

Hyperacanthomysis, a new genus for *Acanthomysis longirostris* Li, 1936, and *A. brevirostris* Wang & Liu, 1997 (Crustacea: Mysidacea: Mysidae)

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Abstract: A new mysid genus, *Hyperacanthomysis*, is proposed to receive *Acanthomysis longirostris* Li, 1936, and *A. brevirostris* Wang & Liu, 1997. The new genus differs distinctly from *Acanthomysis* Czerniavsky, 1882, in the following characters: the remarkably short distal segment of the exopod of the male fourth pleopod and the triangular or narrowly linguiform telson. The new genus is also distinguished from related genera of *Acanthomysis* and the remaining species belonging to *Acanthomysis* s. l. by the combination of the following characters: the multi-segmented carpopropodus of the third to eighth thoracic endopods, the long 2-segmented exopod of the fourth male pleopod, and the telson with an unarmed portion between two spine groups on the lateral margin. *Acanthomysis bowmani* Modlin & Orsi, 1997, from Californian waters, is judged to be a junior synonym of *H. longirostris*, and may be a naturalized species introduced from East Asian waters.

Key words: new genus, Mysidae, *Acanthomysis*, revision, taxonomy

Introduction

Through the revisions of *Acanthomysis* Czerniavsky, 1882, this genus was redefined (*Acanthomysis* s. s.), *Orientomysis* Derzhavin, 1913, was reinstated, and 8 genera were established for the reception of the detached species (Holmquist 1979, 1980, 1981a, 1981b; Fukuoka & Murano 2000). However, many species remain in *Acanthomysis* (*Acanthomysis* s. l.). Among them, 2 species, *Acanthomysis longirostris* Li, 1936, and *A. brevirostris* Wang & Liu, 1997, are transferred to a new genus *Hyperacanthomysis* in the present study.

The body length was measured from the tip of the rostrum to the posterior end of the telson excluding the apical spines. Some of the present specimens examined are deposited in the National Museum of Natural History, Smithsonian Institution (USNM). All the specimens of Li's collection are in preparation by the second author for permanent storage at the National Science Museum, Tokyo.

Subfamily Mysinae

Tribe Mysini

Hyperacanthomysis new genus

Diagnosis

Carapace anteriorly produced into long triangular rostral plate; anterolateral corner rounded; posterior margin emarginate. Eye normal, rather small. Antennal scale lanceolate with rounded apex, all margins setose, apical suture present. Antennal sympod with spiniform process at outer distal angle. Labrum with spiniform anterior process. Third to eighth thoracic endopods with carpopropodus divided into 9–11 subsegments. Marsupium composed of 2 pairs of ordinary oostegites. All pleopods, except fourth of male, reduced to unsegmented lobe, gradually increasing in length posteriorly; pseudobranchial lobe poorly developed. Fourth pleopod of male biramous; endopod rudimentary, unsegmented; exopod developed, elongated, 2-segmented, proximal segment long, armed with 1 long stout spiniform seta at inner distal corner, distal segment extremely short, less

than one-tenth of proximal segment in length, armed with 2 long, stout, unequal terminal setae. Endopod of uropod armed with 1–3 spines on inner ventral surface of statocyst region. Telson triangular or narrowly linguiform, lateral margin armed with 2–6 spines near base and many spines on posterior two-thirds, latter spines not arranged in groups, naked portion inserted between two spine groups.

Etymology

The generic name is a combination of Greek *Hyper* and *Acanthomysis*. It is feminine in gender.

Type species

Acanthomysis longirostris Li, 1936.

Other species

Hyperacanthomysis brevirostris (Wang & Liu, 1997) new combination.

Remarks

Hyperacanthomysis clearly differs from *Acanthomysis* s. s. in the following points: (1) the carpopropodus of the third to eighth thoracic endopods is divided into 9–11 sub-segments in the former genus compared to 3 in the latter; (2) the distal segment of the exopod of the male fourth pleopod is 0.04–0.07 times as long as the proximal segment in the former genus as compared to 0.10–0.25 times as long in the latter; and (3) the telson is triangular with a narrow posterior end or narrowly linguiform in the former genus while linguiform with anterior dilated portion in the latter.

The new genus is allied to *Alienacanthomysis* Holmquist, 1981; both genera have the short distal segment of the exopod of the male fourth pleopod. The new genus, however, differs distinctly from the latter by the rounded anterolateral corner of the carapace, the rather small eyes, the robust antennular peduncles, the labrum with a spiniform anterior process, and the armature of the telson.

Hyperacanthomysis is also distinguished from related genera of *Acanthomysis* and the remaining species belonging to *Acanthomysis* s. l. by the combination of the following characters: the multi-segmented carpopropodus of the third to eighth thoracic endopods, the long 2-segmented exopod of the fourth male pleopod, and the telson with an unarmed portion between two spine groups on the lateral margin.

***Hyperacanthomysis longirostris* (Li, 1936) new combination (Fig. 1)**

Acanthomysis longirostris Li, 1936, p. 590–593, Figs 22–32 (type locality: Port Kunsan, Korea).—Banner, 1948, p. 86 (key).—Gordan, 1957, p. 337 (list).—Li, 1964, p. 467–469, Fig. 118.—Mauchline & Murano, 1977, p. 44

(list).—Liu & Wang, 1986, p. 192–194, Fig. 18.—Shen et al., 1989, p. 219–221, Fig. 15.—Müller, 1993, p. 195 (list).—Jo & Ma, 1996, p. 815, Fig. 11.—Wang & Liu, 1997, p. 216.—Jo et al., 1998, p. 36–37, Fig. 3.

Acanthomysis longirostris var. *sinensis* Shen, 1955, p. 91–93, Figs 51–53.

New synonym *Acanthomysis bowmani* Modlin & Orsi, 1997, p. 439–446, Figs 2–4 (type locality: Suisun Bay, Sacramento-San Joaquin Estuary, California).

Material examined

One hundred and forty males (8.5–10.8 mm) and 296 females (9.4–11.4 mm), Port Kunsan, Korea, 11 June 1934, Li's coll. No. 3 (syntypes). Four males (8.4–11.6 mm) and 52 females (11.2–14.9 mm), Ryubai Island, Korea, 13 Apr. 1936, Li's coll. No. 33. Thirteen males (11.8–14.2 mm) and 24 females (11.6–14.6 mm), Kunsan, Korea, fish market, 8 Dec. 1987, provided by S.-G. Jo. One male (11.6 mm), holotype of *Acanthomysis bowmani* (USNM 282745) and 1 female (12.5 mm), allotype of *A. bowmani* (USNM 282746), Suisun Bay, California, 11 Apr. 1996.

Description

Body robust with smooth surface. All thoracic somites without sternal process.

Carapace anteriorly produced into long triangular rostrum with acutely pointed apex and concave lateral margins, extending to or beyond distal margin of second segment of antennular peduncle (Fig. 1A); anterolateral corner rounded; posterior margin smooth, emarginate, leaving last 2 thoracic somites exposed dorsally.

Eye rather small, extending beyond lateral margin of body, slightly compressed dorsoventrally, about 1.3 times as long as broad; cornea occupying two-fifths of whole organ in dorsal view; eyestalk smooth, without papilliform process on dorsal surface (Fig. 1A).

Antennular peduncle of male more robust than that of female, third segment shorter than preceding 2 segments combined, 1.2 times as long as broad; in female, length of third segment almost same as combined length of first and second segments, 1.2 times as long as broad (Fig. 1A).

Antennal scale lanceolate with rounded apex, about 1.5 times as long as antennular peduncle, 5.5–6.5 times as long as broad, with long, stout, plumose setae on whole margins, suture present near apex (Fig. 1B). Antennal peduncle about half length of scale (Fig. 1B). Antennal sympod with spiniform process at outer distal angle (Fig. 1B).

Labrum with spine-like anterior process. Mandibular palp with second segment about 2.2 times as long as broad, third segment about half length of second. Outer lobe of maxillule armed with 14 stout spines on distal margin and 3 setae on surface, with hump-like process armed with several small spines in middle of outer margin. Maxilla with exopod extending beyond distal margin of proximal segment of endopod, armed with plumose setae on outer and

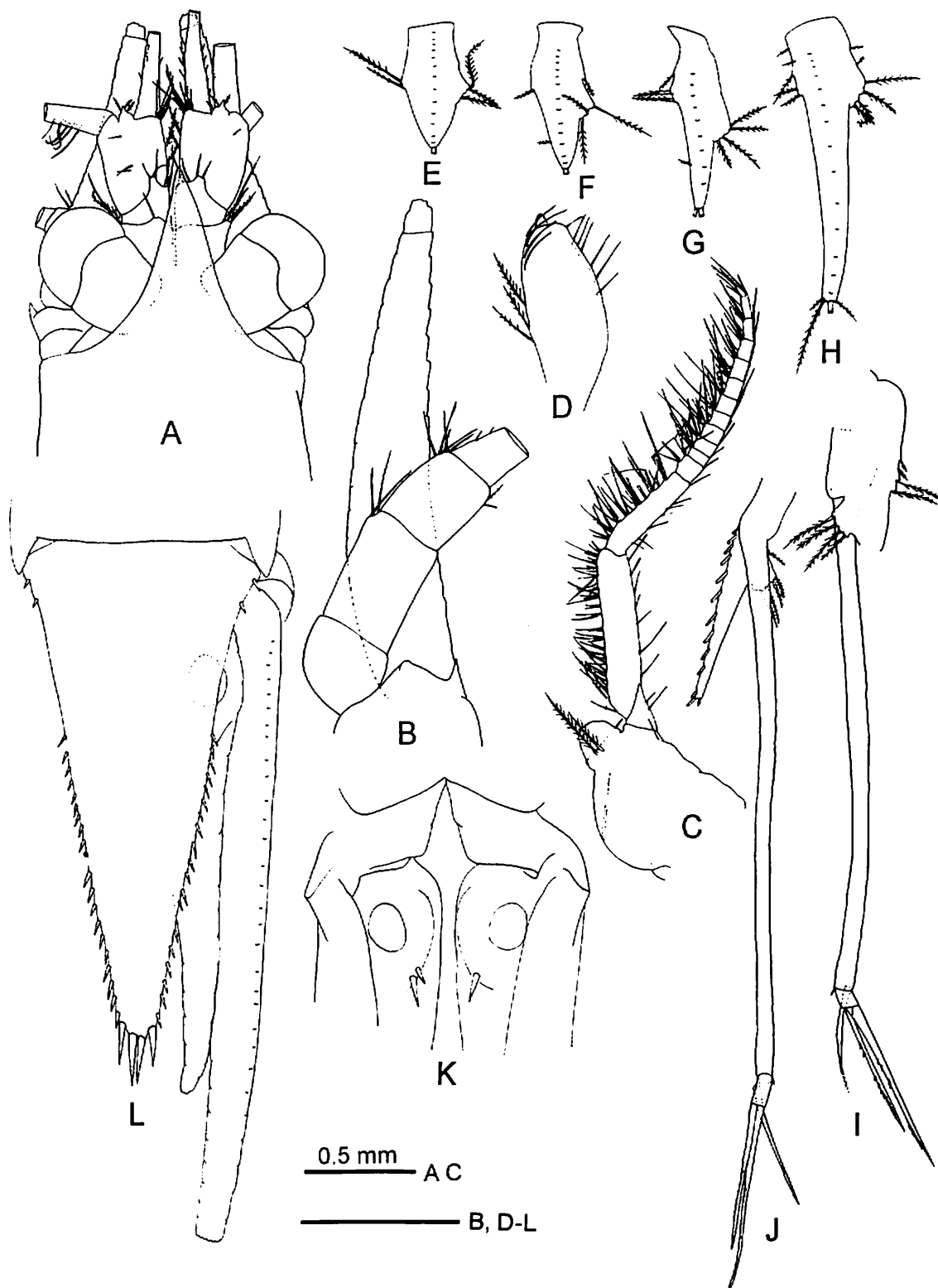


Fig. 1. *Hyperacanthomysis longirostris*, new combination. A, B, syntype, female (10.2 mm), li's coll. No. 3. C-L, syntype, male (10.8 mm), li's coll. No. 3. J, holotype of *Acanthomysis bowmani* (USNM 28746), male (11.6 mm). A. Anterior part of body, dorsal view. B. Antenna. C. Fifth thoracic endopod. D. Penis, lateral view. E-G. First to third pleopods. H. Fifth pleopod. I, J. Fourth pleopod. K. Proximal part of uropod, ventral view. L. Telson and uropod, dorsal view.

apical margins; endopod with second segment 1.3 times as long as broad, without spines on outer margin.

First thoracic endopod short, robust; inner margin of preischium, ischium and merus expanded inwardly. Second thoracic endopod robust. Third to eighth thoracic endopods with carpopropodus divided into 10 or 11 subsegments, dactylus with long and slender claw (Fig. 1C). Thoracic exopods with 8-segmented flagellum in first and eighth limbs, 9-segmented in second to seventh limbs, proximal 3 or 4 segments with spinules on inner margin; basal plate armed with several small spines at outer distal corner, rounded with some spinules on outer and proximal inner margins.

Penis 2.4 times as long as broad in lateral view, armed with 6 long smooth setae on posterior margin, 5 inwardly curved setae on apical margin, and 3 long plumose setae on middle part of anterior margin (Fig. 1D).

In female, sixth thoracic limb with hair tuft on coxa, seventh and eighth limbs with ordinary oostegites; oostegite on seventh limb with bailing lobe.

All abdominal somites without folds or spine rows; first to fourth somites subequal in length, fifth somite 1.3 times as long as fourth, sixth somite 1.2 times as long as fifth.

All pleopods, except fourth of male, reduced to unsegmented lobe, gradually increasing in length posteriorly; fifth pair of both sexes 1.7 times as long as third; pseudo-branchial lobe poorly developed (Fig. 1E–H). Fourth pleopod of male biramous; endopod rudimentary, unsegmented; exopod elongated, extending to posterior margin of last abdominal somite, proximal segment 3.2 times as long as endopod, armed with 1 tiny seta at outer distal corner and 1 long spiniform seta at inner distal corner, latter seta about 6 times as long as distal segment, distal segment very short, 0.04 length of proximal one, armed with 2 long, barbed, unequal terminal setae, longer seta 10 times as long as distal segment, 1.3 times longer than shorter one (Fig. 1I, J).

Endopod of uropod longer than telson, extending to apex of apical spines of telson (Fig. 1L), armed on inner ventral surface of statocyst region with 1–3 spines increasing in length distally (Fig. 1K). Exopod of uropod 1.2–1.3 times longer than endopod (Fig. 1L).

Telson triangular with narrow apex, 1.4 times as long as last abdominal somite, 2.2 times as long as broad at greatest width; lateral margin almost straight, armed with 2 or 3 spaced spines on anterior part, then followed by unarmed portion which occupies one-fourth of lateral margin, posterior three-fifths of lateral margin with 21–23 spaced and subequal spines except apicalmost one, latter about 2.5 times longer than other lateral ones; apical margin armed with pair of long stout spines being almost equal to apicalmost lateral one in length (Fig. 1L).

Remarks

Based on the specimens of *Acanthomysis longirostris* (now *Hyperacanthomysis longirostris*) obtained from the South China Sea and the Yellow Sea, Liu & Wang (1986)

noted that there were some specimens different from the original description (Ii 1936) in the length of the rostrum and the number of the carpopropodal subsegments of the third to eighth thoracic endopods. In the original description, the rostrum extends to the distal margin of the second segment of the antennular peduncle and the carpopropodus of the third to eighth thoracic endopods is divided into 9–11 subsegments. However, in some of Liu & Wang's specimens, the rostrum extends only to the middle of the first segment of the antennular peduncle and the carpopropodus is divided into 6–9 subsegments. Shen et al. (1989) observed both forms in their specimens. In the majority of the present specimens examined, the rostrum overreaches the distal margin of the first segment of the antennular peduncle, and the number of the carpopropodal subsegments is 9–11 in fully matured specimens and 7 in immature individuals.

Modlin & Orsi (1997) described *Acanthomysis bowmani* from Suisun Bay, Sacramento–San Joaquin Estuary, California. This species is very closely allied to *H. longirostris* except for the exopod of the fourth male pleopod. In *A. bowmani* the proximal segment of the exopod is 1.2 times longer than the distal segment, and the proximal segment of the exopod is not armed with any setae while the distal segment is armed with 2 long, spiniform setae on the terminal end, and 1 long seta and 1 small spine on the lateral margins near the terminal end. If the mid-length articulation illustrated by Modlin & Orsi (1997) was injury due to collecting or subsequent treatment, the fourth male pleopod of *A. bowmani* is in agreement with that of *H. longirostris*. Reexamination of the type materials clearly indicated that *A. bowmani* is identical to *H. longirostris*.

Modlin & Orsi (1997) reported the occurrence in the Sacramento–San Joaquin Estuary, California, of *A. bowmani* (now *H. longirostris*) and *Acanthomysis aspera* Ii, 1964. Both species are known to be distributed in the coastal waters of East Asia. Modlin & Orsi (1997) suggested that *A. aspera* was introduced to Californian waters with the flushing of ship ballast water, because it had never previously been collected in surveys of the Sacramento–San Joaquin Estuary during the past 25 years. Similarly *H. longirostris* may be a naturalized animal introduced from East Asian waters.

Distribution

Coastal waters of Korea (Ii 1936, 1964; Jo & Ma 1996; Jo et al. 1998), the northern Chinese coast (Liu & Wang 1986; Shen et al. 1989; Wang & Liu 1997), western Japan (Ii 1964), and California (Modlin & Orsi 1997).

Hyperacanthomysis brevirostris
(Wang & Liu, 1997)
new combination
(Fig. 2)

Acanthomysis sinensis Li, 1964, p. 469–472, Fig. 119 (type locality: 32°53'N, 122°19'E, off the mouth of the Yangtze River, China).—Mauchline & Murano, 1977, p. 45 (list).—Müller, 1993, p. 198 (list).

Acanthomysis brevirostris Wang & Liu, 1997, p. 216–219, Fig. 6.

Material examined

Six males (8.2 mm) and 16 females (6.4 mm), off Yangzi River, East China Sea (32°53'N, 122°19'E), 31 July 1933, Li's coll. No. 144 (types). Four males (5.8–7.0 mm) and 18 females (6.2 mm), East China Sea (32°53'N, 122°29'E), 8 July 1931, Li's coll. No. 130. One male (7.4 mm), East China Sea (31°49.8'N, 124°02.5'E), 42 m, bottom net, 20–21 May 1968.

Description

Body rather slender with smooth surface. Thoracic somites without sternal process.

Carapace with anterior margin produced into rather long triangular rostral plate with obtusely pointed apex and concave lateral margins, extending beyond middle of first segment of antennular peduncle (Fig. 2A, B); anterolateral corner rounded; posterior margin smooth, emarginate, leaving last thoracic somite exposed dorsally.

Eye rather small, not or slightly extending laterally beyond lateral margins of body, 1.4 times as long as broad; cornea occupying one-third of whole eye in dorsal view; eyestalk without papilliform process on dorsal surface (Fig. 2A, B).

Antennular peduncle of male more robust than that of female, first segment 1.1 times as long as broad, third segment 1.2 times longer than proximal 2 segments combined, 1.5 times as long as broad (Fig. 2A); first segment of female 1.2 times as long as broad, third segment slightly longer than first and second segments combined, 1.5 times as long as broad (Fig. 2B).

Antennal scale lanceolate with rounded apex, reaching apex of processus masculinus of antennular peduncle in male (Fig. 2A), in female, overreaching distal margin of antennular peduncle by one-fifth of its length (Fig. 2B), 5.3–5.7 times as long as broad, all margins setose, apical suture present (Fig. 2C). Antennal peduncle long, extending near apical suture of scale (Fig. 2C). Antennal sympod with spiniform process at outer distal corner (Fig. 2C).

Labrum with long, spiniform, anterior process. Mandibular palp rather slender, second segment 3 times as long as broad, third segment two-thirds length of second. Outer lobe of maxillule armed with 11–13 stout spines on distal margin and 3 setae on surface, outer margin with hump-like

process armed with several small spines in middle portion. Exopod of maxilla extending to distal margin of proximal segment of endopod, armed with plumose setae on outer and apical margins; endopod with second segment almost circular in shape, 1.1 times as long as broad, without spines on outer margin.

First thoracic endopod short and robust, preischium, ischium and merus with inner margin slightly expanded inwardly. Second thoracic endopod rather slender. Third to eighth thoracic endopods slender, carpopropodus divided into 11 subsegments, dactylus with long and slender claw (Fig. 2D). Thoracic exopods with 8-segmented flagellum in first and eighth limbs, 9-segmented in second to seventh limbs; basal plate armed with 1 or 2 small spines at outer distal corner in female but not in male.

Penis 2.3 times as long as broad in lateral view, armed with 3 setae on distal half of posterior margin, 5 inwardly curved setae on apical margin, and 2 long plumose setae on distal half of anterior margin.

Marsupium composed of 2 pairs of ordinary oostegites.

All abdominal somites without folds or spine rows; first to fourth somites subequal in length, fifth somite 1.3 times as long as fourth, sixth somite 1.3 times as long as fifth.

First to third and fifth pleopods of male and all pleopods of female reduced to unsegmented lobe, gradually increasing in size posteriorly; fifth pleopod of both sexes about 1.8 times as long as third; pseudobranchial lobe poorly developed (Fig. 2F–J). Fourth pleopod of male biramous (Fig. 2E). Endopod reduced to unsegmented lobe (Fig. 2E). Exopod developed, elongated, extending to posterior third of last abdominal somite, 2-segmented; proximal segment 2.7 times longer than endopod, armed with 1 short seta at outer distal corner and with 1 long seta at inner distal corner, long seta 3 times as long as distal segment; distal segment 0.07 length of proximal segment, armed with 1 short seta at outer distal corner and with 2 long unequal barbed terminal setae, longer one 5.5 times as long as distal segment, 1.3 times longer than shorter (Fig. 2E).

Endopod of uropod 1.2 times as long as telson (Fig. 2K), armed on inner ventral surface of statocyst region with 2 or 3 spines increasing in length distally; exopod of uropod 1.1 times as long as endopod (Fig. 2K).

Telson narrowly linguiform, as long as last abdominal somite, 1.6–1.9 times as long as maximum width at base; lateral margin almost straight, armed with 5 or 6 spines near base, followed by unarmed part occupying one-third of margin, and then on posterior four-sevenths with 12–14 spaced spines gradually increasing in size apically, apical-most lateral spine longer than other lateral ones, apical margin armed with 2 pairs of long spines being subequal in length and 2.8 times longer than apical-most lateral one (Fig. 2K).

Remarks

Hyperacanthomysis brevirostris was first described by Li

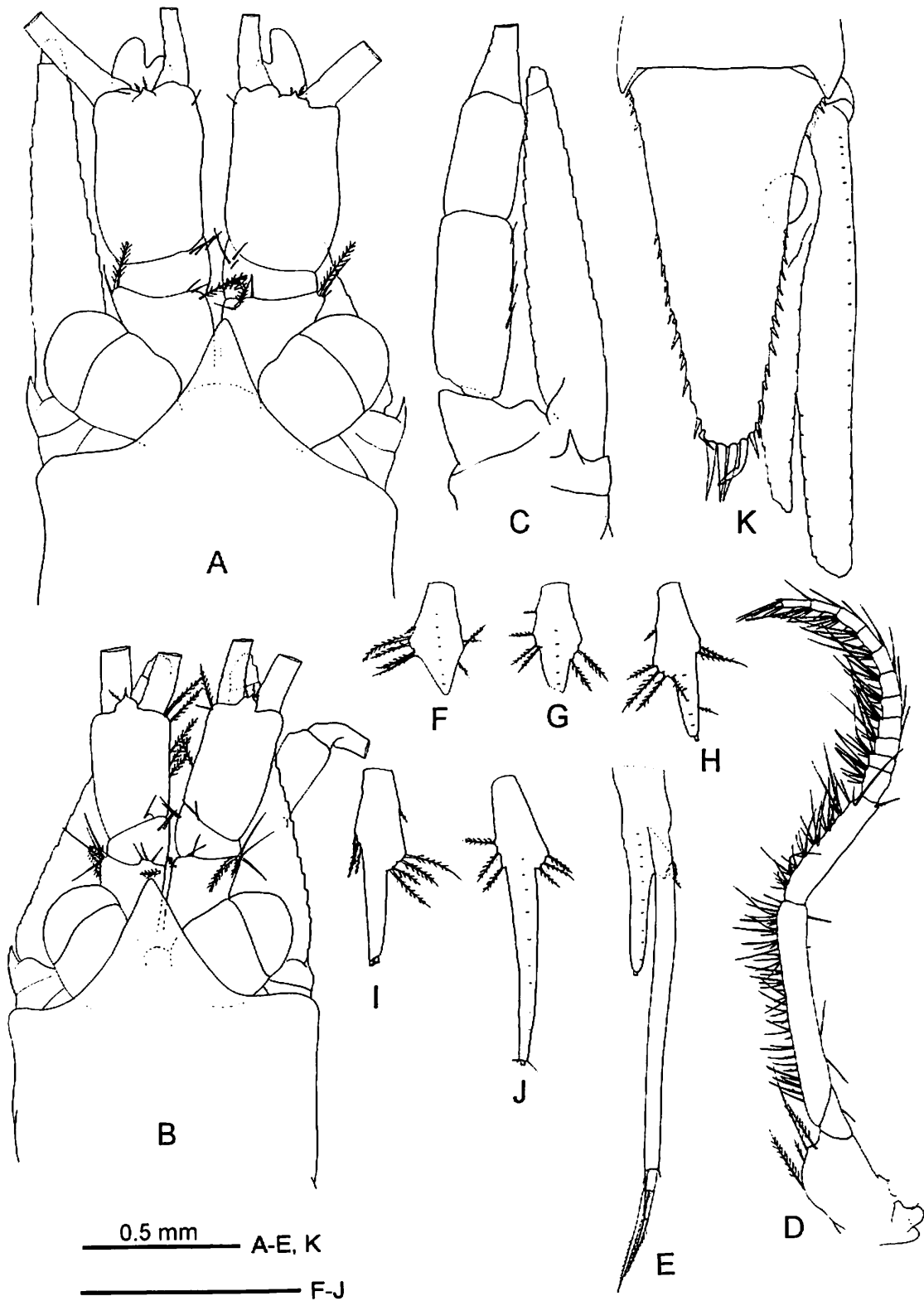


Fig. 2. *Hyperacanthomysis brevirostris*, new combination. **A, C, E, K**, type, male (8.2 mm), li's coll. No. 144. **B, D, F-J**, type, female (6.4 mm), li's coll. No. 144. **A, B**. Anterior part of body, dorsal view. **C**. Antenna. **D**. Fifth thoracic endopod. **E**. Fourth pleopod. **F-J**. First to fifth pleopods. **K**. Telson and uropod, dorsal view.

(1936) under the name of *Acanthomysis sinensis*, later changed to *Acanthomysis brevirostris* by Wang & Liu (1997), because the name *sinensis* was a homonym of *Acanthomysis longirostris* var. *sinensis* (now *H. longirostris*).

Hyperacanthomysis brevirostris resembles *H. longirostris* but differs from it as follows: (1) the rostrum of *H. brevirostris* extends beyond the middle of the first segment of the antennular peduncle, while that of *H. longirostris* extends to or beyond the distal margin of the second segment of the antennular peduncle; (2) the eyes do not or only slightly extend laterally beyond the lateral margins of the body in *H. brevirostris*, while they distinctly extend beyond the margins in *H. longirostris*; (3) the antennal peduncle extends to near the apical suture of the antennal scale in *H. brevirostris* while it extends to the middle of the antennal scale in *H. longirostris*; (4) the apex of the telson of *H. brevirostris* is wider than that of *H. longirostris* and is armed with 2 pairs of long spines compared to a single pair in *H. longirostris*; and (5) in *H. brevirostris* the telson is armed with 5 or 6 spines near the base of the lateral margin compared to 2–4 in *H. longirostris*.

Distribution

Off mouth of Yangzi River, China (Li 1964) and the East China Sea (Wang & Liu 1997; present study).

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