

Two New Species of *Acanthomysis* (Crustacea, Mysidacea) from Japan

By

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Abstract

Descriptions of two new species of *Acanthomysis*, *A. robusta* and *A. tenuicauda*, are given. Both species are distinguished from many species of the genus by the presence of the transverse row of spinules on the sixth abdominal somite. Among several species with the transverse row, *A. robusta* is unique in having the long rostral plate with narrowly rounded apex and the shape and armature of the telson. *A. tenuicauda* is distinguishable by the long and slender antennal scale and the telson with subparallel lateral margins in the distal one-third.

The genus *Acanthomysis* is the most dominant mysid in neritic and coastal waters in Japan and contains many important species being useful as a natural food on fishes there. One of the present two new species, *A. robusta* was dominantly found in coastal waters off Akita, Japan Sea side of northern Japan. The other species, *A. tenuicauda* collected from the East China Sea in the present study, has been abundantly found in stomachs of soles and penaeid shrimps in Ariake Sea, western Japan.

The present two new species closely resemble each other. In the establishment of these species, MAUCLINE, who examined the integumental organs of both species, suggested to me that the differences in the distributional patterns of the organs were great. I express my sincere gratitude to Dr. J. MAUCLINE, Dunstaffnage Marine Research Laboratory, for his kind criticism and suggestion.

The type specimens are lodged in the National Science Museum, Tokyo.

Acanthomysis robusta sp. nov.

(Figs. 1, 2 and 3a)

Acanthomysis sp., II, 1964: 507–509. (In pars)

Material. Eleven adult females and 9 adult males; 23 April 1975; collected with a shrimp net from sandy bottom at depth of 4.5–5 m off Tsuchisaki, Akita Prefecture.

Body length. Adult male 12.5–14.9 mm, adult female 12.3–16.5 mm.

Description. Body robust. Frontal margin of carapace produced into triangular

rostral plate between eyes; apex narrowly rounded, extending beyond middle of first segment of antennular peduncle (Fig. 1a, b). Eye well developed, somewhat depressed dorso-ventrally, set apart, extending laterally beyond lateral margin of carapace; cornea clearly wider than eyestalk (Fig. 1b). Antennular peduncle with third segment equal to length of preceding 2 segments together; sexual appendage from third segment in male small, half length of the segment (Fig. 1a, b). Antennal peduncle composed of 3 segments, somewhat shorter than antennular peduncle; first and third segments nearly equal in length; second segment longest, 1.3 times as long as the first (Fig. 1c). Antennal scale lanceolate, extending beyond antennular peduncle by $1/4$ of scale length in male and by $2/5$ in female, twice as long as antennal peduncle, 4.5 times as long as broad; outer margin slightly convex, inner margin convex in proximal $1/3$ and nearly straight in distal $2/3$, setose all round; sympod produced to a spinous process at outer distal corner (Fig. 1c). Mouth parts and endopods of first and second thoracic limbs allied to those of species of the genus (Figs. 1d-f, 2a, b). Abdomen composed of 6 segments; first to fifth segments subequal; sixth segment longest, a little longer than width, armed at $2/3$ of length of the segment from anterior margin with transverse row of spinules, the row being discontinuous for a short distance at mid-dorsal line (Figs. 1a, 2j). Telson elongate triangular, longer than endopod of uropod, 2.5 times as long as maximum width at base, equal to length of fifth and sixth abdominal segments combined; distal margin narrow, armed with 2 pairs of spines which are considerably longer than lateral longer spines and show a sexual dimorphism, in male inner pair of spines clearly shorter than outer pair (about 10:7) (Fig. 2g), while in female nearly equal to the outer (Fig. 2h); lateral margin in proximal half concave, armed with about same length spines rather sparsely set, nearly straight in distal half, armed densely with spines grouped to about 13 sets, each set composed of a large spine followed by 1-3 small ones (Fig. 2e); dorsal surface near base armed with normally 2, rarely 3 or more spines (Fig. 2e, f). Endopod of uropod a little shorter than telson, armed on inner margin near region of statocyst with 4 spines which become longer distally (Fig. 2c, j); exopod of uropod longer than the inner by $1/4$ of length of exopod (Fig. 2j). Endopod and exopod of fourth pleopod of male imperfectly marked off from basal joint; exopod extending to middle of sixth abdominal segment (Fig. 3a), composed of 2 joints, first segment about twice as long as endopod, second segment about $1/4$ of the first in length, terminating to 2 setae being equal in length (Fig. 2d).

Type series. Holotype (NSMT-Cr 8606), adult female of 13.3 mm; allotype (NSMT-Cr 8607), adult male of 13.3 mm; and paratypes (NSMT-Cr 8608), the other 10 females and 8 males.

Remarks. Ii (1964) collected 6 males and 4 females of unknown species from the mouth of Mogami River, which is located near the present locality, but he hesitated to give a name them because he found unusual diversities in the sixth abdominal somite and the apical armature of telson. Of his specimens, in one adult female which was most perfectly preserved, a distinct transverse row of spinules was found on the sixth

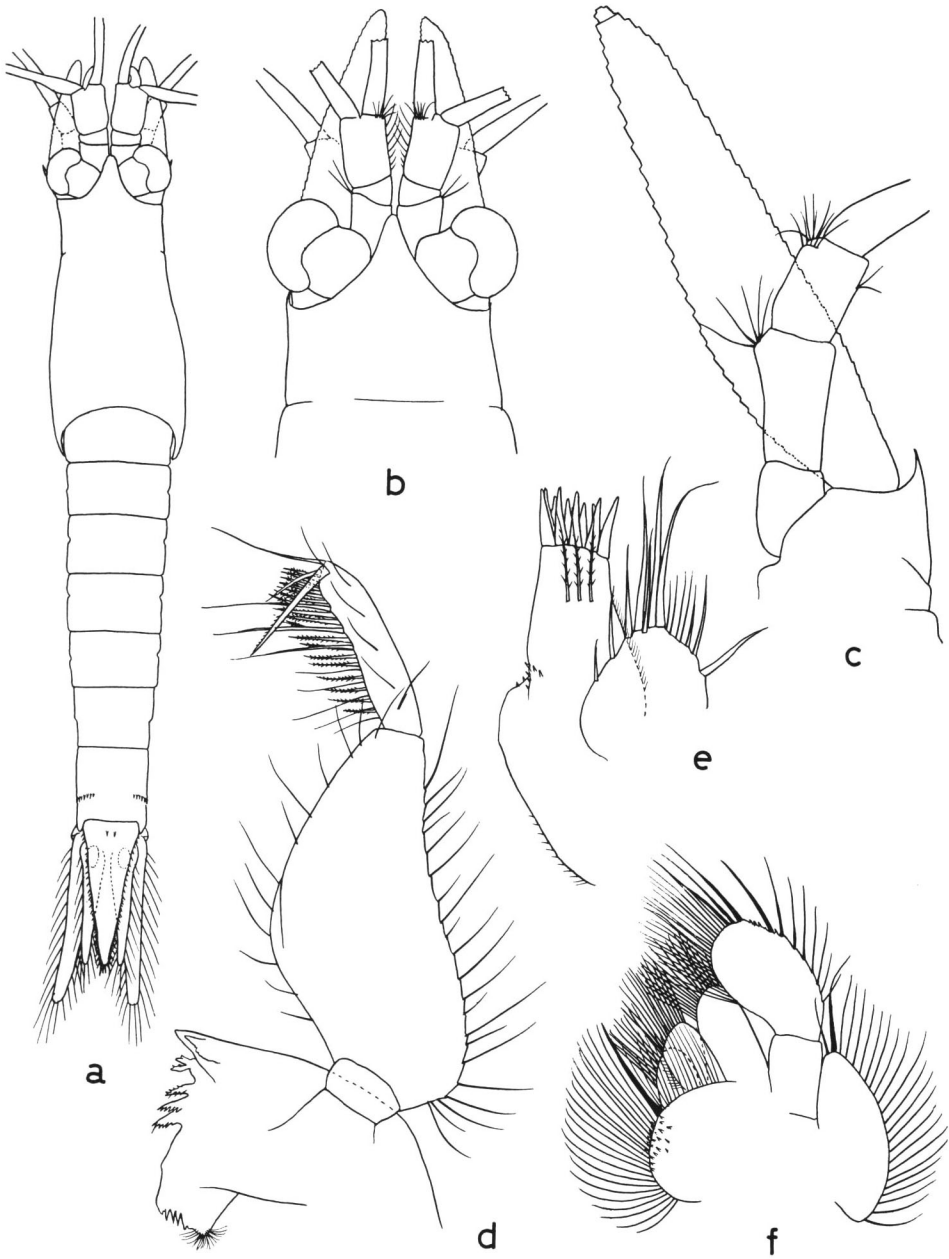


Fig. 1. *Acanthomysis robusta* sp. nov., a, adult male in dorsal view, $\times 8$; b, anterior end of adult female, $\times 14$; c, antenna, $\times 28$; d, mandible, $\times 45$; e, maxillule, $\times 68$; f, maxilla, $\times 45$.

abdominal somite, but this was not found in the other specimens. As to the apical armature of the telson, the difference that the inner pair of apical spines in male is much shorter than those in female was observed. The present specimens agree with the adult female perfectly preserved among II's specimens. The present species is furnished with the transverse row of spinules on the sixth abdominal segment in the both sexes and does not show such noticeable dimorphism in the telson as figured by II. It is clear that II's species was composed of two or more species.

In the present species, intraspecific variations was observed in the transverse row of spinules on the sixth abdominal somite and the spines on the dorsal surface of telson. There were small numbers of specimens armed with 2 rows of spinules and a further specimen in which the spinule row was also present on the fifth abdominal somite in addition to that on the sixth (Fig. 2i). On the dorsal surface near the base of telson, a pair of spines was usually present, but in some specimens the dorsal surface was armed with 3 or more spines (Fig. 2f, i).

This species is related with *Acanthomysis serrata* LIU et WANG, *A. okayamaensis* II, *A. rotundicauda* LIU et WANG and *A. tenuicauda* sp. nov. in the presence of the spinule row on the sixth abdominal somite. It is, however, distinguishable from *A. serrata* as follows. 1) Rostral plate reaches beyond middle of the first joint of antennular peduncle in the present species, whereas it does not reach to middle of the first antennular joint in the latter species. 2) Antennal scale extends clearly beyond antennular peduncle including male appendage in this species, but does not extend to apex of male appendage in *A. serrata*. 3) Telson is 2.5 times as long as broad in the present species, while twice in *A. serrata*.

This species is also distinguishable from *A. okayamaensis* in the following respects. 1) Antennal scale in this species is 4.5 times as long as broad, while in *A. okayamaensis* it is 6 times. 2) Apex of the telson in this species is less than 1/5 of the maximum width of telson, while in *A. okayamaensis* it is about 1/4. 3) In this species the dimorphism is observed on the apical armature of telson, while it is not in *A. okayamaensis*. 4) Distal half of the lateral margin of telson in this species is armed with grouped spines with 2 or 3, rarely 1, short spines between longer ones, while in *A. okayamaensis* it is armed with grouped spines with a single or rarely 2 short spines.

From *A. rotundicauda* the present species is rather easily distinguishable in the long and narrow rostral plate, the antennal scale extending beyond apex of male appendage of antennular peduncle, the distal joint of exopod of fourth male pleopod being long in proportion to proximal joint, the apical armature of telson and the uropodous endopod shorter than telson.

Differences between *A. tenuicauda* sp. nov. are noted in the paragraph of the species.

Etymology. The specific name is derived from a robust constitution.

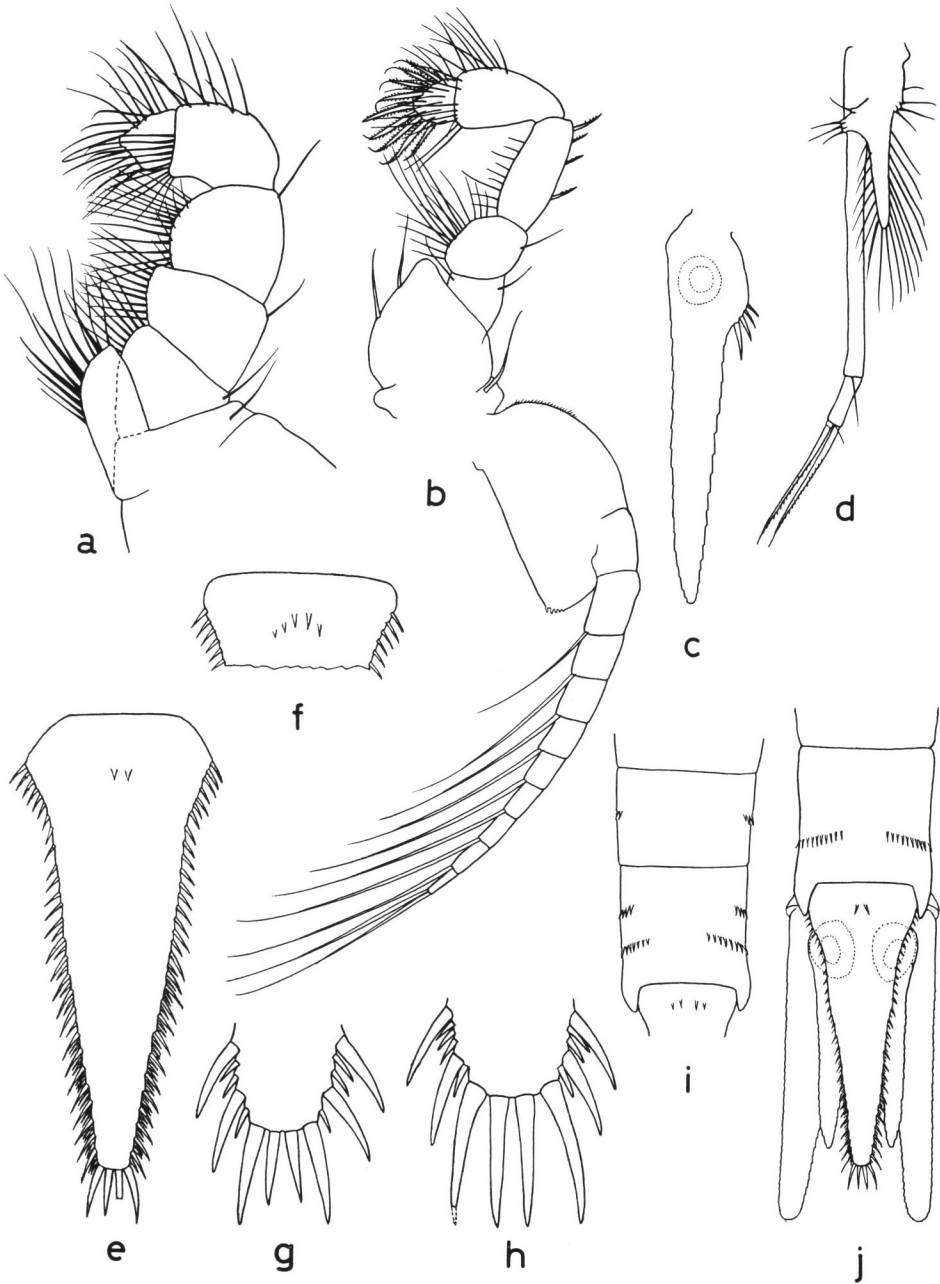


Fig. 2. *Acanthomysis robusta* sp. nov., a, first thoracic endopod, $\times 45$; b, second thoracic limb, $\times 28$; c, endopod of uropod, $\times 28$; d, fourth pleopod in male, $\times 28$; e, telson, $\times 28$; f, basal part of telson in one of paratypes, $\times 28$; g, distal part of telson in male, $\times 68$; h, distal part of telson in female, $\times 68$; i, fifth and sixth abdominal segments and basal part of telson, $\times 18$; j, posterior end in adult female, $\times 14$.

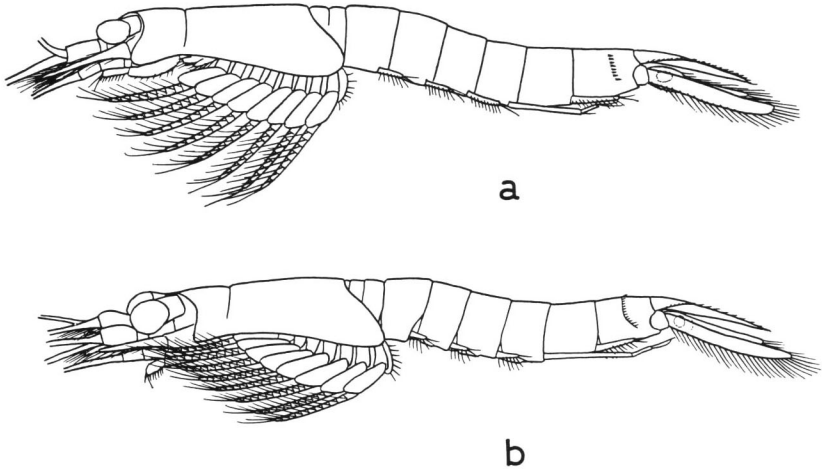


Fig. 3. *Acanthomysis robusta* sp. nov., $\times 6$; b, *Acanthomysis tenuicauda* sp. nov., $\times 7$.

Acanthomysis tenuicauda sp. nov.

(Figs. 3b, 4 and 5)

Acanthomysis sp. IKEMATSU, 1963: 87.

Material. Many males and females; 20–21 May 1968; collected with the bottom-net from the sea floor at depth of 42 m at Stn. H31 (East China Sea of $31^{\circ}50.5'N$, $124^{\circ}02.0'E$ to $31^{\circ}49.0'N$, $124^{\circ}03.0'E$) during R/V *Hakuho-Mar*u cruise.

Body length. Adult male 9.5–11.6 mm, adult female 10.1–12.2 mm.

Description. Body robust; carapace somewhat shorter posteriorly in female than in male, produced anteriorly into triangular rostral plate with obtusely pointed apex which extends to base of antennular peduncle; lateral margin of rostrum slightly concave; posterior margin emarginate, leaving last 2 thoracic segments uncovered in dorsal view (Fig. 4a–c). Eye well developed, a little depressed dorso-ventrally; cornea wider than eyestalk; eyestalk without papilla, armed with spinules on antero-basal part (Fig. 4b, c). Antennular peduncle more robust in male than in female; in female first segment twice as long as broad and third segment 1.7 times as long as broad (Fig. 4b); in male first segment only slightly longer than width and third segment 1.5 times as long as broad, equal to preceding 2 segments combined (Fig. 4c). Antennal peduncle reaching to middle of third segment of antennular peduncle in female and beyond middle of the third in male; second segment longest, nearly twice as long as broad (Fig. 4d). Antennal scale long and slender, extending beyond antennal peduncle for distal $4/9$ in female and for $1/3$ in male, 6 times as long as broad; sympod with denticle at outer distal corner (Fig. 4d). Mandibular palp with peculiar protuberances along inner margin of second joint (Fig. 4e); in holotype third segment of maxillule with spines furnished with membranous plate on distal half of margins

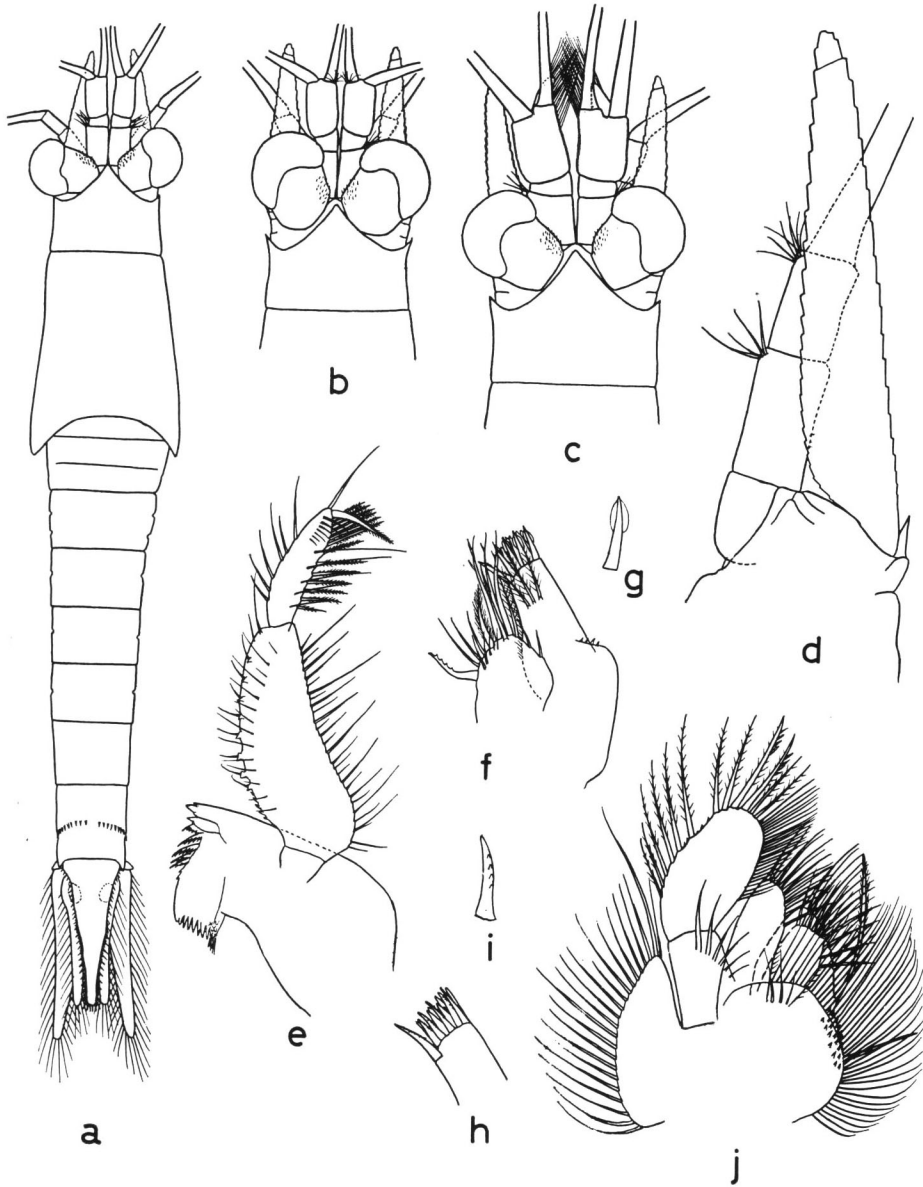


Fig. 4. *Acanthomysis tenuicauda* sp. nov., a, adult female in dorsal view, $\times 10$; b, anterior end in adult female, $\times 14$; c, anterior end in adult male, $\times 14$; d, antenna in adult female, $\times 45$; e, mandible, $\times 45$; f, maxillule, $\times 68$; g, a spine on third segment of maxillule in holotype, $\times 137$; h, distal part of maxillule in one of paratypes, $\times 68$; i, a spine on third segment of the same, $\times 137$; j, maxilla, $\times 68$.

(Fig. 4f, g), but in some paratypes spines furnished with spinules (Fig. 4h, i). First and second thoracic endopods similar to those of preceding species but more slender (Fig. 5a, b). Anterior 5 abdominal segments subequal; sixth segment longest, a little

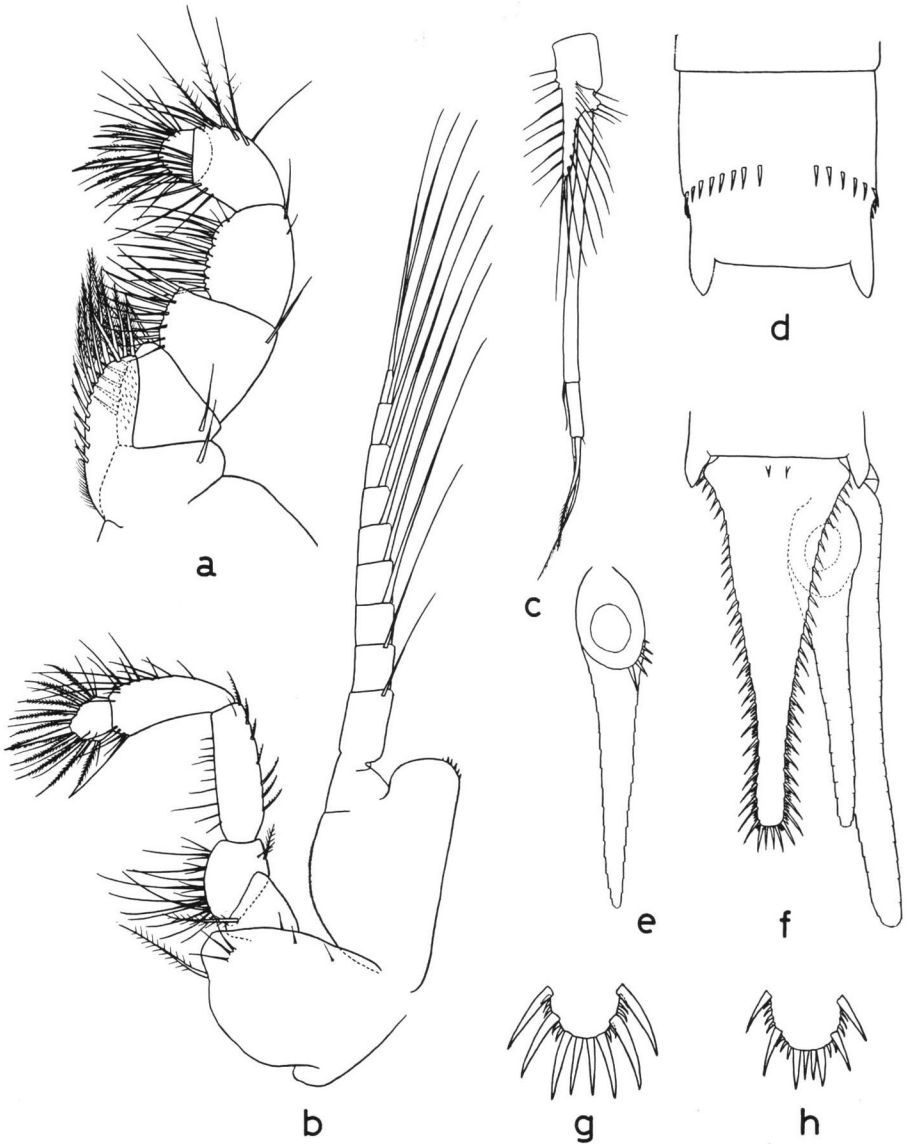


Fig. 5. *Acanthomysis tenuicauda* sp. nov., a, first thoracic endopod, $\times 68$; b, second thoracic leg, $\times 45$; c, fourth pleopod in male, $\times 28$; d, sixth abdominal segment, $\times 28$; e, endopod of uropod, $\times 28$; f, telson and uropod in male, $\times 28$; g, distal part of telson in female, $\times 68$; h, distal part of telson in male, $\times 68$.

longer than width, armed at about middle of the segment with transverse row of spinules, the row discontinuous at mid-dorsal line (Figs. 4a, 5d). Telson long and narrow, about twice as long as sixth abdominal segment, 2.5 times as long as broad, armed with a pair of small spines on dorsal surface near base; lateral margin subparallel in distal 1/3, armed rather sparsely with spines being subequal in length on proximal 1/3 and armed on distal 2/3 with 12–13 grouped spines with 1–4 shorter spines between longer slender ones; apex narrow, rounded, with 2 pairs of spines which are more developed in female than in male, inner pair of apical spines somewhat smaller than outer in female and much smaller in male; outer pair of spines as long as or a little shorter than lateral longer spines in both sexes (Fig. 5f–h). Uropod long and slender; endopod about as long as telson, with 4–5 spines on ventral surface near inner margin at statocyst region (Fig. 5e); exopod extending beyond apex of endopod by distal 1/4 of exopod (Fig. 5f). Fourth pleopod of male barely extending to distal end of sixth abdominal segment (Fig. 3b); exopod slender, composed of 2 segments; first segment long, 3 times as long as endopod; second segment short, about 1/4 of first segment in length, 4 times as long as broad, terminating to 2 setae being different in length (Fig. 5c).

Type series. Holotype (NSMT-Cr 8609), adult female of 10.3 mm with embryos; allotype (NSMT-Cr 8610), adult male of 11.6 mm; and paratypes (NSMT-Cr 8611), 10 males and 10 females.

Remarks. The present species seems to be identical with *Acanthomysis* sp. collected by IKEMATSU (1963) from stomachs of soles and a penaeid shrimp *Trachypenaeus curvirostris* caught in Ariake Sea. The species very closely resembles the preceding one *A. robusta* sp. nov. in the sixth abdominal segment with a transverse row of spinules and the elongate triangular telson with grouped spines. Differences, however, are found in the following respects. 1) Rostral plate in the latter species is longer and narrower than in the former. 2) Antennal scale is 6 times as long as broad in *A. tenuicauda*, while it is 4.5 times in *A. robusta*. 3) Telson is subparallel in distal 1/3 in *A. tenuicauda*, while it is tapering towards apex in *A. robusta*. 4) Outer pair of apical spines of telson is as long as or a little shorter than lateral larger spines in the present species, whereas it is fairly longer in *A. robusta*. 5) Fourth pleopod of male is longer in *A. tenuicauda* than in *A. robusta*; first segment of exopod is 3 times as long as endopod in *A. tenuicauda*, while it is twice in *A. robusta*.

In addition to those differences in the external morphology, between both species there is also a noticeable difference in the distribution of integumental organs. MAUCLINE suggested to the author that the differences in the patterns of distribution of the integumental organs are greater than those normally occurring within a species.

This species is also related with *A. rotundicauda* and *A. serrata* from the South China Sea. It is distinguishable from these both species in the fourth pleopod of male. In the present species the exopod is 3 times as long as endopod and its distal segment is 4 times as long as broad and bears 2 terminal setae being unequal in length, whereas in the latter 2 species it is twice as long as endopod and the distal segment is twice as long as broad and furnished with 2 subequal setae. Besides the fourth pleopod

Table 1. The number of embryos in the marsupium in *Acanthomysis tenuicauda* sp. nov.

Body length (mm)	No. of embryos	Body length (mm)	No. of embryos
10.3	33	11.4	61
10.6	58	11.5	30
10.6	87	11.7	55
10.9	44	12.2	64

of male, the present species is different from both species in the apical armature of telson, i.e. 2 pairs of apical spines are subequal in length and slightly smaller than lateral longer spines in the present species, while those are very different in size in *A. rotundicauda* and are twice longer than lateral longer spines in *A. serrata*.

The species is also allied to *A. okayamaensis*, but differs from the latter in the shape and armature of telson and the length of fourth pleopod of male.

The number of embryos in the marsupium was counted. It varied from 30 to 87 in the females of 10.3 to 12.2 mm examined (Table 1).

Etymology. The specific name is derived from the shape of telson.

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