

# First record of the family Eupronoidae (Crustacea, Amphipoda, Hyperiid) from the Korea Strait, with description of a newly recorded species, *Parapronoe parva*

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This study aims to discover and document amphipods from Korea, contributing to the understanding of Korean amphipod taxonomy. During a pelagic zooplankton survey conducted in the Korea Strait, a species belonging to the eupronoid amphipod genus *Parapronoe* Claus, 1879 was collected and identified as *Parapronoe parva* Claus, 1879. The newly recorded species, *Parapronoe parva* Claus, 1879, is characterized by the morphology of the carpal process on gnathopod 2, the rami of uropod 3, and the telson. *Parapronoe parva* is morphologically similar to *P. campbelli* Stebbing, 1888, *P. elongata* Semenova, 1981, and *P. crustulum* Claus, 1879, but can be distinguished by differences in the structure of the epimeral plate 1, carpus of gnathopod 2, basis of pereopod 6, both rami of uropod 3, and telson. This study represents the first record of both the genus *Parapronoe* and the family Eupronoidae from Korean waters. Additionally, identification keys to the genera of the family Eupronoidae, and to the species of the genus *Parapronoe* are provided.

Keywords: Crustacea, hyperiid, plankton, Platysceloidea, taxonomy



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## INTRODUCTION

The superfamily Platysceloidea Bate, 1863 is one of the most taxonomically challenging groups within the suborder Hyperiid (Shih and Chen, 1995). Members of Platysceloidea are characterized by extremely reduced mouthparts and a distinctive position of antennae 1 and 2. To date, the superfamily comprises 12 families worldwide, Amphithyridae Zeidler, 2016, Anapronoidae Bowman & Gruner, 1973, Brachyscelidae Stephensen, 1923, Eupronoidae Zeidler, 2016, Lycaeidae Claus, 1879, Lycaeopsidae Chevreux, 1913, Oxycephalidae Bate, 1863, Parascelidae Bovallius, 1887, Platyscelidae Bate, 1863, Pronoidae Dana, 1852, Thamneidae Zeidler, 2016, and Tryphanidae Boeck, 1871 (Horton *et al.*, 2025). However, a compre-

hensive systematic revision of these families is still required to clarify the phylogenetic relationships among them (Zeidler, 2016).

Among these families, Eupronoidae Zeidler, 2016 can be distinguished from other families of superfamily Platysceloidea by its subchelate gnathopod 2 and articulated rami of all uropods (Zeidler, 2016). This family was proposed by Zeidler (2016) and comprises two genera, *Eupronoe* Claus, 1879 and *Parapronoe* Claus, 1879, previously placed in the family Pronoidae Claus, 1879 along with *Paralycaea* Claus, 1879. These two genera are clearly distinguished from other related genera by the morphological characteristics of the gnathopods and uropods. Based on these diagnostic features, Eupronoidae was established as an independent family. The genus *Pronoe* remains as a

monotypic genus within Pronoidae, whereas *Paralycaea* was transferred to the newly established family Amphithyridae Zeidler, 2016, due to the morphological similarity of pereopods 5 and 6 to those of *Amphithyrus* Claus, 1879.

Currently, nine species belonging to two genera are recorded worldwide within the family Eupronoidae (Horton *et al.*, 2025). Among these, the genus *Parapronoe* comprises four recognized species, *P. campbelli* Stebbing, 1888, *P. crustulum* Claus, 1879, *P. elongata* Semenova, 1981, and *P. parva* Claus, 1879, whereas the genus *Eupronoe* comprises five valid species, *E. armata* Claus, 1879, *E. intermedia* Stebbing, 1888, *E. laticarpa* Stephensen, 1925, *E. maculata* Claus, 1879, and *E. minuta* Claus, 1879. The genus *Parapronoe* was established by Claus (1879), with *P. crustulum* designated as the type species. This genus is characterized by the sub-terminally inserted articles on the basis of pereopod 5 and lanceolate rami of uropod 2.

To date, neither the genus *Parapronoe* nor the family Eupronoidae has previously been recorded from Korean waters. However, six species belonging to the two genera have been reported from Japanese waters adjacent to Korea, including three species of *Eupronoe* (*E. armata*, *E. maculata*, and *E. minuta*) and three species of *Parapronoe* (*P. campbelli*, *P. crustulum*, and *P. parva*) (Mori *et al.*, 2010). In Chinese waters, nine species belonging to the two genera have been reported, including five species of *Eupronoe* (*E. armata*, *E. intermedia*, *E. laticarpa*, *E. maculata*, and *E. minuta*) and four species of *Parapronoe* (*P. campbelli*, *P. crustulum*, *P. elongata*, and *P. parva*) (Shih and Chen, 1995; Lowry, 2001). Although the genus *Parapronoe* had not previously been recorded in South Korea, *Parapronoe parva* Claus, 1879 was collected during a pelagic zooplankton survey conducted in the Korea Strait (Fig. 1). This study therefore represents the first record of

both the genus *Parapronoe* and the family Eupronoidae from Korean waters, adding a newly recorded species to the Korean hyperiid amphipod fauna. In addition, keys to the genera of the family Eupronoidae and the species of the genus *Parapronoe* are provided.

## MATERIALS AND METHODS

Specimens were collected with a MOCNESS net from subtidal waters of the South Sea, Korea (Fig. 1). The specimens were fixed in 95% ethanol and dissected in glycerol on Cobb's aluminum hole slides. The materials were examined under a stereomicroscope (Olympus SZX 10) and a compound microscope (Olympus BX 51), and drawings and measurements were made with the aid of a drawing tube. Line drawings were produced using the program Clip Studio Paint (Celsys, Japan). Body length was measured from the end of the rostrum to the end of the urosome, along the dorsal parabolic line of the body. The examined specimens are deposited at the Marine Biodiversity institute of Korea (MABIK) in Seocheon, Korea and the Department of Biological Science, Dankook University (DKU), Cheonan, Korea.

## SYSTEMATIC ACCOUNTS

Order Amphipoda Latreille, 1816  
 Suborder Hyperiidea Edwards, 1830  
 Superfamily Platysceloidea Bate, 1863  
 Family Eupronoidae Zeidler, 2016  
 표범옆새우과 (신칭)  
 Genus *Parapronoe* Claus, 1879 측표범옆새우속 (신칭)

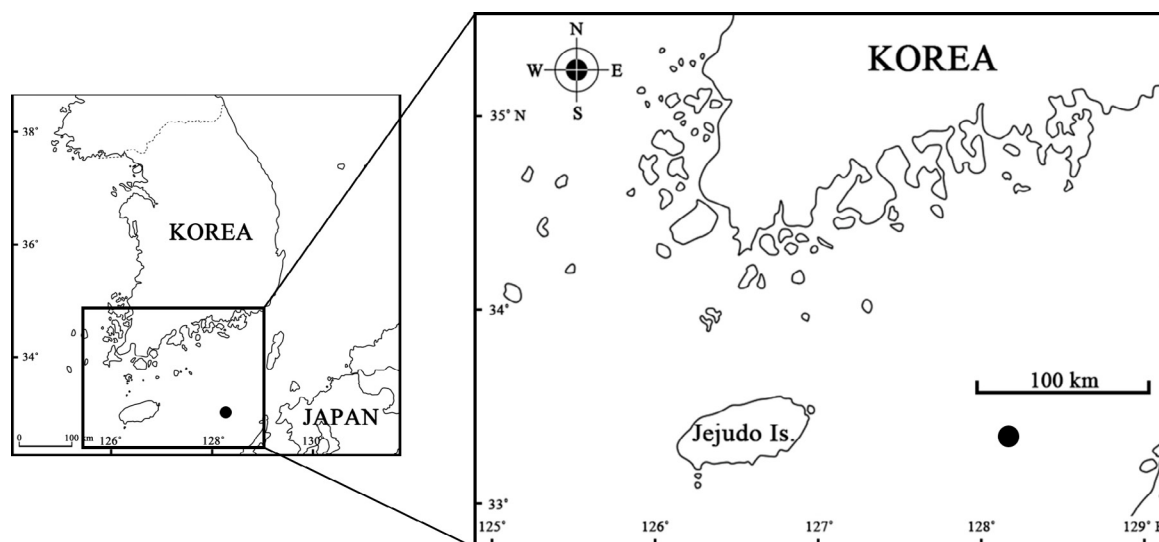


Fig. 1. Distribution of the *Parapronoe parva* Claus, 1879 (●: Korea Strait).

***Parapronoe parva* Claus, 1879 (Figs. 2, 3)**

꼬마표범옆새우 (신칭)

*Parapronoe parva* Claus, 1879: 177.*Sympronoe parva* Stebbing, 1888: 1533, pl. 192; Zeidler, 1978: 24.*Sympronoe propinqua* Stebbing, 1888: 1537, pl. 193.

**Material examined.** 1♀, dissected (appendages on one slide), MABIK CR00259793, 1♀, DKUAMP202516, Korea Strait, 33°22'06"N, 128°16'42"E, 16 May 2019, by MOCNESS net, collected by SH Choo.

**Description. Adult female** (MABIK CR00259793), body (Figs. 2, 3A) 7.7 mm long, dorsally smooth, covered with pigment fleck. Head subovate, slightly longer than deep, slightly longer than pereonites 1–3 combined; eyes well developed, covering most of head. Pereonites 1–7 (Fig. 3A), posterolateral margin produced. Urosomite 2 (Fig. 3L) fused with urosomite 3, length less than twice width, 1.29 × longer than wide. Antenna 1 (Fig. 3B), peduncular article 2 subrectangular, anterior margin slightly concave, flagellum 3-articulate, flagellum articles 1–2 with 5 and 3 anterodistal setae each, terminal article with 2 setae.

Gnathopod 1 (Fig. 3C) simple; coxa subrectangular, longer than width; basis longish ovate, relatively long, widening distally, 1.13 × longer than wide anterior margin with serration; ischium trapezoidal, 0.25 × basis, posterior margin slightly convex; merus trapezoidal, expanded, 1.14 × ischium; carpus longish ovate, 1.56 × merus, anterodistal and posterodistal corner slightly produced; propodus subrectangular, relatively slender, 0.72 × carpus, anterior margin slightly convex, posterior margin with 5 setae; dactylus falcate, short, 0.35 × propodus.

Gnathopod 2 (Fig. 3D) subchelate; coxa subquadrate; basis subrectangular, relatively long, 2.07 × longer than wide, anterodistal corner slightly produced, posterior margin curved; ischium trapezoidal, short, 0.23 × basis, posterior margin slightly convex; merus trapezoidal, widening distally, 1.64 × ischium; carpus characteristic in form, subquadrate, 0.95 × merus, anterodistal corner with serration, two-thirds of posterior margin with serration, posterodistal corner produced, carpal process rounded; propodus subrectangular, relatively slender, 0.85 × carpus, anterior margin slightly convex, posterior margin with serration; dactylus falcate, short, 0.27 × propodus.

Pereopod 3 (Fig. 3E), coxa subquadrate; basis longish ovate, widening distally, relatively long, 2.01 × longer than wide; ischium trapezoidal, short, 0.22 × basis; merus longish ovate, widening distally, 2.34 × ischium; carpus subrectangular, 1.01 × merus; propodus relatively slender, narrowing distally, 0.81 × carpus; dactylus narrow, falcate, 0.34 × propodus.

Pereopod 4 (Fig. 3F) similar to pereopod 3, but elongated.

Pereopod 5 (Fig. 3G), basis elongate, expanded, 1.59 ×



**Fig. 2.** *Parapronoe parva* Claus, 1879, adult female, 7.7 mm, habitus. Scale bar = 0.5 mm.

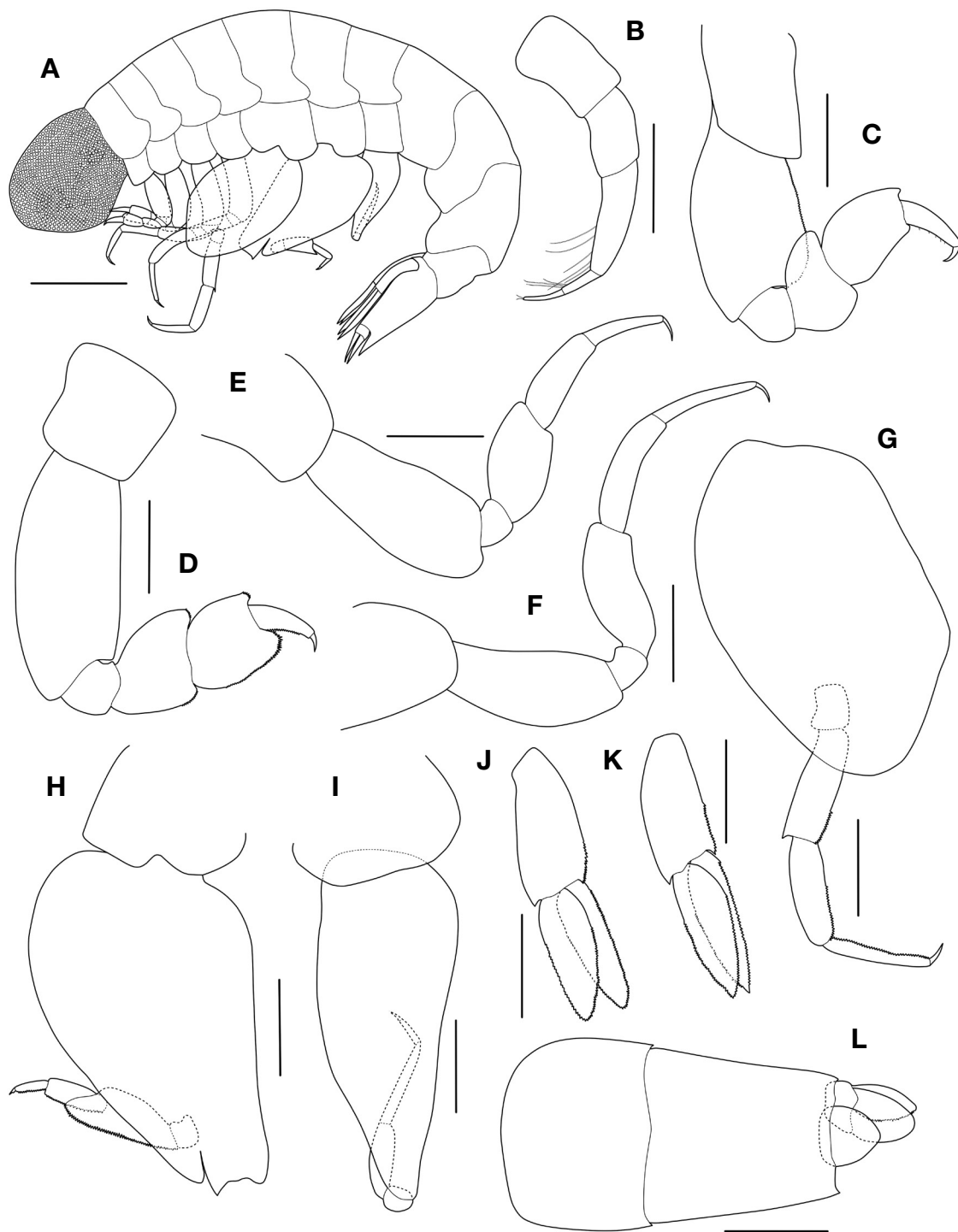
longer than wide, midanterior margin convex, ischium inserted sub-terminally; ischium trapezoidal, relatively short, 0.13 × basis, posterior margin concave; merus subrectangular, 2.62 × ischium, anterodistal margin with serration, posterodistal corner slightly produced; carpus longish ovate, 0.98 × merus, half of anterior margin with serration; propodus relatively slender, 0.97 × carpus; dactylus narrow, falcate, 0.26 × propodus.

Pereopod 6 (Fig. 3H), coxa trapezoidal; basis elongate-ovate, expanded, 1.81 × longer than wide, narrowing distally, anterodistal corner produced, process concave medially; ischium trapezoidal, short, 0.07 × basis, posterior margin concave; merus longish ovate, 4.56 × ischium, anterior margin with serration, anterodistal corner produced, covering half of carpus; carpus subrectangular, 0.56 × merus, anterior margin with serration; propodus slender, 0.57 × carpus, anterior margin with serration; dactylus narrow, falcate, 0.23 × propodus.

Pereopod 7 (Fig. 3I), coxa subrectangular; basis elongate-ovate, expanded, 3.02 × longer than wide, narrowing distally; ischium ovate, short, 0.08 × basis; merus longish ovate, 2.41 × ischium; carpus subrectangular, slender, 1.19 × merus; propodus subrectangular, 0.36 × carpus; dactylus narrow, falcate, 0.48 × propodus.

Uropod 1 (Fig. 3J), peduncle subrectangular, widening distally, laterodistal margin with serration; outer ramus lanceolate, 0.99 × peduncle, lateral and two-thirds of medial margin with serration; inner ramus lanceolate, slightly broader than outer ramus, 0.99 × outer ramus, two-thirds of lateral and medial margins with serration.

Uropod 2 (Fig. 3K) shorter than uropod 1; peduncle subrectangular, widening distally, laterodistal margin with serration; outer ramus lanceolate, 1.17 × peduncle, lateral and two-thirds of medial margin with serration, terminal corner slightly rounded; inner ramus lanceolate, slightly



**Fig. 3.** *Paraprionoe parva* Claus, 1879, adult female, 7.7 mm. A, habitus, lateral; B, antenna 1; C, gnathopod 1; D, gnathopod 2; E, pereopod 3; F, pereopod 4; G, pereopod 5; H, pereopod 6; I, pereopod 7; J, uropod 1; K, uropod 2; L, urosomites, uropod 3, telson. Scale bars: A = 1.0 mm; J-L = 0.5 mm; E-H = 0.4 mm; C, D, I = 0.3 mm; B = 0.2 mm.

broadier than outer ramus,  $0.97 \times$  outer ramus, two-thirds of lateral and medial margins with serration, terminal corner slightly rounded.

Uropod 3 (Fig. 3L) characteristic in form, shorter than

uropod 2; peduncle trapezoidal; outer ramus relatively slender,  $2.16 \times$  peduncle, medial margin with serrulation, terminal margin rounded; inner ramus expanded, broader than outer ramus,  $1.06 \times$  outer ramus, terminal margin

rounded.

Telson (Fig. 3L) characteristic in form, articulated with urosomites 2–3 combined,  $0.59 \times$  uropod 3, entire, short, subtriangular, unarmed.

**Distribution.** Cosmopolitan (Korea, China, Japan, Mediterranean Sea, Atlantic, Pacific, and Indian Oceans).

**Remarks.** *Parapronoe parva* Claus, 1879 is similar to *P. campbelli* Stebbing, 1888, *P. elongata* Semenova, 1981, and *P. crustulum* Claus, 1879 in that all four species share the following features: the ischium of pereopod 5 inserted subterminally on the basis and lanceolate rami of uropod 2. However, *P. parva* can be distinguished from its congeners by the following features (different characteristics of *P. campbelli*, *P. elongata*, and *P. crustulum* in brackets): 1) gnathopod 2, carpus with rounded process (vs. pointed in *P. campbelli*, *P. elongata*, and *P. crustulum*); 2) uropod 3, rami with rounded terminal margins (vs. pointed in *P. campbelli*, *P. elongata*, and *P. crustulum*); 3) urosomites 2–3 combined shorter than twice their width (vs. longer in *P. elongata*); and 4) telson about half the length of uropod 3 (vs. subequal in *P. campbelli* and *P. crustulum*, and shorter in *P. elongata*). Although only a limited number of specimens were available, the presence of rounded carpal process on gnathopod 2 and rounded terminal margin on uropod 3 indicates that our specimens agree well with the original description of *P. parva* provided by Claus (1879).

#### Key to genera of the family Eupronoidae

- Pereopod 5, ischium inserted terminally on basis .....  
..... *Eupronoe* Claus, 1879
- Pereopod 5, ischium inserted subterminally on basis .....  
..... *Parapronoe* Claus, 1879

#### Key to species of the genus *Parapronoe*

1. Telson subequal in length to uropod 3 ..... 2
  - Telson about half as long as, or shorter than uropod 3 .....  
..... 4
2. Pereopod 6, basis with distinct locking mechanism .....  
..... *P. crustulum* Claus, 1879
  - Pereopod 6; basis without distinct locking mechanism .....  
..... *P. campbelli* Stebbing, 1888
3. Gnathopod 2 with rounded carpal process; uropod 3, both rami with rounded terminal margins .....  
..... *P. parva* Claus, 1879
  - Gnathopod 2 with pointed carpal process; uropod 3, both rami with pointed terminal margins .....  
..... *P. elongata* Semenova, 1981

#### CONFLICTS OF INTEREST

The authors of this paper have no affiliation with any interests and are solely responsible for the paper.

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