

MUNIDOPSIS (DECAPODA: ANOMURA: GALATHEIDAE) FROM THE
ABYSSAL DEPTHS OF TAIWAN, WITH DESCRIPTION OF ONE NEW SPECIES

Masayuki Osawa, Chia-Wei Lin, and Tin-Yam Chan

(MO) Department of Marine and Environmental Sciences, University of the Ryukyus,
1 Senbaru, Nishihara-cho, Okinawa 903-0213, Japan;
(CWL and TYC) Institute of Marine Biology, National Taiwan Ocean University,
Keelung 202, Taiwan, R.O.C.
(corresponding author TYC: tychan@mail.ntou.edu.tw)

A B S T R A C T

During deep-sea trawling in Taiwanese waters, four species of galatheids belonging to the genus *Munidopsis* were collected at two stations deeper than 3000 m. Three species represent new records from Taiwan: *M. panamae* Baba, 2005, *M. profunda* Baba, 2005, and *M. teretis* Baba, 2005, all recently described and known from very limited material. The other is a new species, *Munidopsis tafrii*, which resembles *M. ceratophthalma* Alcock, 1901, and *M. orcina* McArdle, 1901, but clearly differs in characters of the carapace. The specimens of *M. profunda* from 4430–4455 m are the deepest record for marine animals from Taiwanese waters.

INTRODUCTION

In a recent deep-sea survey off Taiwan, two abyssal trawls to depths of 3579 m and 4455 m were made in the summer of 2005. Among the abyssal benthic animals collected were a number of galatheids belonging to the genus *Munidopsis* Whiteaves, 1874. Close examination of these specimens revealed that they represented four species. Three of them were species very recently described by Baba (2005), namely *M. panamae* Baba, 2005, *M. profunda* Baba, 2005, and *M. teretis* Baba, 2005, all previously known from very few (one to three) specimens and from localities far distant from Taiwan. The other species is new to science and resembles *M. ceratophthalma* Alcock, 1901, from the Andaman Sea and west of Sumatra and *M. orcina* McArdle, 1901, from the Arabian Sea. In this study, the authors report on the three rare species from Taiwan and describe one new species, *M. tafrii*. *Munidopsis profunda* is the deepest galatheid known in the Indo-Pacific and is the deepest marine animal so far reported from Taiwanese waters.

The specimens examined, including the holotype of the new species, are deposited in the National Taiwan Ocean University (NTOU, with code A). The postorbital carapace length (cl) is measured from the orbital margin to the posterior margin of the carapace along the dorsal midline. Lengths of the segments of the chelipeds are measured along the mesial margins and of second to fourth pereopods (ambulatory legs) along the dorsal margins. The station (stn) designations CP and OCP refer to the collecting gear, a French beam trawl and a 3 m ORE beam trawl, respectively.

SYSTEMATICS

Munidopsis tafrii, new species
(Figs. 1–3, 5A)

Type Material.—Taiwan. TAIWAN 2005, RV “Fisheries Researcher I”, stn CP 294, 23°59.36'–23°56.61'N, 122°20.76'–

122°20.22'E, 3564–3579 m, 9 August 2005, holotype male, cl 17.1 mm (NTOUA00814).

Diagnosis.—Carapace and pereopods covered with short transverse ridges bearing short, curled plumose setae. Carapace, exclusive of rostrum, slightly longer than broad; dorsal surface moderately convex, unarmed; lateral margins weakly convex, roundly crested, anterolateral corner and anterior end of anterior cervical groove terminating in small spine; lateral end of posterior cervical groove with distinct notch; frontal margin oblique behind ocular peduncle, leading to external orbital angle with small spine (antennal spine). Rostrum broad, subtriangular, nearly horizontal, terminating acutely; median lateral margin moderately convex; dorsal surface slightly convex, with median rounded carina extending onto epigastric lobes. Pleon unarmed, covered with short, curled plumose setae on transverse ridges and pleura; sixth segment with weakly produced posterolateral lobes and nearly transverse postero-medial margin. Telson composed of 8 calcified plates. Ocular peduncle immovable, with short, dorsomesially placed eye-spine. Basal segment of antennular peduncle with dorsolateral spine shorter and narrower than ventrolateral. Antennal peduncle with first segment bearing strong distomesial spine and with distolateral angle produced; second segment with spine each on distomesial and distolateral angles; third segment with small tubercles on distal margin. Merus of third maxilliped armed with 3 distinct spines and several smaller spines on flexor margin, disto-extensor margin bearing 1 small spine. First pereopods slightly shorter than carapace including rostrum; merus with 4 terminal spines; carpus with 3 terminal spines; palm approximately as long as broad measured at bases of fingers; fingers slightly longer than palm; fixed finger with denticulate carina on distolateral surface. Second to fourth pereopods somewhat compressed laterally, second pereopod reaching or slightly overreaching tip of first pereopod; merus and carpus each with row of spines on

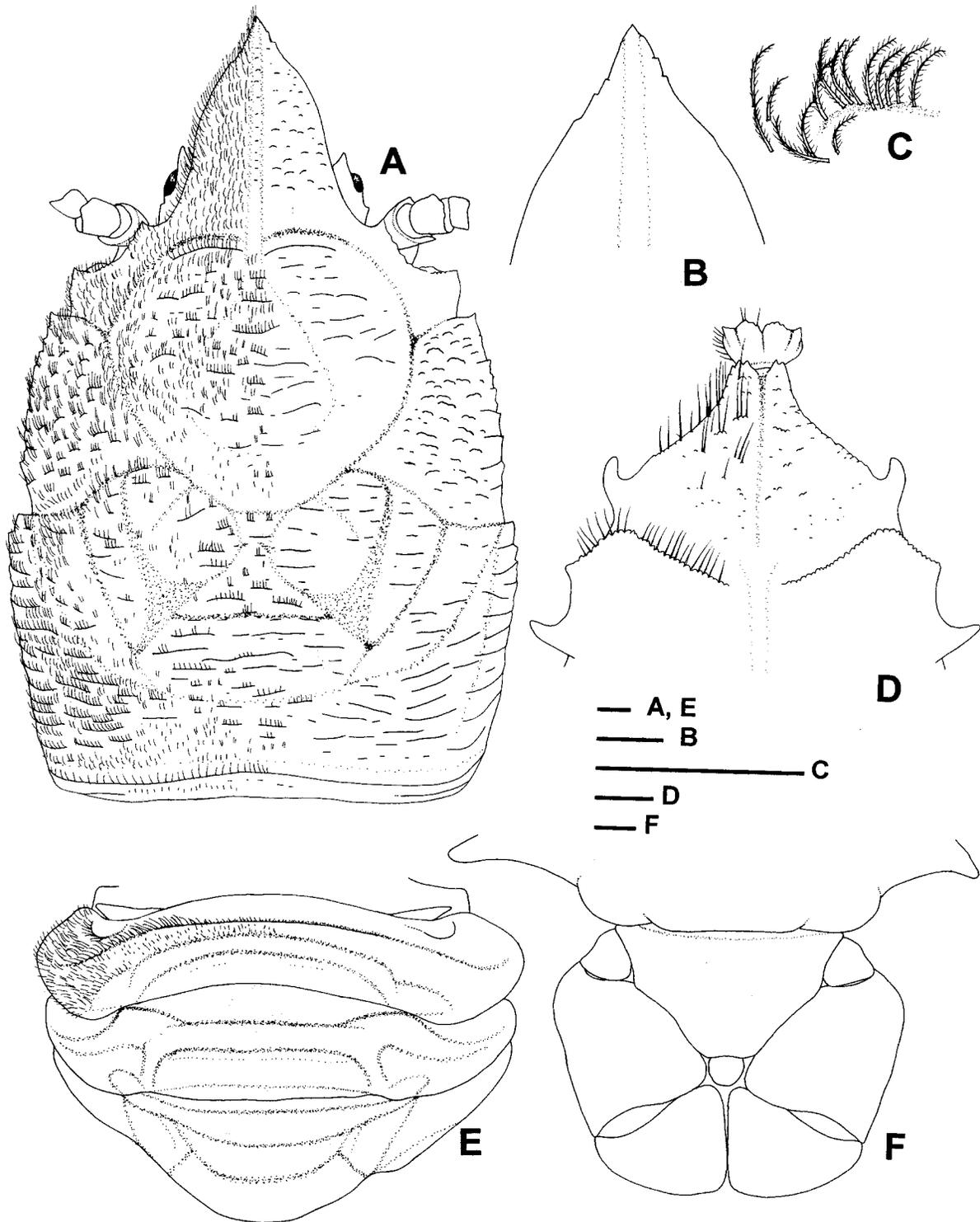


Fig. 1. *Munidopsis tafrii*, new species, holotype, male, cl 17.1 mm (NTOUA00814). A, carapace, dorsal view (setae omitted from right side); B, rostrum, dorsal view (setae omitted); C, curled plumose setae on left posterior branchial region, dorsal view; D, anterior part of sternal plastron, ventral view (setae omitted from left side); E, Pleon, dorsal view (most setae omitted); F, posterior part of sixth pleomere and telson, extensor view. Scales equal 1.0 mm. Setae drawn as simplified, exact state of setae see C.

dorsal crest; propodus crenulate on dorsolateral and dorsomesial margins; dactylus 0.6-0.7 length of propodus, with 7-10 teeth on nearly straight ventral margin. Epipods absent from pereopods.

Description.—Carapace (Fig. 1A), exclusive of rostrum, slightly longer than broad; dorsal surface moderately convex from side to side, covered with elevated, interrupted, transverse ridges; those on rostrum, gastric region, and

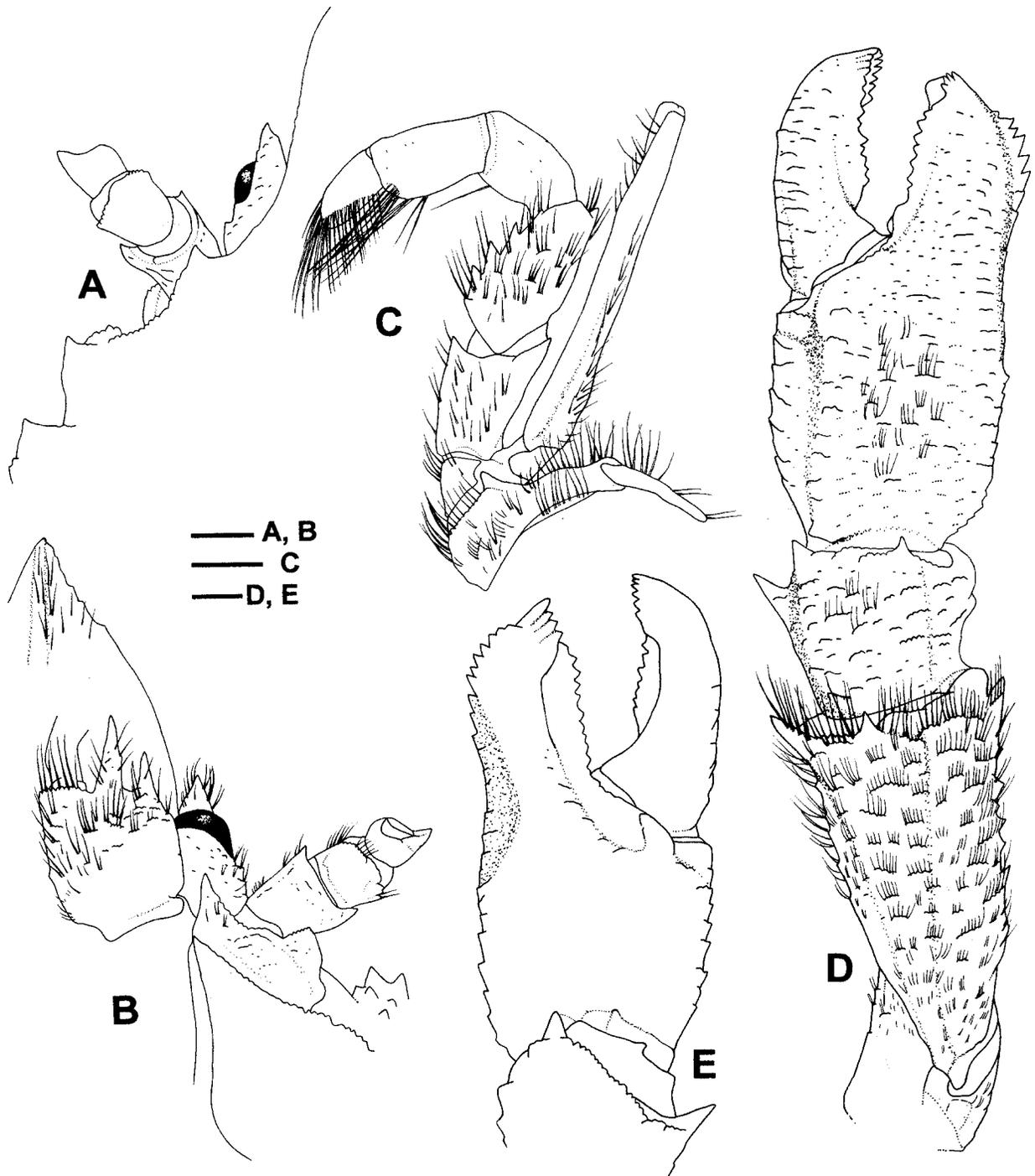


Fig. 2. *Munidopsis tafrii*, new species, holotype, male, cl 17.1 mm (NTOUA00814). A, left frontal margin, ocular peduncle, and antennal peduncle, dorsal view; B, left, anterior part of pterygostomial flap, ocular peduncle, basal segment of antennular peduncle, and antennal peduncle, ventral view; C, left third maxilliped, lateral view; D, right cheliped, dorsal view; E, same, chela and distal part of carpus, ventral view (surface structure omitted). Scales equal 1.0 mm. Setae drawn as simplified, exact state of setae see Fig. 1C.

anterior branchial region somewhat arched, and those on cardiac and posterior branchial regions longer; anterior margins of ridges with short, curled plumose setae (Fig. 1C); regions well delineated by furrows including distinct anterior and posterior cervical grooves. Posterior cervical grooves each followed by broad convexity. Cardiac region separated into anterior and posterior parts by shallow,

transverse depression. Posterior margin preceded by unarmed, elevated ridge. Lateral margins weakly convex, roundly crested; anterior corner terminating in small spine; anterior end of anterior cervical groove with distinct notch, terminating in small spine; lateral end of posterior cervical groove also with distinct notch, bluntly produced. Frontal margin oblique behind ocular peduncle, leading to external

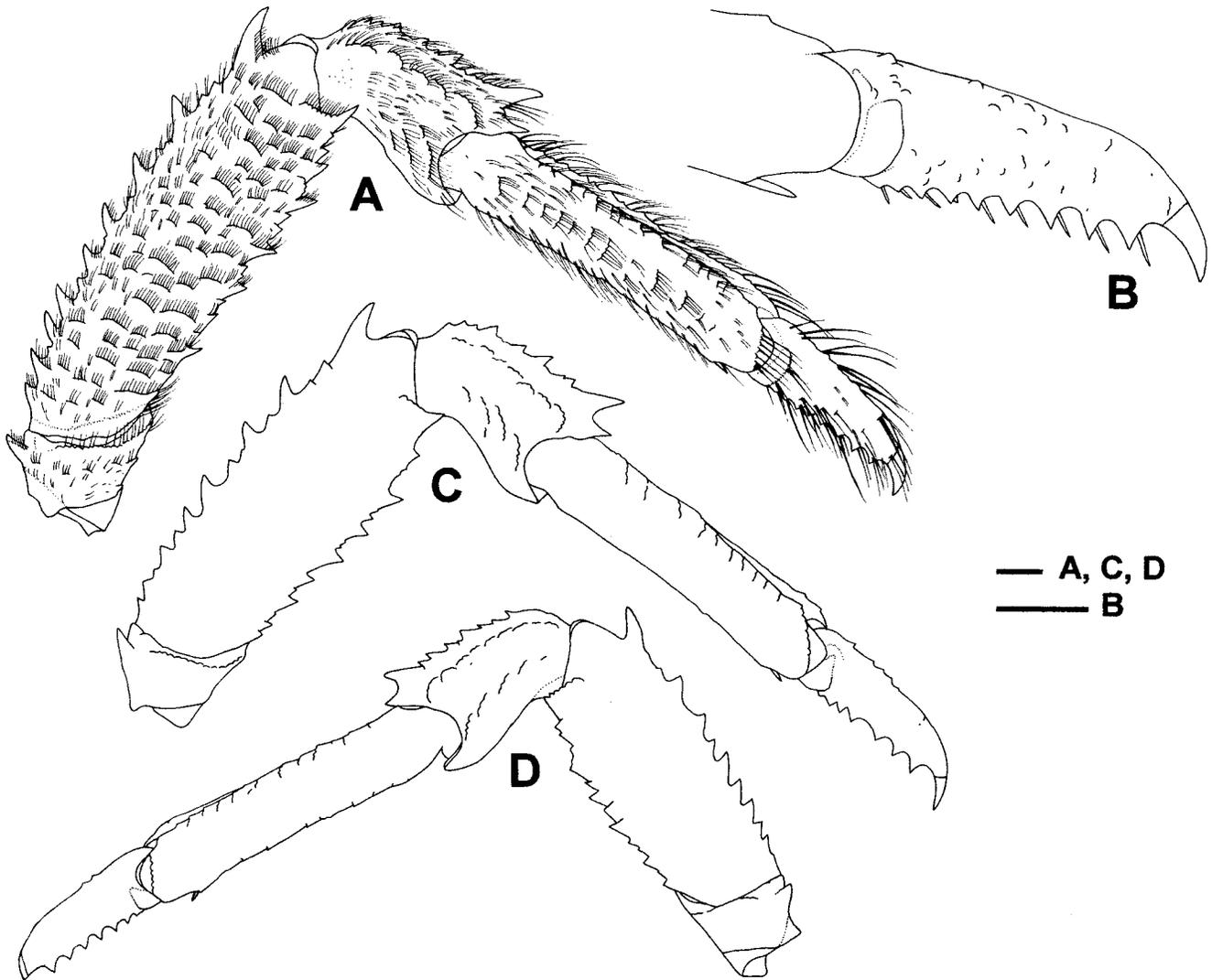


Fig. 3. *Munidopsis tafrii*, new species, holotype, male, cl 17.1 mm (NTOUA00814). A, right second pereiopod, lateral view; B, same, dactylus and distal part of propodus, lateral view (setae omitted); C, right third pereiopod, lateral view (surface structure, setae and bristles omitted); D, left fourth pereiopod, lateral view (surface structure, setae and bristles omitted). Scales equal 1.0 mm. Setae drawn as simplified, exact state of setae see Fig. 1C.

orbital angle with small spine (antennal spine), then oblique toward anterolateral corner of carapace. Rostrum (Fig. 1A, B) broad, 0.35 of breadth between anterolateral spines of carapace when measured at anterior bases of ocular peduncles in dorsal view, approximately 0.3 length of remaining carapace, subtriangular, nearly horizontal and weakly upturned anteriorly in lateral view, terminating acutely; lateral margins moderately convex on median part, sinuous and crenulate at anterior 0.3; dorsal surface slightly convex, with median longitudinal, rounded carina extending onto relatively distinct epigastric lobes; ventral surface with rounded, longitudinal ridge on midline.

Pterygostomian flap with short and long, oblique ridges; anterior margin narrowly rounded.

Third thoracic sternite (Fig. 1D) moderately broad; anterior margin tuberculate, divided into 2 rounded lobes by deep median notch; lateral margin of each lobe convex, with small tuberculate spine anteriorly. Fourth thoracic sternite (Fig. 1D) narrowly elongate anteriorly; lateral

margin with row of small tubercles; surface depressed in midline, with short, tuberculate ridges anteriorly bearing short setae; greatest width approximately 3.7 times that of third sternite. Fifth and sixth thoracic sternites nearly smooth. Seventh thoracic sternites with some short transverse ridges.

Pleon (Fig. 1E) covered with short, curled plumose setae on transverse ridges and pleura; second to fourth segments each with 2 elevated, blunt transverse ridges; fifth segment with only weak posterior ridge; sixth segment (Fig. 1F) nearly smooth, with weakly produced posterolateral lobes and nearly transverse posteromedian margin. Telson (Fig. 1F) composed of 8 calcified plates, membranous part present between lateromedian and distal plates.

Ocular peduncle (Figs. 1A, 2A, B) immovable, with short, stout, dorsomesially placed eye-spine directed forward; lateral margin with small projection; surface with very short ridges bearing short plumose setae; semicircular

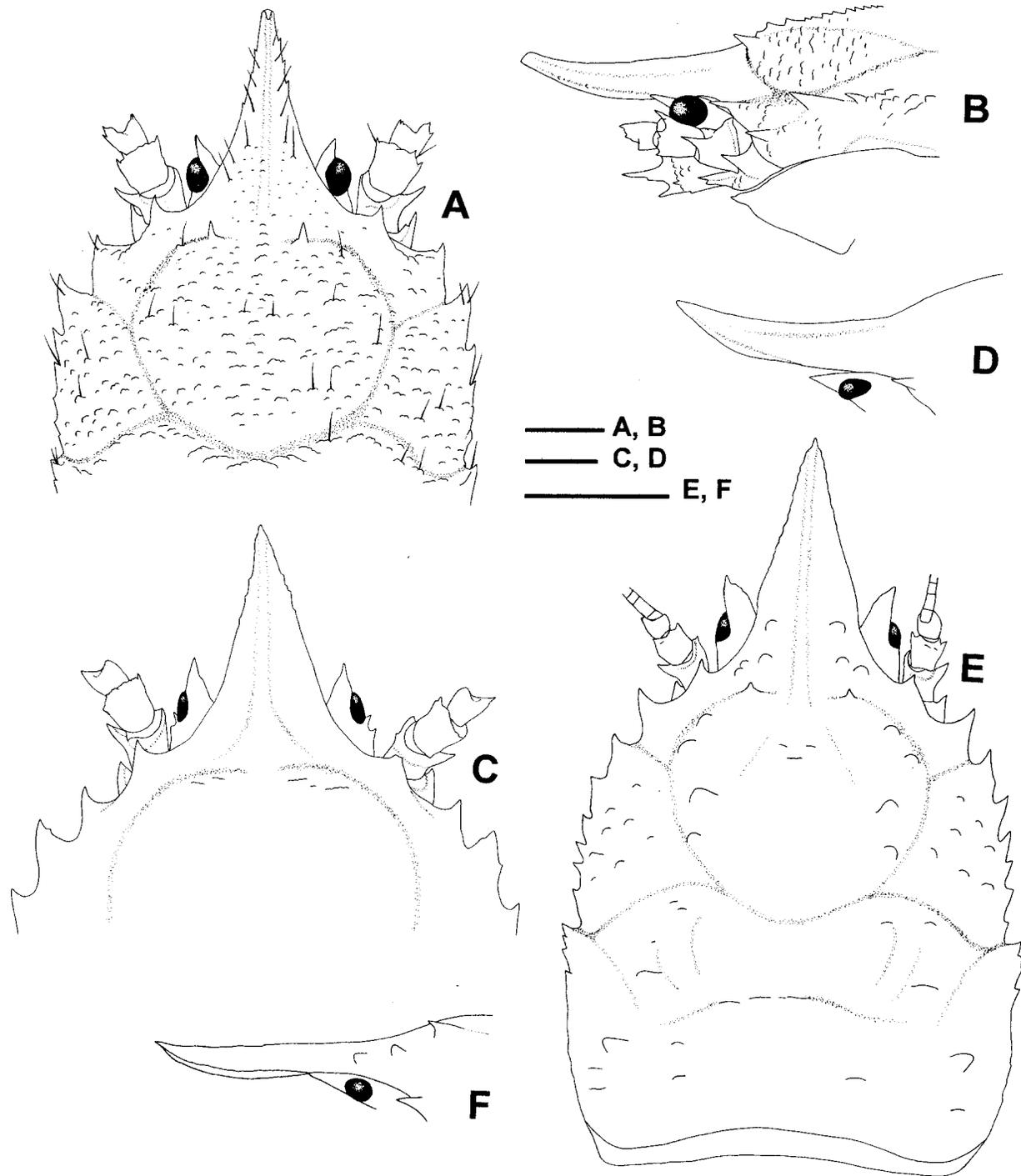


Fig. 4. *Munidopsis panamae* Baba, 2005, female, cl 16.3 mm (NTOUA00815) (A, B); *Munidopsis profunda* Baba, 2005, male, cl 23.4 mm, (NTOUA00818) (C, D); *Munidopsis teretis* Baba, 2005, male, cl 10.3 mm (NTOUA00817) (E, F). A, anterior part of carapace, dorsal view (distal tip of rostrum broken); B, same, left, lateral view (setae omitted); C, anterior part of carapace, dorsal view (plumose setae omitted); D, rostrum, left, lateral view; E, carapace, dorsal view (plumose setae and rugae omitted); F, rostrum, left, lateral view. Scale equals 3.0 mm.

cornea cupped within broad-base eyestalk, narrower than eye-spine in dorsal view.

Basal segment of antennular peduncle (Fig. 2B) with dorsolateral spine distinctly shorter and narrower than ventrolateral; distomesial margin with small tubercles but no dorsal spine.

Antennal peduncle (Figs. 1A, 2A, B) overreaching tip of eye-spine by approximate length of fourth segment. First segment with strong distomesial spine barely reaching distal margin of second segment; distolateral angle produced. Second segment bearing distomesial and distolateral spines, distomesial spine smaller than distolateral. Third segment



Fig. 5. Fresh specimens, dorsal view. A, *Munidopsis tafrii*, new species, holotype, male, cl 17.1 mm (NTOUA00814) (left third and right fourth pereopods missing); B, *Munidopsis panamae* Baba, 2005, female, cl 16.3 mm (NTOUA00815); C, *Munidopsis profunda* Baba, 2005, male, cl 23.4 mm (NTOUA00818) (right second pereopod missing); D, *Munidopsis profunda* Baba, 2005, female, cl 27.9 mm (NTOUA00816).

with small tubercles on distal margin. Fourth segment unarmed.

Third maxilliped (Fig. 2C) with ischium approximately as long as merus measured on extensor margin; extensor margin with small spine; flexor margin sharply ridged, terminating in

small spine; mesial ridge (crista dentata) with row of small, acute corneous teeth. Merus with some short ridges on lateral surface, flexor margin with 3 distinct spines and several smaller spines, extensor margin with small distal spine. Carpus nearly smooth, with weak, short ridges on extensor

surface. Propodus and dactylus without spines. Exopod far exceeding distal margin of merus. Epipod slender.

First pereopods (Fig. 2D, E) subequal, stout relative to length, 1.2-1.3 times longer than postorbital carapace, slightly shorter than carapace including rostrum; dorsal surface with numerous short, occasionally squamiform, transverse ridges (apparently fewer in number on palm and dactylus); short, curled plumose setae present on ridges, giving very setose appearance; mesial surfaces of merus and carpus and mesial and lateral faces of chela with longer setae. Ischium with 2 spines on dorsal crest, distal spine much stronger than proximal; ventral margin serrated, with subdistal spine; ventrolateral margin with 1 or 2 small spines. Merus with 4 terminal spines (dorsal, dorsomesial, ventromesial, and ventrolateral), dorsal spine smaller than others. Carpus approximately as long as broad, with 3 terminal spines (mesial, dorsomesial, and dorsolateral), mesial spine strongest; ventrodiscal margin with median, narrowly rounded projection. Palm massive, moderately inflated, 1.3-1.4 length of carpus, approximately as long as broad measured at bases of fingers; dorsal surface with blunt ridge along mesial margin; ridges on mesial and lateral surfaces elevated; lateral margin somewhat concave at base of fixed finger. Fingers slightly longer than palm; opposable margins nearly straight, narrowly gaping, distally spooned; prehensile edges each with row of small, bluntly triangular teeth, proximal teeth obsolete; distal margins each with row of small, rounded or subtriangular teeth; fixed finger with somewhat ventrally directed denticulate carina on distolateral surface.

Second to fourth pereopods (Fig. 3A-D) (left third and right fourth pereopods missing) moderately slender, somewhat compressed laterally; second pereopod longest, reaching or slightly overreaching tip of first pereopod; ridges on merus to propodus with short, curled plumose setae; dorsal surfaces of carpus and propodus densely setose; dorsodistal and ventral margins of propodus and surface of dactylus with several long setae. Merus elongate, subrectangular in lateral view, with row of spines on dorsal crest, distal spine pronounced; lateral surface, except rounded distal lobe, covered with slightly elevated, transverse ridges, dorsal ridges small; ventrolateral margin with row of small spines, distal spine of second pereopod strongest but that of fourth pereopod greatly reduced; ventromesial margin crenulate, unarmed distally. Carpus with row of small spines on dorsal crest, terminating in strong spine; lateral surface with elevated crest of short ridges somewhat dorsally along midline and row of oblique ridges ventrally; distolateral margin with spine near dorsodistal spine; ventrodiscal margin produced, with 2 or 3 small, tuberculate spines. Propodus, exclusive of distal rounded projection, 3.7-4.1 times as long as high measured at base of distal projection; dorsal surface flattish; dorso-lateral and dorsomesial margins crenulate, delimited by row of short transverse ridges; lateral surface with row of short transverse ridges on midline and shallow sulcus dorsally; ventral surface with scattered, short transverse ridges, distal margin with 1 or 2 small, corneous spines. Dactylus 0.6-0.7 length of propodus; terminal claw moderately long, curved (in fourth pereopod, shortened

Table 1. *Munidopsis* species known from Taiwan and its adjacent waters. ¹ = *M. beringana* Benedict, 1902, ² = *M. tenax* Alcock, 1901, ³ = *M. ciliata* Wood-Mason, 1891, ⁴ = *M. tridentata* (Esmark, 1857), ⁵ = *M. plana* Baba, 1986, ⁶ = *M. hastifer* Benedict, 1902.

Species	Taiwan	Japan	South China Sea, around the Philippine, the Pacific side of Indonesia
<i>M. andamanica</i> MacGilchrist, 1905	+	-	+
<i>M. antonii</i> (Filhol, 1884) ¹	-	+	-
<i>M. bispinoculata</i> Baba, 1988	-	-	+
<i>M. camelus</i> (Ortmann, 1892)	-	+	-
<i>M. carinimarginata</i> Baba, 1988	-	-	+
<i>M. crenatirostris</i> Baba, 1988	-	-	+
<i>M. cylindrophthalma</i> (Alcock, 1894)	+	+	+
<i>M. cylindropus</i> Benedict, 1902	-	+	+
<i>M. dasyptus</i> Alcock, 1894	-	-	+
<i>M. formosa</i> Wu and Chan, 2000	+	-	-
<i>M. gibbosa</i> Baba, 1978	-	-	+
<i>M. granulata</i> Miyake and Baba, 1967	-	+	-
<i>M. lacinososa</i> Baba, 2005	-	-	+
<i>M. latimana</i> Miyake and Baba, 1966	+	+	+
<i>M. levis</i> (Alcock and Anderson, 1894) ²	-	-	+
<i>M. nitida</i> (A. Milne-Edwards, 1880) ³	-	+	+
<i>M. panamae</i> Baba, 2005	+	-	-
<i>M. petila</i> Baba, 2005	-	-	+
<i>M. pilosa</i> Henderson, 1885	-	-	+
<i>M. plumatisetigera</i> Baba, 1988	-	-	+
<i>M. profunda</i> Baba, 2005	+	-	+
<i>M. regia</i> Alcock and Anderson, 1894	-	-	+
<i>M. rostrata</i> (A. Milne-Edwards, 1880)	-	+	+
<i>M. rotundior</i> Baba, 2005	-	-	+
<i>M. scobina</i> Alcock, 1894	-	-	+
<i>M. serricornis</i> (Lovén, 1852) ⁴	-	-	+
<i>M. similior</i> Baba, 1988	-	-	+
<i>M. sinclairi</i> McArdle, 1901	-	-	+
<i>M. spinosa</i> (A. Milne-Edwards, 1880)	-	+	+
<i>M. subchelata</i> Balss, 1913 ⁵	-	+	-
<i>M. subsquamosa</i> Henderson, 1885	-	+	-
<i>M. tafrii</i> , new species	+	-	-
<i>M. taurulus</i> Ortmann, 1892 ⁶	-	+	-
<i>M. teretis</i> Baba, 2005	+	-	-
<i>M. trachynotus</i> (Anderson, 1896)	-	-	+
<i>M. trifida</i> Henderson, 1885	-	+	+
<i>M. valdiviae</i> (Balss, 1913)	-	+	+
<i>M. verrilli</i> Benedict, 1902	-	-	+
<i>Munidopsis</i> sp., new species	+	-	-

by regeneration); dorsal surface with small, flattened tubercles; ventral margin nearly straight, with 7-10 teeth decreasing in sizes proximally, each with short but slender bristle.

Epipods absent from all pereopods.

Color (Fig. 5A).—Carapace, pleon, and pereopods entirely white. Cornea orange-pink. Setae on pereopods grayish brown.

Etymology.—The specific name, *tafrii*, refers to the acronym of the Taiwan Fisheries Research Institute for which the new species was named following its discovery on a cruise of the research vessel "Fisheries Researcher I" of the institution.

Remarks.—According to the key to species of *Munidopsis* by Baba (2005), *M. tafrii* agrees with *M. ceratophthalma* Alcock, 1901, from the Andaman Sea and west of Sumatra at depths of 677-878 m, in key characters. These characters include the carapace without epigastric spines or processes,

the distinct eye-spine situated at the mesial end of the ocular peduncle, the fixed finger of the cheliped with a denticulate carina on the distolateral margin, the second pereopod reaching the tip of the first pereopod, and no epipods on the pereopods. However, *M. tafrii* is readily distinguished from *M. ceratophthalma* by having a much broader rostrum and in lacking strong spines at the anterolateral corner and the anterior end of the cervical groove on the carapace.

The new species also resembles *M. orcina* McArdle, 1901, described from the Arabian Sea at a depth of 2105 m, in having a broad, subtriangular rostrum with a dorsal carina and convex lateral margins and in having the dorsal surfaces of both the carapace and pleon without distinct spines and processes. However, *M. tafrii* differs from the Arabian Sea species in the characters of the carapace, pleon, and pereopods. The dorsal surfaces of the carapace and chelipeds of *M. tafrii* are covered with transverse ridges bearing short plumose setae, instead of numerous tubercles as seen in *M. orcina*. The pleon of *M. tafrii* also lacks small tubercles covering the dorsal surface, unlike that of *M. orcina*. The second pereopod reaches or slightly overreaches the tip of the first pereopod in *M. tafrii*, whereas it does not reach that level in *M. orcina*. The propodi of the second to fourth pereopods are armed with distinct spines on the dorsal margins in *M. orcina*, but these are only crenulate in the new species.

Munidopsis panamae Baba, 2005
(Figs. 4A, B, 5B)

Munidopsis panamae Baba, 2005: 165, fig. 78.

Material Examined.—Taiwan. TAIWAN 2005, RV “Fisheries Researcher I”, stn CP 294, 23°59.36′-23°56.61′N, 122°20.76′-122°20.22′E, 3564-3579 m, 9 August 2005, 1 female, cl 16.3 mm (NTOUA00815).

Color (Fig. 5B).—Carapace, pleon, and pereopods entirely white. Cornea orange.

Distribution.—Gulf of Panama, 3800 m (Baba, 2005), and Taiwan (3564-3579 m).

Remarks.—The specimen from Taiwan agrees well with the original description of *M. panamae* based on a single specimen from the Gulf of Panama. Only some minor differences are found between the two specimens. The gastric region of the carapace (Fig. 4A) is armed with only a pair of distinct epigastric spines in the specimen from Taiwan, whereas it has additional small spines in the holotype. The rostrum (Fig. 4B) is weakly upturned in the present specimen, but it is horizontal in the specimen from the Gulf of Panama. These differences are considered to be intraspecific variations, although additional specimens from the type locality and Taiwan are needed to confirm this assumption.

Munidopsis profunda Baba, 2005
(Figs. 4C, D, 5C, D)

Munidopsis profunda Baba, 2005: 173, figs. 82, 83.

Material Examined.—Taiwan. TAIWAN 2005, RV “Fisheries Researcher I”, stn CP 294, 23°59.36′-23°56.61′N, 122°20.76′-122°20.22′E, 3564-3579 m, 9 August 2005,

2 males, cl 16.9, 23.4 mm, 1 female, cl 16.7 mm (NTOUA00818); stn OCP 296, 22°15.08′-22°9.84′N, 121°55.10′-121°54.85′E, 4430-4455 m, 10 August 2005, 1 male, cl 20.6 mm, 1 female, cl 27.9 mm (NTOUA00816).

Color (Fig. 5C, D).—Carapace, pleon, and pereopods entirely white. Cornea orange-pink. Setae on pereopods grayish brown.

Distribution.—Celebes Sea, 5163-5243 m (Baba, 2005), and Taiwan, 3564-4455 m.

Remarks.—This species was described recently by Baba (2005) based on three specimens from the Celebes Sea collected at depths of 5163-5243 m. The deepest records for species of *Munidopsis* in the Indo-Pacific region are known for this species and *M. petila* Baba, 2005, both collected from the same “Galathea” station 450. Five specimens were obtained from shallower depths in Taiwan, and they generally agree with the original description of the species. Only some minor differences were found between the Taiwan and Celebes Sea materials. The rostrum (Fig. 4C, D) of the Taiwan material is weakly upturned and somewhat stouter than that of the type material. In the original description, the rostrum is described as strongly curving dorsad. The antennal spine on the frontal margin of the carapace is as large as the anterolateral spine in the present specimens rather than being larger as in the Celebes specimens. These differences appear to be intraspecific variations, since other variations are also observed. The large male (23.4 mm) of the station CP 294 and female of the station OCP 296 have the palms of the chelipeds unarmed on the dorsomesial margins, but some small spines are found on the margins in the other specimens examined and the type material. The larger male of the station CP 294 also lacks a small ventrolateral spine on the basal segment of the antennular peduncle and a distolateral spine on the third segment of the antennular peduncle, as does the small paratype. In the female from station OCP 296, the lateral eye-spine of the ocular peduncle is very small and the propodi of the second to fourth pereopods are unarmed on the dorsal margins except for a single, small dorsomesial proximal spine on the right second pereopod. In other specimens examined, the lateral eye-spine is small but distinct and the propodus of each of the ambulatory legs has 2-6 spines on the dorsolateral and dorsomesial crests (spines on the dorsomesial crest are more prominent).

The female of station OCP 296 (Fig. 5D) has the right posterior branchial region strongly inflated, possibly an infestation of a bopyrid isopod. The brachial cavity was empty when the galatheid specimen was examined.

The specimens from station OCP 296 (4430-4455 m) represent the deepest record of marine animals from Taiwanese waters.

Munidopsis teretis Baba, 2005
(Figs. 4E, F)

Munidopsis teretis Baba, 2005: 190, fig. 91.

Material Examined.—Taiwan. TAIWAN 2005, RV “Fisheries Researcher I”, stn CP 294, 23°59.36′-23°56.61′N,

122°20.76'-122°20.22'E, 3564-3579 m, 9 August 2005, 1 male, cl 10.3 mm (NTOUA00817).

Color.—This species was not photographed because the single specimen collected had no differences in the color from those of *M. profunda* obtained in the same station (CP 294) and was initially thought to belong to the same species.

Distribution.—Off Durban (South Africa), 3520 m, Tasman Sea, 3930 m (Baba, 2005), and Taiwan, 3564-3579 m.

Remarks.—The present specimen from Taiwan is almost identical with the original description of *M. teretis*, which was based on two specimens from similar depths but remote localities. As discussed by Baba (2005: 176), this species resembles *M. profunda*, which was also collected from Taiwan and from the same station (CP 294). *Munidopsis teretis* is distinguished from *M. profunda* by the following characters: the carapace has a pair of small tuberculate epigastric processes or spines, and a blunt process mesial to the midlength of the posterior branchial margin (no similar processes on these regions in *M. profunda*); the rostrum is nearly horizontal in lateral view (weakly to strongly upturned in *M. profunda*); and the ocular peduncle lacks a lateral eye-spine (small lateral eye-spine in *M. profunda*).

NOTE ON THE *MUNIDOPSIS* FAUNA IN TAIWANESE WATERS

At present, 122 species of *Munidopsis* are known in the Indo-Pacific (Baba, 2005). In Taiwanese waters, only four species of the genus have been recorded: *M. andamanica* MacGilchrist, 1905, *M. cylindrophthalma* (Alcock, 1894), *M. formosa* Wu and Chan, 2000, and *M. latimana* Miyake and Baba, 1966 (Wu and Chan, 2000; Wu et al., 1997). The addition of the present four abyssal species and a new species we will describe in a separate paper increases the total number of the Taiwanese *Munidopsis* to nine. Ongoing extensive deep-sea survey around Taiwan has also yielded an abundant material of *Munidopsis*, including many new regional records and some even representing undescribed species. Thus, the Taiwanese species still are not assessed correctly and will increase in number much more than the presently known species.

Turning our eyes to *Munidopsis* fauna known from the waters adjacent to Taiwan, 28 species have been recorded from the South China Sea, around the Philippines, and the Pacific side of Indonesia, and 14 species are listed from Japanese waters (Baba, 1978, 1988, 2005; Table 1). Among the presently known species of Taiwan, *M. andamanica* and *M. profunda* are also known to occur in the Southeast Asian waters, and *M. cylindrophthalma* and *M. latimana* are also distributed in the waters and Japan. *Munidopsis formosa* and *M. tafrii* are known only from Taiwan at present.

Munidopsis profunda was described from the Celebes Sea collected at depths of 5163-5243 m, and is known as the deepest record of species of the genus in the Indo-Pacific region. As mentioned before, this species also represents the deepest record of marine animals from Taiwanese waters (4430-4455 m). The deepest records of *Munidopsis* species in Japanese waters are known for *M. antonni* (Filhol, 1884)

and *M. subsquamosa* Henderson, 1885, both collected from the vicinity of the Izu Islands, at depths of 3580-3960 m (Baba, 1982).

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