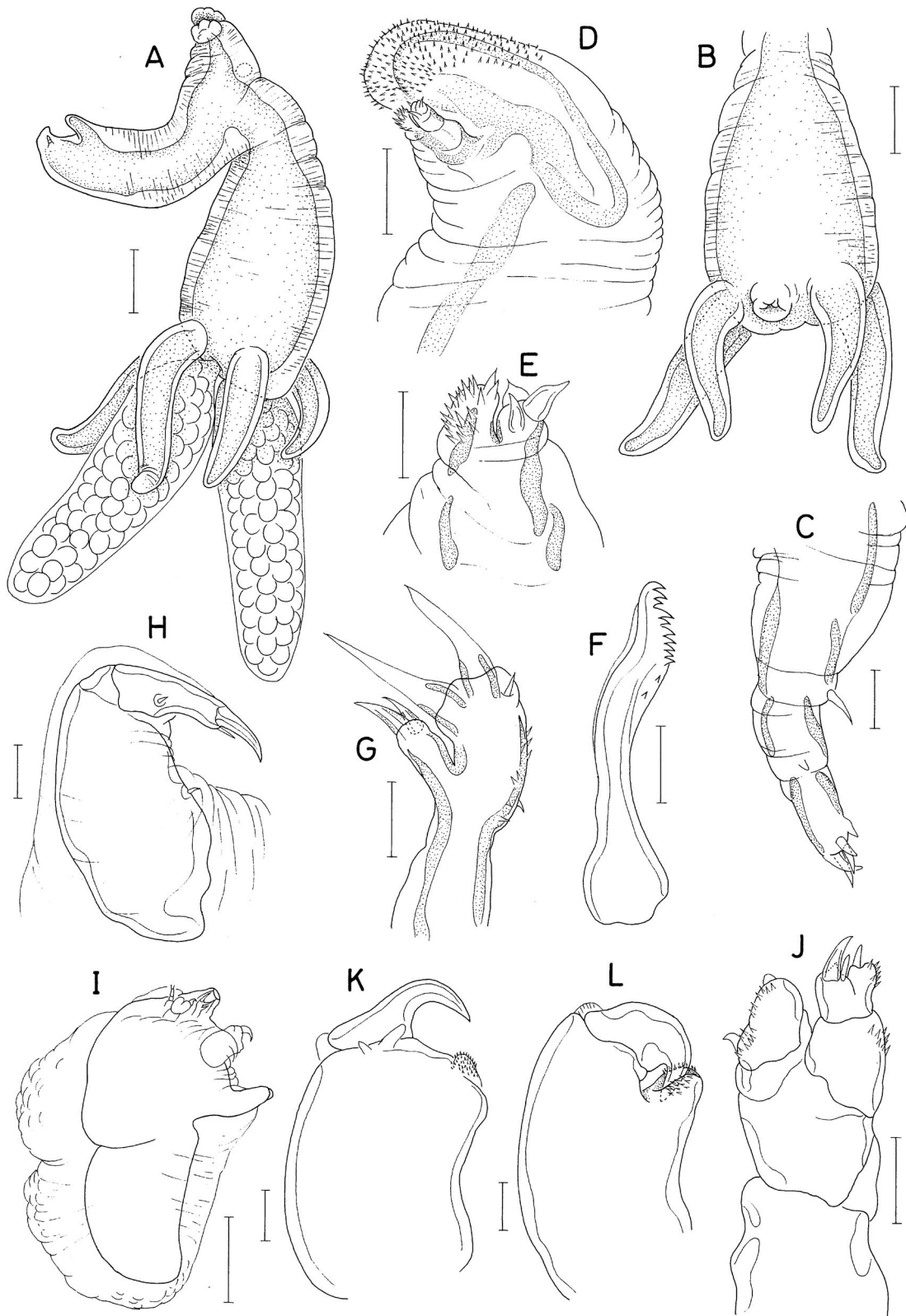


Fig. 1. *Parabrachiella trichiuri* (Yamaguti, 1939). Female: A, Habitus, right; B, Trunk, ventral; C, Antennule; D, Antenna; E, Endopod of antenna; F, Mandible; G, Maxillule; H, Maxilliped. Male: I, Habitus, right; J, Antenna; K, Maxilla; L, Maxilliped. Scale bars: A, B=0.5 mm, C, E-G, J-L=0.02 mm, D, H=0.05 mm, I=0.2 mm.

Antennule (Fig. 1C) 4-segmented; armature formula 0, 1, 1, and 5. Antenna (Fig. 1D) unsegmented, distally biramous; exopod expanded over endopod, covered with numerous spinules; endopod (Fig. 1E) distally bifurcate, with 3 broad setae on outer branch and many spinules on inner branch. Mandible (Fig. 1F) with 10 teeth, third distal one of them smaller than nearby teeth, and 2 small denticles proximal to teeth. Maxillule (Fig. 1G) biramous; exopod with 1 distal and 1 subdistal setae; endopod with 2 large distal and 1 small subdistal setae, and ornamented with several spinules along inner margin. Maxilla transformed to attachment organ, short, tapering, with biramous tip (Fig. 1A). Maxilliped (Fig. 1H) subchelate, 2-segmented; proximal segment expanded, with 1 small seta on inner margin; distal segment bearing 2 small setae (proximal and distal) and terminated in claw. Legs absent.

Male: Body (Fig. 1I) 0.75 mm long, covered with thick, transparent layer, with dorsal constriction between cephalothorax and trunk. Antennule 3-segmented, with armature formula 1, 0, and 5; 2 of distal setae tubercle-like. Antenna (Fig. 1J) consisting of 2-segmented protopod, 1-segmented exopod, and 2-segmented endopod; exopod with 3 short setae (proximal and distal) and ornamented with spinules on outer surface; first endopodal segment unarmed, but with patch of spinules at inner subdistal region; second endopodal segment distally with 1 claw, 2 setae, and several spinules. Mandible and maxillule similar to those of female. Maxilla (Fig. 1K) 2-segmented; proximal segment with 2 small processes distally and 1 patch of minute spinules at inner subdistal region; distal segment as strong claw. Maxilliped (Fig. 1L) also 2-segmented; distal segment as strongly curved claw; proximal segment with spinulose pocket receiving distal claw. Legs absent.

Distribution. Indo-West Pacific.

Remarks. The most detailed description of this species was provided by Ho and Do (1984) who placed it in the genus *Neobrachiella* Kabata, 1979. But Boxshall and Halsey (2004) gave *Parabrachiella* Wilson, 1915 priority over *Neobrachiella*. The genus *Parabrachiella* is speciose, containing 68 species and each species is highly host specific (Piasecki et al., 2010). The robbonfish *Trichiurus lepturus*, the host of *P. trichiuri*, is distributed widely in tropical and subtropical seas in the world and known as the host of more than 15 species of parasitic copepods (WoRMS Editorial Board, 2022), but *P. trichiuri* is the only species of the family Lernaepodidae parasitic on that fish.

Castro Romero and Baeza Kuroki (1987) provided a key to females of species of *Neobrachiella* (now junior synonym of *Parabrachiella*). According to their key, *P. trichiuri* can be differentiated from its congeners by (1) the pyriform trunk with two pairs of posterior processes; (2) the maxilla less than half as long as cephalothorax; (3) trunk pyriform; and (4)

genital process not protruding from margin of trunk.

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CONFLICTS OF INTEREST

No potential conflict of interest relevant to this article was reported.

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