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SAGING CEBUANA, A NEW GENUS AND SPECIES OF TAENIACANTHID COPEPOD (CYCLOPOIDA) PARASITIC ON A FILEFISH (ACTINOPTERYGII: MONACANTHIDAE) COLLECTED FROM CEBU ISLAND, THE PHILIPPINES

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ABSTRACT. — A new taeniacanthid genus, *Saging*, is proposed for a new species, *Saging cebuana*, based on specimens of both sexes collected from the outer surface of the strap-weed filefish *Pseudomonacanthus macrurus* (Bleeker) (Actinopterygii: Tetraodontiformes) caught in the North Pacific Ocean, off Cebu Island, the Philippines. The new genus is characterised by the following: a spiniform process present on the first antennulary segment; an auxiliary spiniform process present near the base of the postantennal process; the female maxilliped completely lacks a terminal claw (endopod); leg 1 is sexually dimorphic (not lamelliform in the male); legs 2 to 4 bear stout, coarsely serrated spines on each ramus; and legs 2 to 4 have two-segmented endopods, with an extremely elongated proximal segment on legs 2 and 3. We also propose that *S. cebuana* is an intermediate form between two other taeniacanthids, namely *Taeniacanthus mcgroutheri* Tang, Uyeno & Nagasawa, 2011 and *Umazuracola elongatus* Ho, Ohtsuka & Nakadachi, 2006, also reported on the outer surface of filefishes.

KEY WORDS. — parasitic copepod, new genus, Philippines, Taeniacanthidae, *Pseudomonacanthus macrurus*

INTRODUCTION

Taeniacanthidae C. B. Wilson, 1911 is a family of cyclopoid copepods containing members that are either parasitic on marine fishes or associated with sea urchins (Dojiri & Humes, 1982; Dojiri & Cressey, 1987; Boxshall & Halsey, 2004). This family, along with Bomolochidae Sumpf, 1870, Tuccidae Vervoort, 1962, and Tegobomolochidae G. V. Avdeev, 1978, are members of the bomolochiform complex characterised by the presence of: 1) an indistinctly four-segmented antenna bearing two pectinate processes, claw-like spines, and setae; 2) a mandible with two subequal spinulated blades; 3) a maxilla bearing spinulated elements; 4) a concave ventral surface of the cephalothorax; and 5) a lamelliform leg 1 (Dojiri & Cressey, 1987; Boxshall & Halsey, 2004). Dojiri & Cressey (1987) recognised 14 genera in Taeniacanthidae, but three genera, *Biacanthus* Tang & Izawa, 2005, *Caudacanthus* Tang & Johnston, 2005, and *Makrostrotos* Ho & Lin, 2006, was established since then (Tang & Izawa, 2005; Tang & Johnston, 2005; Ho & Lin, 2006). Recently, Huys et al. (2012) transferred *Tucca* Krøyer, 1837 to Taeniacanthidae, established Makrostrotidae Huys, Fatih, Ohtsuka & Llewellyn-Hughes, 2012 to accommodate *Makrostrotos acuminatus* Ho & Lin, 2006 and *M. hamus* Ho & Lin, 2006, and considered *Pseudotaeniacanthus* Yamaguti & Yamasu, 1959 as a sister group to Bomolochidae based on a re-evaluation of the morphological features of these taxa. More importantly, Huys et al. (2012) relegated the Umazuracolidae Ho, Ohtsuka & Nakadachi, 2006 to a junior synonym of the Taeniacanthidae based on a phylogenetic analysis using complete ssrDNA (18S) sequences of *Umazuracola elongatus* Ho, Ohtsuka & Nakadachi, 2006 and 43 other species belonging to 21 families of cyclopoid copepods. They also convincingly demonstrated that the phylogenetic analysis used by Ho et al. (2006) to support the establishment of the Umazuracolidae was flawed due to poor data quality and incorrect assessments of homology. *Umazuracola elongatus*, which was described from the black scraper *Thamnaconus modestus* (Günther) (Tetraodontiformes: Monacanthidae) from Japan, has similar antennae and mouthparts to those of the bomolochiform complex, but differs in that it lacks the concave ventral surface of the cephalothorax and has a reduced and non-lamelliform leg 1. In this study, a new species of taeniacanthid is described based on material collected from the head and body surface of the strap-weed filefish *Pseudomonacanthus macrurus* (Bleeker) (Tetraodontiformes: Monacanthidae) caught off Cebu Island, the Philippines. This copepod bears some uncommon characters which are not shared with any known taeniacanthid genus. Thus, a new genus is also established herein to accommodate this new species.

MATERIAL AND METHODS

Ten specimens of *Pseudomonacanthus macrurus* collected in the North Pacific Ocean, off Cebu Island, the Philippines were subsequently purchased at the Pasil Fish Market (10°17'N, 123°53'E) on Cebu Island on 4 Mar.2009. Copepods were collected by rinsing the head and body of the hosts with freshwater and then preserved in 80% ethanol. Selected copepod specimens were soaked in lactophenol for 24 h before dissection and observations were carried out using the method proposed by Humes & Gooding (1964). Drawings were made with the aid of a drawing tube. Morphological terminology follows Huys & Boxshall (1991). Measurements given are in micrometres with the range followed by the mean and standard deviation in parentheses. Type specimens are deposited in the crustacean collection at the Zoological Reference Collection, Raffles Museum of Biodiversity Research, National University of Singapore (ZRC), and the National Museum of Nature and Science, Tsukuba, Japan (NSMT).

TAXONOMY

Taeniacanthidae C. B. Wilson, 1911
Saging, new genus

Type species. — *Saging cebuana*, new genus, new species, by present designation.

Etymology. — The generic name means "banana" in the Cebuano language. It alludes to the laterally compressed and slightly curved shape of the female body of the new genus. Gender feminine.

Diagnosis. — Adult female. Body laterally compressed. Cephalothorax composed of cephalosome and first pediger. Second to fourth pedigerous somites and urosomites free, decreasing in width posteriorly. Genital double-somite quadrangular, widest at mid-length. Abdomen composed of three free somites. Caudal ramus with six setae. Rostrum large, well developed. Antennule six-segmented, with pointed, outwardly curved process on anterior margin of proximalmost segment and armature formula 5, 15, 8, 4, 2 + 1 asethetasc, 7 + 1 aesthetasc. Postantennal process present, with additional spiniform process near its base. Antenna four-segmented, composed of coxobasis and three-segmented endopod; second endopodal segment bearing two pectinate processes and one medial claw; third endopodal segment with two terminal claws and three setae. Labrum broad, fringed with row of spinules. Mandible one-segmented, with one terminal and one subterminal blades. Paragnath triangular. Maxillule represented by simple lobe armed with four setae. Maxilla two-segmented, composed of syncoxa and basis; latter tapering into serrated process and bearing one subterminal seta. Maxilliped two-segmented, composed of unarmed syncoxa and basis with two elements. Leg 1 biramous and lamelliform, composed of coxa, basis, and two-segmented rami. Legs 2 to 4 biramous, each composed of coxa, basis, three-segmented exopod, and two-segmented endopod; both rami bearing stout, serrated spines; legs 2 and 3 with extremely elongated proximal endopodal segment. Leg 5 uniramous, two-segmented, composed of protopod and one-segmented exopod; exopod bearing four long naked setae. Leg 6 knob-like, bearing three setae in egg sac attachment area. Egg sac multiserate.

Adult male. Body with weak lateral compression. Cephalothorax composed of cephalosome and first pediger. Second to fourth pedigerous somites and urosomites free, decreasing in width posteriorly. Genital somite rectangular, with paired genital opercula located posteroventrally. Abdomen composed of three free somites. Caudal ramus with six setae. Rostrum large, well developed. Antennule as in female except proximalmost segment bearing smaller process than that of female. Antenna, postantennal process, mandible, paragnath, maxilllule, and maxilla as in female. Maxilliped highly developed as grasping organ, four-segmented. Leg 1 biramous, not lamelliform. Legs 2 and 3 similar to those of female except with patch of spinules on proximal endopodal segment and only three spines on distal endopodal segment, respectively. Legs 4 and 5 similar to those of female.

Remarks. — *Saging*, new genus, belongs to Taeniacanthidae because it possesses the following combination of characters: a postantennal process; two pectinate processes, plus claw-like spines and setae, on the endopod of the antenna; two subequal, spinulated blades on the mandible; a spinulated terminal process on the maxilla; and a modified, lamelliform leg 1. The new genus resembles *Umazuracola* in the presence of a spinulated terminal process and naked seta on the maxillary basis, a two-segmented endopod on legs 2 to 4, and strong, coarsely serrated spines on the rami of legs 2 and 3 and on the endopod of leg 4. Ho et al. (2006) described the female maxilliped of *U. elongatus* as being indistinctly three-segmented, with the basis bearing a rudimentary seta and the endopod drawn out into a slender terminal process. The latter is here re-interpreted as a basis element rather than a vestige of the endopod. While a remnant of the endopod on the female maxilliped may be represented by one or more apical setae in some taeniacanthids, such as *Echinosocius gulicolus* Dojiri & Humes, 1982 (see Dojiri & Humes, 1982: fig. 26c) and *Irodes upenei* (Yamaguti, 1954) (see Dojiri & Cressey, 1987: fig. 125h) for example, two closely-set setae are also present on the maxilliped basis in virtually all taeniacanthids. The two elements on the maxilliped basis are typically situated proximally, but they may also originate near the apical margin as in *U. elongatus*, the new genus, and other taeniacanthids such as *Anchistrotos gobii* Brian, 1906 (Dojiri & Cressey, 1987: fig. 101g) and *Taeniacanthodes haakeri* Ho, 1972 (Dojiri & Cressey, 1987: fig. 150h). The morphological similarities between the new genus and *Umazuracola* provide further evidence that the latter is a derived member of Taeniacanthidae as proposed initially by Huys et al. (2012). The new genus can be distinguished from *Umazuracola* by the following combination of characters: 1) third and fourth pedigers separate (vs fused); 2) urosomites distinct (vs fused); 3) postantennal process present (vs absent); 4) leg 1 well-developed, lamelliform, with two-segmented rami (vs reduced, not lamelliform, with two-segmented exopod and one-segmented endopod); 5) first endopodal segment highly elongated on legs 2 and 3 (vs short); 6) leg 6 hidden in a recess on the genital double-somite (vs exposed on urosome); and 7) paired egg sacs multiseriate (vs uniseriate).

Saging cebuana, new species

(Figs. 1–3)

Etymology. — The specific name of the new species, *cebuana*, refers to the type locality, Cebu Island.

Material examined. — Holotype: adult female (ZRC 2013.0516), ex *Pseudomonacanthus macrurus* (Bleeker) (Tetraodontiformes: Monacanthidae), Pasil Fish Market (10°17'N, 123°53'E), Cebu Island, the Philippines, 4 Mar.2009.

Allotype – adult male (ZRC 2013.0517), collection data same as those of holotype.

Paratypes – 5 adult females and 1 adult male (ZRC 2013.0518) in 70% ethanol; 6 adult females and 1 adult male (NSMT-Cr 22374) in 70% ethanol, all collection data same as those of holotype.

Description. — Female holotype. Body (Fig. 1A, B) 853 long, laterally compressed, and slightly curved in lateral view. Prosome 601 long. Cephalothorax (Fig. 1A, B) slightly wider than long, 228 × 248, rounded, and composed of cephalosome and first pedigerous somite. Second to fourth pedigerous somites and urosomites free, progressively narrower posteriorly. Genital double-somite quadrangular, wider than long, 78 × 111, and widest at mid-length. Abdomen 135 long, composed of three free somites. Caudal ramus (Fig. 1C) longer than wide, 27 × 23, with six setae (seta I not observed).

Rostrum (Fig. 1A) large, highly protuberant. Antennule (Fig. 1D) six-segmented (articulation between ancestral segments XIV–XVII and XVIII–XX not expressed), with pointed, outwardly curved process on anterior margin of proximal-most segment; armature formula 5, 15, 8, 4, 2 + 1 asethetasc, 7 + 1 aesthetasc; all setae naked. Antenna (Fig. 1E) four-segmented, composed of coxobasis and 3-segmented endopod; coxobasis large, bearing one distal plumose seta; first endopodal segment rod-like, as long as coxobasis, and armed with one naked seta; second endopodal segment with two pectinate processes (larger one with numerous rows of spinules) and one inner apical claw; terminal endopodal segment extending beyond pectinate processes, with two apical claw-like spines and three naked setae. Postantennal process (Fig. 1F) present. Additional spiniform process (Fig. 1F) present near base of postantennal process. Labrum (Fig. 1G) broad, indented along posterior margin, and fringed with spinules. Mandible (Fig. 1H) one-segmented, with one terminal and one subterminal, serrated blades. Paragnath (Fig. 1I) triangular, ornamented with spinules apically. Maxillule (Fig. 1J) represented by simple lobe armed with three long, naked and one long, plumose setae. Maxilla (Fig. 2A) two-segmented, composed of syncoxa and basis; former unarmed and latter tapering into apically serrated process and bearing one subterminal naked seta. Maxilliped (Fig. 2B) two-segmented, composed of unarmed syncoxa and irregularly-shaped basis with two minute spines near apex.

Legs 1 to 4 (Fig. 2C–F) biramous; leg 1 with two-segmented rami; legs 2–4 with three-segmented exopod and two-segmented endopod. Leg armature formula as follows:

	Coxa	Basis	Exopod	Endopod
Leg 1	0–1	1–1	1–0; 8	0–1; 6
Leg 2	0–0	1–0	I–0; I–1; II, I, 3	0–1; II, I, 2
Leg 3	0–0	1–0	I–0; I–1; II, I, 3	0–1; II, I, 1
Leg 4	0–0	1–0	1–0; 1–1; 1, 1, 4	0–1; I, I, 1

Leg 1 (Fig. 2C) lamelliform; intercoxal sclerite triangular, ornamented with spinules near posterior margin; coxa ornamented with rows of setules along outer margin; basis with row of spinules along inner distal margin; both rami with plumose setae, excluding outer setae on exopod. Intercoxal sclerite of legs 2 to 4 (Fig. 2D–F) with rows of spinules at distolateral corners. Coxa of legs 2 and 3 (Fig. 2D–F) with several rows of spinules on anterior surface and along distolateral corner; coxa of leg 4 similar to that of leg 3 except without distolateral spinules. Basis of legs 2 to 4 (Fig. 2D–F) with row of spinules along inner margin and at insertion point of endopod. Exopod of legs 2 and 3 (Fig. 2D, E) bearing plumose setae and stout, serrated spines, each with subterminal flagellum. Leg 4 exopod (Fig. 2F) bearing naked setae, except for inner seta on middle segment; terminal exopodal segment elongate, with two apical knobs, each bearing one pointed process. Endopod of legs 2 to 4 (Fig. 2D–F) ornamented with spinules along outer margin of proximal segment and bearing stout, serrated spines and plumose setae (except for innermost seta on distal endopodal segment of leg 4). Proximal endopodal segment of legs 2 and 3 (Fig. 2D, E) highly elongated, as long as exopod in leg 2 and longer than exopod in leg 3.

Leg 5 (Fig. 2G) uniramous, composed of protopod and one-segmented exopod; protopod bearing one long naked seta; exopod bearing four long naked setae. Leg 6 (Fig. 2G) knob-like, bearing three naked setae in egg sac attachment area.

Male allotype: Body (Fig. 3A, B) 510 long, with weak lateral compression. Prosome 319 long. Cephalothorax (Fig. 3A) subquadrate, longer than wide, 186 × 157, and composed of cephalosome and first pediger. Second to fourth pedigerous somites and urosomites free, narrowing posteriorly. Genital somite (Fig. 3C) wider than long, 65 × 72, rectangular, and with paired genital opercula located posteroventrally.

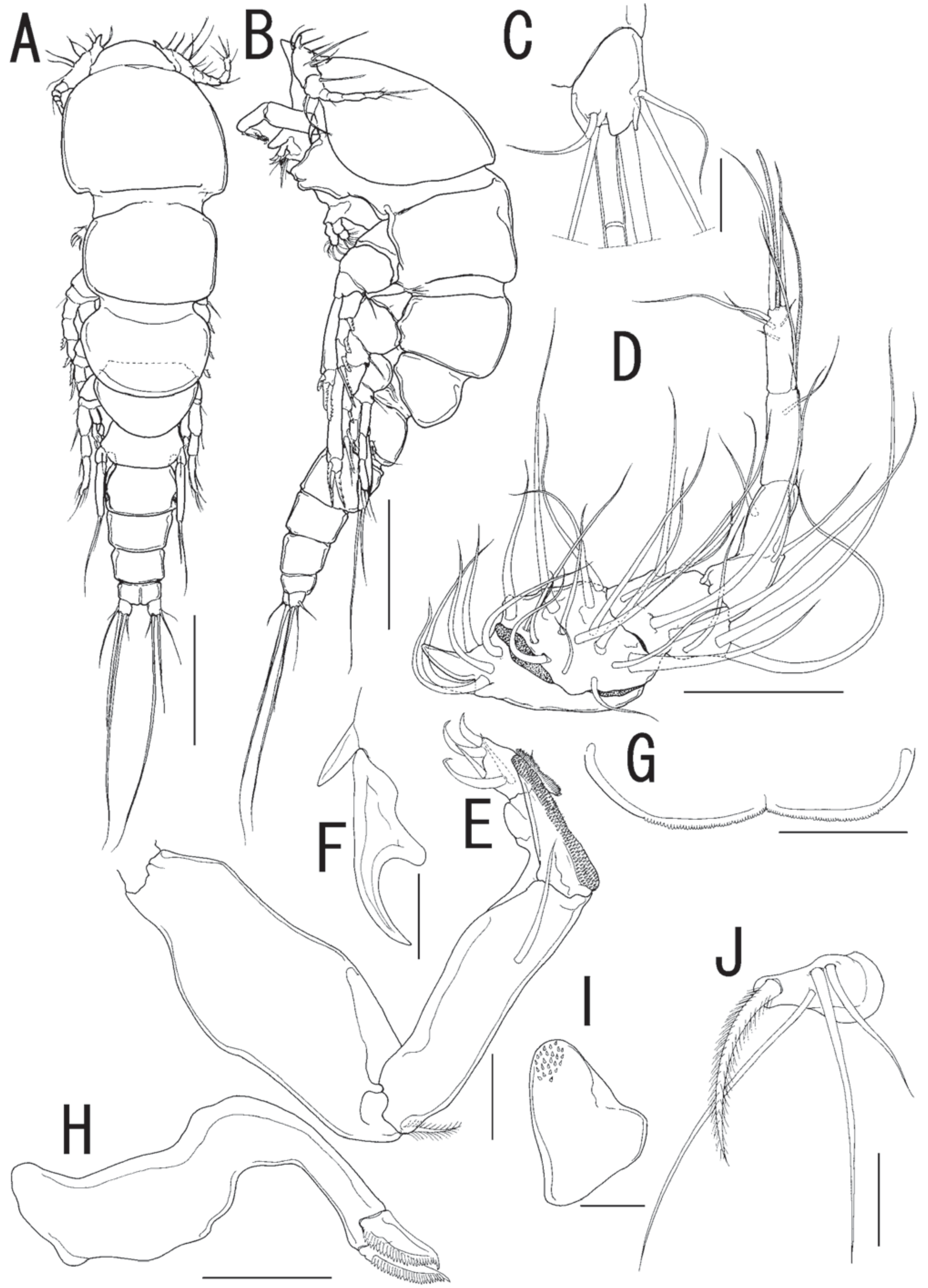

Fig. 1. *Saging cebuana*, new genus, new species, holotype female (ZRC 2013.0516). A, habitus, dorsal; B, habitus, lateral; C, right caudal ramus, dorsal; D, left antennule, ventral; E, right antenna, posterior; F, postantennal area, ventral; G, labrum; H, right mandible, anterior; I, right paragnath; J, right maxillule, anterior. Scale bars = 200 µm (A, B), 20 µm (C, E–H, J), 50 µm (D), 10 µm (I).

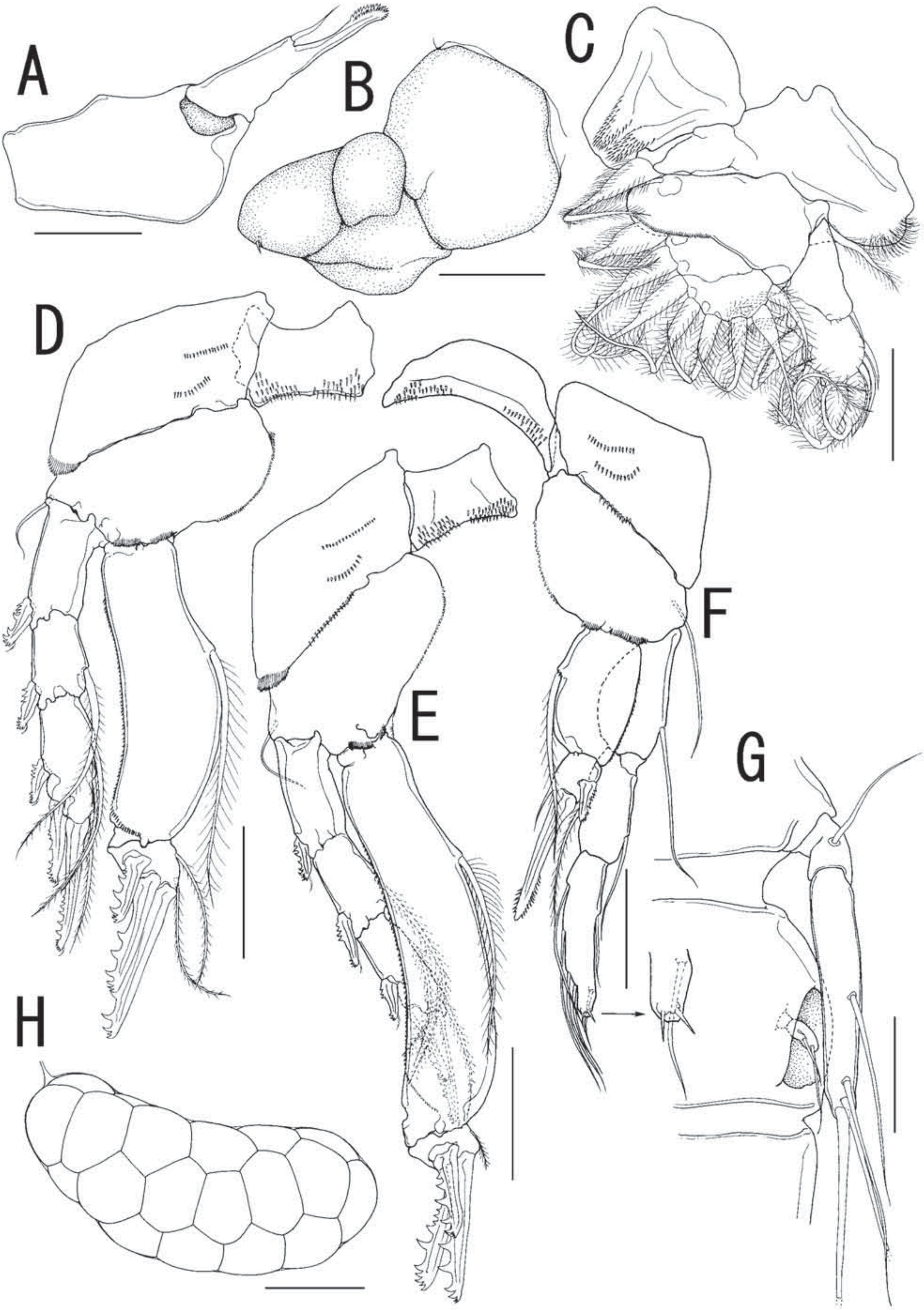

Fig. 2. *Saging cebuana*, new genus, new species, holotype female (ZRC 2013.0516) (A–G) and paratype female (ZRC 2013.0518) (H). A, right maxilla, anterior; B, left maxilliped, anterior; C, left leg 1, anterior; D, right leg 2, anterior; E, right leg 3, anterior; F, left leg 4 with enlarged view of tip of distal exopodal segment, anterior; G, right leg 5 and leg 6, dorsal; H, left egg sac, dorsal. Scale bars = 20 μm (A, B), 30 μm (C), 50 μm (D, E); 40 μm (F, G), 100 μm (H).

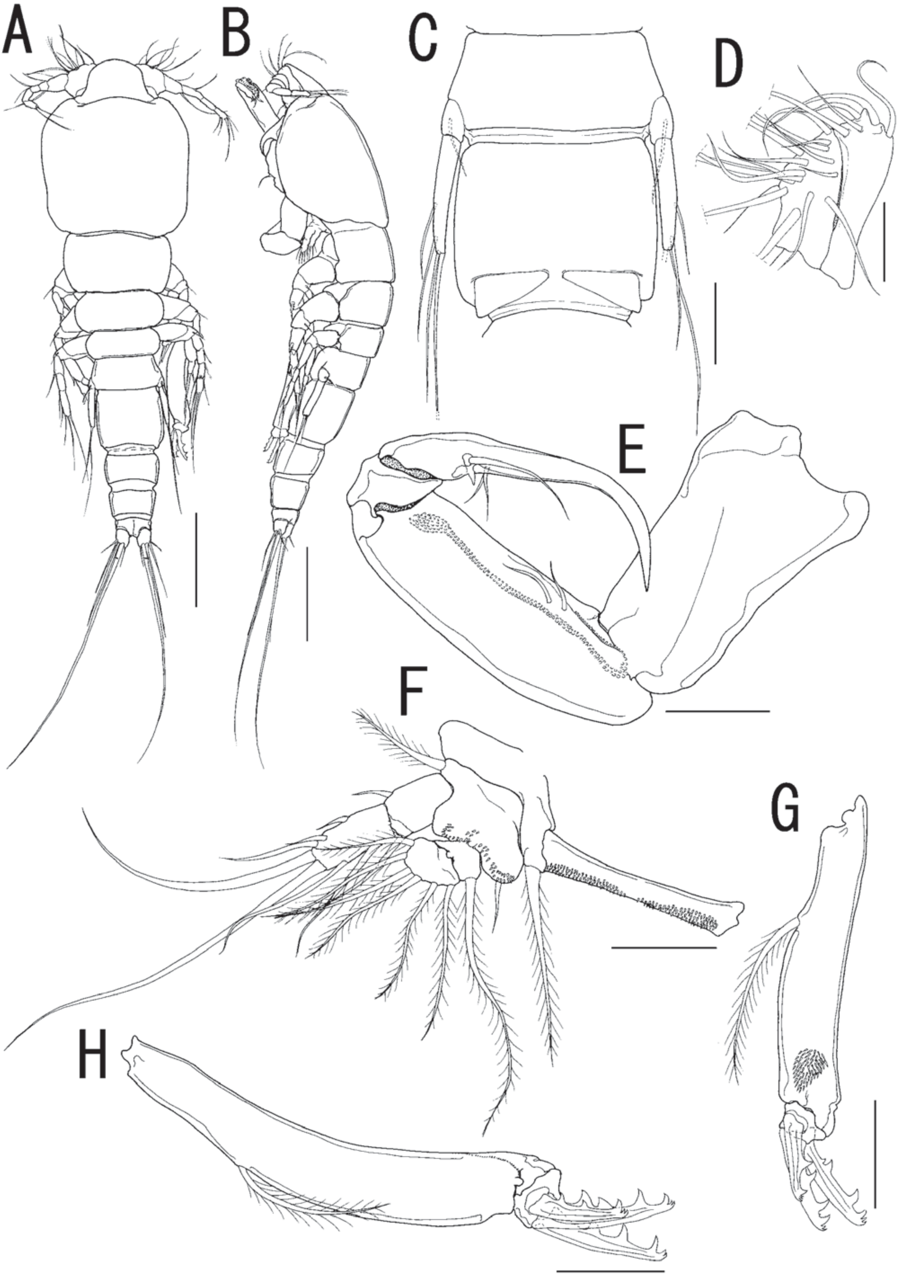

Fig. 3. *Saging cebuana*, new genus, new species, allotype male (ZRC 2013.0517). A, habitus, dorsal; B, habitus, lateral; C, fifth pediger and genital complex, ventral; D, first and second segments of right antennule, ventral; E, right maxilliped, posterior; F, right leg 1, anterior; G, endopod of left leg 2, anterior; H, endopod of left leg 3, anterior. Scale bars = 100 µm (A, B), 30 µm (C, G, H), 20 µm (D–F).

Table 1. List of taeniacanthid species reported from monacanthid fishes.

Copepod	Reference(s)
Cirracanthus monacanthi (Yamaguti, 1939)	Dojiri & Cressey (1987); Tang et al. (2011)
Cirracanthus spinosus Dojiri & Cressey, 1987	Dojiri & Cressey (1987); Tang et al. (2011)
Nudisodalis acicula Dojiri & Cressey 1987	Dojiri & Cressey (1987); Tang et al. (2011)
Saging cebuana, new species	Present study
Taeniacanthus aluteri (Avdeev, 1977)	Avdeev (1977)*
Taeniacanthus balistae (Claus, 1864)	Yamaguti & Yamasu (1959); Shiino (1960); Dojiri & Cressey (1987); Lin & Ho (2006)
Taeniacanthus brayae Tang, Uyeno & Nagasawa, 2011	Tang et al. (2011)
Taeniacanthus mcgroutheri Tang, Uyeno & Nagasawa, 2011	Tang et al. (2011)
Taeniacanthus occidentalis (C. B. Wilson, 1924)	Wilson (1924); Humes & Rosenfield (1960); Dojiri & Cressey (1987)
Taeniacanthus similis Dojiri & Cressey, 1987	Dojiri & Cressey (1987)
Umazuracola elongatus Ho, Ohtsuka & Nakadachi, 2006	Ho et al. (2006)

*Tang et al. (2011) argued that Avdeev's (1977) record is erroneous.

Abdomen 92 long, composed of three free somites. Caudal ramus longer than wide, 20 × 15, armed as in female.

Antennule (Fig. 3D) with smaller pointed process on first segment. Maxilliped (Fig. 3E) four-segmented, highly developed as grasping organ; proximal segment (syncoxa) large, unarmed; second segment (basis) bearing two proximal setae and ornamented with irregular rows of small denticles; third (first endopodal) segment small, unarmed; terminal (distal endopodal) segment curved, claw-like, bearing three setae and one conical process near base.

Intercoxal sclerite of leg 1 (Fig. 3F) rod-like, with two patches of spinules. Leg 1 (Fig. 3F) biramous, not lamelliform; coxa with one inner plumose seta; basis ornamented with spinules along posterior margin and bearing one outer plumose seta and one inner naked seta; proximal exopodal segment with one outer and one inner naked seta; terminal exopodal segment with seven naked setae; armature formula of endopod as in female. Endopod of leg 2 (Fig. 3G) with patch of spinules near distal margin of proximal segment and lacking two inner setae on terminal segment. Endopod of leg 3 (Fig. 3H) without small inner seta on terminal segment. Leg 6 (Fig. 3C) modified, represented by unarmed genital operculum.

Variability. — Three female paratypes with multiseriate egg sacs (Fig. 2H). Measurements of female paratypes (n = 11) are as follows: body length (excluding caudal setae) 750–941 (860 ± 61); prosome length 549–667 (614 ± 40); cephalothorax length 251–298 (273 ± 15) and width 225–301 (263 ± 24); genital double-somite length 60–78 (69 ± 5) and width 105–122 (115 ± 6); abdomen length 105–159 (135 ± 15); caudal ramus length 21–27 (25 ± 2) and width 17–21 (18 ± 1).

Measurements of male paratypes (n = 2) are as follows: body length (excluding caudal setae) 465–494 (480 ± 20); prosome length 297–307 (302 ± 7); cephalothorax length 161–182 (172 ± 14) and width 144–146 (145 ± 2); genital somite length 56–63 (59 ± 5) and width 65–75 (70 ± 7); abdomen length 81–89 (85 ± 6); caudal ramus length 16 (16 ± 0) and width 13–14 (13 ± 1).

Attachment site. — Surface of the head and the trunk.

DISCUSSION

The large spiniform projection on the first antennulary segment and the auxiliary spiniform process anterior to the postantennal process are two unique features of *Saging*, new genus. These accessory structures were presumably formed in *Saging* to aid its attachment to the outer surface of its host. Other taeniacanthids reported from the outer surface of their fish hosts also possess accessory attachment structures, such as the ventromedian spiniform process on the rostral area of *Taeniacanthodes* C. B. Wilson, 1935 and *Tucca*, the paired uncinate processes posterior to the antennulary bases in *Biacanthus*, and the shield-like rostrum bearing longitudinal ridges in *Taeniastrotos* Cressey, 1969 (Ho, 1967; Dojiri & Cressey, 1987; Tang & Izawa, 2005).

The sexually dimorphic leg 1 in *Saging* is also unique character for the family Taeniacanthidae. The male leg 1 is less modified and bears one fewer armature element on the distal exopodal segment than that of the female. Although a sexually dimorphic leg 1 is also characteristic of the Bomolochidae (Boxshall & Halsey, 2004), the structure of the female leg 1 in *Saging* is identical to that of most taeniacanthids, with a well-developed inner basal seta and the outwardly-directed endopod bearing setae along the inner margin.

So far 11 species of taeniacanthids have been reported from monacanthids (Table 1). Of these, *Taeniacanthus mcgroutheri* Tang, Uyeno & Nagasawa, 2011 and *U. elongatus* share the following combination of female characters with *S. cebuana*, new species: 1) a large rostrum lacking sclerotised structures on the ventral surface; 2) naked setae on the antennule; 3) two blades on the mandible; 4) a spinulated terminal process and one seta on the maxillary basis; 5) six elements on the terminal exopodal segment of legs 2 to 4; 6) serrated spines, each with a subapical flagellum, on the exopod of legs 2 and 3; 7) setiform spines on the exopod of leg 4; 8) a two-segmented endopod on legs 2 to 4; and 9) armature of II, I, 2 on the distal endopodal segment of leg 2 (see Ho et al., 2006; Tang et al., 2011; present study). All three species (including *Taeniacanthus brayae* Tang, Uyeno & Nagasawa, 2011 which shares all the aforementioned characters except Nos. 2, 8, and 9) also attach to the outer surface of their monacanthid hosts (i.e., eye, head, or body), unlike the other seven taeniacanthid species which infect the gills and/or branchial cavity wall of their monacanthid hosts (Tang, 2006; Tang et al., 2011). It is worth noting that all seven other species possess character No. 6 as well, with *Nudisodalis acicula* Dojiri & Cressey, 1987 also having character Nos. 3 and 7 and *Cirracanthus monacanthi* (Yamaguti, 1939) having character No. 7 (Dojiri & Cressey, 1987; Tang et al., 2011). *Saging cebuana* appears to be an intermediate form between the less derived *T. mcgroutheri* and the more derived *U. elongatus*. For example, *S. cebuana* shares numerous spinules on the large pectinate process of the antenna, the terminal segment of the antenna extends beyond the pectinate processes and bears setal elements that are isolated from the two apical claws, an armature of II, I, 1 on the terminal endopodal segment of leg 3, and four extremely long setae on the free exopodal segment of leg 5 with *T. mcgroutheri*. On the other hand, it shares a laterally compressed body, a naked anal somite, an antenna with the proximal endopodal segment longer than the remaining endopodal segments combined, a female maxilliped lacking an endopod, and strong, coarsely serrated spines on the rami of legs 2 and 3 and on the endopod of leg 4 with *U. elongatus* (Ho et al., 2006; Tang et al., 2011; present study). Based on the aforementioned morphological similarities between *T. mcgroutheri*, *S. cebuana*, and *U. elongatus*, including their predilection for the host's outer surface, it is conceivable that *S. cebuana* and *U. elongatus* had evolved from an ancestral form of *T. mcgroutheri*.

In this study, *S. cebuana* was collected from *Pseudomonacanthus macrurus* from the Philippines, one of the countries located within the Central Indo-Pacific biogeographic realm (sensu Spalding et al., 2007). This filefish was recently reported for the first time by Yoshigou et al. (2009) from the Ryukyu Islands, Japan, within the Temperate Northern Pacific biogeographic realm. We have examined 10 specimens of *P. macrurus* collected from Kin Bay, Okinawa-jima Island, the Ryukyu Islands, Japan, from 2008 to 2009; however, none carried *S. cebuana*. Despite this, we anticipate that additional sampling of *P. macrurus* will reveal that *S. cebuana* also occurs in southern Japan.

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