

A New Record of *Gynodiastylis platycarpus* (Cumacea: Gynodiastylidae) from Korea

Chang-Mok Lee¹, Soon-Sang Hong², Kyung-Sook Lee^{2,*}

¹Munsandong Middle School, Paju 413-904, Korea

²Department of Life Sciences, Dankook University, Cheonan 330-714, Korea

ABSTRACT

Gynodiastylis platycarpus Gamô is redescribed as a new record of Korean fauna and a key to the Korean species of the genus is provided. This species is characterized by a slender body, a small telson, and a 3-articulated uropodal endopod.

Keywords: *Gynodiastylis platycarpus*, Gynodiastylidae, Cumacea, Korea

INTRODUCTION

Gerken (2001) described 6 new genera and 45 new species of the cumacean family Gynodiastylidae, containing 103 species within 12 genera. Among them, *Gynodiastylis* is the largest genus and distinguished from other genera by the following characteristics: 1) pseudorostral lobe is very stout and horizontally projected; 2) pereopod 1 has 1 distinct brush of long setae on the terminal margin of the propodus; 3) uropodal endopod is 1-3 articulated; 4) males have fully developed exopods on maxilliped 3 and pereopod 1-4 (frequently pereopod 1-2 or 1-3); 5) females only have fully developed exopods on pereopod 1-2, but without an exopod on maxilliped 3 and pereopod 3-4 (Gerken, 2001).

Until now, three species of the genus have been recorded in Korea: *Gynodiastylis anguicephala* Harada, 1962, *Gynodiastylis rotundicauda* Gamô, 1961, and *Gynodiastylis tubicola* Harada, 1962 (Lee et al., 2002). In the present paper, *Gynodiastylis platycarpus* is redescribed as a new record of Korean fauna and a key to the Korean species of the genus is provided.

A light-trap was used for collection of specimens from the shallow waters of the Yellow sea and South sea of Korea during 1999-2009. Drawings and measurements were performed with the aid of a drawing tube equipped on the light microscope. Body length was measured from the anterior tip of the carapace to the posterior end of the last abdominal segment. Lengths of appendages were measured along the mid-line of each appendage, exclusive of inflated outer angle.

SYSTEMATIC ACCOUNTS

Order Cumacea Kröyer, 1846

Family Gynodiastylidae Stebbing, 1912

Genus *Gynodiastylis* Calman, 1911

¹**Gynodiastylis platycarpus* Gamô, 1961 (Figs. 1, 2)

Gynodiastylis platycarpus Gamô, 1961: 105, figs. 1, 2; Harada, 1962: 297, figs. 2, 3; Gamô, 1963: 88; 1968: 186; Day, 1980: 202; Băcescu, 1992: 415; Gerken, 2001: 46, fig. 193.

Material examined. Korea: Incheon-si: 1♂, Dong-gu, Isl. Jakyakdo, 7 Oct 1998, Kim IH; 4♂♂, Ongjin-gun, Isl. Deokjeokdo, 20-21 Sep 1999, Lee CM; 1♂, Ongjin-gun, Isl. Daeyeonpyeongdo, 23 Aug 2000, Kim YH; 1♂, Ongjin-gun, Isl. Baekryeongdo, 25 Oct 2000, Kim YH; Gyeongsangnam-do: 1♂, Tongyeong-si, Isl. Bijindo, 9 Jul 1998, Lee CM; Jeju-do: 1♂, Seogwipo-si, Isl. Saeseom, 16 Feb 1998, Lee CM; Chungcheongnam-do: 1♂, Taean-gun, Isl. Anmyeondo, 21 Aug 2006, Kim YH; Jeollanam-do: 1♂, Yeosu-si, Isl. Geomundo, 17 Apr 2009, Kim YH.

Description. Adult male: Body length (Fig. 1A) 2.0-2.2 mm, excluding telson and uropod. Carapace (Fig. 1A, B) slightly longer than 1/3 of body length, 1.65 times as long as its width, twice as long as its depth; shape nearly rectangular in dorsal view; surface glossy and rough. Antero-lateral corner obtuse. Pseudorostral lobe truncated, 1.65 times as long as ocular lobe. Ocular lobe much wider than long, with 3 lenses.

Thorax (Fig. 1A, B) 0.6 times as long as carapace length,

© 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.

*To whom correspondence should be addressed

Tel: 82-41-550-3449, Fax: 82-41-550-3440

E-mail: kslee@dankook.ac.kr

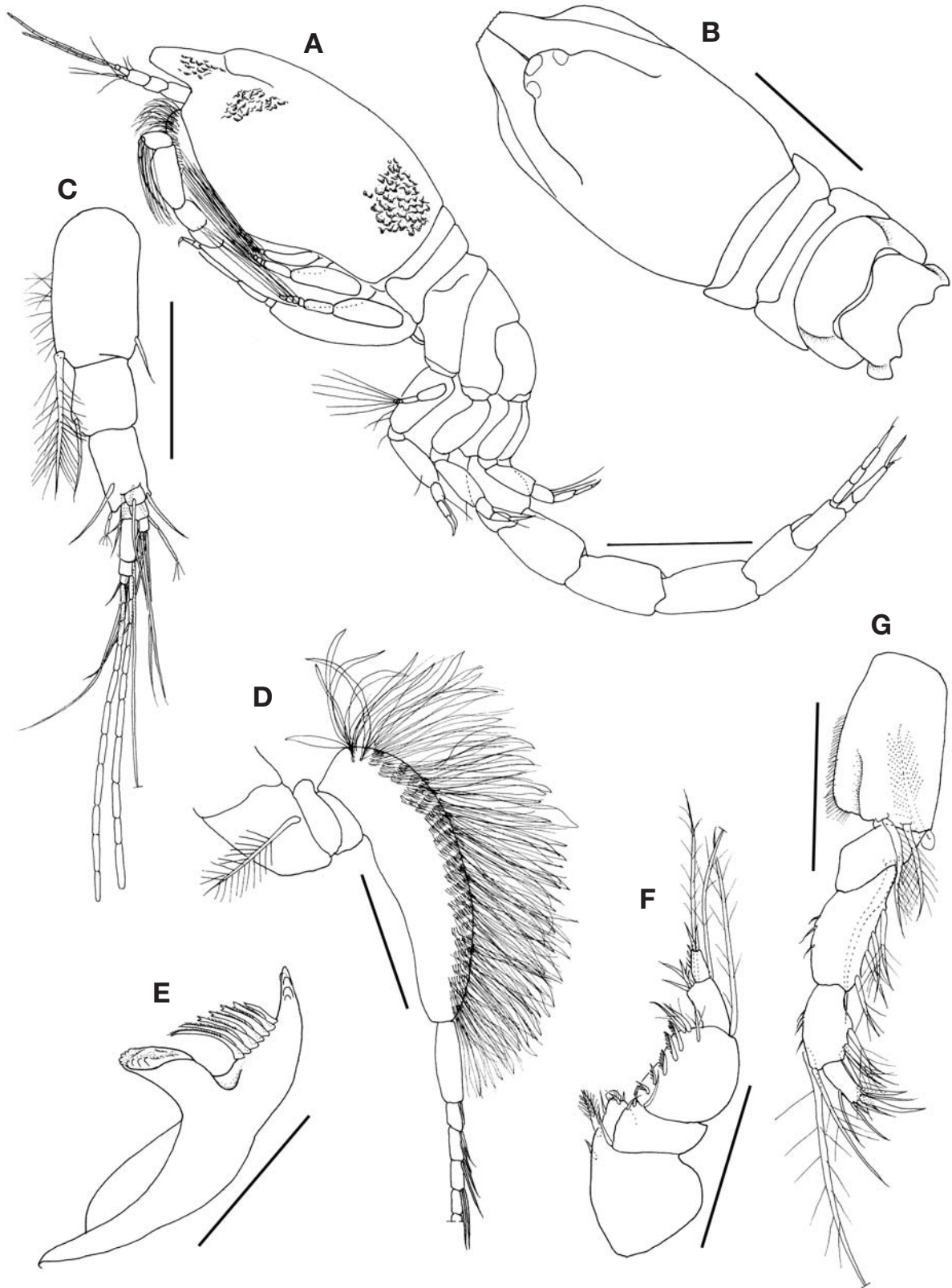


Fig. 1. *Gynodiastylis platycarpus* Gamô, adult male, 2.2 mm. A, Habitus, lateral; B, Cephalothorax, dorsal; C, Antenna 1; D, Antenna 2; E, Right mandible; F, Maxilliped 1; G, Maxilliped 2. Scale bars: A, B=0.3 mm, C-G=0.1 mm.

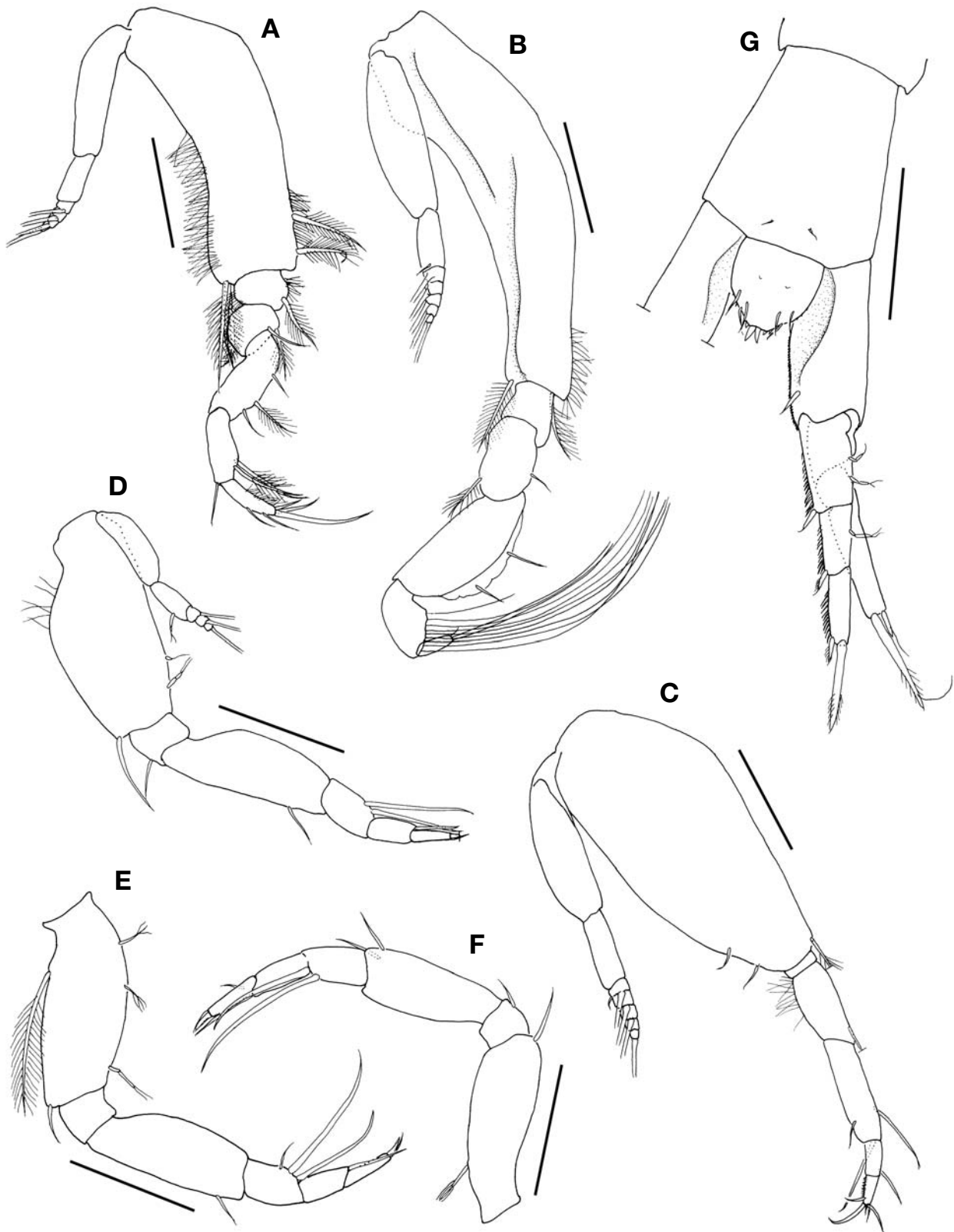


Fig. 2. *Gynodiastylis platycarpus* Gamô, adult male, 2.2 mm. A, Maxilliped 1; B, Pereopod 1; C, Pereopod 2; D, Pereopod 3; E, Pereopod 4; F, Pereopod 5; G, Uropod and last abdominal segment, dorsal. Scale bars: A-G=0.1 mm.

about 1/5 of body length; fifth segment longest.

Abdomen (Fig. 1A) 0.85 times as long as cephalothorax, slender; fifth segment longest.

Antenna 1 (Fig. 1C). Peduncle 3-articulated; first article slightly longer than remaining articles combined, with numerous hairs and 1 strong plumose seta distally on outer margin and 1 short simple seta on inner margin; second article with 1 simple seta on outer corner; third article with 4 simple distal setae, 2 sensory seta on surface and distal margin. Main flagellum 3-articulated; second article very long, with 1 long simple seta and 1 aesthetasc on distal margin; third article very small, with 1 short simple seta and 1 aesthetasc on terminal margin. Accessory flagellum 3-articulated, subequal to 1/2 length of main flagellum.

Antenna 2 (Fig. 1D) very short, not exceeding carapace. Peduncle 5-articulated; second article with 1 plumose seta on surface; flagellum 9-10 articulated, first article very long.

Right mandible (Fig. 1E) with 1 simple seta and 6 serrated setae (4 of them bifurcated) between pars incisiva and pars molaris; pars incisiva with 5 teeth.

Maxilliped 1 (Fig. 1F). Carpus of protopod with 3 plumose setae, 5 comb-like specialized setae near inner margin; outer corner with 1 long plumose seta. Endite with 1 strong plumose seta and 2 simple setae on inner margin, and 1 tooth and 2 simple setae on terminal margin.

Maxilliped 2 (Fig. 1G). Basis about 0.55 times as long as remaining articles combined, with 3 strong plumose setae on distal margin. Carpus with 4 plumose setae on inner margin and 3 short simple setae on outer margin. Dactylus about 0.55 times as long as propodus, with 1 simple seta on outer margin, and 1 strong spiniform seta and 5 simple setae on terminal margin.

Maxilliped 3 (Fig. 2A). Basis 1.3 times as long as remaining articles combined, with numerous hairs on outer margin, 3 long plumose setae on outer corner, and 2 plumose setae on inner margin. Propodus with 2 plumose setae on inner margin and 1 simple seta on outer corner. Dactylus about 0.8 times as long as propodus, with numerous hairs on inner margin, 2 simple setae on outer margin, and 2 simple setae and 1 long spiniform seta on terminal margin. Exopod well developed.

Pereopod 1 (Fig. 2B). Basis 1.1 times as long as remaining articles combined, with 1 plumose seta, numerous hairs near inner corner, and 1 plumose seta on outer corner. Carpus 1.85 times as long as propodus, with 2 simple setae and 1 membranous lamella on inner margin. Propodus with approximately 9 very long setae. Exopod well developed.

Pereopod 2 (Fig. 2C). Basis 1.3 times as long as remaining articles combined, with 1 plumose seta; inner margin with 2 simple setae. Carpus very long, 1.3 times as long as merus, with 1 simple seta on outer margin, 1 simple seta on inner

margin, and 1 simple seta on terminal margin. Exopod well developed.

Pereopod 3 (Fig. 2D). Basis about 0.75 times as long as remaining articles combined, with 2 sensory setae on outer margin and 1 simple seta on inner corner. Exopod well developed.

Pereopod 4 (Fig. 2E). Basis about 0.6 times as long as remaining articles combined, with 1 long plumose seta on outer margin, 1 simple seta on outer corner, and 3 sensory setae on inner margin.

Pereopod 5 (Fig. 2F). Basis about 0.55 times as long as remaining articles combined, with 1 simple seta on outer corner and 1 sensory seta on inner margin.

Telson and Uropod (Fig. 2G). Telson small, 0.4 times as long as last abdominal segment; dorsal surface with 2 pairs of simple setae; both lateral margins with several spinules; terminal margin with 1 pair of spines. Uropodal peduncle 0.75 times as long as last abdominal segment, with 1 spine on inner margin. Endopod 3-articulated, 1.5 times as long as peduncle; each of articles with numerous spinules on inner margin and 1 spine on inner corner; terminal margin with 1 long spine. Exopod 2-articulated, 0.85 times as long as endopod; second article with 2 apical spines, one of them very long and plumose.

Distribution. Korea (Yellow Sea, South Sea) and Japan.

Remarks. *Gynodiastylis platycarpus* is characterized by a slender body, a small telson, and a 3-articulated uropodal endopod. This species is related to *G. carinirostris* Hale, 1946, and *G. hartmeyer* Zimmer, 1914, having a similar body form and 3-articulated uropodal endopod (Hale, 1946; Gerken, 2001). However, *G. platydactylus* is distinguished from the two congeners by a small telson, which is less than half as long as the last abdominal segment compared with more than half in *G. carinirostris* and *G. hartmeyer*.

Gynodiastylis platydactylus from Japanese waters was originally described on the basis of the adult female (body length 3.9 mm) by Gamô (1961). Harada (1962) recorded the adult female (body length 3.7 mm) and the adult male (body length 2.2 mm) from the vicinity of the type locality. Our male specimens coincide with Gamô's and Harada's adult female specimens, except for the absence of a pair of spots on the carapace. Our male specimens also show accordance with Harada's description of the adult male.

Key to the species of the genus *Gynodiastylis* in Korea

1. Surface of the carapace smooth, without any ornament ... 2
 - Surface of the carapace pitted, with several ridges 3
2. Telson longer than the last abdominal segment; uropodal endopod unarticulated *G. rotundicaudatus*
 - Telson shorter than 1/2 length of the last abdominal segment; uropodal endopod 3-articulated

-*G. platycarpus*
3. Surface of the carapace covered with numerous reticulate sculptures; uropodal endopod longer than 1/2 peduncle in length*G. anguicephala*
– Surface of the carapace covered with alveolate sculptures; uropodal endopod shorter than 1/2 length of the peduncle*G. tubicola*

ACKNOWLEDGEMENTS

This study was supported by a grant from the research fund of Dankook University in 2009.

REFERENCES

- Băcescu M, 1992. Cumacea II (Fam. Nannastacidae, Diastylidae, Pseudocumatidae, Gynodiastylidae et Ceratocumatidae). *Crustaceorum Catalogus Pars*, 8:175-468.
Day J, 1980. South African Cumacea. Part 4. Families Gynodiastylidae and Diastylidae. *Annals of the South African*

- Museum*, 82:187-292.
Gamô S, 1961. On two new species of cumacean Crustacea, genus *Gynodiastylis* (Diastylidae) from Sagami Bay. *Zoological Magazine, Tokyo*, 70:105-109.
Gamô S, 1963. Review summary on the order Cumacea, with a list of the species found in Japan. *Researches on Crustacea, Carcinological Society of Japan, Tokyo*, 1:73-90.
Gamô S, 1968. Studies on the Cumacea (Crustacea, Malacostraca) of Japan Part 3. *Publications of the Seto Marine Biological Laboratory*, 16:147-192.
Gerken S, 2001. The Gynodiastylidae (Crustacea: Cumacea). *Memoirs of Museum Victoria*, 59:1-274.
Hale HM, 1946. Australian Cumacea. No. 12. The family Diastylidae (Part 2) *Gynodiastylis* and related genera. *Records of the South Australian Museum*, 8:357-444.
Harada I, 1962. Cumacean fauna of Japan. II. Family Diastylidae 2. Genus *Gynodiastylis*. *Japanese Journal of Zoology*, 13: 293-306.
Lee CM, Kim YH, Lee KS, 2002. Three new records of gynodiastylid cumaceans (Cumacea, Gynodiastylidae) from Korea. *The Korean Journal of Systematic Zoology*, 18:99-120.

Received February 9, 2011
Accepted March 3, 2011