February, 1965 No. 14

PUBLICATIONS

FROM

THE AKKESHI MARINE BIOLOGICAL STATION

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By

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Three new species of Cumacea, *Bodotria ovalis*, *B. serrulata* and *Cumella quadrispinosa* described herein, were obtained from the collection of the cumaceans made by myself at Akkeshi Bay during the 15th to 20th of August in 1963 (Fig. 1)*.

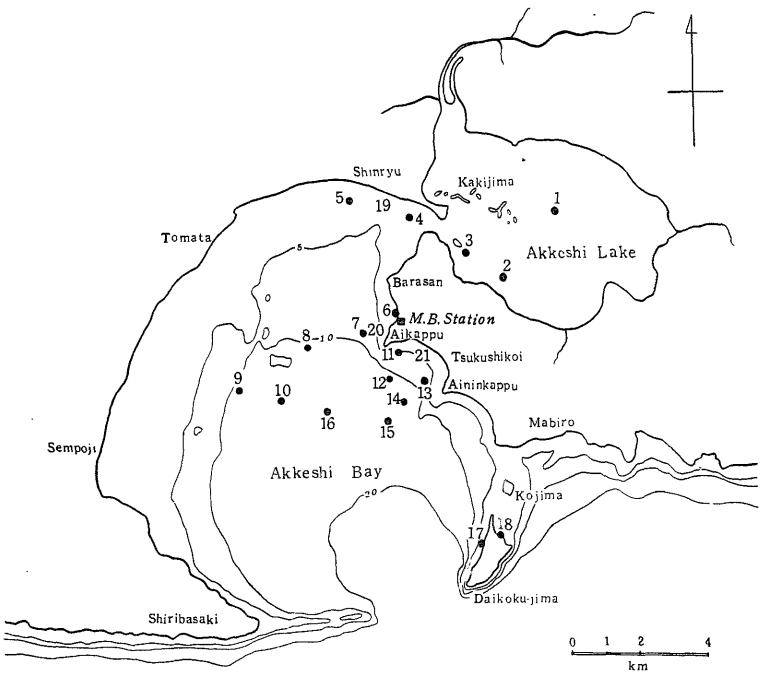

Fig. 1. Map of Akkeshi Bay. Solid circles with numbers indicate the localities, from which the cumaceans were collected by the Ekman-Berge bottom-sampling grab and the 19–21 numbers show the places of hauling the plankton-net just below the surface at night.

* Further result of the investigation will be given later.

Publ. Akkeshi Mar. Biol. Stat., No. 14, 1965.

Before going further I have to express my gratitude to Professor Tune Sakai for his kind guidance. I must also tender my thanks to Professor Masao Iwasa of the Seikei University and to Professor Huzio Utinomi of the Seto Marine Biological Laboratory of the Kyoto University for their invaluable advice. I want to express my heartily thanks to Professor Atsuhiko Ichikawa and Professor Mayumi Yamada of the Hokkaido University for their kindness in giving me an opportunity of performing the study. My thanks are also due to Dr. Fumio Iwata and Mr. Zen Nagao, the marine biologists of the Akkeshi Marine Bilogical Station and other staff of the Station for their kind help rendered me in collecting the materials.

Family Bodotriidae
Subfamily Bodotriinae

1. *Bodotria ovalis* sp. nov.

(Figs. 2-4)

Description of the holotype: The holotype is an adult female (length, about 4.2 mm) with well-developed marsupium, in which sixty embryos are carried. The integument is well-calcified, very hardened and clothed with small reticulate sculpture with a fine pitted background.

The carapace is almost ovoid in shape as seen from above and widest across the posterior portion. The dorsal surface is almost flattened and smooth, except that the middle portion with a dorso-median carina with a longitudinal median line along the full length is a little raised. The dorso-lateral margin is much expanded laterally and forms a very strong keeled carina with a pellucid edge; a little below the dorso-lateral carina there is a faint ridge. The length of the carapace is more than one-fourth of the total length of the animal and a little less than the width, which is nearly one and two-thirds times the depth. The antennal notch is shallowly concave as a V-shaped notch with a subacute antero-lateral angle. The ocular lobe is rather small, semi-circular in shape, reaches the apex of the pseudorostrum and bears discernible ocelli. The apex of the pseudo-rostrum is shallowly sinuated in the middle portion as seen from above.

The combined length of all the free thoracic segments is a little less than as long as the carapace. The dorsum of the first free thoracic segment is almost concealed, whereas the sides are largely exposed. The second segment is very large and its widest breadth is nearly as wide as the carapace. The third to fifth segments are successively narrowed. The dorsal surface is rather flattened with the exception of the longitudinal

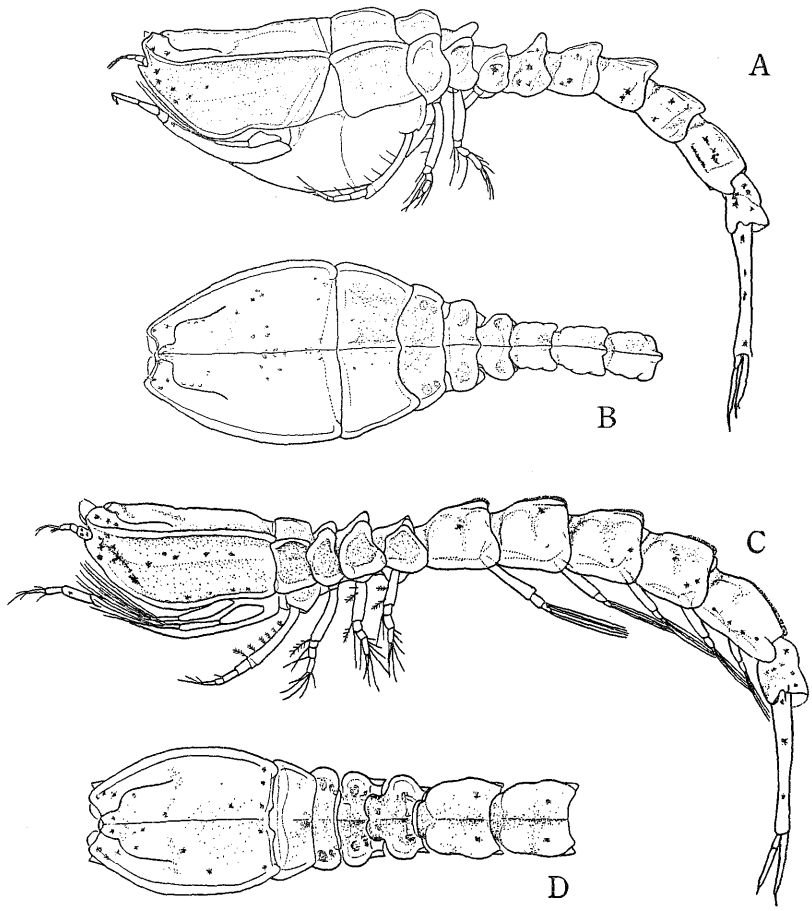

Fig. 2. *Bodotria ovalis* sp. nov., holotype ovigerous female (length, ca. 4.2 mm): A: lateral view. B: anterior portion of body, from above. Paratype adult male (length, ca. 4.8 mm): C: lateral view. D: anterior portion of body, from above.

dorso-median carina. The dorso-median carina is distinct on all the segments; the carina on the third segment is a little raised and that of the fourth segment is much more raised postero-dorsally. The dorso-lateral ridge of all the segments is also much carinated laterally and lamellate like that of the carapace.

The abdomen is slender and slightly more than one-half the length of the total length of the animal. The fifth segment is the longest of all the other abdominal segments; the sixth segment is about three-fourths as long as the fifth. There is a distinct dorso-median carina with a dorso-median line on the first five segments. The posterior portion of the dorso-median carina of the first segment is much raised dorsally; such

carina of the second to fourth segments is also raised.

The first segment of the peduncle of the antennule is much more than the combined length of the second and third segments. The second segment is shorter than the third. The main flagellum is two-segmented and the proximal segment is a little less than three times as long as the distal one. The distal segment is furnished with two subequal long aesthetascs. The accessory flagellum is very minute.

The length of the basis (if measured along the middle line of the segment, exclusive of the external prolongation) of the third maxilliped is a little more than twice as long as the remaining distal segments together. The external angle is developed into a prolongation with seven plumose hairs on the inner border, about one-seventh the length of the basis and reaches the level about one-half of the length of the merus in the natural position. In the middle portion of the inner border of the basis there are about three teeth. The distal segments are illustrated in Fig. 3, C.

The length of the basis (if measured along the middle line of the segment) of the first peraeopod is a little less than one and one-half times as long as the remaining distal segments together. The merus is about twice as long as the ischium and as wide as the carpus. The carpus is one and one-half times as long as the merus and its breadth is one-third the length of the carpus; the inner border bears a rather long and three small hairs. The propodus is nearly equal to the length of the dactylus and one-half as long as the carpus.

The second peraeopod is much more than one-half the length of the first peraeopod. The basis is nearly one and one-half times as long as the remaining distal segments together and bears five plumose hairs on the inner border. The short ischium is ankylosed with the basis. The carpus is slightly longer than the merus and bears two unequal spines on the distal end. The propodus is less than two-thirds as long as the carpus. The dactylus is about twice as long as the propodus and provided with four unequal spines, of which the longest one is nearly equal to twice as long as the dectylus.

The third peraeopod is about seven-eighths as long as the second peraeopod. The basis of the third peraeopod is slightly longer than one and one-half times as long as the remaining distal segments together. The fourth peraeopod is shorter than the third peraeopod. The fifth peraeopod is much shorter than the fourth one.

The peduncle of the uropod is rather long and slender, and slightly less than two and one-third times as long as the last abdominal segment; it bears small serrations on the inner border. The endopod is a little

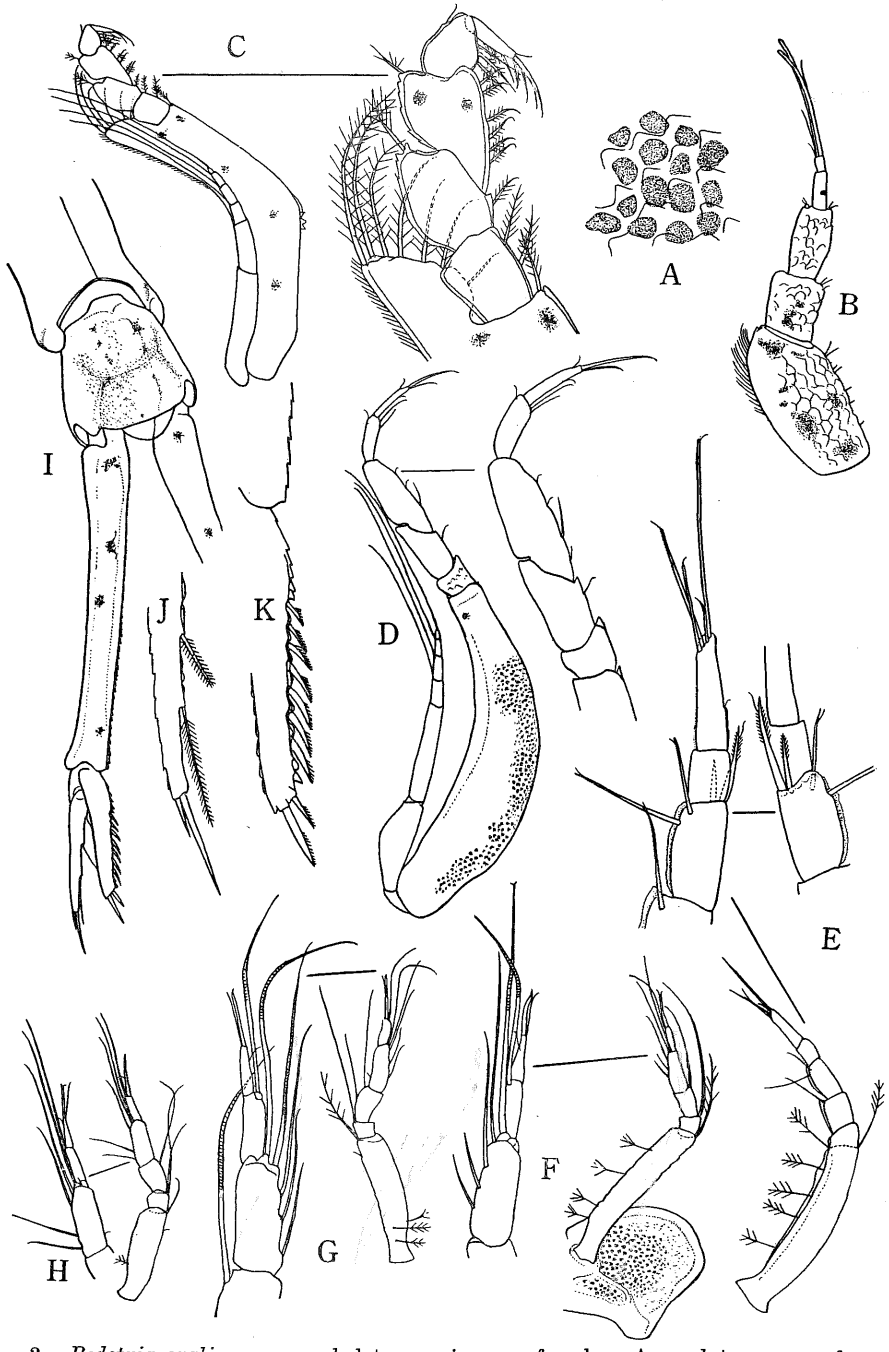

Fig. 3. *Bodotria ovalis* sp. nov., holotype ovigerous female: A: sculpture on surface of side of third free thoracic segment. B: antennule. C: third maxilliped with its enlarged distal segments. D–H: first to fifth peraeopods with enlarged distal portion. I: uropod with fifth and sixth abdominal segments. J–K: enlarged distal portion of endopod of uropod.

less than two-fifths of the length of the peduncle and furnished with serrations and seven spines on the inner border; on the distal portion of the inner border there are two teeth and its distal end is furnished with two spines. The exopod is slightly longer than the endopod and bears three plumose hairs on the inner border and two unequal spines on the distal end.

Paratype adult male (length, about 4.8 mm): The integument is well-calcified and hard; the surface is clothed with fine pitted sculpture like reticulation.

The carapace is ovoid in shape as seen from above and widest across the one-half anterior portion. The dorsal surface is almost flattened and smooth, except that the middle portion with a dorso-median carina with a longitudinal median line along the full length is raised. The dorso-lateral ridge is much laterally expanded and pellucid as well as that in the female. The length of the carapace is about one-fourth of the total length of the animal and nearly one and one-third times the width, which is slightly more than one and one-third times the depth. The ocular lobe is rather large, semi-circular in shape and reaches the apex of the pseudorostrum.

The combined length of all the free thoracic segments is nearly three-fourths as long as the carapace. The first free thoracic segment is almost concealed dorsally and laterally. The second segment is large and four-fifths as wide as the carapace. The third to fourth segments are successively a little decreased in width. The fifth segment is rather large. The dorso-median ridge is distinct on all the segments; the carina on the third to fifth segments is not so raised dorsally as that in the female. There is a submedian carina on both sides near the dorso-lateral ridge on the dorsum of each of the last three thoracic segments. The dorso-lateral ridge of all the segments is also carinate as well as that of the carapace and also as well as that in the female.

The abdomen is plump and less than three-fourths of the total length of the animal. On all the first five segments there is a well-marked dorso-median carina with a longitudinal median edge which is provided with fine teeth as illustrated in Fig. 4, B. The first segment is almost as wide as the fifth free thoracic segment and also as wide as the second abdominal segment, but it is a little less than as deep as each of the next three segments which are almost of the same size.

The first segment of the peduncle of the antenule is one and one-fourth times the length of the distal two segments combined. The third segment is one and one-third times as long as the second and bears four subequal aesthetascs like those on the distal portion of the main flagellum. The main flagellum is two-segmented; the first segment is long, about two-fourths as long as the third peduncular segment. The second segment

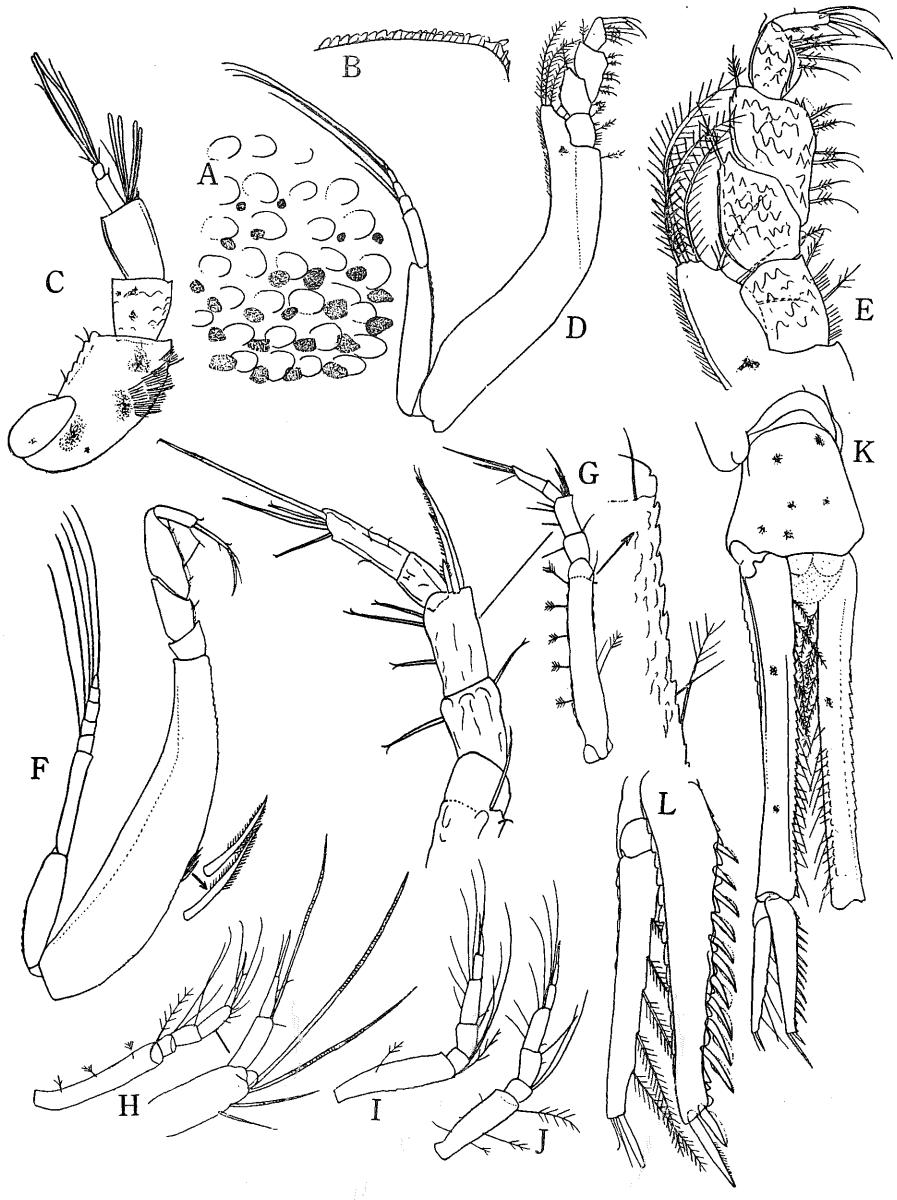

Fig. 4. *Bodotria ovalis* sp. nov., paratype adult male: A: sculpture on surface of carapace. B: dorso-median carina of third abdominal segment, from side. C: antennule. D: third maxilliped. E: distal portion of third maxilliped. F–J: first to fifth peraeopods. K: uropod with last abdominal segment. L: endopod and exopod of left uropod.

of the main lash is slightly more than one-third the length of the first one and bears two rather long aesthetascs. The accessory flagellum is very

minute.

The basis of the third maxilliped is nearly twice as long as the remaining distal segments together; its external angle is developed into a prolongation, which is nearly one-seventh of the length of the basis (exclusive of the prolongation). Other general features of the distal segments are very like those of the female.

The basis of the first peraeopod is a little more than one and one-half times as long as the remaining distal segments together and bears three strong spines near the middle portion of the inner border. The characters of the remaining distal segments are very like those in the female.

The second peraeopod is nearly one-half as long as the first peraeopod. The basis of the second peraeopod bears five plumose hairs on the inner border; the length of the segment is nearly one and one-third times as long as the remaining distal segments together. The ischium is very short and ankylosed with the basis.

The third peraeopod is nearly equal to the length of the fourth and the basis of the third peraeopod is less than the length of the remaining distal segments together. The basis of the fourth peraeopod is much shorter than the remaining distal segments together. The fifth peraeopod is a little less than the length of the fourth peraeopod and the basis of the fifth is about two-thirds the length of its remaining distal segments together.

The peduncle of the uropod is nearly 2.5 times as long as the last abdominal segment and provided with five plumose hairs on the proximal portion and eight long and fifteen short spines on the distal portion of the inner border. The endopod is subequal to the length of the exopod, which is about two-fifths as long as the peduncle. The endopod bears ten spines interspersed with serrations on the inner border and is also serrate on the outer border; the distal end bears two unequal spines. The exopod is furnished with five plumose hairs on the inner border and two unequal spines and a seta on the distal end.

Material: 2♀ ovigerous (holotype), St. 11–12, depth about 8–12 m, sandy mud bottom; August 16, 1963.

1♀ subadult, St. 14, depth about 13 m, muddy bottom; August 16, 1963.

2♂ adult (1♂ paratype), night surface tow-net, St. 20, off Akkeshi Marine Biological Station; August 16, 1963.

2♀ subadult (damaged specimen), night surface tow-net, St. 21, off Tsukushikoi; August 16, 1963.

1♀ ovigerous (damaged specimen), night surface tow-net, St. 21, off Tsukushikoi; August 19, 1963.

Remarks: The new species has the uropod with the long peduncular

segment (nearly 2.3(♀) or 2.5(♂) times the length of the last abdominal segment) and with one-segmented endopod.

It is easily distinguished from any of the hitherto known species of this genus by that the dorsal surface of the carapace is very broad and flattened and that the cephalothoracic portion with strong keeled carinae is almost ovoid in shape as seen from above.

2. *Bodotria serrulata* sp. nov.

(Figs. 5–7)

Description of the holotype: The holotype is an adult female (length, about 3.5 mm) with well-developed empty marsupium. The integument is well-carcified and very hard.

The length of the carapace is two-sevenths of the total length of the animal; it is widest across the posterior region nearly three-fourths of the lengths of the carapace and one and one-third times as wide as its depth. The carapace is provided with a well-marked dorso-median ridge with a median line over the full length. The dorsal surface is rather flat; the postero-dorsal portion is largely reticulated and pitted. The dorso-lateral ridge is well-developed, carinate and beset with small, serrations. On the lateral side of the carapace there is an arched lateral ridge which extends from the posterior part to the antero-lateral angle of the carapace. At about one-third anterior portion there is a transverse short ridge between the dorso-lateral and the lateral ridge. The pseudorostral lobes barely meet in front of the ocular lobe and truncated. The ocular lobe is rather rounded, triangular in shape, as long as wide, and almost reaches the apex of the pseudorostrum; it is beset with discernible ocelli. The antennal notch is angularly concave with an acute antero-lateral angle.

The combined length of all the free thoracic segments is less than two-sevenths of the total length of the animal. The dorso-median carina is distinct on all the segments, especially much elevated dorsally on the postero-dorsal part of each of the third and fourth segments. The first segment is only exposed dorsally as a narrow strip and its side is partly exposed. The second segment is very large, slightly broader than and as deep as the carapace. The next three segments are successively narrowed and decreased in depth. The side of each segment is very distinct and its upper edge is very thickened and much carinated, forming a strong dorso-lateral ridge.

The abdomen is slender and much less than one-half the length of the animal. The dorso-median carina is well-marked on the first five seg-

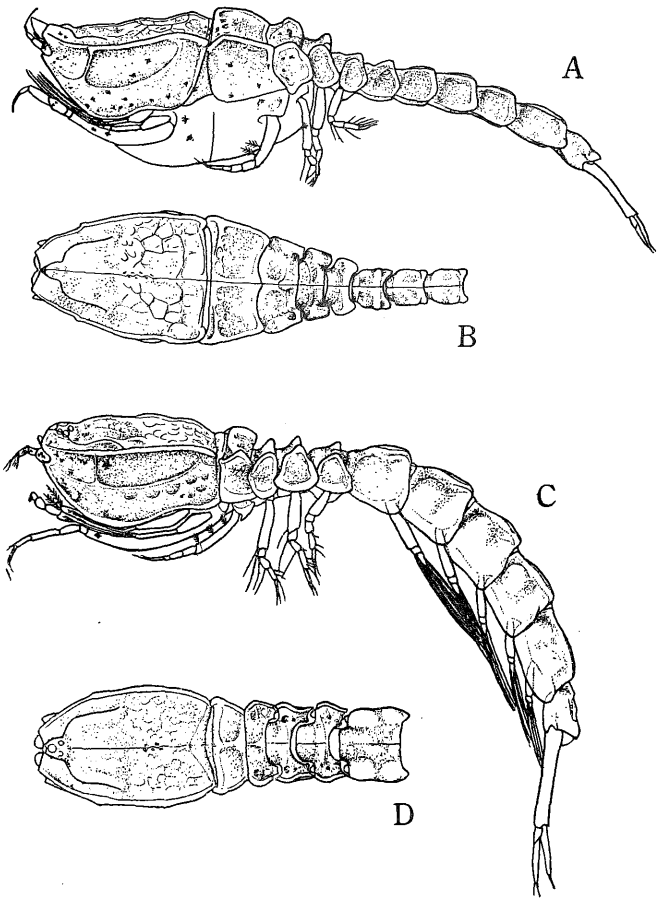

Fig. 5. *Bodotria serrulata* sp. nov., holotype adult female with well-developed marsupium (length, ca. 3.5 mm): A: lateral view. B: anterior portion of body, from above. Paratype adult male (length, ca. 4.1 mm): C: lateral view. D: anterior portion of body, from above.

ments. The first segment is much carinated postero-dorsally. The fifth is larger and longer than the other segments. The last segment is about two-thirds the length of the fifth.

The first segment of the peduncle of the antennule is expanded laterally and one and one-fourth times as long as the combined length of the distal two segments. The third segment is nearly three-fourths as long as the second, which is one-third as long as the first. The main flagellum is two-segmented; the distal segment is very short, about one-third the length of the proximal one and furnished with two subequal long aesthetascs.

The basis of the third maxilliped is equal to twice as long as the

remaining distal segments together. The prolonged external angle of the basis is about one-seventh of the length of the basis and reaches the end of the ischium, which is subequal to the length of each of the next two segments. The propodus is rather small, two-thirds as long as the carpus. The dactylus is three-fourths the length of the propodus.

The basis of the first peraeopod is nearly one and one-half times as long as the remaining distal segments together. The carpus is expanded laterally, about one-fourth as wide as the length and one and two-thirds times as long as the merus; its inner border bears three small hairs and a rather long seta. The propodus is less than one-half the length of the carpus. The dactylus is as long as the propodus and bears two unequal distal spines.

The second peraeopod is less than four-sevenths the length of the first peraeopod. The basis is a little more than the length of the remaining distal segments together and bears three plumose hairs on the inner border. The ischium is very short and ankylosed with the basis. The merus and carpus are subequal in length and each is nearly one and one-half times as long as the propodus. The dactylus is about twice as long as the propodus and furnished with four unequal distal spines, of which the longest one is nearly twice as long as the segment.

The third peraeopod is a little shorter than the second and a little longer than the fourth. The basis of the third peraeopod is longer than the remaining distal segments together and the basis of the fourth peraeopod is shorter than the remaining distal segments together. The fifth peraeopod is much shorter than the fourth and the basis of the fifth peraeopod is a little more than one-half the length of the remaining distal segments together.

The peduncle of the uropod is one and three-fourths times as long as the last abdominal segment. The endopod is one-half the length of the peduncle, serrate on both borders and bears two spines on the inner border and two unequal apical spines. The exopod is slightly longer than the endopod and bears six plumose hairs on the inner border and two unequal distal spines.

Paratype adult male (length, about 4.1 mm): The length of the carapace is one-fourth of the total length of the animal. It is widest across the middle portion a little less than three-fourths of its length and a little more than its depth. The dorso-median carina with a median line is well-marked over the whole length. The dorso-lateral ridge is well-developed as well as in that of the female. On the lateral side there is a well-marked and arched lateral ridge, below which it is beset with rather big shallow pits. The pseudorostral lobes barely meet in front of the

ocular lobe and truncated. The ocular lobe is somewhat rounded, triangular in shape, nearly as wide as long and beset with discernible ocelli. The antennal notch is angularly concave with an acute antero-lateral angle.

The first segment of the peduncle of the antennule is expanded laterally and one and one-third times as long as the distal two segments combined. The third segment is one and one-half times the length of the second one and furnished with unequal aesthetacs like those of the main flagellum. The main flagellum is two-segmented and the distal segment is short, one-third as long as the proximal one and provided with two aesthetascs.

The flagellum of the antenna a little exceeds the body length.

The basis of the third maxilliped is shorter than twice as long as the remaining distal segments together; its prolonged external angle slightly exceeds the end of the ischium and is one-seventh the length of the basis. The merus is nearly equal to the length of the ischium and a little less than the carpus. The propodus is two-thirds as long as the carpus and slightly longer than the dactylus.

The basis of the first peraeopod is a little longer than the remaining distal segments together and provided with six strong spines on the one-third proximal portion of the inner border. The ischium is short. The carpus is one and two-thirds times the length of the merus, nearly one-third as wide as the length and bears two small hairs and a long seta on the inner border. The propodus is slightly less than one-half the length of the carpus. The dactylus is subequal to the length of the propodus and bears a long terminal spine much exceeding the length of the segment.

The second peraeopod is shorter than one-half of the length of the first peraeopod. The basis is equal to the length of the remaining distal segments together and bears three plumose hairs on the inner border. The short ischium is ankylosed with the basis. The carpus is subequal to the length of the merus and provided with three unequal spines on the distal end. The propodus is nearly one-half as long as the carpus. The dactylus is slightly more than one and one-half times as long as the propodus and provided with four unequal spines, of which the longest one much exceeds the length of the segment.

The third peraeopod is nearly equal to the length of the second and as long as the fourth peraeopod. The basis of the third peraeopod is about as long as the remaining distal segments together and the basis of the fourth is much shorter than the remaining distal segments together. The fifth peraeopod is much shorter than the fourth and the basis of the fifth pareaopod is about one-half the length of the remaining distal segments together.

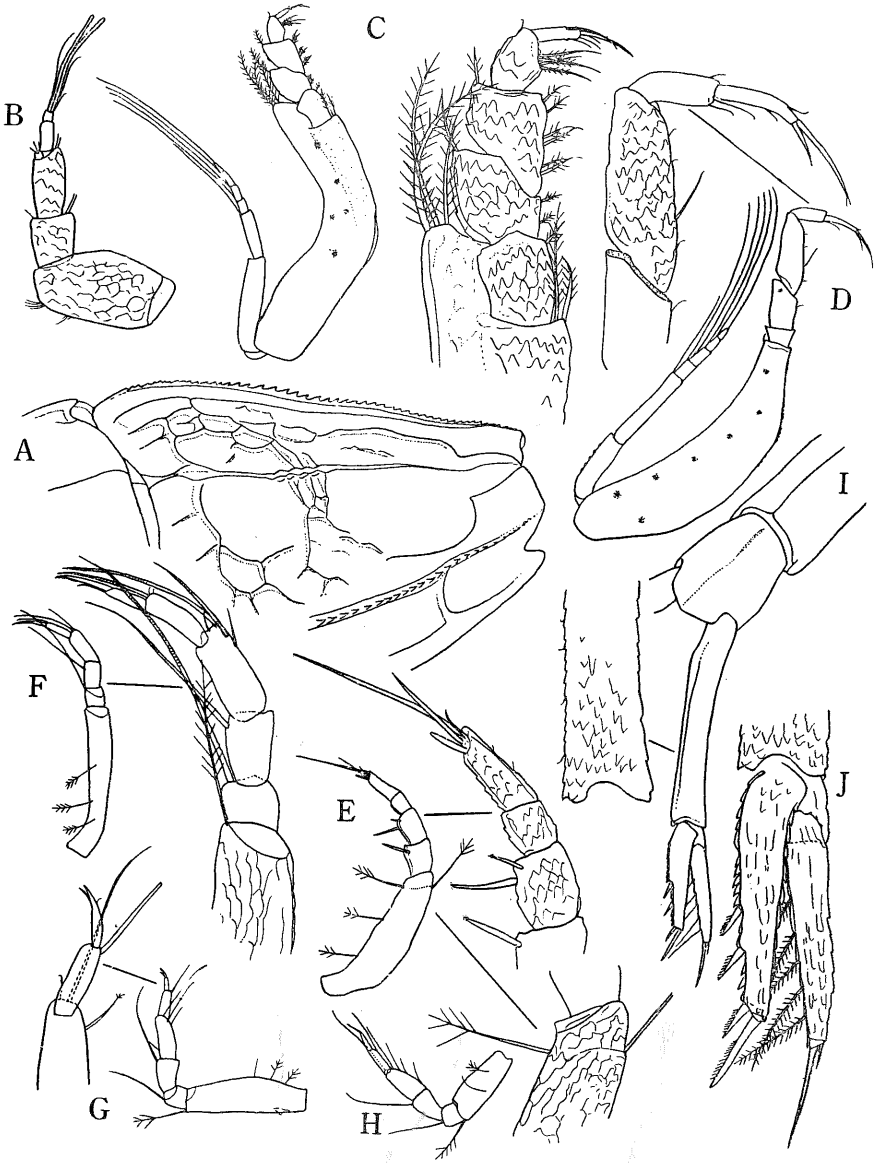

Fig. 6. *Bodotria serrulata* sp. nov., holotype adult female with well-developed marsupium: A: carapace, somewhat dorsal view. B: antennule. C: third maxilliped. D–H: first to fifth peraeopods. I: uropod with last two abdominal segments. J: endopod and exopod of right uropod.

The peduncle of the uropod is nearly one and two-thirds times as long as the last abdominal segment. The endopod is a little more than one-half the length of the peduncle and provided with seven spines interspersed

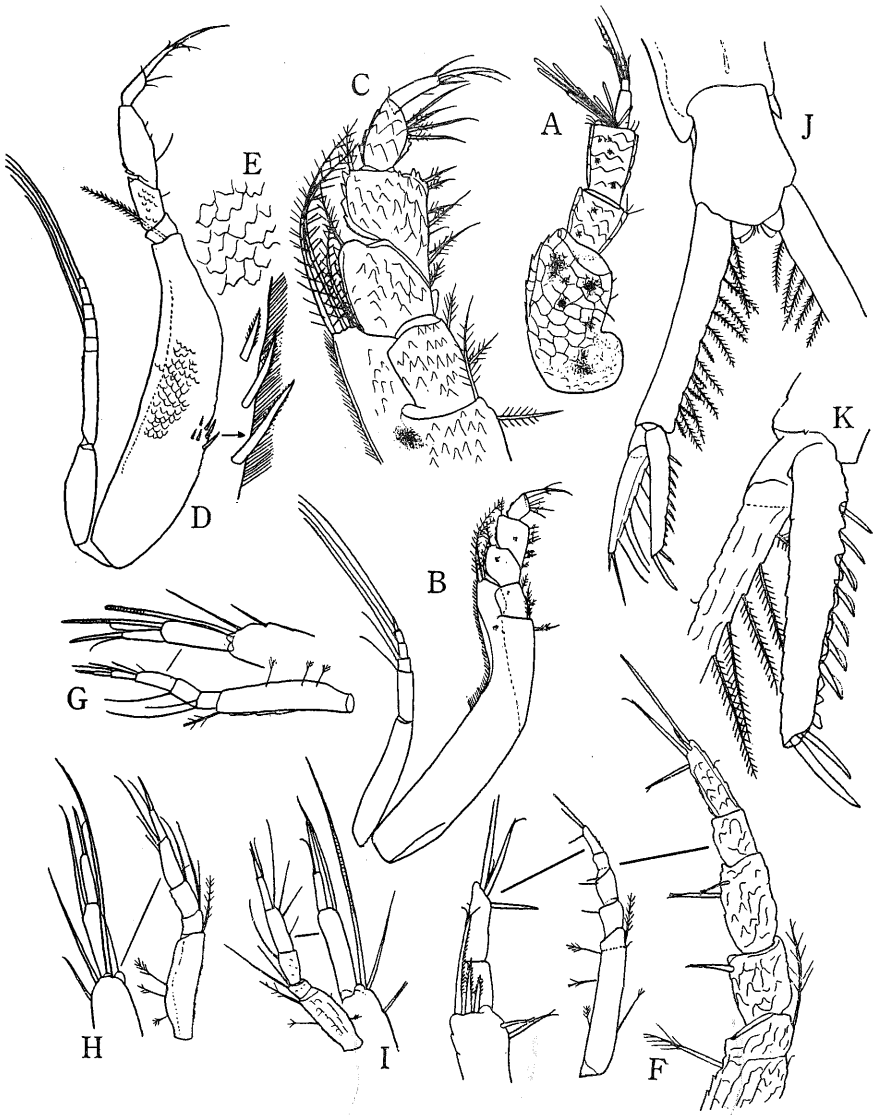

Fig. 7. *Bodotria serrulata* sp. nov., paratype adult male: A: antennule. B: third maxilliped. C: distal portion of third maxilliped. D: first peraeopod. E: sculpture on surface of basis of first peraeopod. F–I: second to fifth peraeopods. J: uropod with last two abdominal segments. K: endopod and exodopod of left uropod.

with a serration on the proximal portion of the inner border; on the distal portion of the inner border there are large serrations. The distal end of the endopod bears two unequal spines. The exopod is slightly longer than the endopod and furnished with six plumose hairs on the inner border and two unequal distal spines.

Material: 1♀ adult (holotype), night surface tow-net, St. 20, off Akkeshi Marine Biological Station; August 16, 1963.

1♂ adult (paratype), St. 11–12, depth about 8–12 m, sandy mud bottom; August 16, 1963.

Remarks: The new species with single-segmented endopod of the uropod is very allied to *B. biplicata* from Sado Island (Gamô 1964), from which it differs by the following points of characters: 1) the cephalothoracic portion with strong keeled carinae, 2) the lateral fold with a short transverse ridge, 3) the dorso-lateral and lateral carinae or folds do not bend dorsally and not contact with the reticulated patterns on the dorsal surfae.

It is also very like that of *B. ovalis* in appearance. But it is distinguished from the last named by having the relatively narrow carapace with lateral fold and the dorsal surface of the carapace with reticulated sculpture and by the shorter peduncular segment of the uropod (1.75(♀) or 1.67(♂) times the length of the last abdominal segment).

Family Nannastacidae

3. *Cumella quadrispinosa* sp. nov.

(Figs. 8–10)

Description of the holotype: The holotype is an adult female (length, about 1.8 mm) with well-developed marsupium, in which four embryos are carried.

The carapace is covered with minute tuberculate granules; the dorso-median carina with a median line is well-marked over the whole length; it is raised in the middle portion and much more elevated postero-dorsally. On the dorso-median carina there are four forwarded teeth, two of which are on the frontal lobe, the median one with a minute tooth is situated behind the middle of the length of the carapace and the last one is near the posterior border of the carapace. The postero-dorsal portion of the carapace is rather depressed laterally and the posterior margin is raised dorsally. On each side in the middle portion of the carapace there is a transverse depressed area with a ridge. The length of the carapace is a little more than one-third of the total length of the animal and a little less than one and two-thirds times the width, which is fully one and one-fourth times the depth. The pseudorostral lobes meet in front of the ocular lobe for a distance nearly as long as the ocular lobe and broadly truncated as seen from above, and obliquely truncated as seen from the side. The ocular lobe is semi-circular in shape and beset with three ocelli. The antero-

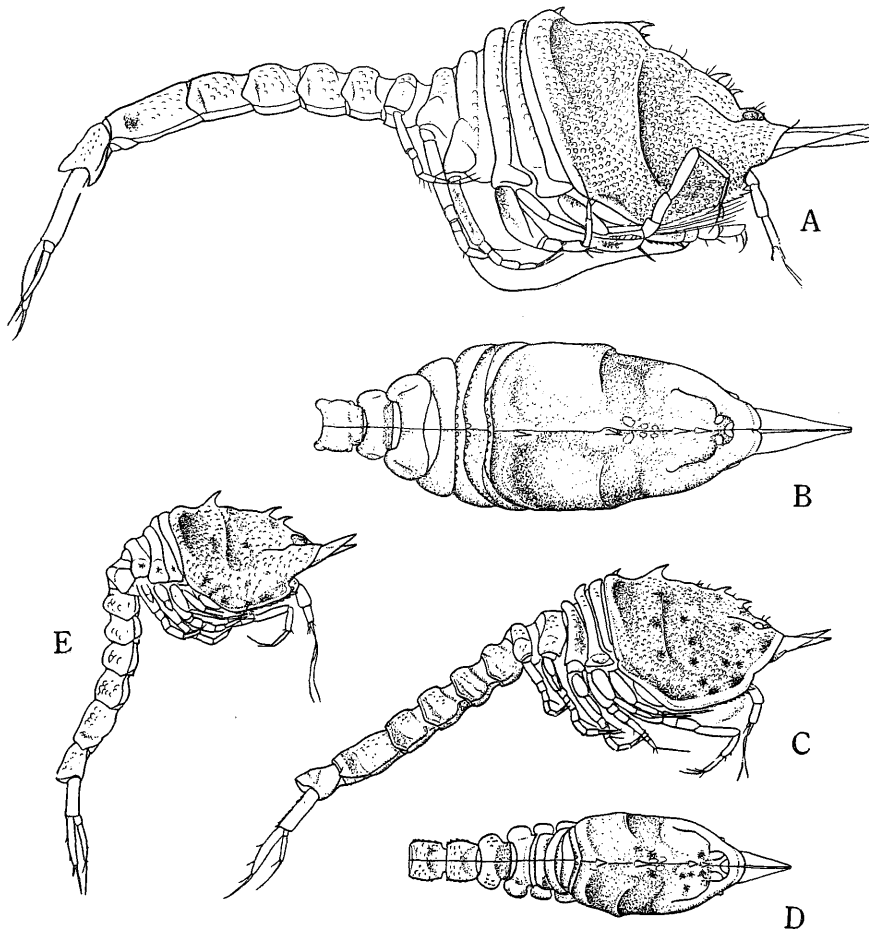

Fig. 8. *Cumella quadrispinosa* sp. nov., holotype adult ovigerous female (length, ca. 1.8 mm): A: lateral view. B: anterior portion of body, from above (sculpture on surface of body is omitted). Paratype young male (length, ca. 1.3 mm): C: lateral view. D: anterior portion of body, from above (sculpture on surface of body is omitted. E: manca larva (length, ca. 1 mm).

lateral angle is furnished with teeth. The lower margin of the carapace is serrate.

The combined length of all the free thoracic segments is slightly less than three-fourths the length of the carapace. The dorso-median line is present on all the segments and the sides are prominent. The first segment is exposed, one-sixth as deep as and as wide as the carapace. The remaining free thoracic segments are successively decreased in width as well as in depth.

The abdomen is less than one-half of the total length of the animal.

The first two segments are almost of the same size and the third and fourth segments are slightly longer than each of the preceding segments. The fifth segment is more than one and one-fourth times as long as the fourth segment. The sixth segment is slightly less than three-fourths of the length of the fifth.

The first segment of the peduncle of the antennule is about one and one-fifth times as long as the second segment, which is a little longer than the third one. The main flagellum is two-segmented and the proximal segment of the main lash is longer than the distal one; it bears two unequal aesthetascs. The accessory flagellum is rather large and two-segmented.

The basis of the third maxilliped is provided with seven teeth near the inner distal portion and four teeth in the middle of the inner border which is margined with hairs. The length of the basis is one and one-fourth times as long as the remaining distal segments together. The ischium is short. The length of the merus (inclusive of its outer distal angle) is almost as long as the carpus and its outer angle is a little developed into a prolongation which is provided with a large tooth on the outer border. The carpus is a little shorter than the propodus and provided with a tooth on the outer distal border. The dactylus is a little more than one-third the length of the carpus.

The basis of the first peraeopod is less than two-thirds the length of the remaining distal segments together and bears a tooth on the distal end and a row of hyaline flat teeth on the ventral surface near the outer border. The ischium is nearly one-fifth as long as the basis. The merus is about one and one-half times the length of the ischium and a little more than one-half of the length of the carpus. The dactylus is a little less than two-thirds the length of the propodus which is nearly three-fourths as long as the propodus.

The length of the second peraeopod is more than one-half the length of the first peraeopod. The basis is stout and nearly two-thirds as long as the remaining distal segments together. The ischium is very short. The merus is expanded and less than the length of the carpus. The carpus bears three unequal spines on the distal end. The propodus is two-thirds the length of the carpus. The dactylus is rather long, nearly twice as long as the propodus and provided with a long distal seta a little exceeding the length of one-half of the dactylus.

The third and fourth peraeopods are subequal in length and each is a little longer than the second peraeopod. The basis of the third peraeopod is nearly equal to the length of the remaining distal segments together, whereas the basis of the fourth one is much less than the length of the

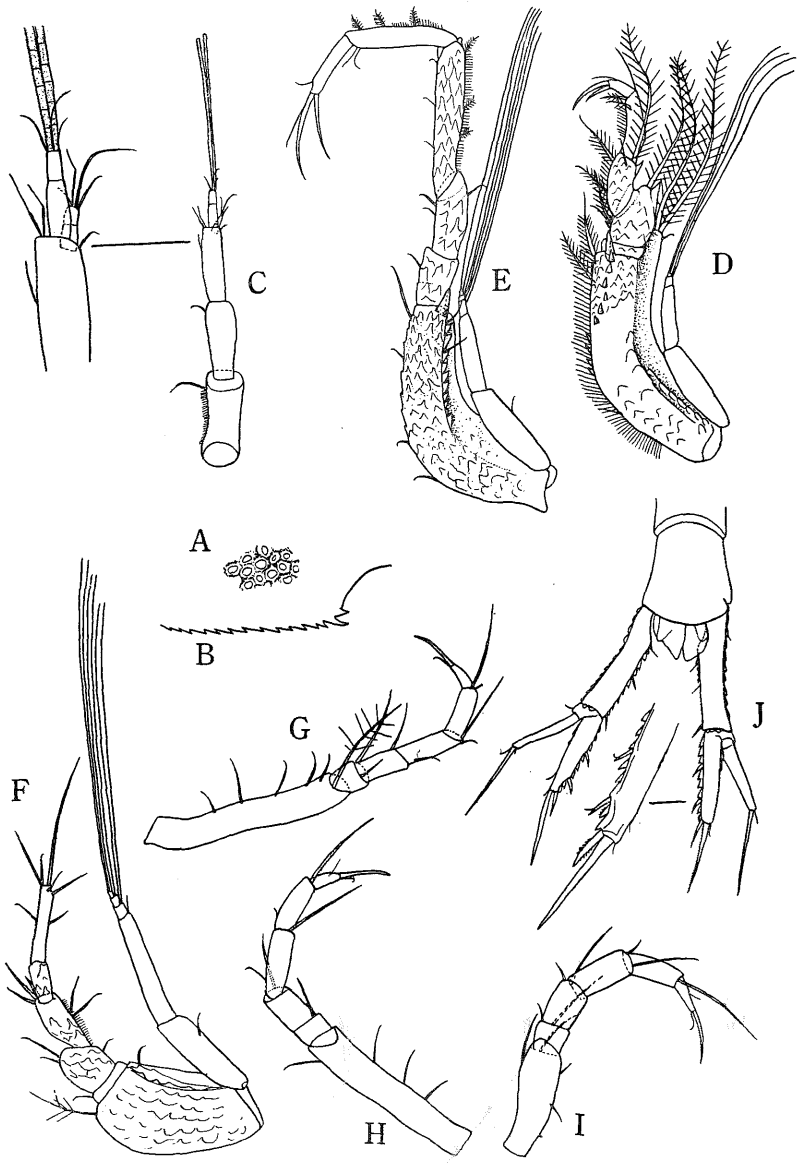

Fig. 9. *Cumella quadrispinosa* sp. nov., holotype ovigerous female: A: sculpture on carapace. B: antero-lateral border of carapace. C: antennule. D: third maxilliped. E–I: first to fifth peraeopods. J: uropod with last abdominal segment.

remaining distal segments together. The fifth peraeopod is about five-sixths as long as the fourth peraeopod. The basis of the fifth peraeopod is slightly more than one-half as long as the remaining distal segments together.

The peduncle of the uropod is more than the length of the last abdominal segment, serrate on both lateral borders and furnished with three small setae on the inner border. The endopod is three-fourths of the length of the peduncular segment and furnished with three spines interspersed with two or three serrations and with a long terminal spine nearly three-fourths as long as the endopod. The exopod is slightly shorter than the endopod and provided with a long terminal spine which is nearly equal to the length of the exopod.

Paratype young male (length, about 1.3 mm): In life the colour of the carapace is almost dark brownish; there are several dark brown chromatophores around the middle portion of the dorso-lateral side and along the lower margin of the carapace. There are three white-pigmented ocelli on the dark-coloured ocular lobe. The free thoracic segments are also dark brownish in colour. The abdomen is almost colourless and transparent; the dorsal surface and the posterior part of the fifth abdominal segment are slightly dark-coloured. The antennule and the proximal portion of the first three pairs of peraepods are also slightly dark-pigmented. The remaining parts of the body are colourless and transparent.

General features of the carapace are almost like those of the adult female holotype. The length of the carapace is one-third the total length of the animal and a little less than one and three-fourths times the width, which is much less than the depth. The ocular lobe is semi-circular in shape and beset with three ocelli. The antennal notch is shallowly concave. The antero-lateral corner is rounded and margined with serrations.

The combined length of all the free thoracic segments is a little more than one-half the length of the carapace. The first segment is exposed, a little more than one-half as deep as and nearly three-fourths as wide as the carapace. The following segments are successively decreased in depth as well as in width.

The abdomen is nearly one-half of the total length of the animal. The first two segments are almost of the same size and each of the third and fourth segments is slightly longer than the second segment. The fifth segment is about one and one-half times the length of the fourth segment. The sixth segment is two-thirds as long as the fifth segment.

The first segment of the peduncle of the antennule is nearly one and one-third times as long as the second segment which is almost subequal to the length of the third segment. The main flagellum is two-segmented; the distal segment is provided with a small protuberance like a segment. The accessory flagellum is rather large and two-segmented.

The basis of the third maxilliped is slightly longer than the remaining distal segments together and bears teeth on the distal part of the inner

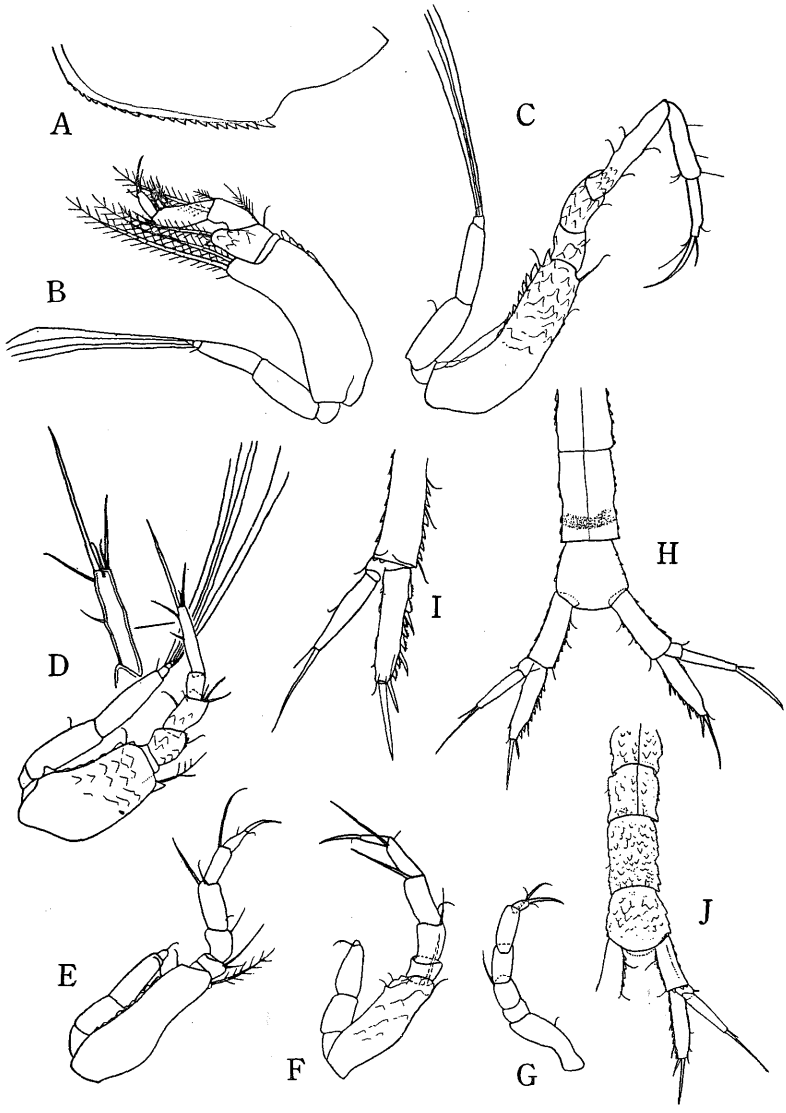

Fig. 10. *Cumella quadrispinosa* sp. nov., paratype young male: A: antero-lateral border of carapace. B: third maxilliped. C–G: first to fifth peraeopods. H: uropod with last three abdominal segments. I: distal portion of left uropod. Manca larva: J: uropod with last four abdominal segments.

border; its external angle is developed into a prolongation about one-sixth as long as the basis. The following distal segments are very like those in the female (Fig. 10, B). The first to fifth peraeopods are shown in Fig. 10, C–G. The basis of the third and fourth peraeopods is provided with

a an exopod.

The peduncle of the uroped is a little longer than the last abdominal segment, serrate on both borders and bears three fine setae on the inner border. The endopod is a little longer than the peduncular segment and bears three spines interspersed with two or three serrations on the inner border; the distal end is furnished with a terminal spine nearly three-fourths as long as the endopod. The exopod is a little shorter than the endopod and provided with a long terminal spine, which is a little shorter than the endopod.

Manca larva (length, about 1 mm): The general features of the manca larva are very like those in the more advanced stage, but the hindmost small dorsal tooth of the carapace is not yet present and the last peraeopod of the fifth abdominal segment is of the rudimentary condition. In male specimen (?) of the manca larva the exopod of the third and fourth peraepods is rudimentary present (Fig. 8, E).

Material: 6♀ with marsupium, 3♀ subadult; 9♂ young (1♂ paratype), 4 manca larvae (1♀, 3♂ ?), St. 2, depth 1 m, muddy bottom; August 18, 1963.

1♀ ovigerous holotype, 1♀ juvenile, St. 3, depth 3 m, muddy bottom; August 15, 1963.

Literature Cited

GAMÔ, S. 1964. On three new species of Cumacea from the southern Sea of Japan. Crustaceana, vol. 7, pp. 241–253, figs. 1–7.